

# AIR-SOURCE HEAT PUMPS



## FINANCIAL INCENTIVES

Financial incentives may be offered to members who install air-source heat pump systems. Special heating rates, rebates, and federal and state tax credits may be available.

### APPLICATIONS

Air-source heat pumps are easy to install in new construction and are the ideal choice when it is time to update or replace older, inefficient heating systems or aging central air conditioners. Heat pumps can use your home's existing ductwork, making it easy to upgrade to a new high-efficiency heating and cooling system. Air-source heat pumps can also be used to avoid costly duct additions in homes without central air. Unlike a window air conditioner, minisplits are incredibly efficient and do not block light or airflow through a window.

### YEAR-ROUND BENEFITS

#### Comfort

Whether heating or cooling, new high-efficiency heat pumps keep homeowners comfortable by providing precise temperature and humidity control.

#### Safety

A home's safety is improved by removing combustion appliances. By removing a traditional pilot-light furnace, combustion gas buildup is no longer possible.

#### Performance

Variable frequency heat pumps provide the best performance, as they ensure the home's air is mixed constantly, leading to more even temperatures throughout the day. Minisplits can assist old HVAC systems by filling in gaps and providing unmatched control.

**According to the U.S. Department of Energy, if you heat with electricity, a properly installed heat pump can reduce the amount of electricity you use for heating by as much as 30% to 40%.**

## FOR MORE INFORMATION VISIT

**U.S. Department of Energy (DOE)**  
**Energy Efficiency and Renewable Energy**  
[energy.gov/energysaver/energy-saver](https://energy.gov/energysaver/energy-saver)

**Cold Climate Air-Source Heat Pump List**  
[ashp.neep.org](https://ashp.neep.org)

All programs subject to change at any time,  
without prior notice.



**Guthrie County REC**

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[guthrie-rec.coop](https://guthrie-rec.coop)

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# THE VERSATILE AIR-SOURCE HEAT PUMP

## TWO UNITS IN ONE

An air-source heat pump is versatile. It's actually two units in one: an efficient home heating system and a high-performance air conditioner. Advancements in efficiency and technology have greatly improved air-source heat pump reliability and home comfort. The air-source heat pump transfers heat between your house and the outside air.

## WHY ELECTRIFY?

It sounds counterintuitive, but the more member-consumers use electricity for things they would otherwise do with gas or other fuel sources, the more we all save. The cooperative, and you as its member, benefit from air-source heat pump installations on the lines because the units improve the utilization of the electric grid and excess generation capacity in the winter. Air-source heat pumps help lower summer peak usage, which helps to control the average price of electricity.



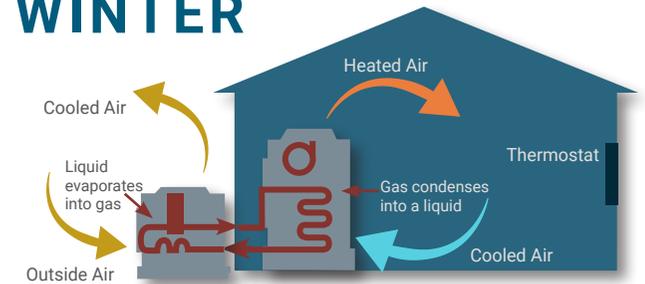
## SELECTING AN AIR-SOURCE HEAT PUMP

- Consider the heating efficiency, indicated by the heating season performance factor (HSPF) and cooling efficiency, indicated by the seasonal energy efficiency ratio (SEER). The higher these factors, the more efficient the system. Although the cost of the more efficient system is higher, the energy savings can pay for the initial investment in a short time.
- For the best heaters, consider a cold climate air-source heat pump. These systems are tested for capacity and efficiency down to 5°F and many systems and heat pumps provide reliable heat in even colder weather.
- For greater efficiency and reliability, look for a system that qualifies as ENERGY STAR®.
- Visit [ashp.neep.org](http://ashp.neep.org) for more information on the best cold climate air-source heat pumps.
- For superior energy savings, choose a system with a variable speed inverter drive. These systems adjust the speed of the compressor to optimize comfort while keeping sound levels to a minimum.
- Select a qualified contractor who will properly install your heat pump and thermostat.
- Check with your cooperative to make certain the equipment you choose qualifies for their incentive programs.

## HOW AIR-SOURCE HEAT PUMPS WORK

An air-source heat pump moves heat, using refrigerant and coils in much the same way as a refrigerator. Heat pumps do not rely on the combustion of fuels like oil, propane or natural gas. In winter, the heat pump's outside unit captures heat that exists naturally in the atmosphere and transfers it to the inside unit where it is amplified to warm your home. In summer, the process is reversed to remove heat and excess humidity, leaving your home cool and comfortable.

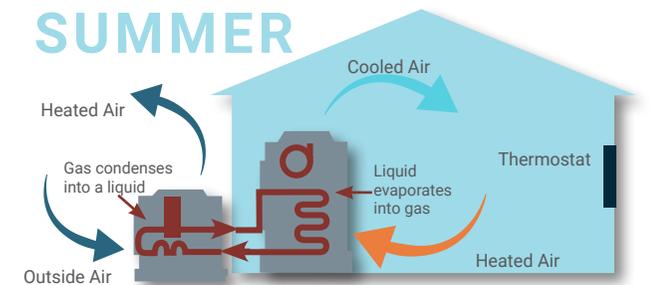
## WINTER



### HEATING MODE

In heating mode, an air-source heat pump evaporates a refrigerant in the outdoor coil; as the liquid evaporates it pulls heat from the outside air. After the gas is compressed, it passes into the indoor coil and condenses, releasing heat to the inside of the house. The pressure changes caused by the compressor and the expansion valve allow the gas to evaporate at a low temperature outside and condense at a higher temperature indoors.

## SUMMER



### COOLING MODE

In cooling mode, an air-source heat pump operates on the same principles as an air conditioner - the system evaporates a refrigerant in the indoor coil; as the liquid evaporates it pulls heat from the air in the house. After the gas is compressed, it passes into the outdoor coil and condenses, releasing heat to the outside air. A variable speed system operates better at different temperatures while matching the amount of cooling produced to the home's need.