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**HEAT.**  
**COOL.**  
**SAVE.**  
**SMILE.**

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Your complete guide to buying and owning a heat pump.



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## One System. Double-Digit Savings.

A heat pump is one of the most cost-efficient heating systems you can buy. It can cut your heating costs in half if you are currently using electric resistance heat. And, if your home already has a heat pump, upgrading its efficiency will also reduce your heating costs.

What makes a heat pump so efficient? It transfers heat where you want it – from inside your home to the outdoors for cooling, and from the outside in for heating. By contrast, conventional furnaces have to generate hot air. Moving heat is far more efficient than manufacturing it.

There's a lot to consider when buying a heat pump, from choosing a contractor to evaluating energy efficiency and other features. This guide should help make your decisions easier.

## How a Heat Pump Works

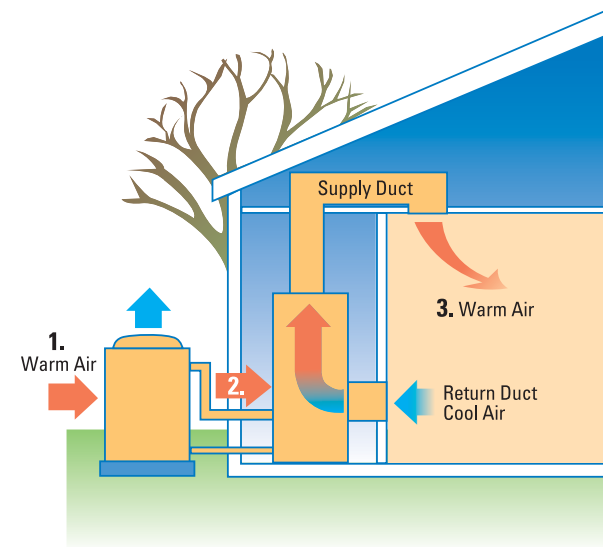
A heat pump is a proven technology in heating and cooling design. In the cooling mode, a heat pump extracts the heat from indoor air and transfers it outside. For heating, heat from outdoors is transferred indoors. (Even air at 35° F contains a lot of extractable heat. To contain no heat at all, air temperature must dip below -200° F.)

## Types of Heat Pumps

Heat pumps fall into two basic categories: those that use air to transfer heat and those that use water.

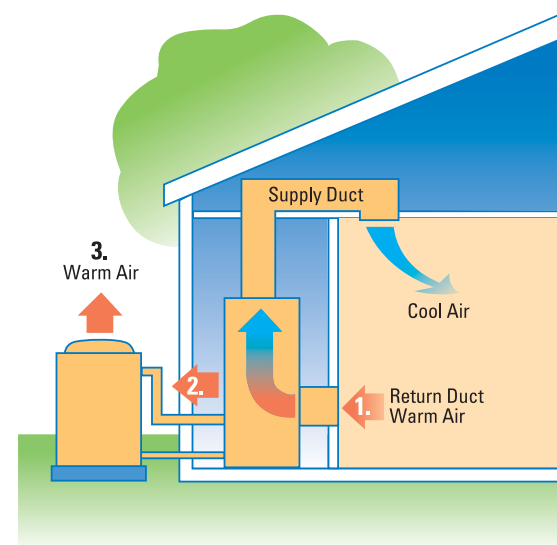
Whether air or water source, heat pumps are available in a single package unit or a split system. The split system, which is the most common, consists of an outside compressor and inside air handler. The single package unit (mainly used in manufactured homes) combines the condensing unit and the air handler (coil) in one unit, located outside the home.

## Winter Heating



1. Heat is extracted from air by the outdoor coil.
2. Refrigerant gas carries heat to the indoor unit.
3. Circulating indoor air picks up heat and carries it throughout the home.

## Summer Cooling



1. Heat is extracted from the home's air by the indoor coil.
2. Refrigerant gas carries heat to the outdoor unit.
3. Heat is transferred to the outdoors.

## Evaluating Your Heat Pump's Efficiency

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To help consumers make informed choices, the U.S. government has established a minimum efficiency rating for all air conditioning and heating equipment, indicating the percentage of energy used efficiently. A high rating indicates high efficiency.

- Air conditioning equipment is rated by the Seasonal Energy Efficiency Ratio (SEER). The minimum efficiency available today is a SEER of 13.
- Heat pump equipment is rated by the Heating Seasonal Performance Factor (HSPF). The minimum available today is an HSPF of at least 7.7 depending on the type of system.

**A high-efficiency unit will have a SEER of 14 or higher and an HSPF of 7.8 or higher. Remember, the higher the SEER and HSPF number, the more efficient – and economical – the unit will be to operate.**

- Precise, professional installation is critical to the efficiency of your new unit. Among the factors that lower SEER/HSPF ratings are leaky air ducts and improperly sized refrigerant tubing, refrigerant charge, duct design and duct sizing.

## Doing Your Homework: Selecting a Contractor

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### The First Step

Start by researching specific heat pump brands and their reputations for quality and reliability. Many libraries, bookstores and Web sites offer publications that rate or report on heat pumps. This may be the single most important step of all, so be sure to take your time.

### The Credentials

Once you've chosen a manufacturer, look for local air conditioning contractors who install that brand. Get several written bids if possible, making sure service after installation is outlined. Confirm that the contractor is licensed, check the company's credentials with your local Consumer Protection Agency and ask for references. Contact the references to ensure the service was satisfactory.

### The Contract

Once you feel comfortable with a contractor, insist that everything – especially the cost of all materials and labor – is spelled out in writing. If the contractor suggests that you might benefit from Progress Energy's heat pump incentives, contact us for information before you agree to the deal.

## Contractor Checklist

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### Make sure your contractor:

- ☑ Correctly sizes your system to your home. This ensures that you purchase the most effective heat pump system for your home. This step has the greatest potential for error, so ask your air conditioning contractor to perform a *Manual J* or equivalent calculation to determine system size.
- ☑ Performs a *Manual D* calculation to ensure that your ducts can supply the conditioned air your home requires.
- ☑ Recommends multiple return ducts in your home. At a minimum, you should have a return in the main room of the house and a return in the master bedroom.
- ☑ Seals all duct seams with mastic that meets UL-181 standards. This will keep the duct system airtight where seams are joined. Tape will fail over time, but mastic meeting UL requirements will last indefinitely.
- ☑ Installs a heat pump with MINIMUM efficiency ratings of 14 SEER and 7.8 HSPF. Higher is better.

- ☑ Replaces both the outdoor and indoor units for maximum efficiency. Note: When replacing older equipment with a heat pump, be sure to replace the indoor unit as well. Otherwise, your system will not perform at its designed efficiency. Also, the outdoor and indoor units must be a matched pair to attain optimal performance, efficiency and comfort.

## Service After the Sale

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The contractor should provide you with an equipment operating manual and clear information on the manufacturer's warranty coverage. Your operating manual will include important information to assist you in utilizing your heat pump properly and efficiently. It's worth the time to read it.

## Usage and Maintenance

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### Follow these guidelines to get the most out of your heat pump.

- In winter, never increase your thermostat more than two degrees at a time. Doing so will significantly reduce your system's efficiency and will make it more costly to operate.

- Check and, if needed, change filters monthly. Pass up the temptation to buy cheaper standard fiberglass mesh filters and use electronic air cleaners, which can eliminate up to 95 percent of all airborne particles, grease, smoke, bacteria and some viruses (fiberglass filters screen out only about 15 percent).
- Keep the fan switch of your thermostat in the auto position when cooling.
- Keep coils of the outdoor unit free of debris and unblocked by plants and shrubs.

## Special Features

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Additional features that will maximize your comfort and energy efficiency:

### Two-Speed Motors

Two-speed units can run on low speed, using only about 50 percent of the energy up to 80 percent of the time. They run quieter and for longer periods of time than single-speed models. Other benefits of two-speed motors include:

- Fewer on/off cycles
- Fewer drafts (cold air at startup in the winter and hot air at startup in the summer)
- Smaller temperature swings – just two- or three-degree swings vs. four-degree swings with single-speed models.
- Better air circulation
- Constant, even heating and cooling

### Variable Speed Fans

A variable speed fan on the indoor unit will enhance the comfort and efficiency of your heat pump system even more. The slower the fan operates, the better the unit will remove humidity.

### Humidity Control

Look for a unit with a low Sensible Heat Fraction (SHF), which rates an air conditioner's ability to remove humidity. The number should be no higher than 0.7 or 0.8. Any unit with a higher number probably will not remove enough humidity to help you feel comfortable.

### Upgraded Thermostats

An upgrade from the standard thermostat can conserve enough energy to pay for the additional thermostat cost in just three years or less. An accurate, programmable thermostat allows you to raise the temperature setting a few degrees in the summer and lower it in the winter during periods when you are sleeping or away from home. The thermostat can then readjust the temperature at a predetermined time.

## Glossary of Terms

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You'll be able to converse like a pro with this handy glossary guide to heat pump terminology.

**Air Conditioning:** The process of controlling the temperature, humidity, cleanliness and distribution of air.

**Air Duct:** A passageway for transporting conditioned air to the appropriate area(s) of a home or business.

**Air Handling Unit:** The fan and coil unit of a split system, packaged air conditioner or heat pump.

**Compressor:** Assists in transferring heat either into or out of your home as needed. (The compressor is the heart of the heat pump and air conditioning system.)

**Controlled Air:** Air that is intentionally introduced to a building, usually through mechanical means, and is conditioned (heated/cooled and dehumidified) before reaching the conditioned area.

**HSPF:** Heating Seasonal Performance Factor. A measure representing the ratio of input (electricity) versus output (moving heat) over a season.

**HVAC:** Heating, Ventilating and Air Conditioning.

**Mastic:** A thick, pliable substance that adheres well to certain materials (often fibrous or mesh fabrics) and is used for binding different building components together. For best results, a mastic must be rated UL 181.

**SEER:** Seasonal Energy Efficiency Ratio. The total cooling of a central unitary air conditioner or unitary heat pump in BTUs during its normal annual usage period for cooling divided by the total electric energy input in watts-hours during the same period.

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The high-efficiency **heat pump** is just one of the many home energy improvement recommendations offered by Progress Energy. These money-saving ideas are part of our ongoing commitment to helping customers use energy more efficiently. Visit [progress-energy.com/save](http://progress-energy.com/save) for more ways to save.

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