



ENERGY EFFICIENCY



Scott Carbary  
ENERGY ADVISOR

# SCOTT'S ENERGY SPOT: HEAT PUMPS

Tips from Firelands Electric's energy advisor

Improved design, government and utility incentives, and the surge in electrification in the U.S. over the past decade have resulted in heat pump sales surpassing natural gas systems for residential heating and

cooling. But is a heat pump right for your home? Let's take a deeper dive to find out!

Heat pumps extract heat from the air, soil, or water and transfer it to your living space. Since they transfer heat rather than generating it, like a gas, oil, or electric furnace would, heat pumps can have efficiency ratings as high as 150% to 400% or more.

## Ducted air-source heat pump

There are several different types of heat pumps available. The most common is the ducted air-source heat pump (ASHP). Resembling a standard outdoor air conditioner, the unit transfers heat from the outside air to the indoor furnace or air handler via a refrigerant. The warm air is then distributed throughout the house with ductwork. In cooling mode, this process is reversed. The refrigerant transfers the heat from the indoor space to outside the home. In other words, the heat pump is one unit that functions as both a furnace and an air conditioner. ASHPs are versatile and can be used in residential, commercial, new construction, and retrofit applications with efficiencies ranging from 150% to 200%.

New models of ASHPs work well in our northern climate but do need a source of backup heat to supplement

their output when temperatures drop into the 30s or below. This back up source could include an electric furnace (heating coils), or a gas or oil furnace. When used in conjunction with fossil fuel furnaces, heat pumps can also help members use the least expensive of their home's available heat sources.

## Water source heat pump

Instead of air, water-source heat pumps (WSHP) transfer heat using water from a well or pond. The unit is usually located in the basement and connected to the home's ductwork system. This type of heat pump can also be incorporated into a hot water baseboard system.

WSHPs can have operating efficiencies up to 300% or more. They supply consistent temperatures as long as they receive an adequate quantity and quality of water. These systems also require a way to dispose of the water after the heat transfer is completed.

## Ground source heat pump

Ground source heat pumps (GSHP), also referred to as geothermal systems, transfer heat from outdoors to indoors via fluid-filled pipes that are installed

horizontally or vertically in the ground or a pond. To function properly, the piping system may require a large amount of space, making GSHPs one of the most expensive heat pump types to install. Like ASHPs, GSHPs are typically located in the basement and connected to a ductwork system. However, their efficiency can be much greater, reaching a maximum of more than 400%.



### Mini-split heat pump

Mini-split heat pumps have been used in other countries for some time but are now growing in popularity in the U.S. They are most often used in a ductless configuration with individual units in various rooms throughout the home. Mini-splits are super-quiet with efficiencies of 200% to 250%. One of their benefits is the ability to adjust the indoor and outdoor blowers based on the needs of the space, which allows greater heating and cooling capabilities, as well as better dehumidification. They can also be installed for a relatively reasonable cost and be used in homes without ductwork, such those heated with electric baseboards.

Contrary to the naysayers familiar with their parents' or grandparents' heat pumps, a well-designed and properly installed system will work well in our northern climate. Proof of this lies in the Nordic countries' successful use of heat pumps, where 60% of the buildings in Norway and more than 40% of those in Sweden and Finland use heat pumps for heating and cooling their homes. However, it is important that members use a contractor who is expertly trained and comfortable with installing and setting up a heat pump.

I know this has been a lot of information, but remember that the cooperative's highly skilled employees are always happy to help and to answer any questions you may have. Simply contact the Member Services Department by calling 1-800-533-8658.



## GENERATE SAFELY

Never connect a standby generator into your home's electrical system. There are only two safe ways to connect a standby generator to your equipment.

### Stationary generator

- An approved generator transfer switch, which keeps your house circuits separate from the electric co-op, should be installed by a professional.

### Portable generator

- Plug appliances directly into the outlet provided on the generator.
- Set up and run your generator in a well-ventilated area outside the home. Make sure it's out and away from your garage, doors, windows and vents. The carbon monoxide generated is deadly.
- Use a heavy-duty extension cord to connect electric appliances to the outlet on the generator.
- Start the generator first before connecting appliances.

