

Air Source Heat Pumps (ASHPs) for Heating & Cooling

WHAT IS A HEAT PUMP?

A heat pump is a technology that collects energy from one location and transfers it to another. Everyone has a heat pump in their home already, in the form of a refrigerator — this appliance simply moves the heat energy from inside the fridge to outside the fridge (into your kitchen) all day & night, keeping your food fresh. A window air conditioner unit works the same way, and so does a central A/C system. This is exactly how a heat pump works for your home in the summer, but there's more; during winter months the refrigerant cycle can be reversed to provide heating for your home by capturing heat energy from the outside even on extremely cold days. Using physics, engineering, and refrigerant, a heat pump over the course of the year uses 1 unit of energy input and produces about 3 units of heat energy output, making it the most efficient way to heat and cool homes in New England.

IS A HEAT PUMP RIGHT FOR MY HOME?

One of the greatest things about Cambridge is the city's diversity and history, and those two traits are represented in its housing stock. Cantabrigians live in a wide variety of building styles — from stately single-family colonials to two-families, triple-deckers, and mid-rise multi-families. The great news is that for every style and type of home, there is a workable heat pump design. Air Source Heat Pumps (ASHPs) are a wide product category with many configurations and flexibility in design, from multiple indoor ductless units fed by a single outdoor unit (when yard space is at a premium) to a small, ducted unit providing precise heating and cooling to two small bedrooms of a condo. The options are nearly limitless and can be configured successfully for nearly all Cambridge homes.

Clean Heating and Getting to Net Zero

Clean heating and cooling technologies are a great way to increase home comfort and decrease our carbon footprint. Buildings in Cambridge are responsible for over 75% of our carbon emissions, and heating and cooling our buildings with clean energy will be an important part of getting to net zero. The technology is here, it is market ready, and it is affordable. Cambridge Clean Heat is here to support you along the way.

SHOULD I REPLACE MY WINDOW A/Cs WITH A HEAT PUMP?

While there are many different types of heat pumps, the most common in our region and many parts of the world is called a ductless mini-split. This unit typically uses less than 50% of the electricity used by a typical window unit, and multiple conditioned zones can be set up throughout the house with a single unit. These smart, extremely quiet systems are a great solution when running ductwork isn't possible. Additionally, these units (depending on the design) can completely replace the need to run a traditional heating system, displacing a large amount of CO2 emissions and reducing operating costs depending on the existing fuel source. One more advantage is that heat pumps are a permanent system, meaning they don't have to be installed and uninstalled in spring and fall.

SHOULD I REPLACE MY CENTRAL A/C WITH A HEAT PUMP?

The short answer is *absolutely*. Many configurations of whole home heat pumps ("unitary systems") are the exact same technology as a central AC system except for a reversing valve that allows the system to provide heating in addition to cooling. In many ways, replacing an existing central A/C system with a heat pump is the most favorable way to electrify your heating needs. This is because you are investing in a state-of-the-art heating/cooling source without needing to buy the means of distribution — since the ductwork is already in place. Additionally, the advantages of a new heat pump system are identical to those of a premium new central A/C system: extremely quiet operation, no hard starts and stops, precise temperature & humidity control, and significant improvement in efficiency versus window A/C units.

ABOUT ABODE

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 and clients.

