

FACT SHEET

Cold Climate Heat Pumps: A Reliable Solution for Massachusetts

Heat pumps now provide dependable heating across Massachusetts, even in sub-zero temperatures. New cold climate product certifications, trained installer networks, and weatherization programs are helping consumers switch from less efficient fossil fuel systems and stay warm all winter.

Heat pumps are ready for Massachusetts' climate.

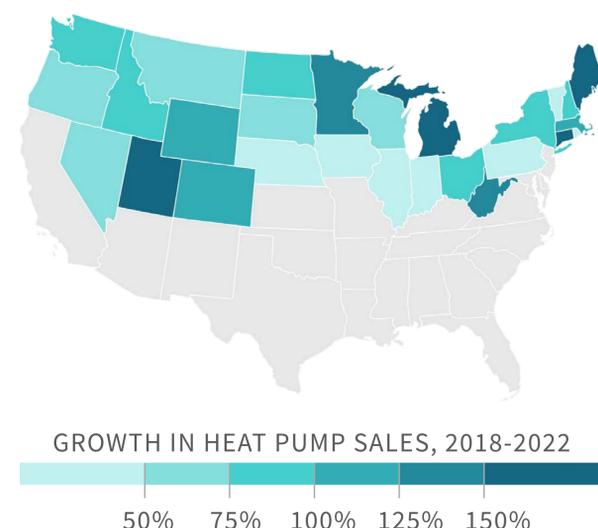
Thanks to remarkable technological advancements in recent years, there are now thousands of heat pump models that can operate effectively in sub-zero temperatures. Over 100 heat pump manufacturers now offer cold climate products serving a wide range of building types.¹

Heat pumps perform 2 to 4 times more efficiently than gas, oil, or propane systems in Massachusetts' climate thanks to improved performance in both mild temperatures and extreme cold.²

TEMPERATURE	COLD CLIMATE HEAT PUMP PERFORMANCE ²
47°F ❄️	3.7–4.6x more efficient HEAT PUMP vs GAS FURNACE
17°F ❄️❄️	2.7–3.3x more efficient HEAT PUMP vs GAS FURNACE
5°F ❄️❄️❄️	2.2–3.0x more efficient HEAT PUMP vs GAS FURNACE

Many of the coldest states are heat pump leaders.

Cold states are increasingly adopting heat pumps³



MAINE

Pursuing a goal of 100,000 new heat pumps by 2025, Maine installed over

27,000
heat pumps in 2021.⁴

MASSACHUSETTS

Mass Save's network of 800-plus verified contractors installed more than

18,000
heat pumps in 2022.⁵

ALASKA

The Cold Climate Housing Research Center has successfully field-tested heat pumps **north of the Arctic Circle.**

What is a cold climate heat pump?

Cold climate heat pumps are specifically engineered to maintain performance below freezing. All cold climate heat pumps perform twice as efficiently as gas furnaces down to 5°F, with many products performing at -13°F or below without backup.⁶ Ground source heat pumps provide even better performance at any temperature — and new federal incentives have made them increasingly affordable.



What about the coldest days of the year?

Heat pumps can serve as a primary heating system year-round in Massachusetts, but do become less efficient and effective in extreme temperatures. Backup heating systems can ensure year-round comfort in areas where winters consistently drop below -13°F.

Electric backup

Some heat pumps come with integrated backup systems to ensure year-round performance. These systems must be installed and programmed correctly to maximize bill savings and minimize grid impacts.

Fossil fuel backup

These systems keep households reliant on aging infrastructure and volatile commodity prices. Programs in Massachusetts should disincentivize new fossil fuel installations when feasible to align with the necessary transition to cleaner, all-electric buildings.



Successful installations start with three key steps.

Use rating systems.

Consumers can rely on established standards to select products proven to perform in extreme cold. Certified product lists and other resources from ENERGY STAR and Northeast Energy Efficiency Partnerships (NEEP) can be found at:

- **ENERGY STAR:** www.energystar.gov/products/air_source_heat_pumps
- **NEEP:** neep.org/heating-electrification/ccashp-specification-product-list

Work with trained installers.

Proper system design and installation is essential for ensuring heat pumps perform as intended. Approved contractor lists like that managed by Mass Save can help consumers connect with the right contractors.

Incorporate weatherization.

Ensuring homes are properly insulated and air sealed can result in lower-cost heat pump installations, improved performance and bill savings, and enhanced comfort. Weatherization measures are an important addition for many heat pump installations.

DID YOU KNOW?

Over **1.5 million** American homes already use heat pumps to stay warm in sub-freezing conditions.⁷



Take action

Massachusetts policymakers can take several steps to maximize the benefits of cold climate heat pump deployment:

- ▶ **Target optimal opportunities for heat pumps** including new construction, delivered fuel systems (e.g., oil and propane), water heater replacements, electric resistance, and new air conditioning installations.
- ▶ **Maintain a verified contractor list** to ensure quality installations.
- ▶ **Invest in workforce development programs** to train and educate contractors about new, high-performance cold climate heat pumps.
- ▶ **Design programs** to align with cold climate certifications and facilitate access to incentives for whole-home installations and complementary weatherization upgrades.
- ▶ **Prioritize low-income and environmental justice communities** by developing enhanced incentives, creating program set-asides, and making programs accessible to customers facing additional barriers.

Learn more

Heat Pumps: A Practical Solution for Cold Climates, RMI, 2020, rmi.org/heat-pumps-a-practical-solution-for-cold-climates

Can Heat Pumps Actually Work in Cold Climates?, Consumer Reports, 2022, www.consumerreports.org/heat-pumps/can-heat-pumps-actually-work-in-cold-climates-a4929629430

NOTES

1. Northeast Energy Efficiency Partnerships, 2022, bit.ly/46b2W34
2. Values represent the 5th and 95th percentiles of performance on the Cold Climate Air Source Heat Pump Product List. Northeast Energy Efficiency Partnerships, 2023, bit.ly/44bDbxV
3. RMI industry research, 2023
4. Energy News Network, 2022, rb.gy/c4z8o
5. Energy News Network, 2023, rb.gy/mtY7h
6. Center for Energy and Environment, 2017, rb.gy/aow4z
7. US Energy Information Administration, 2020, bit.ly/44A8GT6