



Home Electrification Fact Sheet

Heat Pump Clothes Dryer

CLIMATE CHANGE & CLOTHES DRYERS

Laundry generates an estimated 179 million metric tons of carbon dioxide emissions every year. Most of that comes from drying clothes. Clotheslines and drying racks create zero emissions. Electric heat pump clothes dryers are the next best option. In the East Bay, the majority of electricity on our power grid comes from clean, renewable energy sources, so moving from a gas-powered dryer to an electric heat pump dryer greatly reduces your greenhouse gas emissions.

HOW DOES A HEAT PUMP DRYER WORK?

A heat pump dryer uses the same technology as your refrigerator, only in reverse: a chemical refrigerant, circulating through a coil, moves heat from the air into the appliance. Conventional gas dryers vent heated air to the outdoors. Instead of venting the heated air, heat pump dryers recycle the heated air until the moisture is removed. When the air inside the drum flows over the cool part of the coil, moisture is pulled from the air and drained into a collection tank or drainpipe.

ENERGY EFFICIENCY

Electric heat pump dryers are the most energy efficient tumble dryers. Heat pump dryers use 25 to 70 percent less energy than non-Energy Star dryers that use conventional technology, such as vented gas and electric dryers. Consumers with high electricity rates, who do many loads of laundry, have the potential for large energy and cost savings.

Energy Star: All electric heat pump dryers have Energy Star certification, which means that the dryers use at least 20% less energy than conventional models. Until heat pump dryers became available in the US, the Energy Star program did not rate clothes dryers, because none were energy efficient enough to justify Energy Star ratings.

WHO IS USING HEAT PUMP DRYERS?

Heat pump dryers were first developed in Europe by Electrolux in 1997. Ventless dryers are popular in Europe. Vented dryers are actually illegal in Switzerland. Heat pump dryers first became available in the US in 2014, from three manufacturers. Today, six manufacturers sell electric heat pump dryers in the US, and all models receive an Energy Star rating.

CLOTHES DRYING EXPERIENCE

Length of Dry Time: Heat pump dryers take longer to dry clothes than a gas or traditional electric dryer because they reach a lower maximum temperature. The drying time varies, depending on the model. 50 - 80 minutes for a full load is typical.

Humidity: Heat pump dryers do not create hot air or moisture in the room, which is good for apartments.

Secondary Lint Traps: Heat pump dryers have a lint trap that needs to be cleaned between loads, and a secondary lint trap that needs occasional cleaning. It is less cumbersome than cleaning a dryer vent.

Gentle on Clothes: The majority of fabric damage occurs from overdrying. Heat pump dryers are gentler on clothing because they don't get as hot, which extends the life of fabrics. Clothes come out of a heat pump dryer feeling mildly warm. They may even feel slightly damp, even though the clothes have nearly zero excess moisture.

COST & REBATES

Cost: Heat pump clothes dryers cost between \$900 and \$1900. Since they don't require a vent or gas plumbing, money can be saved on installation. They cost a bit more than conventional dryers, but use dramatically less energy to run, so payback on the initial investment is short. To calculate how much money you can save on energy costs using a heat pump dryer, visit marketplace.pge.com/dryers. Alameda residents can access rebates of \$100 for Energy Star dryers from Alameda Municipal Power.

HEALTH & SAFETY

Improves Air Quality: Electric heat pump dryers do not produce air pollution. Gas-powered dryers vent carbon dioxide to the outdoors. Studies that have analyzed vented dryer emissions have also found more than 25 volatile organic compounds, including seven hazardous air pollutants, coming out of vents. Of those, two chemicals—acetaldehyde and benzene—are classified by the Environmental Protection Agency as carcinogens. The EPA has established no safe exposure level for these chemicals.

Reduced Fire Hazard: The majority of dryer fires start when built-up lint near the motor, gas burners, or heating elements catch on fire. The fire then spreads to ignite lint in the vent pipe. Because heat pump dryers are ventless, that fire hazard is reduced. Gas plumbing and appliances carry an additional hazard, as they can be damaged during earthquakes, causing leaks. If ignited, leaks can cause house fires. One in four fires after an earthquake is related to natural gas leaks.

INSTALLATION

Electrical Outlet: Most heat pump dryers require a 220V outlet. Some Miele models use a 110V outlet.

No Vent: Heat pump dryers are easy to install because they do not require a vent. This allows for greater flexibility in where the dryer is located: it can be situated in rooms that are not close to perimeter walls and in homes where punching a hole in the wall for a vent is problematic or forbidden.

Drain: In a heat pump dryer, moisture from the wet clothes condenses on the cold coil of the heat pump, and the condensed water is expelled out of a drain tube or sent to a collection box to be emptied by hand. The drain tube can be routed down the same drainpipe into which the washing machine drains.

WHAT DO THEY LOOK LIKE?

Heat pump dryers look like most other dryers, the only difference being an extra panel in front for the secondary lint trap. Most heat pump dryers are small sized (24" with 4+ cubic feet capacity). Some manufacturers, like Whirlpool, are now making larger capacity models (7+ cubic feet).



NEXT STEPS?

If you are interested in a heat pump clothes dryer, consider these next steps:

- Check PG&E's website to compare models: marketplace.pge.com/dryers
- Check the EnergyStar site to compare models: energystar.gov/productfinder/product/certified-clothes-dryers/
- Compare prices and reviews of heat pump clothes dryer models from online appliance vendors. Visit appliance showrooms to view floor models.
- Talk to people who own heat pump dryers about their experience at electrification tours or expos.



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