

Heat Pumps

Frequently Asked Questions

What is a Heating and Cooling Heat Pump?

A heating and cooling heat pump moves the existing heat in the air or ground from one place to another using electric or renewable power. In summer, it moves heat from inside a building to the outside, and in winter it works like an air conditioner in reverse and moves heat from outside into the building.

Unlike traditional systems that are powered by burning fossil fuels or using electric resistance, heating and cooling heat pumps are very energy efficient—they extract more energy than they consume—and the latest models work reliably even when the temperature outside is extremely cold or hot.

What is an Air Source Heat Pump (ASHP) and Ground Source Heat Pump (GSHP)?

Air Source Heat Pump (ASHP)

While most heating systems burn fuel or utilize electric resistance, an air source heat pump is a versatile electrical system that extracts heat from one place and transfers it to another. Heat pumps are not a new technology; it has been used in Canada and around the world for decades. Heat pumps work by collecting heat from the outdoor air, transferring it via an air exchanger, and distributing it inside. A heat pump has a fully reversible cycle that can provide year-round climate control for customers – heating in winter and cooling and dehumidifying during the summer.

Ground Source Heat Pump (GSHP)

A ground source heat pump provides a clean way to heat buildings, free of all carbon emissions on site. Unlike the air, the ground (or groundwater) remains at a consistent temperature throughout the year—around 55°F. Geothermal heat pumps take advantage of the steady temperature by transferring heat stored in the earth into a building during the winter and transferring it out of the building and back into the ground during the summer. In addition to space conditioning, geothermal heat pumps equipped with desuperheaters can also produce hot water by transferring excess heat from the pump's compressor to the building's hot water tank.

Ground source heat pumps are suitable for a wide variety of buildings and are particularly appropriate for low environmental impact projects.

Ductless Mini-Split Heat Pumps

For homes without ducts for central air conditioning or heating, air-source heat pumps are also available in a ductless version called a mini-split heat pump. Mini-splits are efficient, whisper-quiet, and can keep your home or business comfortably warm or cool without blocking a window. There is a lot of flexibility in where mini-split systems can be installed, which allows for a stress-free installation.

Air-Source and Ground Source Heat Pump Benefits

Since air-source technology concentrates and transfers heat rather than generating it directly, heat pumps can deliver one-and-a-half to three times more heat energy to a home than the electrical energy they consume, using energy more efficiently.

- Dual heat-and-cooling system
- Whisper-quiet
- Lower emissions
- Filters and dehumidifies the air

Why is National Grid promoting and offering rebates on heat pumps?

Heat pumps are alternative heating and cooling technologies that can provide customers with added comfort and choice in their homes. Additionally, by converting from more traditional, fossil fuel-heating equipment to air- or ground-source technology, you'll be able to enjoy the benefits of cleaner, renewable resources to meet your heating and cooling needs.

How do heat pumps perform during the coldest days of the winter and the hottest days of the summer?

Heating and cooling pumps are a proven technology and, depending on the particular model, will continue to operate even at extreme outdoor temperatures. For example, one of the performance requirements for a NEEP-certified cold climate air-source heat pump (one of the requirements for National Grid program eligibility)

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is a Coefficient of Performance (COP) > 1.75 at 5°F. This means that, for every unit of energy utilized by the system, 1.75 units of heating/cooling energy will be provided.

The equipment may see a decrease in efficiency at the extreme temperatures but will continue to heat or cool as intended.

For more specific information, please consult either the specific manufacturer or the contractor responsible for installing the equipment.

What are cold climate heat pumps?

A cold climate heat pump provides air conditioning and heating from one unit. In summer, it uses a refrigerant to transfer warm air from inside to the outdoors. In winter, it acts like an air conditioner in reverse, transferring warmth from the outside air to the inside. Yes, even cold winter air contains enough heat to use for warmth. Cold climate heat pumps are designed to operate in the northeast.

Will running a heat pump affect my electricity bill?

Overall, electricity bills may increase due to specific usage patterns and customer behavior. On average, a typical customer may see a decrease in electricity consumption during the summer months (e.g. a mini-split unit replacing a window air conditioner) but an increase during the winter months (e.g. a central air-source pump system offsetting an oil boiler for space heating). Any increase in electricity consumption due to heating use may be offset by decreases in other forms energy consumption, for example, gallons of heating oil (or propane) or therms of natural gas. If, however, your home is currently heated through an electrical resistance system, you may see a decrease in electricity consumption during the winter months as well.

Why should I use a cold climate heat pump to heat my home or business?

Cold climate heat pumps are more efficient and cleaner than standard units because they reduce the use of fossil fuels. As more and more of our power is generated from renewable sources, this benefit will only increase. With our enhanced rebate, you can have a heat pump system installed at a lower cost than a traditional, cooling-only system.

Does a mini-split heat pump system require ductwork?

Depending on your individual circumstances mini-split heat pumps are available in both duct and ductless units. You should always have professionals advise you on making the right choice for your home.

Will my existing energy services be affected?

Depending on the scale of your overall project, your existing electric service may need to be upgraded. Additionally, you may also need to upgrade your home's electrical specifications based on the type of heat pump system you'd like to install. Please consult a licensed electrician to verify your home's electrical needs prior to installing new heat pump equipment.

Why is National Grid encouraging heat pump technology?

National Grid strongly supports the 2019 New York State Climate Leadership and Community Protection Act, which set a goal of using 100% renewable energy in the state by 2040. Heat pump systems use a combination of electricity and renewable energy instead of fossil fuels, making them more efficient and cleaner than older fuel oil and propane heating systems. The overall cost of operating a heat pump is typically lower than these fossil fuel systems, saving you money each month. Heat pump systems are better for you and our planet.

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Residential Customers

1. Air Source Heat Pump (ASHP) and Ground Source Heat Pumps (GSHP)

National Grid offers valuable rebates on cold climate air source heat pumps to fit any space, as well as rebates on ENERGY STAR® ground source heat pump equipment.

To learn more about the program and apply for rebates visit ngrid.com/nys-cleanheat

Customers must select a participating contractor and install a qualifying system. For a listing of participating National Grid qualified contractors visit ngrid.com/nyscleanheatcontractor

2. Heat Pump Water Heater (HPWH) Incentives

National Grid offers customer incentives on new installation of ENERGY STAR rated heat pump water heaters.

To learn more about the program and apply for rebates visit ngrid.com/uny-waterheating

For questions or additional details please call us at **1-844-212-7823** or email NYSCleanHeatCI@nationalgrid.com. Visit ngrid.com/nys-cleanheat for more information.