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4 Reasons You Might Consider a Heat Pump (Plus a Few Caveats)

These eco-friendly, highly efficient HVAC systems could save you money. But what is a heat pump, exactly?

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Updated by Justin Krajewski

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Heat pumps can help slow climate change—and state and local governments have spent the last couple of years creating incentives for homeowners to use them.

Photo: Christian Delbert/Getty Images

Heat pumps are having a moment in the spotlight—or as close to one as a heating and cooling appliance can get. Whether it's ducted heat pumps, mini-splits, or even geothermal systems, there's a buzz around this climate-friendly HVAC tech.

Over the past couple of years, many major news outlets and magazines have hyped up heat pumps' potential for mitigating climate change. State and local governments and utility companies keep expanding rebates and incentives for homeowners who install them. The Department of Energy is showing support for heat pumps over traditional heating systems.

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In This Article

[Heat Pumps Are Eco-Friendly](#) • [Cost-Efficient](#) • [Easy To Install](#) • [Comfortable](#) • [What Are Heat Pumps?](#) • [Types of Heat Pumps](#)

A growing number of Americans say that they would install a heat pump as their next heating system. According to a [nationally representative survey by CR \(PDF\)](#) of 2,103 U.S. adults in June 2022, 49 percent of those without one said they would “maybe” consider it in the future. (Nine percent replied with a clear-cut “yes.”)

ON HVAC

Heat Pump Brands
& Buying Guide

To learn how to pick the right heat pump for your home, see our [heat pump buying guide](#). CR members can also explore our [ratings for predicted reliability and owner satisfaction](#) for 24 brands of ducted air-source heat pumps, though we don't currently have ratings for

and Least) Reliable
Heat Pumps

ductless mini-split systems or ground-source systems.

and Least) Reliable

Here's why a heat pump may well be your home's next heating and cooling system, along with a few crucial factors you should consider before making a switch.

Reliable Central Air
Conditioning Systems

Lower Utility Bills
in Warmer Climates

CR explains how buying a heat pump for your home could get you thousands of dollars in federal tax credits and state rebates.

1. Heat Pumps Are More Eco-Friendly

Air-source heat pumps, the most common type, will trim your household carbon dioxide emissions by about 40 percent compared with gas furnaces, according to a study from UC Davis. The exact amount depends on how your electricity (which powers a heat pump) is generated. But nearly all homes will reduce their carbon footprint; 98 percent of them, according to a study from the University of Texas, the University of Michigan, and Carnegie Mellon University.

Clean electricity amplifies the environmental benefits of a heat pump. In eastern Massachusetts, for example, one major power company already generates more than 60 percent of its electricity from renewable and non-

carbon sources, including nuclear power, wind, solar, and hydroelectric dams. For the Northeast as a whole, the UC Davis study estimates that switching to an air-source heat pump should slash household carbon emissions from heating by about 75 percent compared with a gas furnace.

In the Midwest, where electricity comes mostly from gas and even coal, it's only about a 12 percent reduction. But as the grid gets cleaner (or more people install solar power), emissions will shrink even more.

One valid counterpoint is that widespread adoption of heat pumps, along with other newly electrified technologies like plug-in vehicles, may strain the electrical grid. That could lead to a greater risk of power failures during heat waves and cold snaps, or increased air pollution from fossil-fuel power plants as they work overtime during periods of peak electricity use.

Policymakers may need to work out a solution for that problem. But on an individual level, if you think a heat pump is right for your home, installing one is very likely to be good for the environment on balance.

A mini-split heat pump can help efficiently heat and cool a home without existing ductwork.

Photo: Marcus Lindström/Getty Images

2. You Might Save Money

Heat pumps aren't just some expensive tech for do-gooders. Though the cost of installation varies widely, CR members surveyed between 2007 and 2023 paid an average of \$8,348 for a system compared with \$6,221 for a gas furnace.

But in many cases, heat pumps are the most affordable way to heat and cool a home. Even by the most conservative estimate we've found (the study from the University of Texas, et al.), an air-source heat pump will be the most cost-effective HVAC system in 32 percent of households, or more than 37 million.

Homes that heat with propane, oil, or "regular" electric-resistance systems are the most likely to save money by installing a heat pump. Propane and oil

are always expensive (even when we aren't in the midst of a massive price spike). And electric resistance heating uses an average of two-and-a-half to three times as much electricity as a heat pump does to produce the same amount of heat.

So in many parts of the country, you could save more than \$1,000 per year on your heating bills by switching to a heat pump. The DOE has some state-by-state fact sheets that can give you an idea of how much you might save per year.

You may also be eligible for subsidies or tax incentives that shrink the costs of heat pumps even further. Many states and utility companies offer rebates for heat pumps.

Massachusetts, for example, currently offers a \$10,000 rebate for whole-house air-source heat-pump systems if you remove your old equipment. And the federal government offers a 30 percent tax credit on ground-source heat pumps through the end of 2032. Punch in your ZIP code at DSIREUSA.org to see what's available near you.

Mark Norris, a professor of environmental science at Stevenson University who lives in Baltimore County, Maryland, found that a ground-source heat pump was the most affordable way to heat and cool his home—a bit of a surprise because they're much more difficult to install than regular air-source heat pumps or traditional HVAC equipment.

Norris had the ground-source system installed to a depth of 250 feet, straight down into the dirt in the front yard of his “tiny suburban lot,” as he described it. It cost about \$23,000 up front, but as the rebates and incentives from his utility company and federal, state, and local governments trickle in, the total

out-of-pocket cost works out to be around just \$8,000. Norris says that the final cost is lower than the quote he received to install a basic gas furnace and central AC.

Most of the time, though, gas heating will cost less than a heat pump, particularly in colder climates. Installing both a basic gas furnace and basic central AC is usually cheaper than installing one whole-house cold-climate heat pump.

And gas-fired heating equipment tends to cost less to install than electric cold-climate heat pumps, says Dave Lis, a director at the Northeast Energy Efficiency Partnerships, though the operating costs are often pretty close. There are nuances and exceptions to this, though, including the option of using a hybrid or dual fuel system that combines a heat pump and furnace system, running the heat pump in milder temperatures when it's most efficient, then switching to a furnace when it saves money to do so. (You can read more about hybrids in our [heat pump buying guide](#).)

The easiest way to figure out whether a heat pump is right for your home is to get a few quotes from local HVAC contractors, according to Francis Dietz, vice president of public affairs for the Air-Conditioning, Heating, & Refrigeration Institute.

“They’re going to know how many heating days you have based on where you live, and what your [utility] rates are,” Dietz says. They’ll also know what equipment works well in your area and what subsidies are available. A good contractor will do a proper load calculation to figure out exactly how much heating and cooling capacity your home needs, and whether you’d benefit from efficiency upgrades. (Our heat pump buying guide has more information on finding an experienced contractor.)

3. Installing a Heat Pump Can Be Easy

Lis says that there's usually a way to get a heat pump into your home even if it's a smaller system meant for just one or two rooms that need supplemental heating and cooling. "They're very flexible, they're very customizable, and there are a million flavors of these systems, from ducted to ductless and everything in between," he explains.

If you already have ductwork, you're in a good position. Ducted heat pumps can hook right up to existing forced-air systems, which can help keep installation costs down. If you already have central AC, it's even easier. Installing a heat pump is essentially no different than installing a central AC, so you'll already have the right electrical connections and runs for the wiring and refrigerant lines.

Ductless heat pumps, also known as mini-splits, can be pretty easy to set up, too. These don't require existing ductwork. The outdoor portion of the heat pump is identical to that of a ducted model, but rather than hooking up to a central forced-air system, the condenser hooks up to one or more "heads" placed on the walls or in the ceilings around your home—they're sort of like individual air vents. (You can learn more about the technical details in our [heat pump buying guide](#).) Costs can add up quickly for a multihead system, but it's usually less expensive than adding ductwork.

There are a few important caveats to consider. Heat pumps might struggle in drafty, poorly insulated homes. You might need to upgrade your electrical service to support whole-house electric heating. And it's possible that you'll want to keep (or add) a backup heating system just in case the weather gets so unusually cold that your heat pump can't keep up.

We cover these scenarios in greater detail in our heat pump buying guide. But even if you find a few barriers to adopting a heat pump in your own home, there's usually a way to resolve it, sometimes with the aid of energy efficiency incentives from a government or utility company.

4. Your Home Can Be More Comfortable

Traditional heating systems (and basic air conditioners) actually aren't great at holding steady temperatures in your home.

“With furnaces, we're used to the furnace coming on, making the room hot, then it turns off and gets cold, and you get this big temperature swing up and down,” says Iain Walker, a building scientist at the Lawrence Berkeley National Laboratory.

Modern heat pumps, by contrast, are much better at maintaining the same temperature and humidity in your home. “They like to operate continuously at some fixed low level, so they don't swing around like a furnace,” Walker says.

Because they're most efficient when they run at a trickle, it also turns out that you'll save the most energy if you leave the thermostat set to the same temperature—even overnight, contrary to all the eco-friendly advice we've internalized over the years.

“If you keep pushing the buttons on the thermostat, you won't get the efficiency you wanted to get out of the heat pump, because they're not designed to work that way,” Walker says. So if you've tolerated chilly nighttime temperatures because it saves energy, a heat pump will free you from that burden.

(Of course, if you prefer a cooler room at night, you can still lower the temperature; you'll just use some extra energy.)

Mini-split heat pumps are also a great way to add climate control to parts of your home that need it, but typically don't have it—a newly finished attic, for example, or a home addition. They're also a great way to add permanent AC to a home without an existing forced-air system (like a home that heats with radiators) because they're much easier to install than ductwork. Even if you install them mainly for their cooling abilities, you may be pleasantly surprised by how effectively and efficiently they can heat, too, reducing the amount of time that you'll need to run your main heating system.

What Are Heat Pumps?

At the most basic level, a heat pump is an appliance that can heat and cool your home. It's like an air conditioner that also provides heat, but it uses much less energy than a furnace, boiler, or electric radiator.

That's because a heat pump—using metal coils, a fan, and refrigerant—absorbs ambient heat from outside your home and transfers it inside (or out in cooling mode), as opposed to generating heat by burning fuel or using energy-intensive electrical resistance.

Heat pumps have actually been around for decades and are the primary HVAC system in more than 10 percent of homes in the U.S., though mostly in the warmest parts of the country, where the older heat pump designs can work effectively and efficiently.

But the performance has improved by leaps and bounds over the past 10 years, especially in cold weather. Heat pumps are now a practical option for climate control in most homes, whether it's to completely replace a traditional system or just to supplement it.

Types of Heat Pumps

There are several types of heat pumps. Air-source systems are the most common because they're relatively easy to install. They collect heat from the air outside—and there's always some free heat, even if the weather feels pretty chilly.

If you have existing ductwork, you can add a ducted air-source heat pump to your system much like you'd add a central air conditioner. Without existing ductwork, a ductless mini-split air-source heat pump might be easier to install. While certain air-source heat pumps can struggle to perform in cold climates, plenty of models are now capable of keeping your home warm even in sub-zero temperatures.

And then there are ground-source heat pumps, also known as geothermal heat pumps, which absorb heat from deep holes dug into the ground outside your home. The pumps are fantastically efficient because it's a mild, stable temperature underground of 50 to 60 degrees Fahrenheit year-round. But they can be prohibitively expensive to install and won't always work in every lot. You can read more about each kind of heat pump in our [heat pump buying guide](#).

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