



# All about heat pumps

Know your power  
to select the right  
heating and cooling  
system for your home.

[KnowYourPower.com](https://www.knowyourpower.com)



# WHAT IS A HEAT PUMP?

A heat pump is a heating and cooling system that “pumps” or moves heat from one area to another with the use of a refrigerant, similar to the way a refrigerator works. During the winter, the heat pump moves heat from outside into the house to heat it. During the summer, the heat pump moves heat from inside your home to the outside, cooling your house in the process. Because heat pumps use electricity to move heat around rather than generating it, they are many times more efficient than a typical electric furnace. And, they provide air conditioning.

Heat pumps are traditionally used in conjunction with a forced air furnace and ductwork to move heated or cooled air around the house. More recently, a “ductless” version of a heat pump has been introduced that heats and cools your home without the need for a forced air furnace or ductwork throughout the house. This system is an excellent choice for upgrading the efficiency of your electric baseboard heaters or to add air conditioning.

## TRADITIONAL DUCTED HEAT PUMP



A typical heat pump sits at the back of a house.

# IS A HEAT PUMP RIGHT FOR YOUR HOME?

## YOU MAY WANT TO CONSIDER A HEAT PUMP FOR YOUR HOME IF:

- You have an electric furnace due for replacement and want a more efficient heating system
- As much as half of your household energy goes toward heating and cooling
- You want air conditioning
- Some of your rooms are too hot or too cold. Duct problems, inadequate air sealing or insulation could be the cause. With a high-efficiency heat pump system, your home's ducts will be properly tested and sealed.
- Your home has humidity or mold problems. When air conditioning, heat pumps can dehumidify your home. Leaky ductwork can lead to too much or too little humidity in your home, depending on the season. Properly sealed ducts and heat pump system controls can help control humidity problems and lead to better air quality and greater comfort inside your home.
- Your equipment needs frequent repairs and your energy bill keeps going up
- Your existing heating equipment hasn't been properly maintained
- Your furnace or boiler is more than 15 years old
- Your home is at least 1,600 square feet. Heating costs are higher for large homes, and the initial investment you make in a heat pump will be paid back through electric savings over time. If your home is smaller than 1,600 square feet, consider a ductless heat pump.

# ADVANTAGES AND DISADVANTAGES OF A HEAT PUMP

## ADVANTAGES

- Heat pumps generally cost less to run than all other heating systems, depending on the price of heating fuels in your area.
- Heat pumps operate with no flames, fumes or chimneys, so they present no risk of carbon monoxide poisoning.
- Heat pumps provide a constant, even temperature.
- Heat pumps provide both heating and cooling.
- Heat pumps transfer heat already in the environment, rather than generating new heat.

## DISADVANTAGES

- Heat pumps require a larger upfront investment than most other heating systems.
- Heat pumps may cost more to service and repair than other heating systems.
- Heat pumps may be noisier than other heating systems because of the indoor fan and compressor in the outdoor unit. Some jurisdictions have noise ordinances that restrict where you can locate the outdoor distribution unit. Ask your heating contractor about noise ordinances in your area.
- Outside air temperature can impact heat pump efficiency. Heating efficiency drops as outdoor air temperature decreases. Cooling efficiency decreases as outdoor temperatures increase.

# DUCT SEALING AND COMMISSIONING: DO THEY MATTER?

You'll hear these two terms frequently when shopping for a heat pump. Here's what you need to know.

## DUCT SEALING

Ducts are a critical component of a heat pump system – they circulate heated or cooled air throughout the house. A poorly performing duct system causes your heating system to work harder and can reduce your heating system's efficiency by 20 percent or more. A properly sealed duct system can make your home more energy efficient, comfortable and save you money.

## COMMISSIONING

Commissioning is testing and documentation of the performance of your heat pump. Commissioning ensures that the heat pump is installed to the manufacturer's recommendations and that it's performing as designed. Commissioning also ensures that the system is operating at peak efficiency, saving you heating and cooling dollars and guarding against premature equipment failure.

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## WHAT ARE SEER AND HSPF?

### SEER

Seasonal Energy Efficiency Ratio (SEER) is a measurement of the cooling efficiency of a heat pump or air conditioner. It is a ratio of heat energy removed from the home compared with the energy used to operate the heat pump. The larger the SEER number, the more efficiently the heat pump/air conditioner is at removing heat from your home. Your heat pump must be at least a SEER 14 to qualify for the Tacoma Power heat pump system rebate program.

### HSPF

Heating Seasonal Performance Factor (HSPF) measures the overall heating efficiency of a heat pump. The higher the HSPF number, the greater the heating efficiency of the heat pump. Your heat pump must be at least an HSPF 8.5 to qualify for the Tacoma Power heat pump system rebate program. All Energy Star-rated heat pumps are at least HSPF 8.5.

# GET THE RIGHT CONTRACTOR

A new heating and cooling system is a major investment. Selecting the right contractor is critical to getting a heat pump system that suits your home, is installed correctly, saves you money and keeps you comfortable year around. It will also dictate how smoothly the installation occurs. Below are some suggestions that may help you in selecting the right contractor to install your new heating system.

## **ASK YOUR FRIENDS FOR CONTRACTOR RECOMMENDATIONS**

Ask your friends if they have used a heating contractor in the past. If so, which one? Ask about their experience with this company. Go to [KnowYourPower.com](http://KnowYourPower.com) for a list of contractors who participate in Tacoma's rebate program.

## **CONTACT YOUR LOCAL BETTER BUSINESS BUREAU**

Ask if there are any complaints filed about this contractor.

## **ASK HOW THE CONTRACTOR DETERMINES WHAT SIZE HEATING SYSTEM TO INSTALL**

A reputable contractor will provide a heating and cooling load calculation, which takes into account many factors affecting how much heating or cooling your home needs. They must survey your home to collect the data to perform this calculation. If they do not visit your home, they probably will not properly size your new heating system.

## **ASK HOW THE CONTRACTOR PLANS TO ADDRESS THE HEATING SYSTEM DUCTWORK**

Leaks in existing heating system ductwork can steal efficiency from your new heating system and may impact the safety and air quality in your home. Ask the contractor to test and inspect your ductwork for leaks and insulation. If leaks are found, make sure the contractor plans to seal them with mastic sealant. Old-fashioned duct tape fails over time and is not a permanent solution for leaks.

## **GET AN ITEMIZED, COMPREHENSIVE BID OF ALL THE WORK THE CONTRACTOR PLANS TO DO**

Not all contractors bid the same work. Equipment efficiency, electrical work, duct testing and sealing, new duct work, and removal and disposal of your old heating equipment are all things that should be outlined in the bid. If they are not, ask the contractor to clarify before you sign a contract.

# BIDDING PROCESS

Price is an important factor to consider in a contractor's bid, but the lowest bid isn't necessarily the best choice. Ensure that your bids reflect high-quality equipment and installation by gathering the following information from at least two contractors:

	PROGRAM REQUIREMENT	CONTRACTOR 1	CONTRACTOR 2
The SEER rating	SEER $\geq$ 14		
The HSPF rating	HSPF $\geq$ 8.5		
The balance point to which the system was sized	$\leq$ 35°		
PTCS	Ducts tested & commissioned		
The capacity of the heat pump in tons			
The terms of any extended warranty			
Are all parts covered under the parts and labor warranty? If not, which parts are excluded?			
For ducted heat pumps, did the contractor do a room by room heat loss analysis?	Required		
Qualify for federal tax credit?			



## **OTHER QUESTIONS TO ASK CONTRACTORS**

- What utility or manufacturer's rebates are available?
- Who is responsible for permits? You or the contractor?
- Is the contractor certified in installing the equipment you plan to buy?
- Does the contractor's service department provide 24-hour emergency service?

## **PICK THE RIGHT HEAT PUMP FOR YOUR HOME**

When it comes to heating and cooling equipment, bigger isn't always better. Improperly sized equipment will operate in short run time or cycles, not allowing the heat pump to reach efficient operation or deliver even temperatures in your home. A correctly sized unit will provide optimal savings and comfort.

## **KEEP IT RUNNING**

It's important to properly operate and maintain your heat pump system. An annual service by a qualified technician is recommended, and there are also some things you can do yourself, like check your filter monthly. Be sure it's clean and fitting properly. Ask your contractor what else you can do to keep your heat pump running smoothly and efficiently. You can also read Tacoma Power's fact sheet on operating and maintaining your heat pump.

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