

# Take Control & Save<sup>®</sup>

A Cooperative Effort for Energy Efficiency

[www.TakeControlAndSave.coop](http://www.TakeControlAndSave.coop)



## Air-source heat pumps

### What is an air-source heat pump?

Air-source heat pump (ASHP) systems can both heat and cool your home with the same unit, using refrigeration technology to transfer heat. The refrigeration system consists of a compressor and two coils made of copper tubing. In the winter, the unit extracts the heat from outside, down to an average of twenty-five degrees Fahrenheit\* and transfers it into your house to keep you warm. In the summer, the process is reversed and the unit removes heat from your home and releases it outdoors, keeping you cool.

For more detailed heat pump information visit [www.energysavers.gov](http://www.energysavers.gov) and click on the heat pumps link under Heating & Cooling.



### Benefits of an air-source heat pump

#### **Energy efficient:**

Delivers 1.5 to 3 times more energy than the electricity it consumes.

#### **Versatile all-year service:**

Heats your home in the winter and cools your home in the summer.

#### **Cost effective:**

Co-op electricity rates reflect stability, compared to other fuels.

#### **Environmentally-friendly:**

Heat pumps transfer energy rather than burn fossil fuels.

### Equipment sizing is critical

Your new heat pump should be properly sized to fit your home. Oversized equipment can cause reduced comfort and excessive noise, and will shorten the life of the equipment by causing it to cycle on and off more frequently than a properly-sized unit.

Undersized equipment, with airflow that is too low, can reduce the efficiency of the air distribution and accelerate wear on system components, leading to early failure. Equipment should be sized by a heating and cooling professional. See more about sizing on the back.

### ASHP terminology explained

#### **Air handler:**

In a forced-air heating system, the “box” containing the fan that circulates the air.

#### **Compressor:**

The central part of a heat pump, the compressor pumps refrigerant to meet the heating or cooling requirements of the system.

#### **Heating Seasonal Performance Factor (HSPF):**

A measure of a heat pump’s energy efficiency over one heating season. A higher HSPF rating equals a more efficient heat pump.

#### **Seasonal Energy Efficiency Ratio (SEER):**

A measure of equipment energy efficiency over the cooling season. A higher SEER rating equals a more efficient heat pump.

#### **System Capacity:**

A measurement of the total amount of heat or cooling your system can produce in one hour.

### **Money saving tip!**

Contact your local electric cooperative to determine SEER rating eligible for heat pump rebates.

\*This temperature will vary based on your heat pump model and desired comfort level in your home.

## Calculating the size of equipment

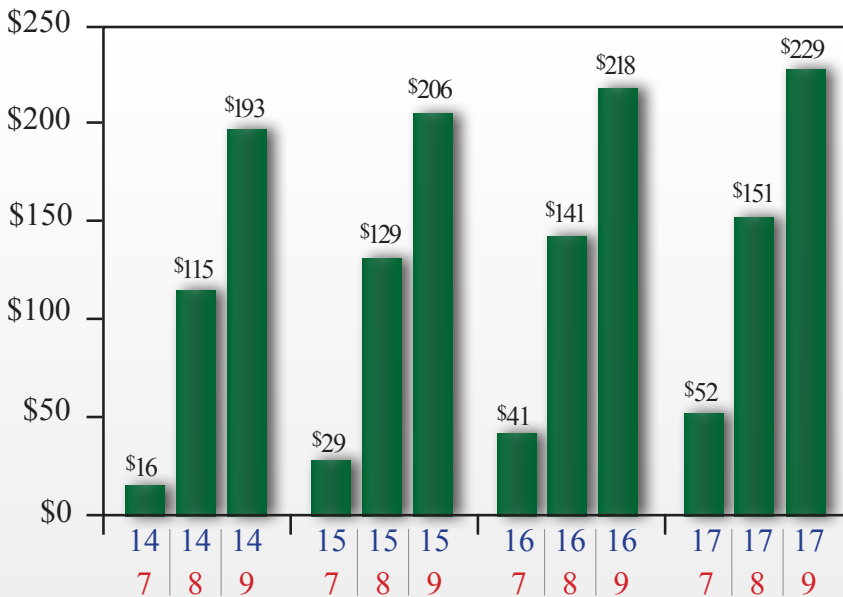
Sizing can be calculated by a heating and cooling contractor, who will complete a load calculation by taking measurements of your home and asking you some questions. The calculation is usually done using software, and should be based on professional guidelines.

A good contractor will not size your equipment solely on the square footage of your house or assume that your existing equipment was sized properly in the first place. Proper equipment sizing is based on your home's heat loss during cold weather and heat gains during warm weather. Your contractor will specify the recommended system capacity in either Btu/h (British thermal units of heat removed per hour) or refrigeration tons (one ton being equal to 12,000 Btu/h).

## Six key factors in determining equipment size:

1. How well your house is insulated
2. How well air leaks are sealed
3. How well your ducts are sealed and insulated
4. The size, type and number of windows and the direction they face
5. Shade from overhangs and landscaping
6. The size, layout and orientation of your house

## Cost savings of more efficient air-source heat pumps



Efficiency ratings - SEER: blue numbers; HSPF: red numbers

As SEER and HSPF ratings increase, the efficiency of an air-source heat pump increases. This chart shows estimated annual savings by increasing your SEER and/or HSPF ratings from a 13 SEER, 7 HSPF, 3-ton air-source heat pump based on weather in Columbia, Mo. For cost comparison information on fuel types visit [www.eia.doe.gov/neic/experts/heatcalc.xls](http://www.eia.doe.gov/neic/experts/heatcalc.xls).

Data calculated using Energy Star's ASHP savings calculator; [www.energystar.gov](http://www.energystar.gov). Based on EIA data, heating degree days of 2,048 and cooling degree days of 1,050 in Columbia, Mo. Actual energy savings may vary based on use, location and other factors. Contact your local electric cooperative for more information.



## Take Control & Save on your heating and cooling!

You may be able to reduce the initial cost of the heat pump by taking advantage of Federal tax incentives, which are available through 2010 for heat pumps that meet certain energy-efficiency ratings. Visit [www.energystar.gov](http://www.energystar.gov) for more information.

Be sure to contact your local electric cooperative prior to purchasing and installing a heat pump as they may offer rebates on certain energy-efficient heat pumps as well. Your cooperative may require you to have a dual-fuel system in order to qualify for a rebate. Dual fuel is simply an air-source heat pump combined with a conventional gas furnace. During extreme cold weather when your heat pump is unable to run, the gas furnace provides a backup heat source, ensuring you are comfortable all year.

For more energy saving ideas, visit [www.TakeControlAndSave.coop](http://www.TakeControlAndSave.coop).

**Take Control & Save**<sup>®</sup>  
A Cooperative Effort for Energy Efficiency  
[www.TakeControlAndSave.coop](http://www.TakeControlAndSave.coop)



Tri-County Electric Cooperative

Your Touchstone Energy<sup>®</sup> Partner 

16875 US Highway 63 • Lancaster, MO 63548 • (660) 457-3733 • [tricontyelectric.org](http://tricontyelectric.org)