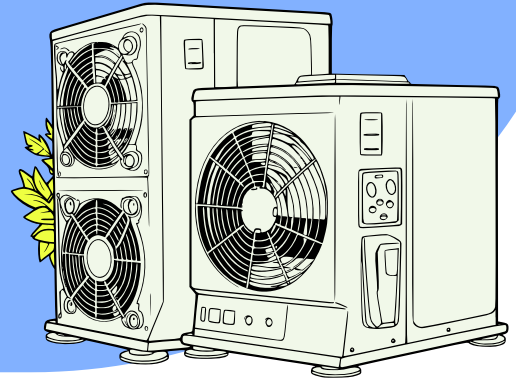


# HEAT PUMPS & NOISE

## A COMMUNITY MINDED INSTALLATION GUIDE

*westvancouver*



This guide outlines simple advice for heat pump installers and residents looking to purchase and install a heat pump to provide year-round heating and cooling in their home.

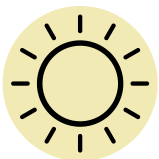
### This guide will help you to:

- determine an optimum outdoor location
- select a quiet heat pump system
- properly maintain your heat pump
- control and prevent noise travel

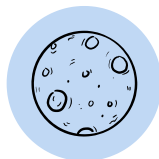
### DISTRICT OF WEST VANCOUVER NOISE BYLAW

DWV Noise Control Bylaw No. 4404, 2005 regulates residential noise types and limits depending on the time of day.

### WHAT ARE THE LIMITS IN RESIDENTIAL AREAS?



\*55dB



45dB

7am 6pm 7am

\*9am - 6pm on Sunday and Statutory Holidays, 'Limits' means exceeding Sound Levels prescribed in this Bylaw.

Properly locating a unit is critical to achieving infrastructure integration that limits potential impacts to neighbours.

Bylaw will only enforce violations when it is clear a unit is the source of noise over allowable limits.

## SELECTING THE RIGHT HEAT PUMP

### 1. SELECT A QUIET UNIT

Most manufacturers specify a **sound power rating**, a lab-tested decibel dB(A) measurement of the sound generated by a unit at full capacity. Aim for the lowest dB(A) rating to comply with municipal bylaws and mitigate disturbance to neighbours.

### WHAT HEAT PUMPS ARE THE QUIETEST?

Look for models with the lowest decibel ratings, and the following features:

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

### 2. SELECT PROPERLY SIZED EQUIPMENT

The mechanical designer should complete room-by-room load calculations to select an appropriately-sized system for the spaces that are to be heated/cooled. An oversized unit may 'short cycle' i.e. turn on and off more than necessary. This can result in excess noise and can reduce the life of the system.

Consider other energy efficient improvements with your heat pump installation. A less leaky house with more insulation requires less energy to heat and cool, and could help further reduce the size of the unit needed.



JUMP ON A NEW  
HEAT PUMP



# HEAT PUMPS & NOISE

## LOCATING THE HEAT PUMP

Most noise complaints are a result of locating the outdoor unit facing, or too close to neighbouring windows, bedrooms, or living areas. Consider the following unit placement to reduce noise travel:

1. **Locate as far away from the property line as possible.** Avoid the side yard in favour of the front or rear yard.
2. **Keep out of high travel and weather-exposed locations.** For example - the unit should not be under a roof drip line; condensation outlets should not drain on pathways; and the unit should not interfere with parking or walkway access.
3. **If you can see it, you can usually hear it.** Use existing barriers like fences, landscaping, or decks to break uninterrupted noise transmission to neighbours and to your own home. Keep the unit away from any neighbouring windows or openings (especially ground and upper-floor bedrooms).
4. **Mount the unit on the ground.** Install the unit on a solid base such as a concrete pad or block, with rubber pads or dampeners to further minimize vibration. Wall-mounted units are generally higher which could allow for easier unimpeded noise travel.
5. **Ensure sufficient air flow clearance.** While locating the unit underneath a deck, patio, or in a dedicated outdoor mechanical space can be a good option, heat pumps require access to clear outdoor air flow to maintain high efficiencies. Follow the manufacturer's instructions for best practices.
6. **Consider acoustic barrier products if a noise issue persists.** Heat pumps generate both high and low frequency noise.

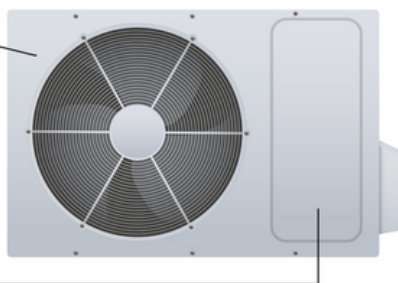
## HOW DO HEAT PUMPS MAKE NOISE?

### CONDENSER FAN

- High frequency "whirring"
- Directional noise (horizontal or vertical depending on your unit).

### COMPRESSOR

- Low frequency "drone"



High frequency sounds are reduced by structures, but lower frequencies may penetrate structures unless they are reduced at the source. Acoustic barriers like shrubs or sound dampening products may be necessary to further reduce noise issues.

## ADDITIONAL CONSIDERATIONS

- Locate the unit outside the drip-line of the roof
- Be careful of hard surfaces that may reflect sound towards your neighbours
- Have your heat pump installed by a certified technician
- Clean or change the air filter regularly
- Keep coils clear of dirt and debris

## MAINTAINING YOUR HEAT PUMP

Heat pumps use fans and motors to move and transfer heat efficiently. The noise produced by these devices can increase over time without periodic maintenance to replace worn parts such as bearings, or tighten loose screws that can cause rattling. Ask your contractor to provide you with an appropriate maintenance schedule.

## SELECTING A CONTRACTOR

- Seek a reputable heat pump contractor who will obtain the proper permits and install the equipment safely and correctly.
- Use [BC Hydro's List of Registered Contractors](#) to support CleanBC rebate eligibility.
- Discuss proper heat pump selection criteria above and ensure details are in writing before signing a contract.

By considering these recommendations, a new heat pump owner can experience many years of comfort and good neighbourly relations.

## FOR MORE INFORMATION VISIT

- <https://westvancouver.ca/business-development/building-development/building-permits-inspections/building-permits-single-family>
- <https://www.westvancouver.ca/business-development/building-development/building-permits-inspections/building-permits-multi>
- <https://jumponaheatpump.ca/>