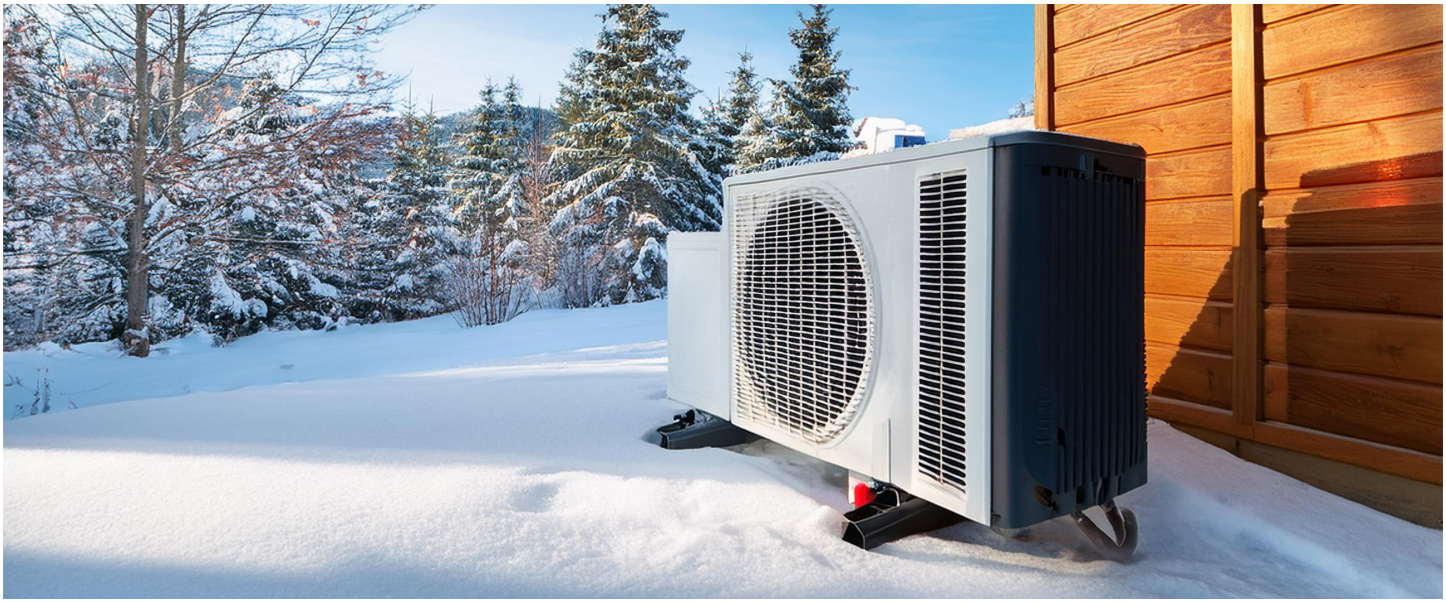
BetterBuiltNW

COLD-CLIMATE DUCTLESS HEAT PUMPS: PROVEN PERFORMANCE IN THE NORTHWEST



Forget what you've heard about poor heat pump performance in the Northwest. The myth that ductless heat pumps can't perform well in cold weather shouldn't dissuade you from exploring these types of HVAC systems for your customers and projects. There are many ductless heat pumps on the market today that can provide low-cost, efficient heat to homes when outdoor temperatures are below zero degrees. When systems are designed according to manufacturer specifications and installed using best practices, ductless heat pumps can deliver reliable performance throughout Northwest winters.

Selecting the right heat pump for your projects can help maximize efficiency and comfort, whether you choose to include auxiliary heat or not. In the more moderate climates of Western Oregon and Washington, most inverter-driven heat pumps, i.e., those using variable-speed compressors to offer efficient heating at low outdoor temperatures, can meet a home's needs without an auxiliary heat system. Homes east of the Cascades can still take advantage of heat pumps, as there are cold-climate models designed specifically for these climate zones.

Follow placement and installation best practices to maximize heat pump performance.

HOW TO ENSURE DUCTLESS HEAT PUMPS PERFORM IN COLDER WEATHER

Choosing the right equipment and installing it correctly are the first steps to ensuring ductless heat pumps meet expectations. Check the manufacturer specifications, especially the design load and heat pump capacity ratings, of the equipment models you are considering. It's important to understand the specs to make sure you're installing a unit with the right capacity for the home; this information might look different for each manufacturer.

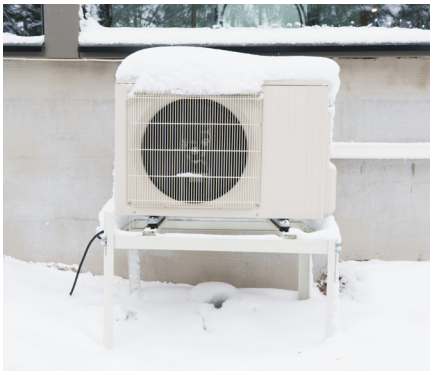
Any heat pump can operate down to about 25 degrees, while cold-climate models—depending on the design—can function at temperatures as low as minus 22 degrees. ENERGY STAR®-certified cold-climate ductless heat pumps are third-party verified to perform according to specifications down to 5 degrees at a minimum and remain functional at even lower temperatures. Following equipment sizing and selection best practices can help ensure cold-climate ductless units and any auxiliary backup heating equipment continue to carry the heating load—and perform effectively and efficiently.

In cases where a backup heating source is installed, a comprehensive controls strategy is a must. Consider how controls settings can minimize auxiliary heating and maximize the use of the more efficient ductless heat pumps, which helps save energy. Builders can work with an HVAC contractor experienced with cold-climate ductless heat pumps to calculate the balance point, the outdoor temperature at which the heat pump's capacity no longer meets the home heating load, and determine when auxiliary heat is needed. In general:

- For standard ductless heat pumps, the balance point is typically between 20 and 30 degrees.
- For cold-climate ductless heat pumps, the balance point is often zero degrees or even lower.

Concerned about service issues if you don't install auxiliary heat? Contractors can pre-install electric resistance strip heaters and leave them disconnected from the control circuit until actual field performance necessitates supplemental heat. One Portland-area builder trialed this method during the construction of several new homes, which were the company's first to feature heat pumps. The HVAC contractor who installed the system and services these homes did not receive any calls from owners requesting that their auxiliary heat be reconnected. The success of this trial gave the builder the confidence to skip auxiliary heating entirely in their future new builds.

> "Double check design load and heat pump capacity rating information to ensure you make the right equipment choice for your home."



For cold-climate heat pumps, the balance point is often zero degrees or even lower.

ENSURE OPTIMAL COMFORT AND PERFORMANCE BY CHOOSING THE RIGHT EQUIPMENT

If you're new to ductless heat pumps or aren't sure what would be the right fit for your project, the Northeast Energy Efficiency Partnership (NEEP) Cold Climate Air Source Heat Pump list is a great place to start. The list includes ducted and ductless heat pumps rated to meet capacity and performance metric thresholds. These heat pumps are good candidates for minimizing the need for supplemental heating sources to maintain resident comfort, even in those colder temperatures.

Contractors and installers can take advantage of the Pacific Northwest National Laboratory's Cold Climate Heat Pump Decision Tool for heat pump size, selection, configuration, and installation guidance. NEEP also has installer videos and sizing guides to help make the transition to heat pump technology easier.

By utilizing ductless heat pumps, residents can experience year-round comfort.

BetterBuiltNW has resources specifically for ductless heat pumps in the Northwest's colder climate zones. Learn more by exploring the following articles, guides, and resources on this topic:

- Resources for Ductless Heat Pumps in Colder Climates
- Installer Guide: Ductless Heat Pumps For Cold Climates
- 9 Recommended Practices for Cold-Climate Ductless Heat Pump Installations
- Cold Climate DHP Specification and Recommendations
- Heat Pumps: Mastering Design Principles