

Battery Energy Storage Systems (BESS/ESS) and NYC Noise Code

1/13/25

Introduction

Battery storage is a technology that enables power system operators and utilities to store energy for later use.¹ This memorandum describes how the New York City Noise Code applies to such energy storage systems. For purposes of this memo, such systems are referenced as “BESS.”

NYC Noise Code Regulations

Sections 24-227 and 24-218

There are two sections of the Noise Code that will apply to all BESS. Based upon the assumption that all BESS will include circulation devices such as fans, the first section is 24-227. This section of the Noise Code regulates noise from circulation devices such as fans and can only be enforced from within a residential dwelling unit (not a commercial property). A circulation device is defined in the Noise Code as any device which circulates a gas or fluid, including but not limited to any air conditioner, pump, cooling tower, fan or blower. Noise Code Section 24-203(17).

The second section is 24-218, which regulates unreasonable noise and would apply, for example, to humming sounds from electrical equipment including transformers/inverters. This section would not apply to circulation devices such as fans. Measurements may be taken from the public right of way or within residential dwelling units. Unreasonable noise is defined in the Noise Code as any excessive or unusually loud sound that disturbs the peace, comfort or repose of a reasonable person of normal sensitivities, injures or endangers the health or safety of a reasonable person of normal sensitivities or which causes injury to plant or animal life, or damage to property or business. Noise Code Section 24-203(62).

The applicable provisions of § 24-227 that set the standards for new circulation devices are as follows:

➤ § 24-227 Circulation devices.

(a) No person shall operate or permit to be operated a circulation device in such a manner as to create a sound level in excess of 42 dB(A) when measured inside a

¹ See NYC Fire Code Section 202 for the definition of Energy Storage System, Stationary.
https://www.nyc.gov/assets/fdny/pdfviewer/viewer.html?file=chapter-2-2022.pdf§ion=firecode_2022

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receiving property dwelling unit. The measurement shall be taken with the window or terrace door open at a point three feet from the open portion of the window or terrace door.

Comment: This section is only applicable if there is a single device (e.g. fan.) The ambient level must be measured when the device is turned off. When the ambient level is at or below 42 dB(A), the sound level is not permitted to exceed 42 dB(A). If the ambient level is above 42 dB(A), then a 4 dB(A) increment above the ambient is the maximum decibel level permitted. For example, if the ambient level is 43 dB(A) then a reading of 48 dB(A) would constitute a violation of this section of the Noise Code. 47 dB(A) would be permitted, but 48 dB(A) is one decibel above the limit.

(b) On and after the effective date of this section, when a new circulation device is installed on any building lot or an existing device on any building lot is replaced, the cumulative sound from all circulation devices on such building lot owned or controlled by the owner or person in control of the new device being installed or the existing device being replaced shall not exceed 45 dB(A), when measured as specified in subdivision a of this section. For a period of two years after the effective date of this section, this subdivision shall not apply to the replacement of a circulation device that was installed on any building lot prior to the effective date of this section by a device of comparable capacity.

Comment: This section is applicable to more than one device (e.g. fans.) The ambient level must be measured when the devices are turned off. When the ambient level is at or below 45 dB(A), the cumulative sound is not permitted to exceed 45 dB(A). If the ambient level is above 45 dB(A) then a 4 dB(A) increment above the ambient is the maximum decibel level permitted. For example, if the ambient level is 46 dB(A) then a reading of 51 dB(A) would constitute a violation of this section of the Noise Code. 50 dB(A) would be permitted, but 51 dB(A) is one decibel above the limit.

The applicable provisions of § 24-218 that set for the standards for unreasonable noise are as follows:

➤ § 24-218 General prohibitions.

(a) No person shall make, continue or cause or permit to be made or continued any unreasonable noise.

(a-1) No person shall make, continue or cause to permit or be made or continued any unreasonable noise:

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(1) for any commercial purpose or during the course of conducting any commercial activity; or

(2) through the use of a device, other than a device used within the interior living space of an individual residential unit, installed within or upon a multiple dwelling or a building used in part or in whole for non-residential purposes.

(b) Unreasonable noise shall include but shall not be limited to sound, attributable to any device, that exceeds the following prohibited noise levels:

(1) Sound, other than impulsive sound, attributable to the source, measured at a level of 7 dB(A) or more above the ambient sound level at or after 10:00 p.m. and before 7:00 a.m., as measured at any point within a receiving property or as measured at a distance of 15 feet or more from the source on a public right-of-way.

(2) Sound, other than impulsive sound, attributable to the source, measured at a level of 10 dB(A) or more above the ambient sound level at or after 7:00 a.m. and before 10:00 p.m., as measured at any point within a receiving property or as measured at a distance of 15 feet or more from the source on a public right-of-way.

(3) Impulsive sound, attributable to the source, measured at a level of 15 dB(A) or more above the ambient sound level, as measured at any point within a receiving property or as measured at a distance of 15 feet or more from the source on a public right-of-way. Impulsive sound levels shall be measured in the A-weighting network with the sound level meter set to fast response. The ambient sound level shall be taken in the A-weighting network with the sound level meter set to slow response.

(c) Notwithstanding the provisions of subdivision b of this section, where a particular sound source or device is subject to decibel level limits and requirements specifically prescribed for such source or device elsewhere in this code, the decibel level limits set forth in this section shall not apply to such sound source or device.

Comment: Ambient readings must be taken when the device or devices are turned off. Determination of whether there is a violation of this section would depend upon the incremental difference between the ambient and the source's noise level. There is no "absolute" maximum noise level that may not be exceeded, for this section of the Noise Code.

Section 24-232

While sections 24-227 and 24-218 would apply to all BESS, section 24-232, would be applicable only if the BESS is not accessory to the residential portion(s) of a building. Section 24-232 provides as follows:

➤ § 24-232 Allowable decibel levels-octave band measurement.

(a) No person shall cause or permit a sound source operating in connection with any commercial or business enterprise to exceed the decibel levels in the designated octave bands shown below as measured within a receiving property as specified therein.

Octave Band	Maximum Sound Pressure Levels (dB) as measured within a receiving property as specified below
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[Table with standards has been removed for purposes of this memo's readability.]

(b) All sources that are within the A-scale limits prescribed by any other section of this code must also comply with the octave band decibel levels as specified herein. Compliance with this section does not constitute a defense to violation of decibel limits set by any other section of this code.

(c) Measurements performed on residential property shall not be taken in non-living areas such as closets and crawlspaces.

(d) This section shall not apply to impulsive sound, music or construction devices or activities.

(e) This section shall not apply to any utility structure in existence prior to January 1, 2004. For the purposes of this subdivision the term "utility structure" means any electric substation owned or operated by an electric, gas, or steam utility subject to the jurisdiction of the New York state public service commission.

A non-residential battery energy storage system, regardless of whether it is connected to public infrastructure, is not exempt from section 24-232.

Comment: The ambient level must be measured when the device is turned off. A 4dB increment is allowed only when the ambient level is above the number in the chart listed for that octave band.

Q & A

1. When does Section 24-218 apply to BESS?

ANSWER: If the BESS has a circulation device, and no access to a dwelling unit occurs for purposes of enforcement under section 24-227, then the provisions of section 24-218 will be applied. Or, if the BESS has no circulation device, then the provisions of section 24-218 will be applied.

2. How should ambient sound levels be measured for the purposes of BESS compliance?

ANSWER: Section 24-203(6) of the Noise Code provides a definition of ambient sound:
“(6) **Ambient sound** means the sound level at a given location that exists as a result of the combined contribution in that location of all sound sources, excluding the contribution of a source or sources *under investigation for violation of this code* [emphasis added] and excluding the contribution of extraneous sound sources.”

Ambient levels are measured at the time of the DEP’s inspection, as that is the time that the source is under investigation for violation of the Code. Measuring averages during seasons and hours may be useful for BESS developers’ modeling purposes, but that is not how the Noise Code is applied for enforcement purposes.

3. Do BESS noise levels need to be measured from both within a receiving property and from 15 feet away on public right of way to demonstrate compliance?

ANSWER: Under section 24-218, noise levels are measured from any point within a receiving property (indoors or outdoors) OR from a distance of 15 feet or more from the source on a public right of way. For a developer’s modeling or monitoring purposes, a conservative approach would be to measure from both.

4. When does § 24-227: “Circulation Devices” apply to BESS?

- a. Does this only apply to BESS whose noisiest component is a fan², not an Inverter?

ANSWER: Yes. As measured from inside a dwelling unit, the ambient level will be compared to the level with the fan/fans on. NOTE: For purposes of applying the requirements of section 24-218, if the inverters were to remain on during this period (assuming that they can remain on

² This section would apply not only to the fans but to any noise coming from an exhaust system.

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when the fans are off) then the ambient level would be compared to the noise from the inverters.

b. Does this apply if ambient noise levels exceed 42 dB(A)?

ANSWER: When the ambient level is at or below 42 dB(A), the sound level is not permitted to exceed 42 dB(A). If the ambient level is above 42 dB(A), then a 4 dB(A) increment above the ambient is the maximum decibel level permitted.

C. Does this apply if there are no receiving dwelling units nearby, such as in a Manufacturing district?

ANSWER: The zoning district in which the dwelling units are located is irrelevant.

5. Does Section 24-227 take into account ambient noise?

ANSWER: The absolute numbers in section 24-227 are only applied when the ambient level is equal to or lower than the absolute number. Pursuant to 24-227(a), when the ambient level is at or below 42 dB(A), the sound level is not permitted to exceed 42dB(A). If the ambient level is above 42 dB(A), then a 4 dB(A) increment above the ambient is the maximum decibel level permitted. For example, if the ambient level is 43 dB(A) then a reading of 48 dB(A) would constitute a violation of this section of the Noise Code. 47 dB(A) would be permitted, but 48 dB(A) is one decibel above the limit. The same concept applies to 24-227(b), but the absolute number is 45 dB(A), not 42 dB(A.)

6. Does the octave band table in Sec. 24-232 apply?

ANSWER: Yes, the octave band table in section 24-232 applies to non-residential BESS, but it is less likely to be applied than sections 24-227 or 24-218. If the ambient level is above the maximum sound pressure levels for the octave band listed within the chart in section 232, then a 4 dB increment above the octave band is permitted.