CitizensUtilityBoard.org

Heat Pumps

FACT SHEET

With the ever-changing landscape of utilities and energy in Illinois, one topic that has recently gained traction is the use of heat pump systems. In addition to their potential to save consumers money, heat pumps are frequently cited as a way to promote more equitable changes in energy policy and the decarbonization of buildings around the state.

What is a heat pump?

Heat pump systems are another method for heating and cooling your home in a more energy-efficient and cost-effective manner. Much like a refrigerator, heat pump systems utilize electricity to move heat from cool spaces to warm spaces and vice versa. Because heat pump systems move heat rather than generate it, they are a more economically sound way of warming your home.

Are there different types of heat pumps?

The most common systems are air-to-air pumps, which transfer heat between the inside of your home and the outside air. Utilized in many places around the southern United States, air-to-air systems are increasingly common due to the development of technology that allows the systems to operate in subfreezing temperatures. Air-to-air pumps are easy to install and will work regardless of whether the home has existing forced air systems.

Geothermal heat pumps are high efficiency heating and cooling technology that uses the earth's free energy and moves hot and cold air between your home and the ground or a nearby water source like a river. The U.S. Environmental Protection Agency says that geothermal heat pumps are the most efficient heating and cooling technology available today. Today's geothermal heat pump systems offer 500 percent efficiency or more. The reason is that the systems do not burn fuel for heat - rather, they just move the heat from the earth, bringing it indoors to heat homes in the winter, and providing an effective place to transfer heat into the ground during the summer. Geothermal systems typically cost more upfront to install, because most systems utilize a closed loop system of pipes in the ground. But because the ground temperature is a constant 50-plus degrees year round, geothermal heat pumps are the most effective way to heat and cool your home. These systems typically reduce energy usage by 30-60 percent or more.

Who can use a heat pump system?

Fortunately, the technology behind heat pump systems is continuously advancing, making it more affordable for consumers. While geothermal systems may cost more upfront, the systems pay for themselves as the consumer uses less energy to heat their home.

Modern infrastructure, particularly the development of all-electric homes and buildings, means that heat pump systems are increasingly common around the U.S. While many people may equate this type of construction with major cities, a recent **Rocky Mountain Institute (RMI) study** revealed that rural Midwesterners could save up to \$14,000 over 15 years by switching from propane furnaces to electric heat pumps.

A more recent version of that **RMI study** found that newly constructed all-electric homes are cheaper to build and operate across the country, including the Midwest.

Why are heat pump systems important?

Heat pumps can help eliminate carbon pollution that causes climate change. Heat pumps use electricity rather than burning gas on-site at your home or business. As the grid changes and uses more wind and solar and less coal and gas, the pollution associated with heat pumps will continue to decrease as well. Heat pumps already have a pollution profile better than gas furnaces or boilers.

In addition to protecting the environment, heat pump systems are more cost-effective for the majority of consumers around the state. Heat pumps can help save a significant amount of money over the long-term, and these systems are emerging as a reliable alternative to utilityowned natural gas companies, which have raised costs significantly in recent years.

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What are the financial incentives for installing heat pumps?

Beyond the energy savings, now is an opportune time to install a heat pump in your home. The Inflation Reduction Act has provided numerous incentives for heat pumps that can be combined with existing utility company rebates.

Geothermal Heat Pump: There is currently a 30 percent federal renewable energy tax credit for the total cost of installation. This tax credit is uncapped and the credit can be spread over multiple tax years if desired. There is an additional \$2,000 home efficiency tax credit for heat pumps that will start in January 2023.

Some electric utilities also offer rebates or other incentives like special rate programs for consumers who install geothermal systems. For instance, ComEd offers a rebate of up to \$9,000, depending upon the size of the system, for eligible customers.

The combination of the federal tax credits plus utility rebates often combine to make the final overall cost of a geothermal system not that much greater than conventional heating and cooling systems. Along with the energy savings, the geothermal installations will pay for themselves in energy savings in about six to eight years due to large energy savings. Geothermal systems also typically last much longer than other heating and cooling systems, since there is nothing outdoors in the typical geothermal installation. The heat pump portion of the installation is indoors, while the loop field heat exchanger is buried in the ground. Geothermal systems typically last 25 years and loop fields are guaranteed for 50 years.

Air Source Heat Pump: Air source heat pumps can heat and cool your home much more efficiently than even energy efficient furnaces and air conditioning units. In addition to the \$2,000 home efficiency tax credit for heat pumps, there also is an \$8,000 electrification rebate for income eligible homeowners.

There also are utility company discounts and rebates available.

In total, starting in either Spring or Summer 2024, once the Inflation Reduction Act (IRA) Rebates become available, a consumer purchasing a \$15,000 heat pump, may only pay about one-fifth of that price tag– after the \$8,000 rebate, \$2,000 credit, and \$2,000 dollar discount from ComEd. These incentives mean the system could pay for itself within a few years. Learn more about the IRA incentives in **CUB's Guide to the Inflation Reduction Act**.

Heat Pump Water Heater: These heat pumps are air source heat pumps that heat your water instead of your space. These also qualify for the \$2,000 home efficiency tax credit and a \$1,750 electrification rebate for income-eligible homeowners. The tax credit is already available but the rebate will not be available until the spring or summer of 2024. There also are some incentives from utility companies. Many heat pump water heaters cost less than \$2,000 leaving little to no cost for consumers and large savings every month on energy bills!

Inflation Reduction Act Rebate Eligibility: Beginning in the spring or summer of 2024, consumers with income below 80 percent of the Area Median Income (AMI) will be able to claim an electrification rebate covering the full cost of electrical appliances, up to a \$14,000 cap. Consumers with income below 150 percent of the AMI can get 50 percent off the cost of appliances up to \$14,000. Learn how to find your AMI at **lowincomerelief.com/area-medianincome/.**

WARNING: Please verify that the system you are looking to purchase qualifies for the rebates. Also, carefully read utility company offers and check with your tax consultant prior to purchasing any heat pump to verify that you qualify for the rebates and tax credits.

How do I get more information?

If you are interested in obtaining your own heat pump system, an excellent place to start is the **U.S. Department of Energy's (DOE) "Heat Pump Systems" page**. The DOE website provides valuable information regarding the ins and outs of the various heat pump systems currently available. In addition, **Consumer Reports** outlines a number of considerations worth mulling over before buying a heat pump.