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ADVANCED HEAT PUMPS: LOW-LOAD EFFICIENT

When it comes to the efficiency of residential heat pumps, not all models are equal. Variable speed heat pumps typically deliver comfort in residential applications with greater efficiency than other air source heat pumps, but specifically choosing a low-load efficient heat pump can boost energy savings even more.

WHAT IS IT?

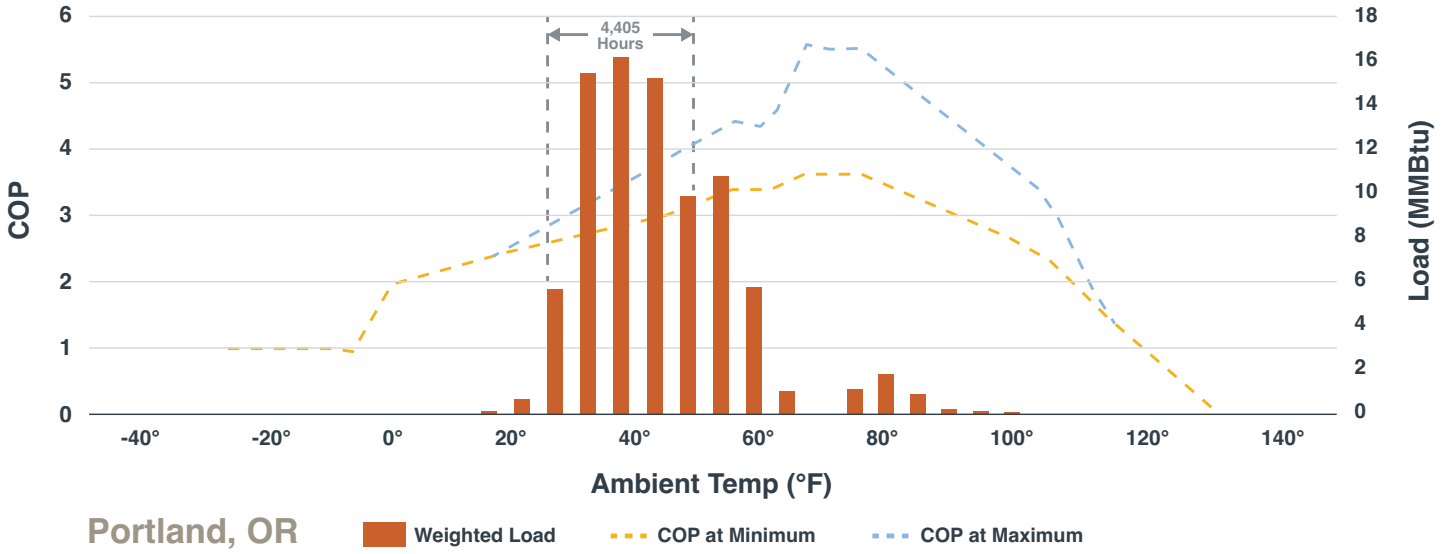
Low-load efficient heat pumps are more efficient than the average heat pump when outdoor temperatures are mild because they modulate the speed of the compressor and fans for maximum operational efficiency and comfort. By operating consistently at lower power and diminishing peak loads, this helps reduce stress on the grid, keeping homes more energy efficient and comfortable.

In most climate zones, heat pumps spend the majority of their operation time when outdoor air temperatures are between 35°F and 55°F. Many heat pump models cycle on and off, attempting to maintain indoor air temperature. As they cycle, efficiency is reduced, and indoor temperatures still fluctuate, impacting homeowner comfort. Heat pumps with low-load efficiency have higher coefficients of performance (COPs) during these moderate outdoor temperatures.

Specification: Low-load efficient heat pumps have a COP of 4.5 or greater at their minimum 47°F output. To maximize this benefit, the heat pump must be properly sized.

LOAD-WEIGHTED HOURS (HEATING AND COOLING): PORTLAND (IEC ZONE 4C)[1]

Portland is a prime example of a mild climate where heat pumps can spend 30% to 80% of their annual load weighted hours in moderate temperatures and can reach much higher COPs with low-speed efficiency.



HOW TO IDENTIFY LOW-LOAD EFFICIENT HEAT PUMPS

The **Northeast Energy Efficiency Partnerships Cold Climate Air Source Heat Pump List**—often referred to as, "the NEEP list"—provides extended data tables for heat pumps with COP at Minimum Capacity at 47°F.

[1]TMY3 data and Levelized Cost Tool (LCTool), Northwest Energy Efficiency Alliance. Depicting heat pump efficiency at low and full speed versus ambient temperature overlayed with Portland, OR, bulk temperature bin hours.

To find more resources, visit **BetterBuiltNW.com/advanced-heat-pumps.**

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