

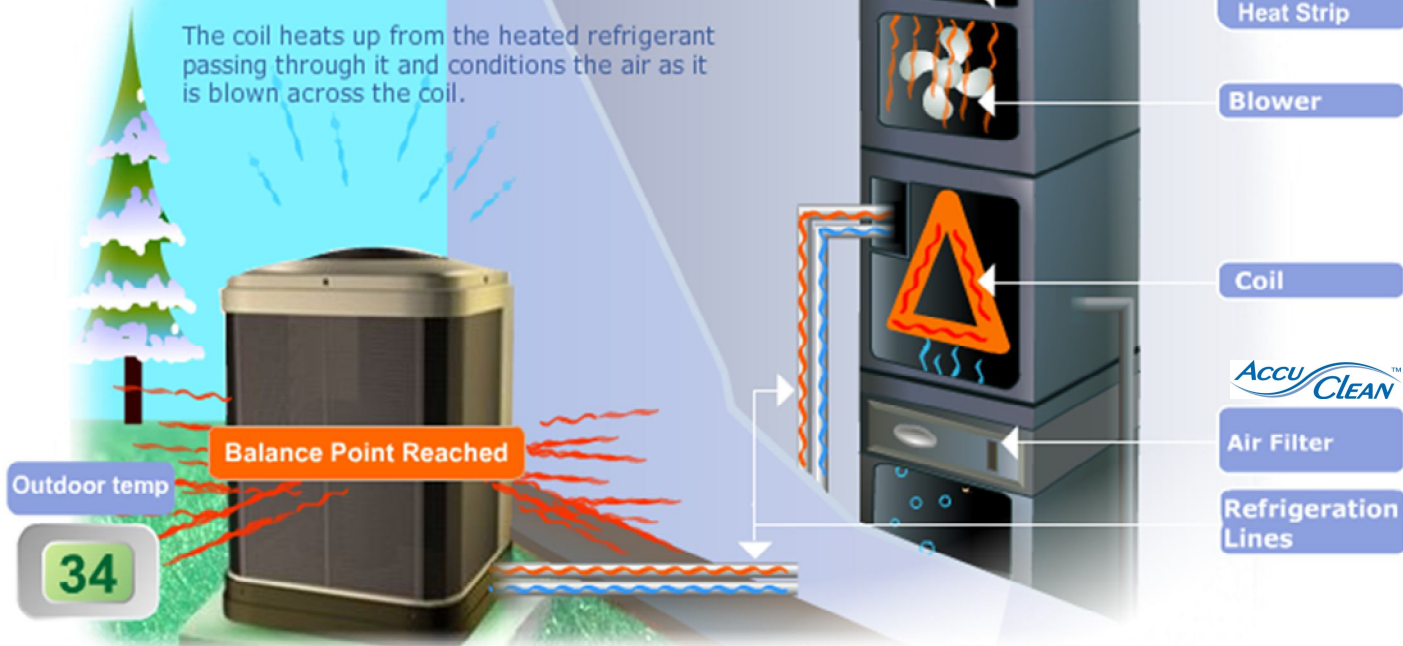
# ALL ELECTRIC HEAT PUMP AND ELECTRIC FURNACE SYSTEM

## How does a Heat Pump Work? Heating Season

Even in cold temperatures, heat still exists in the air.

The heat pump refrigerant absorbs the heat from the outside air, compresses it making it even hotter and sends it to the coil.

The coil heats up from the heated refrigerant passing through it and conditions the air as it is blown across the coil.



As the passing air grabs the heat from the coil, the refrigerant inside the coil cools down and is sent back to the heat pump to absorb the heat from the outside and repeats the process.

As the temperature outside drops, it is harder for the heat pump to extract enough heat to keep up with the homes heating needs.

When the heat pump cannot keep up with the homes heating needs, it has reached its "Balance Point" and needs back-up heat sources, such as resistant heat strips to keep the home comfortable.

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# GAS FURNACE AND HEAT PUMP SYSTEM – “Hybrid”

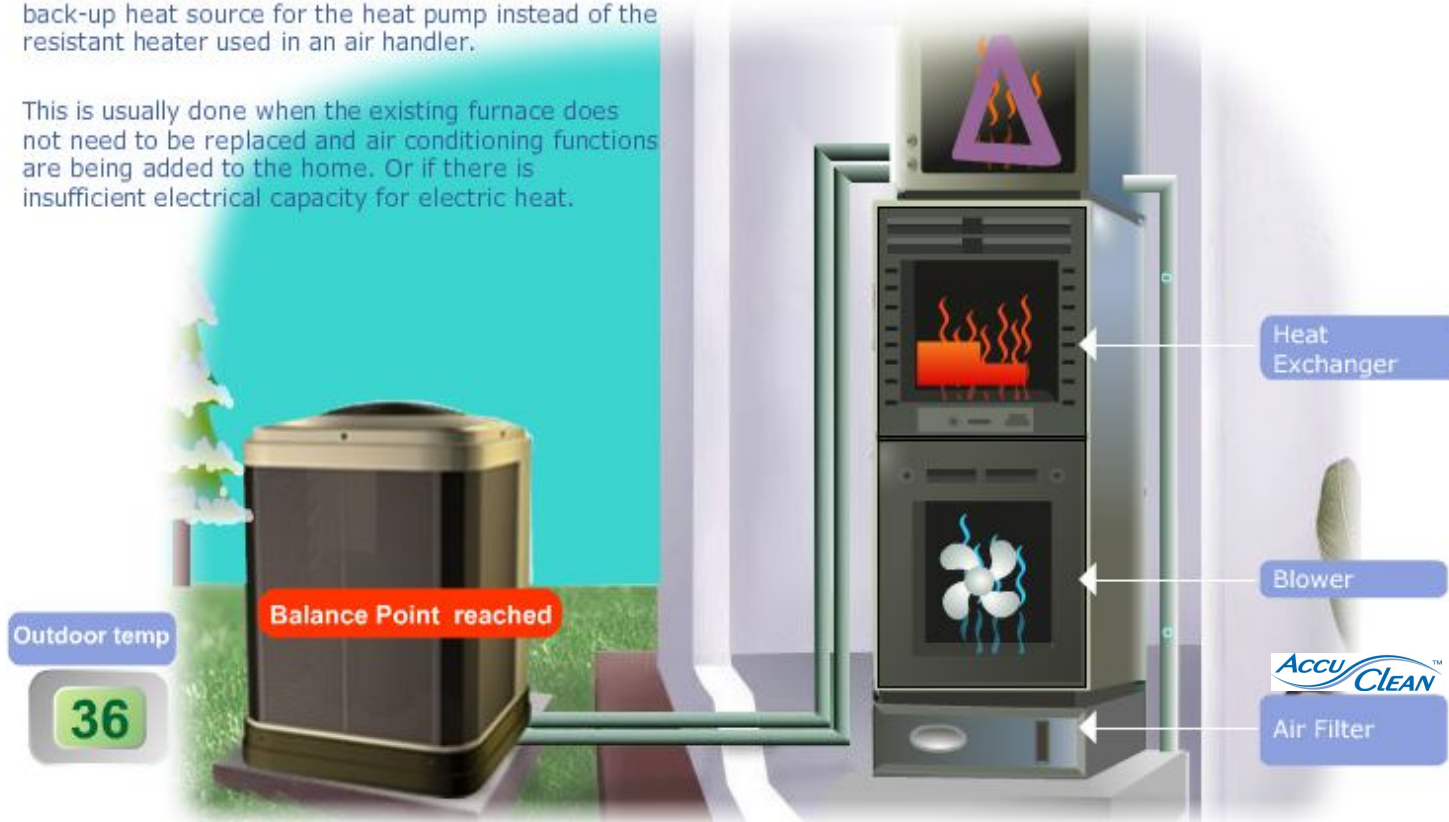
## How does a Heat pump Hybrid system work?

A hybrid system uses a furnace instead of an air handler inside the home.

This allows a fossil fuel furnace to be used as the back-up heat source for the heat pump instead of the resistant heater used in an air handler.

This is usually done when the existing furnace does not need to be replaced and air conditioning functions are being added to the home. Or if there is insufficient electrical capacity for electric heat.

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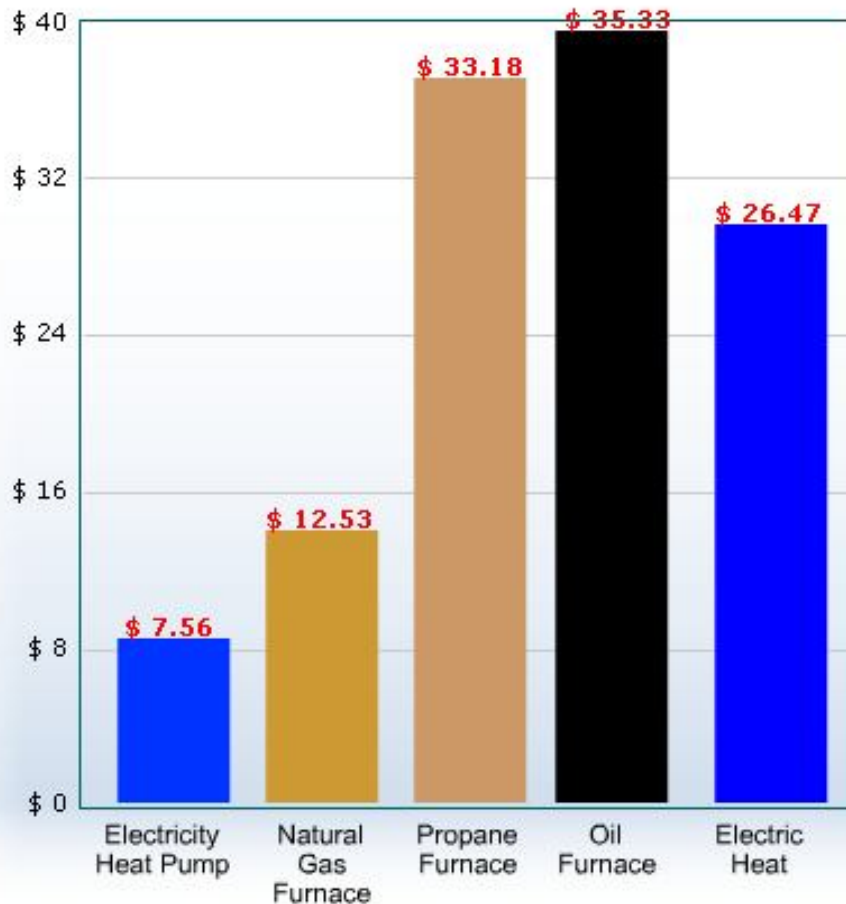
# HEATING PRODUCTS ENERGY COST COMPARISON

## How Efficient is a Heat Pump?

### Energy Cost Comparisons, \$/Million BTU

Print

Professor Dennis Buffington from the department of agricultural and biological engineering of Penn State University says "To make an "Apples to Apples" comparison of different forms of energy the comparison must be on the basis of dollars per million B.T.U.s." Below is an energy cost comparison to create 1 million B.T.U.s.



### Energy Rates:

Electricity \$ 0.09 /kWh  
Natural Gas \$ 1.19 /Therm  
Propane \$ 2.90 /Gal  
Oil \$ 3.90 /Gal

### Conversion Efficiency:

Heat Pump - C.O.P 3.5  
Natural Gas Furnace 95 %  
Propane Furnace 95 %  
Oil Furnace 80 %  
Electric Heat 100 %

Reset

Set as Default



# ANNUAL AVERAGE NUMBER OF HEATING & COOLING HOURS

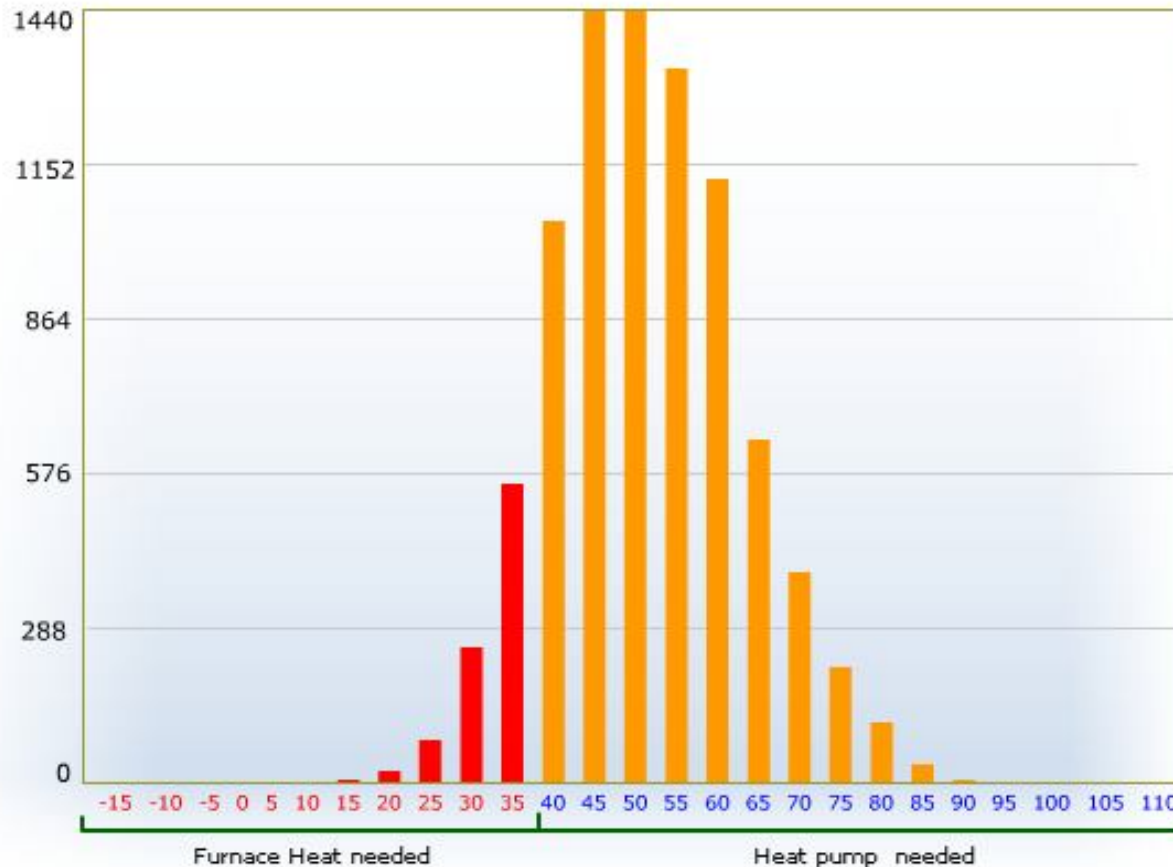
## How much would I use a Heat Pump?

State

Region

Type of system

Heat Pump   
Back-up Furnace Heat 



Equivalent days per year  
the Heat Pump can  
maintain comfort: **326**

Equivalent days per year  
the Back-up Furnace heat  
is needed to maintain  
comfort: **39**

Total Hours Heat Pump can  
maintain comfort: **7824**

Total Hours Electric Heat can  
maintain comfort: **936**

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