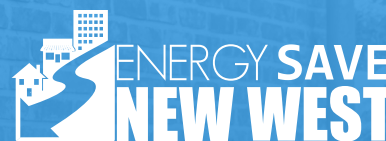


Heat Pump Location & Noise Guide



Energy Save New West's Heat Pump Noise and Location Guide offers homeowners guidance on where to place the outdoor heat pump unit and important information about heat pump noise output to ensure compliance with the City of New Westminster's requirements.



Noise Bylaw for Outdoor Appliances

The City of New Westminster [Noise Bylaw](#) states, *"the noise level of continuous noise emanating from real property within a quiet zone...shall not exceed 55 dBs during the daytime and 45 dBs at night"*

THINGS TO CONSIDER WHEN SELECTING & INSTALLING A HEAT PUMP



RIGHT SIZING OF EQUIPMENT

If your heat pump is either over- or undersized, it is unlikely to achieve its rated efficiency. Oversized equipment may cycle on and off more frequently than necessary, leading to short cycling issues and unnecessary noise from the frequent start/stop functions. Proper sizing should be based on a comprehensive heat loss/heat gain calculation (e.g. CSA F280-12 calculation).



EXISTING DUCTWORK CAPACITY & DISTRIBUTION SYSTEMS

The existing ductwork is also a critical part of the central ducted heat pump retrofit project. Before selecting a heat pump, your existing ductwork needs a careful examination to ensure the existing ductwork is properly sealed and its capacity can handle the new system.



SELECTING A CONTRACTOR

It's essential to hire a contractor who can ensure quality installation, maximizing your equipment's efficiency and comfort. If you are applying for the CleanBC Better Homes heat pump rebate program, the work must be completed by a [Home Performance Contractor Network \(HPCN\)](#) member who has been trained and registered by the [Home Performance Stakeholder Council](#).



REGULAR MAINTENANCE

Regular maintenance on an annual basis is recommended to maximize equipment efficiency and longevity. It is also important to check that your heat pump is not producing unnecessary noise due to loosened screws or worn-out bearings.

FOR MORE INFORMATION VISIT [ENERGYSAVENEWEST.CA](https://energysavewest.ca) OR CALL 604.515.3818

UNDERSTANDING SOUND POWER RATINGS & MINIMIZING DISTURBANCE

WHAT IS A HEAT PUMP SOUND POWER RATING?

The sound power rating is a laboratory-tested measurement of sound level in decibels (dB) that indicates the noise generated by equipment at full capacity.

The sound power ratings of heat pumps can vary by system, with most modern air-to-air heat pump outdoor units typically rated between 55 and 65 decibels. However, depending on the manufacturer and specific model, your heat pump may be quieter or louder.

WHERE DOES OUTDOOR UNIT NOISE COME FROM?

Noise from an outdoor unit is produced by the condenser fans and compressors. The fans generate a high frequency 'whirring' sound, which may be mitigated by surrounding structures. In contrast, the low-frequency noise created by the compressor can typically only be reduced at the source.

When purchasing a heat pump, look for the following features for reduced noise output:

- ▶ Variable speed fans and compressors
- ▶ Soft start and stop functions
- ▶ Nighttime/low sound modes
- ▶ Insulated compressors

WHERE CAN I LOCATE MY HEAT PUMP?

There are no restrictions on the location of outdoor units set by the City of New Westminster, provided that the [Noise Bylaw](#) requirements are met. However, it is important to ensure that your heat pump's outdoor unit does not obstruct parking or access to the building.

DO I NEED A BUILDING PERMIT TO INSTALL A HEAT PUMP?

For single-family homes and duplexes, a building permit is generally not required for heat pump installation. However, for installations in strata units, both a building permit and prior approval from the strata council are required. Additionally, an envelope engineer's review is needed due to exterior wall penetrations that affect the building envelope and fire separation. Depending on the scope of the work, your contractor may also need to obtain other permits, such as electrical or gas permits.

WHAT IF MY HEAT PUMP'S SOUND POWER RATING IS HIGHER THAN THE NOISE LIMIT?

Even if your equipment's sound power rating exceeds the noise limit of 45 to 55 dB, you can still install your heat pump as long as noise mitigation strategies are implemented to reduce the sound power rating.

The Noise Bylaw states, "When determining the noise or sound level from a source, the ambient or background noise or sound level shall be established at the appropriate position and during the relevant period of time wherever possible before taking sound measurements from the source." This means that the actual measured sound level on-site is likely lower than the lab-measured sound rating.

The Bylaw also specifies that "noise or sound measurements should, wherever possible, be made at a height of approximately one (1) metre and a distance of three (3) metres from any wall, buildings, or other reflecting structures with the microphone appropriately oriented." Therefore, the measured noise level is likely to be lower than the equipment's sound power rating.

If you remain concerned about the noise level, consider implementing noise mitigation strategies to further reduce the measured sound level.

WHAT ARE SOME NOISE MITIGATION STRATEGIES?

To minimize sound output levels, consult with your contractor about the optimal location for the outdoor heat pump unit and how its placement may affect noise levels.

If your heat pump is visible, it is likely that you will also hear it. Position your heat pump away from windows and property lines. Additionally, there are several noise reduction options you can consider, including but not limited to the following:

- ▶ Install a sound blanket on the compressor to dampen noise.
- ▶ Install the unit on a solid base such as a concrete pad or block with a vibration-absorbing mat or pads to reduce noise.
- ▶ Use barriers like fences, landscaping or decks to help disrupt the noise transmission to your home as well as your neighbours.
- ▶ Some manufacturers produce purpose-built acoustic enclosures to surround outdoor equipment while addressing airflow requirements.

FOR ADDITIONAL INSIGHT READ '[BETTER HOMES BC – ARE HEAT PUMPS NOISY?](#)'