Heat pump clothes dryers are an efficient alternative to conventional dryers. They save energy—and space—using a ventless, closed-loop system.

Clean Energy Lives Here
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# Heat Pump Clothes Dryer (HPCD)

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Heat Pump Clothes Dryers use heat-pump technology to extract moisture from your clothes. Rather than generating heat with a gas burner or electric coils, a heat pump moves thermal energy from one area to another using a refrigerant and a condenser—like an air conditioner in reverse. As with other heat pump technologies, such as air source heat pumps, these dryers are energy efficient.

While a conventional electric or gas dryer draws in cool air from your home and expels warm, moist air through a vent, a heat pump dryer circulates warm air within a self-contained system, eliminating the need for an exhaust vent. The ventless design and compact size of heat pump clothes dryers allow for plenty of flexibility in its placement in your home. Compared to a conventional electric dryer, energy savings can be up to 60%.
Heat pump clothes dryers deliver both ventless convenience and energy efficiency: the dryer warms, cools, and condenses the same air within a self-contained system. Like an air-source heat pump, a heat-pump dryer contains a closed loop of refrigerant lines and two sets of coils—an evaporator (cold) and a condenser (hot).

Condenser coils heat the air (1) sending hot, dry air through the drum (2). Warm, moist air exits the drum (3). It passes over the evaporator coils to cool the air and extract the moisture (4). The moisture drains away or collects in a removable tray for you to dump out later (5). The cycle begins again by the condenser coils heating the air (1) sending hot, dry air through the drum, repeating the process.

### TYPES OF CLOTHES DRYERS

<table>
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<tr>
<th>TYPE OF DRYER</th>
<th>HOW IT WORKS</th>
<th>VENT TO OUTDOORS?</th>
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<tr>
<td>Heat pump clothes dryer</td>
<td>Heat pump technology extracts moisture from clothes within a closed-loop system. The most energy-efficient option.</td>
<td>No</td>
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<tr>
<td>Hybrid heat pump clothes dryer</td>
<td>Uses a mix of heat pump technology and electric coils, which speeds up drying time but is not as efficient.</td>
<td>No</td>
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<tr>
<td>Combined condensing washer/dryer</td>
<td>Washes and dries in a single cycle in a single appliance</td>
<td>No</td>
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<tr>
<td>Conventional electric dryer</td>
<td>Generates heat using electric resistance and expels hot air through an exhaust vent</td>
<td>Yes</td>
</tr>
<tr>
<td>Conventional gas dryer</td>
<td>Burns fossil fuels to heat the air inside the dryer and expels hot air through an exhaust vent</td>
<td>Yes</td>
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• Electricity Requirements: If you previously had a gas dryer, installing a heat pump clothes dryer may require upgrading your electric outlet to 240-volt. If all-new wiring isn’t an option, some manufacturers offer 120-volt models. Most existing conventional electric dryers already require a 240-volt outlet.

• Size: In general, clothes dryers come in two size ranges. Full-size (or standard) dryers typically have a capacity of 6 or more cubic feet, while compact dryers are typically around 4 cubic feet. Many heat pump clothes dryers are compact, but full-size and full-size hybrid models are also available. While compact models are smaller, a field study found that 95% of loads that people dried in their full-size dryer would also fit in a compact dryer.

USING YOUR HEAT PUMP CLOTHES DRYER

Overall drying time depends on the moisture content in the clothes coming out of the washer. The average load will take longer to dry in a heat pump clothes dryer than in a conventional dryer.

Because heat pump dryers extract moisture from the clothes at a lower temperature, they also tend to be gentler on your clothes, easing wear and tear.

Heat pump dryers don’t vent air to the outdoors, which means all the heat from the dryer remains in your home. This has the added effect of making the room slightly warmer than a conventional, vented dryer would—especially if the dryer is in a small, enclosed space. Keep this in mind when deciding where to place the dryer in your home.

MAINTENANCE:

A heat pump clothes dryer is easy to maintain. In addition to the normal lint trap, the dryer contains an additional lint filter to protect the intricate coils from the lint contained in the recirculated air. This will need to be cleared every few cycles and is easy to access and clean.

Moisture from the dryer is collected in a removable tray, which you’ll need to empty out every cycle. You can skip this step by affixing a hose to the dryer so the water drains into a nearby sink or floor drain.

The condenser coils may have to be cleaned every month or so. You can do this simply with a brushed vacuum head. As with any appliance, regular maintenance will keep your heat pump dryer working most efficiently and will help maximize its useful life.
HEAT PUMP CLOTHES DRYER (HPCD)

Is a Heat Pump Clothes Dryer a Good Fit for My Home?

If you answer yes to ANY of the following questions, then a heat pump clothes dryer may be a good fit for your home.

☐ Do you currently have a gas dryer but would like to reduce your home’s greenhouse gas emissions?
   Heat pump clothes dryers run on electricity instead of burning fossil fuels to dry your clothes, thereby reducing your home’s greenhouse gas emissions.

☐ Do you want to save on electricity costs for your laundry?
   A more efficient dryer can result in considerable savings, especially if you do laundry frequently.

☐ Is your existing clothes dryer over 10 years old or reaching the end of its useful life? Has it had maintenance issues or are you concerned about it failing?
   Now is a good time to upgrade to a heat pump clothes dryer.

☐ Have you always wanted to install a dryer but aren’t able to accommodate an exhaust vent?
   Heat pump clothes dryers don’t require a vent, so they can be placed in virtually any room in your house or condo, including interior rooms.

☐ Do you have limited space for your laundry setup?
   Most heat pump clothes dryers come in a compact size and don’t vent to the outdoors, which adds more flexibility to where you can place one.

☐ Are you concerned about wear and tear on your clothing from your dryer?
   Heat pump clothes dryers operate at lower temperatures and are gentler on your clothing.
Malden resident, Robert, improved his home’s energy efficiency and everyday routine by investing in a heat pump clothes dryer. He opted for a 6 cubic foot model, which is called “full-size” in the U.S. market. While shopping for the dryer required some perseverance, he eventually found one online, which would be delivered and installed in his home by a local vendor. He was even able to receive a $50 dollar rebate on the dryer through the Mass Save/ENERGY STAR incentive program, which is available to most Massachusetts residents. The installation process was simple and quick, since he already had a compatible 240-volt outlet in the laundry cupboard next to his kitchen. Since upgrading from the electric condensing dryer he used previously, Robert has not noticed a major difference in drying time. He appreciates how much gentler the dryer is on clothing, and that it is quieter than any other dryer he’s had.

“A concern for some homeowners is that the dryer gives off residual heat when in use. While Robert agreed that the dryer does give off some warmth, he assures that it is not bothersome. He was able to avoid having to manually empty the water tray, because the water drainage pipe was installed to feed into the wastewater pipe from the washing machine. Overall, Robert is very satisfied with his decision to invest in a new heat pump clothes dryer. He feels better knowing that he is reducing his home’s emissions, while also saving some money on his energy bill.”
HEAT PUMP CLOTHES DRYER (HPCD)

Benefits of HPCD

EASY TO INSTALL
- Self-contained, with no drain or outdoor access required

SAVING MONEY
- Up to 60% more energy efficient than conventional electric or gas dryers
- Gentler on clothes, which can save you money on clothing from less wear and tear

FLEXIBILITY
- Compact design and no need for outdoor ventilation make it suitable for almost any living space

LOWER GREENHOUSE GAS EMISSIONS
- Lower Greenhouse Gas Emissions compared to conventional electric or gas dryers
- Potential for zero greenhouse gas impacts when paired with solar PV or 100% renewable grid electricity
HEAT PUMP CLOTHES DRYER (HPCD)  
Costs, Incentives, & Financing

ESTIMATED COST
The gains in efficiency from a heat pump clothes dryer will lead to greater energy savings over the lifetime of the dryer, but there is a higher upfront cost. In general, a heat pump clothes dryer costs about $400–$600 more than a conventional dryer with similar features. Before incentives or cosmetic upgrades, you can expect to pay $1,000–$1,500 for a compact or full-size heat pump dryer.

If you need to wire a new 240-volt outlet to accommodate the dryer, that will be an additional cost—about $300 on average.

The operating costs of a heat pump clothes dryer can be less than half that of a conventional electric dryer. Field studies have shown that compact heat pump dryers will save more than full-size hybrid heat pump dryers. Using the prices of natural gas (as of Fall 2021), homeowners replacing a conventional electric dryer will typically see higher savings than those replacing a gas dryer.

INCENTIVES
- There are incentives available to homeowners in Massachusetts wishing to upgrade to an electric clothes dryer. Depending on your electric provider, you may be eligible for different incentive programs.

- Mass Save®/ENERGY STAR Rebate: You may be eligible for a $50 rebate for an ENERGY STAR certified heat pump clothes dryer. See the ENERGY STAR website for details and submit your rebate application through Mass Save®.

- If you are served by a municipal electric company, visit your electricity provider’s webpage to see if it offers incentives for heat pump clothes dryers.

FINANCING
- Heat pump clothes dryers can be financed like any other home appliance.
1. Confirm that a heat pump clothes dryer is the right fit for your home and your clean energy priorities.

2. Understand the costs and plan how you will finance the project. Check out the Cost, Incentives, & Financing section to understand the typical costs to install a heat pump clothes dryer.

3. Select your product and plan your installation. Some installation professionals that may need to be involved are an electrician and/or a plumber, if you are capping a gas line.

4. Prepare your home. Take preliminary measures to get your home ready for a new heat pump clothes dryer, such as upgrading your electrical service (if necessary) or—if taking advantage of the added flexibility of a ventless, compact dryer—choosing a new location for your laundry setup. If you’re replacing a conventional gas or electric dryer, remember to seal off the existing dryer vent hole to make your home more efficient. Replacing a gas dryer means you’ll want to cap and seal the gas line as well.

5. Install the heat pump clothes dryer. Talk to a professional about how long installation will take. Installation is typically a simple task, depending on your electrical needs.
How Can I Prepare for A Heat Pump Clothes Dryer?

Determine whether your home has adequate electrical service for a heat pump clothes dryer and make an upgrade if necessary.

Most heat pump clothes dryers require a 240-volt electrical outlet. If you don’t have a 240-volt connection in an appropriate space, talk to an electrician about installing a new outlet.

Think about where you would like to place the dryer.

Flexibility is part of the appeal of a heat pump clothes dryer. You can place it virtually anywhere in your home, provided you have the right electrical outlet. Some things to consider:

- You may want to place your dryer near a drain or sink, so that the condensed water can drain automatically through a hose. But this isn’t necessary as the removable water container collects the water so you can dump it out (or use it to water your plants).
- If you place the dryer with your washing machine, you can set the dryer and washer to share the same drain.
- Under normal operation, a heat pump dryer shouldn’t be noticeably noisy. At times you may notice a faint humming or metallic sound, similar to the sound of a refrigerator or air conditioner, but that’s just the compressor doing its job.
During your conversation with installers, consider asking the following questions:

**CONFIGURATION**

**Where can I put the heat pump clothes dryer?**

Switching to a heat pump clothes dryer is an opportunity to rethink your laundry configuration. Consider moving your washer/dryer to a more convenient place.

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**Can the washer and heat pump dryer share the same drain?**

Yes, but it might require an adapter. Make sure your installer knows how to configure the washer and dryer to share the same drain.

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**Do I need to add a 240-volt outlet?**

Most heat pump clothes dryers are only compatible with a 240-volt outlet. If you don’t have one available, one will have to be installed by a licensed electrician.
COST
What is the installation price and what incentives are available?
The cost of a heat pump clothes dryer can range in between $1,000 and $1,500 for compact or full-size dryers. However, the operating costs of a heat pump clothes dryer can be less than half of that of a conventional electric dryer.

There are incentives available to residents in Massachusetts wishing to upgrade to an electric clothes dryer. Depending on your electric provider, you may be eligible for different incentive programs.

- **Mass Save®/ENERGY STAR Rebate**: You may be eligible for a $50 rebate for an ENERGY STAR certified heat pump clothes dryer. See [ENERGY STAR website](#) for details and submit your rebate application through Mass Save.

- If you are served by a municipal electric company, visit your electricity provider’s webpage to see if it offers incentives for heat pump clothes dryers.

What will it cost to seal off the dryer vent hole and cap the gas line, if necessary?
Factor these two important tasks into any installation costs. Capping a gas line can cost around $150.

TIMING
What should I do to prepare for the installation?
Make sure you understand from your installer if there is anything you need to do to prepare to have them working in your home.
HEAT PUMP CLOTHES DRYER (HPCD)

Getting the Most From Your New Dryer

OPERATION

• When you first start using the dryer, you might need to experiment with the right settings to figure out what works for your laundry needs.

• To make your dryer even more efficient, set your washer to run at the highest available spin-cycle speed to reduce the amount of moisture in the clothing when it goes into the dryer.

HOMEOWNER MAINTENANCE

• Be sure to clean both lint filters regularly.

• Pay attention to the manufacturer’s recommendations. Some models require regular maintenance of the condenser coils, while others have self-cleaning mechanisms.

PROFESSIONAL MAINTENANCE

• Maintenance requirements for heat pump clothes dryers are minimal. However, should the dryer need any repair or professional maintenance, you will want to contact the manufacturer (or your licensed installer) to perform service so as not to void your warranty.
TECHNOLOGIES FOR YOUR CLEAN ENERGY HOME: HEAT PUMP CLOTHES DRYER

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