

# Understanding Dual-Fuel Systems



#### What is a Dual-Fuel System?

It's a home comfort system that pairs an electric heat pump with a gas furnace and alternates between the two fuel sources to maximize comfort and efficiency.

### How does a Dual-Fuel System function?

Depending on the temperature, this system will make use of its electric heat pump or gas furnace. During warm summer months, the heat pump works like a high-efficiency central air conditioner. In cooler spring and fall weather, it provides cost-effective, efficient heat. In cold winter months, the heat pump shuts off altogether and lets the furnace take over.

## How does a Dual-Fuel System heat?

In the fall and spring when heating demands are less great, the heat pump handles the heating, while the furnace distributes the air. This is because when temperatures are 35°F or higher, the heat pump can pull heat from the outside air for less than it costs to run the gas furnace. First, the heat pump uses warm outdoor air to warm the refrigerant and send it to the furnace. Then, the furnace fan draws in the colder air from the home into the furnace where it's heated by the hot refrigerant. Finally, warm air is blown throughout the home.

During the winter months when temperatures drop below  $35^{\circ}$ F, the electric heat pump shuts off and allows the gas furnace to ignite and more efficiently meet the demands brought on by colder temperatures.

# How does a Dual-Fuel System cool?

In the summer, the electric heat pump reverses the flow so that cold refrigerant flows into the furnace to cool the warmer indoor air, which is then distributed throughout the home.

### Dual-Fuel System





# Benefits of a Dual-Fuel System

Now that you have a basic understanding of how a dual-fuel system works, let's break down the benefits of having one in your home.

### Greater Efficiency

A dual-fuel system optimizes energy use by automatically switching between electric and gas fuel sources. Whatever the outdoor condition, it will opt for the more efficient of the two heating options. When its cooler outside during fall, spring, and moderate winters, the electric heat pump provides the most efficient, cost-effective heating method. During normal or more severe winters, the gas furnace is ignited.

Heat pumps also save energy because it's easier to transfer heat than to create it. Surprisingly, even when it feels cold outside, there's still enough heat captured from the outdoor air to make warming your home electrically via the heat pump the most efficient option. In fact, under the most ideal conditions, a heat pump can transfer upwards of 300 percent more energy than it consumes. By contrast, high-efficiency gas furnaces are about 90-percent efficient (although, it is worth noting that top-of-theline furnaces can be up to 99-percent efficient).

### Environmental Impact

Since it's operating through electricity instead of gas upwards of 85 percent of the time, a dual-fuel system is an environmentally responsible option that aids in sustainable energy use.

### Quiet Operation

It can cool scorching summers or heat mild winters with its electric heat pump. Or it can heat extreme winter temperatures with its gas furnace. Either way, Lennox' modern dual-fuel systems are engineered to minimize noise levels. And the higher efficiency offerings are especially quiet.

### Cost Savings

While a dual-fuel system calls for a greater initial investment than conventional systems, those costs are easily offset by the system's inherent efficiency. By prioritizing the heat pump (except in the most high-demand situations), the system runs on electricity a majority of the time. Since in many markets gas is more expensive to use than electricity, the savings can add up quickly.

Also, in addition to a new dual-fuel system adding to your home's value, this upgrade may qualify for rebates and energy-saving tax credits. To learn more, check with your local utility company.