

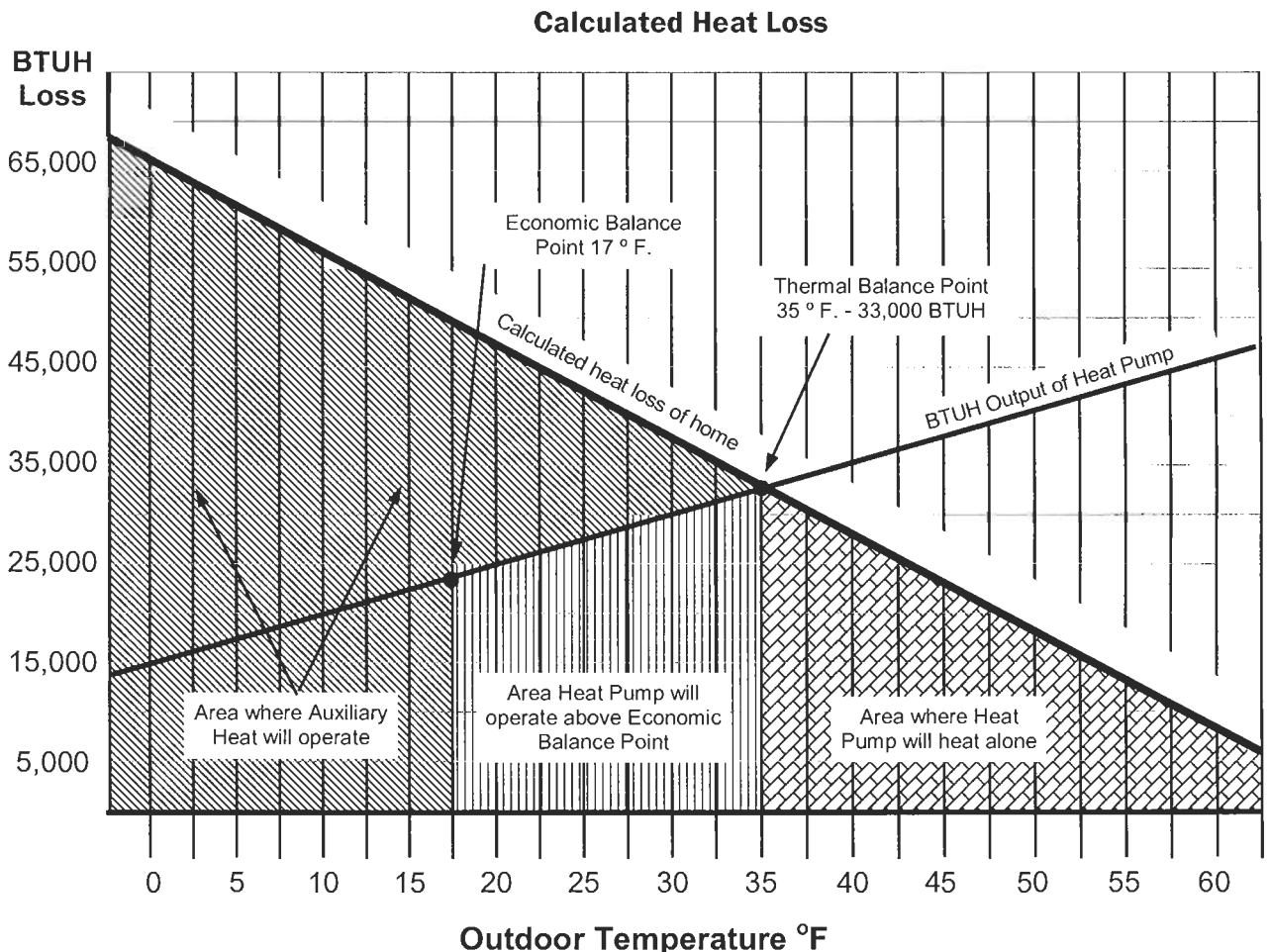
## Heat Pump Output

Heat pump outputs will vary with outdoor temperatures. It actually is not a straight line like the heat loss of the home. There is a small s-curve around the defrost temperature, which makes it difficult to accurately calculate operating costs without using a computer program. We will chart a straight line for ease of understanding the balance points. The two terms we must understand with dual fuel heat pumps are "Economic Balance Point" and "Thermal Point".

**Economic Balance Point** - The lowest temperature at which the operation of the heat pump is more cost effective.

**Thermal Balance Point** - The lowest temperature where the heat pump produces enough heat to meet the load requirements.

As you can see in the graph below, there are two points plotted. The economic balance point is the temperature point (17° F.) where the furnace will begin to operate and the heat pump will be turned off by the outdoor thermostat setting. This point will be determined by fuel costs and equipment efficiencies. This is the only way to determine the economic balance point (EBP). The thermal balance point (TBP) is simply the point at which the heat pump can no longer heat the home without some auxiliary heat. The EBP could be above or below the TBP.



# Calculated Heat Loss

