Residential Mechanical Sound Level Compliance

Photo by John Skelton

Seattle Department of Construction & Inspections

SDCI Noise Abatement Group
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RESIDENTIAL MECHANICAL SOUND LEVEL COMPLIANCE

This presentation is focused on Residential Heat-Pump (HP) or Air-Conditioner (A/C) installations and will cover the following topics:

- What sound level does Seattle Municipal Code (SMC) Chapter 25.08 Noise Control require for my property?
- Common sound level compliance problems, and our suggested solutions to them.
- What happens if a noise complaint is filed against my installation?
- Next Steps
- City Resources available during planning and permitting.

SMC EXTERIOR SOUND LEVEL LIMITS

SMC 25.08.410 - Exterior sound level limits.

A. The exterior sound level limits are based on the Leq during the measurement interval, using a minimum measurement interval of 1 minute for a constant sound source, or a one-hour measurement for a non-continuous sound source. For sound sources located within the City, the exterior sound level limits are as follows:

District of Sound Source	District of Receiving Property		
	Residential (dB(A)LEQ)	Commercial (dB(A)LEQ)	Industrial (dB(A)LEQ)
Residential	55	57	60
Commercial	57	60	65
Industrial	60	65	70

SMC 25.08.420 - Modifications to exterior sound level limits

A. Between the hours of 10 p.m. and 7 a.m. during weekdays, and between the hours of 10 p.m. and 9 a.m. on weekends and legal holidays, the exterior sound level limits established by Section 25.08.410 are reduced by 10 dB(A) where the receiving property lies within a residential district of the City.

SMC EXTERIOR SOUND LEVEL LIMITS CONT.

- Using the chart from SMC 25.08.410, a Residential Source to a Residential Receiver would require a daytime sound level limit of **55dBA**.

- Including the 10dB drop in the allowable exterior sound level limits of SMC 25.08.420, the nighttime sound level limit is **45dBA** between 10:00 PM to 7:00 AM weekdays and 10:00 PM to 9:00 AM weekends and legal holidays.

COMMON SOUND LEVEL PROBLEMS

Excessive noise levels are generally caused by one or more of the following:

1) The equipment sound rating (per AHRI) is too high for the selected location.

2) The distance from the neighbor's property line to the unit is insufficient for compliance.

3) Lack of sound attenuating barrier (unit can be seen and heard from upper floors of neighboring property)

COMMON SOUND LEVEL PROBLEMS - 1

The equipment sound rating is too high for the selected location.

- Change the equipment to a quieter model or install the manufacturers recommended “quiet package”.
- “quiet package” (if available) include compressor blankets, quieter fan blades, etc.
- Locating the equipment further away from the property line will reduce the noise levels and will limit complaints from neighbors.

COMMON SOUND LEVEL PROBLEMS - 2

The distance from unit to the property line is insufficient for compliance with SMC.

- This is typically a problem for H/P's and A/C's installed in "minimum" (3') side yards.
- Front or rear yards are a better choice for H/P installation.
- Installing the unit facing the street or alley typically will provide the required distance to the neighboring property line.

COMMON SOUND LEVEL PROBLEMS - 3

Lack of sound attenuating barrier (Unit is visible and can be heard from the upper floors of the neighboring property line.

- Blocking line of sight with sound attenuating barrier can provide a predictable reduction in noise levels.
- Using recesses in the structure can be very effective in shielding the unit from view and reducing the sound levels at the property line.
- Cantilevering the top of barriers away from the neighbor can increase its virtual height and performance.
- Moving the equipment and the barrier further away from the property line will reduce the angle to the higher floors of the neighboring home and increase the effectiveness of the barrier.

NOISE COMPLAINT – RESIDENTIAL A/C OR HP

What happens if the City receives a noise complaint about a mechanical equipment installation?

Answer: SDCI reviews the Refrigeration permit history at the address provided. We review whether or not a noise advisory was done during the SDCI inspection process.

A) If a noise advisory was done, we respond to the complainant with that information. A sound level compliance measurement may be required.

B) If a noise advisory wasn't done, we would schedule a site visit and take a sound level compliance measurement.

* If a noise review was approved prior, that does not mean it will be in compliance for the life of the equipment. A site visit including compliance measurement may be required at anytime if a complaint is received.

NEXT STEPS IN PLANNING YOUR PROJECT

- If a refrigeration permit has been applied for, SDCI Noise Abatement can review your proposed equipment and location for compliance with the SMC exterior sound level limits. Feedback will be given but no pre-approvals will be granted.

* If an **A/C** installation only meets the daytime sound level limit. Then an ***A/C User Agreement*** could be signed and notarized. That agreement states the homeowner understands their installation does not the meet the SMC nighttime sound level limit of 45dBA, and they agree not to run it during the overnight hours. Overnight hours are defined in SMC as 7am-10pm weekdays, and 9am-10pm weekends and legal holidays.

CITY OF SEATTLE RESOURCES

SDCI Noise Abatement Group

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- John.thomas@seattle.gov - 206-684-8449

Links to additional project planning resources:

https://www.seattle.gov/documents/Departments/SDCI/Codes/NoiseTipsForSitingEquipment.pdf

https://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/noise-code