

How a heat pump works

A heat pump is a great heating and cooling choice in our mild Pacific Northwest climate. The most popular type is an electric air-source heat pump. In the winter, a heat pump collects heat from outdoor air and pumps it inside to warm your home. In the summer, the process is reversed. The heat pump operates as an air conditioner, taking heat out of your house.



Energy savings

Because it transfers heat rather than burning fuel to create heat, a heat pump uses significantly less energy to supply the same amount of heat as a traditional furnace. A secondary heat source, typically a furnace, serves as a backup for days when temperatures drop below 35 degrees.

A properly sized heat pump, added to your existing furnace, allows you to heat your home using up to 40 percent less energy than heating with the furnace alone.* Together, the heat pump and the furnace become a heating-cooling team for all seasons.

The sum of the parts

Most air-source heat pumps have two main parts – an outdoor unit and an indoor unit. The outdoor unit includes an outdoor heat exchanger, a compressor and a fan. The indoor unit contains an indoor heat exchanger and the fan that distributes warm or cool air to your duct system.

During the heating season, the outdoor unit collects heat from the outside air through the outdoor heat exchanger and pumps it to the indoor heat exchanger. The heat is then distributed through the ducts in your home by the blower fan. In the summer, a heat pump pumps heat out of your home and circulates cooler air to keep your home comfortable.

Proper sizing and installation

To ensure your heat pump is sized properly for your home and your heating and cooling needs, buy from an experienced heat pump contractor. An oversized heat pump will cycle on and off more, resulting in higher energy use, poor humidity control in the summer and a shorter operating life.

An experienced contractor will also ensure that your heat pump is installed correctly and your entire heating and cooling system is operating efficiently. To maximize your energy savings, ask your contractor about sealing your ducts and installing a programmable thermostat. Heat lost through leaky ductwork can increase energy use since the back-up furnace is likely to operate more frequently. Once installation is complete, ask your contractor to show you how to operate the heat pump and the thermostat.

Equipment that draws a lot of electricity when it starts up can sometimes cause lights to dim momentarily. This may happen with your heat pump, but it is normal and will not harm your sensitive electronics.

*Compared to an electric furnace. Assumes similar weather, thermostat settings and living patterns before and after installing the heat pump. Individual circumstances will vary. Ask the PGE Energy Experts or your contractor for more information.

For information about PGE heat pump rebates and PGE-approved contractors, go to **PortlandGeneral.com/HeatPump** or call the PGE Energy Experts at **503-612-3500** or **1-800-722-9287**.

Portland General Electric

Getting the most out of your heat pump

Today's high-efficiency heat pumps are designed to offer reliable performance, quiet operation and simple maintenance. When installed and tested by a qualified contractor, the new generation of heat pumps will deliver years of dependable service and comfort. Like most appliances and machines, heat pumps work best when serviced regularly. Schedule preventive maintenance with your heat pump contractor.

Follow these simple guidelines to ensure most efficient operation:

Install a programmable thermostat designed specifically to optimize heat pump operation. "Smart" or "intelligent recovery" thermostats minimize the use of back-up heat and give you convenient program options.

Set the temperature to adjust down no more than 5 to 10 degrees at night when you're sleeping or when you're away from the house.

Don't make frequent thermostat changes. This can cause the back-up heat to come on, which can increase heating costs. It can also cause the system to turn off and on and damage the compressor. Any time the system is turned off, it needs about three minutes for the system pressures to equalize before it is safe to restart. Many systems have a time delay to prevent this problem.

Check air filters once a month. Clean or replace them when dirty.

Keep supply registers and diffusers open. Closing them can damage your heat pump compressor and may actually increase your energy use.

Don't block air returns and air supplies with furniture or other items.

Remove grates and vacuum heat registers regularly to remove dust and debris.

Check ducts yearly for loose connections and holes.

Inspect the indoor cooling coil in the fan to make sure condensation is draining properly.

Keep the outdoor unit free of leaves, dirt and nearby foliage.

If the outdoor coil is covered with ice from freezing rain or an ice storm, don't run the heat pump. Switch the thermostat to emergency or supplemental heat until the ice is cleared. If you clear the ice yourself, be very careful not to damage the coil.

When you're away from home for more than a day in the winter, set the thermostat to the auxiliary or emergency heat position and adjust to the lowest temperature setting. The rest of the year, turn the system off at the thermostat and set the fan at "AUTO" (automatic).

During a long power outage (more than 24 hours), switch your thermostat to emergency heat and leave it there for 12 hours after the electricity comes back on. This delay prevents compressor damage by allowing time for the crank case heater on the compressor to boil off any liquid refrigerant before the compressor is started.

Take time to review your owner's manuals for specifics about your heat pump and your thermostat.

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