Heat Pump Market Insights

August 2022 | Arjun Mehra

INCREASED COMPETITION AND NEW TECHNOLOGY = POSITIVE TRENDS IN THE MASSACHUSETTS COLD CLIMATE HEAT PUMP MARKET

Positioned as a clean heating solution to current economic and environmental factors, heat pumps are gaining momentum and forecasted to grow exponentially through 2030. While still in the early phase of adoption, the Massachusetts cold climate heat pump market has already experienced significant trends impacting market share and product innovation.

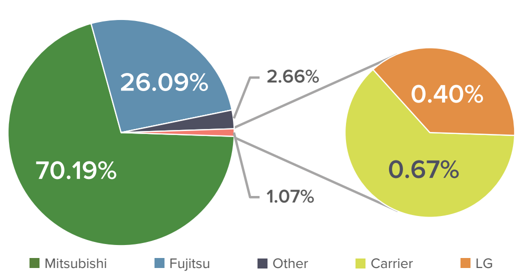
When residential cold climate heat pumps were introduced in the Massachusetts market, HVAC manufacturers Mitsubishi and Fujitsu primarily dominated the market. While they remain popular, reliable brands in Massachusetts, Abode Energy Management's (Abode) analysis indicates shifting trends of increased manufacturer competition—resulting in technological improvements and increased product options.

To best assess trends impacting Massachusetts, Abode looked at various heat pump data from the previous decade. The earliest heat pump installation data available is from the Massachusetts Clean Energy Center's (MassCEC) Air Source Heat Pump (ASHP) rebate database, containing information on over 20,000 projects from 2015-2019. This data shows Mitsubishi (70.19%) and Fujitsu (26.09%) as the dominant manufacturers in the Massachusetts heat pump market during this time period—Carrier (.67%) and LG (.4%) together making up less than 1% of the market. According to independent reviews from websites such as Green Building Advisor, Mitsubishi and Fujitsu heat pumps garnered a reputation for high-system reliability and superior efficiency-to-cost ratio, most likely contributing to the popularity and success of their products.

Abode compared the below data to their more recent database of over 700 heat pump installations from January 2021 through March 2022. While the data collected from Abode's Municipal Light Plant (MLP) programs is a smaller dataset than MassCEC's data, the manufacturer market share data shift is significant. Within three years, Mitsubishi lost 13% of its market share. As the largest international manufacturer of heat pumps, Mitsubishi may have been more susceptible to supply chain challenges over the last few years. Fujitsu lost 17% of its market share, dropping to the fourth most prominent manufacturer in Massachusetts' heat pump market. In alignment with the competitor diversification trend:

- Bosch gained 15% of the heat pump market in a short time,
- Carrier and LG increased market share and expanded their statewide influence,
- Other heat pump manufacturers such as Trane and Ecoer established themselves as key players.

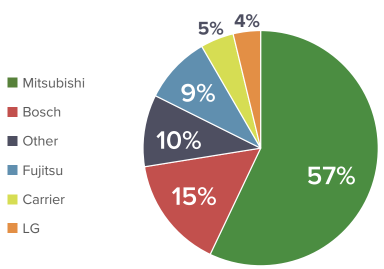
MassCEC Manufacturer Mix



Source: MassCEC Rebate Data 2015 - 2019

https://www.masscec.com/cost-residential-air-source-heat-pumps

Abode Manufacturer Mix

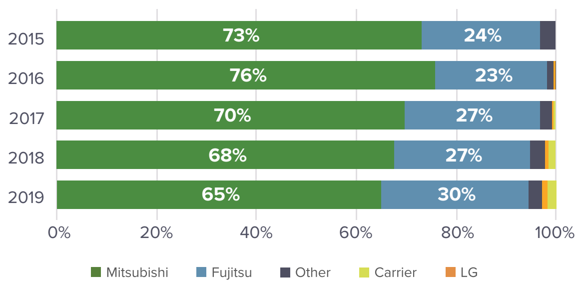


Source: Abode Data 2021-2022

HOW DOES MANUFACTURER DIVERSIFICATION IMPACT THE MARKET?

An increase in manufacturer competition encourages rapid, technological innovation and improvements—benefiting the contractor and customer through cost, product options, and overall customer experience.

Manufacturer Mix Over Time, MassCEC

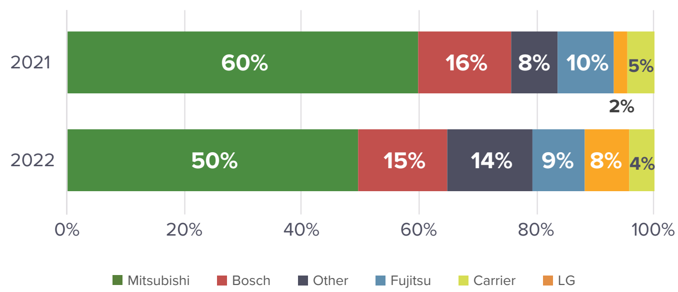


Source: MassCEC data 2015 - 2019

Taking a closer look at the MassCEC data, Abode assessed that LG and Carrier began increasing their heat pump volume in 2017; however, Bosch still had no significant market share through 2019.

Compared to recent data from Abode, Bosch made up 16% of installed heat pumps in 2021, and LG installed 8% of heat pumps by the first quarter of 2022.

Manufacturer Mix Over Time, Abode



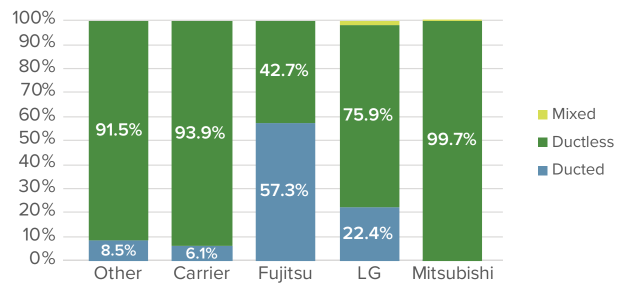
Source: Abode Preapproval Data

But how does cost affect market share? Abode looked at the cost data from both datasets to assess price trends. While pricing is not set by manufacturers, and there is quite a bit of variability among contractors given that they adapt their pricing based on many factors, there are clear trends when analyzing cost data by manufacturer equipment. For the data timeframe of 2015-2019, Fujitsu systems provided the lowest price option available on the market, while Mitsubishi systems pricing was lower than their American counterparts. These cost benefits were likely factors contributing to Mitsubishi and Fujitsu's dominance in the early Massachusetts cold climate heat pump market.

For the data timeframe of 2021-2022, Fujitsu systems are still the most affordably priced heat pump in the market; however, Bosch emerged with an affordable heat pump capable of competing against Fujitsu—likely contributing to Bosh's increased market share and Fujitsu's decreased market share. LG also introduced an affordable heat pump priced lower than Mitsubishi's product line, likely accounting for LG's increased market share and Mitsubishi's decreased market share. Of course, price trends do not take into account system performance and overall long-term savings.

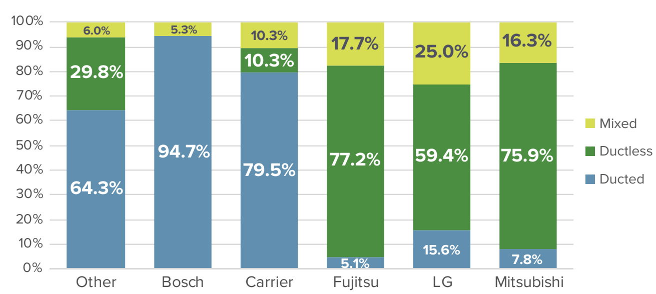
Do product offerings impact market share? While price is an appealing benefit to customers, Abode looked at product mix by manufacturer to assess their impact on trends in Massachusetts' heat pump market.

Manufacturer and Distribution Type



Source: MassCEC ASHP Rebate Data, 2015-2019

Manufacturer Mix & Distribution Type, Abode



Source: Abode Preapproval Data, 2020-2022

Looking at MassCEC rebate data, ductless systems dominated the market between 2015-2019. Fujitsu contractors were the only installers offering a variety of ducted systems—Mitsubishi installations were almost fully comprised of ductless systems. Examining the model numbers of installed systems revealed that mixed ducted/ductless systems were insignificant during this timeframe, which may reflect contractor confidence in available emerging solutions.

In comparison to Abode's MLP 2020-2022 data, there was a significant increase in product offerings from manufacturers with the emergence of mixed and ducted system installations. The most compelling trend depicted by our data is the proportion of ducted systems installed by Bosch, Carrier and Fujitsu—indicating that Bosch and Carrier's increased market share was driven by their ducted system offerings.

Based on Abode's market experience, the success of manufacturer ducted systems may be due to several positive benefits of the Inverter Ducted Split (IDS) product line. Introduced in 2018, the IDS product line includes a cased evaporator coil that can be attached easily to most pre-existing air handlers, making them eligible for rebates that were not previously available. As a result, the IDS product line received increased attention and significant market uptake during a short timeframe. Abode's analysis of product mix reflects this trend—Bosch representing the highest proportion of ducted systems (94%) of any manufacturer, despite needing fossil fuel backup due to capacity drop (60% at 5F with a standard setup[1]).

What's next for heat pumps? While Massachusetts' heat pump market continues to grow and evolve, Abode's data analysis and market experience highlight several trends contributing to our current marketplace. We anticipate that more households will adopt whole-home solutions as contractors gain confidence in the application and utility programs continue to provide enhanced incentives for full-displacement of heat loads.

INCREASED COMPETITION—COST—PRODUCT MIX

We can conclude that an increase in competition in a rapidly, developing industry is contributing to significant momentum in the heat pump market. Other factors, such as improved system performance and utility rebate programs create an abundance of positive benefits for customers resulting in an industry well-positioned for growth. Abode is dedicated to supporting Massachusetts' heat pump market and will continue to analyze and share our findings with you.

[1] https://ashp.neep.org/#!/product/36442/7/25000///0

ABOUT ABODE ENERGY MANAGEMENT

Abode Energy Management is an energy consulting firm driving efficiency improvements for New England's built environment. We are passionate about helping our industry grow through a training-based, collaborative approach. Our collective experience in building performance, renewables, clean energy financing, utility program implementation, community engagement, and workforce development form the foundation that enables us to deliver data-driven results for our partners, clients, and their customers.

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