

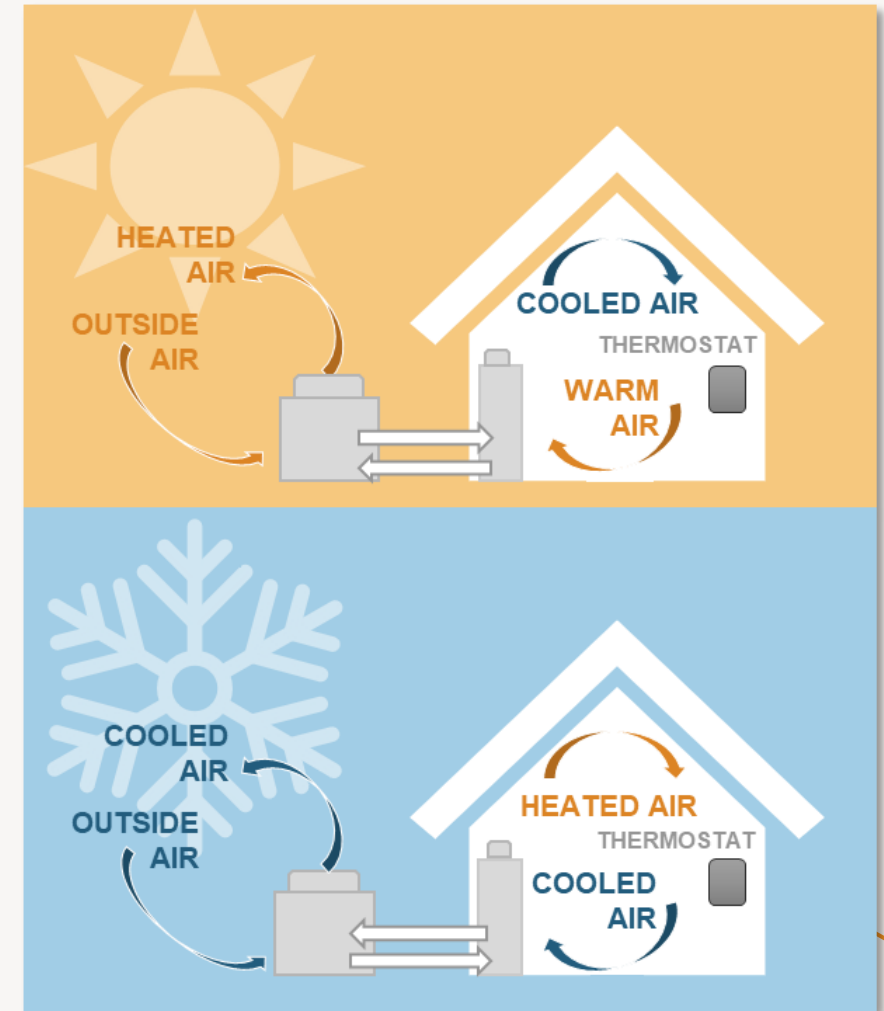
What are Heat Pumps?

South Coast AQMD
GO ZERO Pilot Incentive Program
June 2025

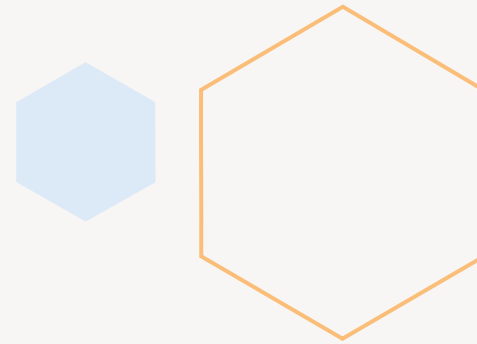


What is a Heat Pump?

- Heat pumps work like an air conditioner or refrigerator in reverse: moving heat from the outside to the inside of the home
- Most heat pumps draw heat from the air, but others can use ground or water
- Heat pump systems can also provide:
 - Air conditioning (AC)
 - Hot water

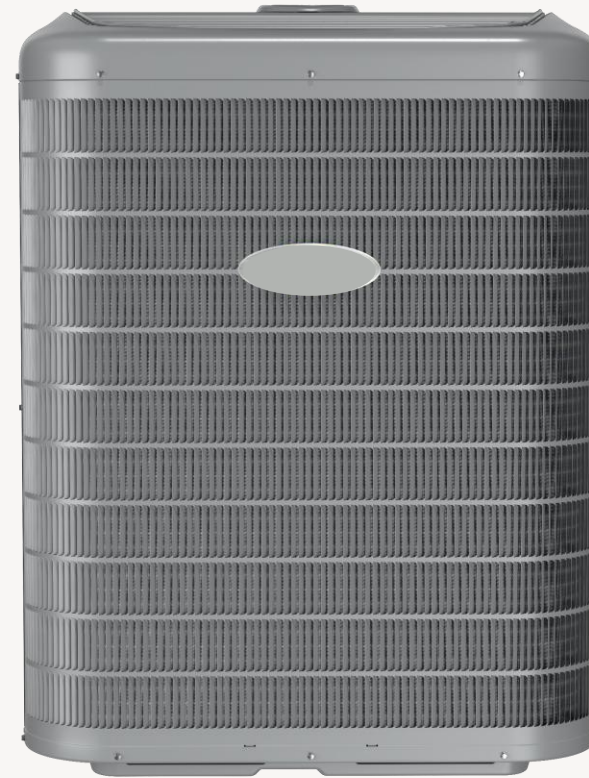


Heat Pumps for Space Heating and Cooling



Ducted Heat Pump Systems

- Produce hot or cold air which is distributed through the home via ducts
- For homes that already have central AC and furnace
 - Replace both AC and furnace
 - Easy “drop-in” installation
 - Lower cost than installing separate furnace and AC per E3 study*



*E3 - Residential Building Electrification in California

Ductless Mini- or Multi- Split Units

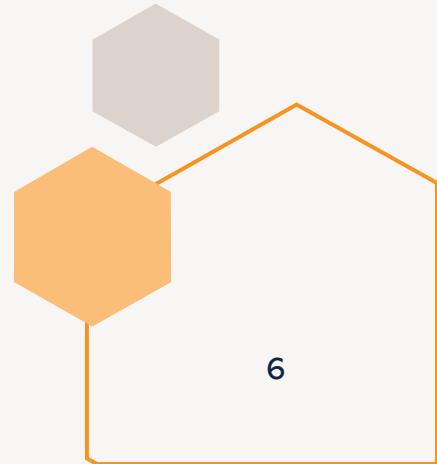
- Has indoor units in each room rather than air ducts
- Single outside unit can serve multiple indoor units
- For homes without AC: cheaper to install than ducted systems
- Efficient to operate, can set different rooms to different temperatures



Window Heat Pumps



- Can be plugged into a standard electrical outlet, no panel upgrade required
- Rests on windowsill, simple installation
- Cheaper for room heating and cooling than mini-split



Heat Pumps for Water Heating



Heat Pump Water Heaters



- Similar to space heating heat pumps, but use heat pump to heat water in a holding tank
 - Three to five times more efficient than electric resistance and gas water heaters
 - Often have back-up electric resistance element
 - Many models are similar size as traditional gas water heaters
 - 240-Volt and 120-Volt standard outlet

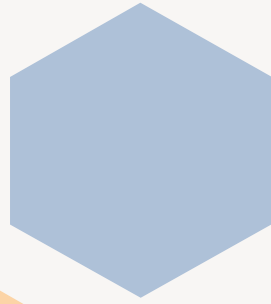
120-Volt Plug-in Water Heaters



- Newer heat pump water heaters available that can be plugged into a standard 120-Volt outlet
 - Requires minimal electrical work
- Similar size and shape of gas tank water heater, though slightly larger than comparable gas heater
- Similar performance to 240-Volt units but with lower energy efficiency and without electric resistance back-up
- Suitable for:
 - Warmer climates
 - Replacing gas unit without panel upgrade

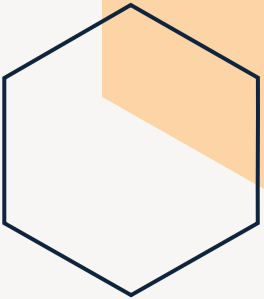
Frequently Asked Questions

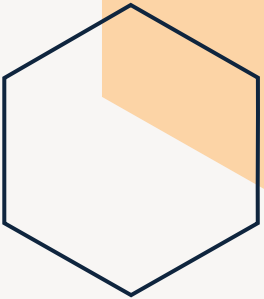
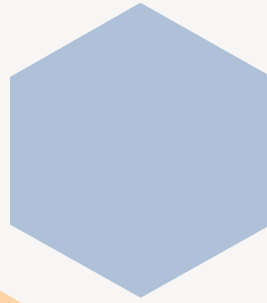




Q: Are Heat Pumps New Technology?

- A:
- No, heat pumps have been around for a long time and are commercially available
 - Technology first developed in mid-1850, commercialized in the 1960s
 - Monthly shipment reports indicate that more heat pumps have been sold in the U.S. for space heating than gas furnaces since 2021
 - Heat pumps have even higher adoption rates in Asian countries than in North America
 - 90 percent of households in Japan have heat pumps for heating and cooling





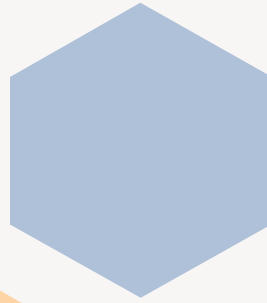
Q: Will a Heat Pump Work When it is Cold Outside?

- A:**
- Cold climate heat pumps can pull heat from the air even at sub-zero temperatures
 - Heat pump technologies have been adopted in many cold climate regions such as Maine, Vermont, Alaska, and within our own mountain communities such as Lake Arrowhead and Big Bear
 - According to the International Energy Agency, 60 percent of Norway's buildings are fitted with a heat pump



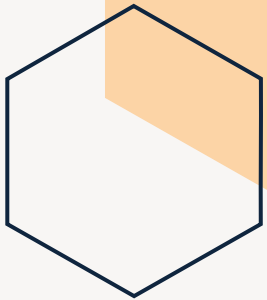
Q: Will I need to Upgrade my Electrical Panel to Operate a Heat Pump?

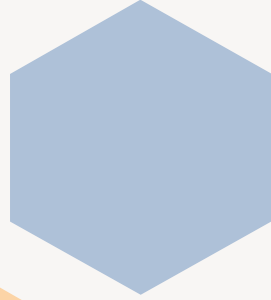
- A:**
- If your home or business already has a central air conditioner, a panel upgrade or upsizing will not likely be needed
 - Some technologies that are less likely to require a panel upgrade include:
 - 120-Volt plug-in heat pump water heaters
 - Portable heat pumps for space heating/cooling
 - Multi-functional heat pumps for water heating and space heating/cooling



Q: Will my Heat Pump Operate when the Power is Out?

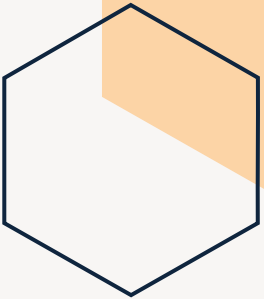
- A:**
- No, but neither will your modern gas space and water heaters
 - Blowers and electronic components in many modern appliances prevent their operation when the power is out
 - Battery backups and solar panels pair well with heat pumps

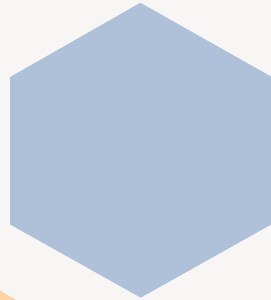




Q: Are Heat Pumps Costly to Run?

- A:
- Over time, consumers are expected to save money on operating costs when switching to heat pumps
 - Running a heat pump results in operational cost savings over the lifetime of the appliance
 - Heat pumps have high COPs (Coefficient of Performance, ratio of energy produced to energy used for heat pumps) meaning they are generally over 3 to 5 times more efficient than gas appliances
 - Electric resistance furnaces are not as efficient as heat pumps since they convert electricity to heat in a nearly one-to-one ratio





Q: How Much Will my Electrical Bills Increase if I Install a Heat Pump?

- A:**
- Predicting future utility costs is a challenge, however, the California Energy Commission's forecast projects increasing natural gas prices, while electricity rates will go up more slowly[†]
 - Lower annual operational costs are anticipated based on the projected fuel price estimates

[†]<https://www.energy.ca.gov/publications/2024/2024-integrated-energy-policy-report-update>