

Wind Law – Enforcement: to add to the replacement text for the present **§17, Noise Standards and Setbacks for Wind Energy Conversion Systems**

30 November 2010

NEW TITLE: **§17, Noise Standards and Enforcement for Wind Energy Conversion Systems**

- G. Enforcement shall be by measurement. The town, using the services of the town engineer, shall be responsible for and shall contract for any enforcement measurements. The contractor shall be a member of the National Council of Acoustical Consultants (NCAC) with a specialty in environmental noise, and the consultant's project leader shall be a Member, Board Certified of the Institute of Noise Control Engineering of the USA.

The duration of any WECS measurement shall be 30 minutes. During the 30-minute period, the equivalent level (LEQ) generated by the WECS shall be measured. The measurement location shall be at any residential property as given in Clause A, and at any point on this residential property at which the background community noise may be measured per Clause C. Measurements shall be entirely within the appropriate time period, e.g., during nighttime for nighttime enforcement, and the WECS shall operate continuously during the 30-minute measurement.

The microphone shall be situated between 4 and 4.5 ft above the ground. Measurements shall be conducted within the general provisions of ANSI S1.13-2005, and using a meter that meets at least the Type 2 requirements of ANSI S1.4 and S1.4A-1985 (R2006). The instrument noise floor shall be at least 10 dB below the lowest level measured.

A calibrator shall be used as recommended by the manufacturer of the sound level meter.

The fundamental level of the calibrator and the sensitivity of the sound level meter shall be verified annually by a laboratory using procedures traceable to the National Institute of Standards and Technology.

A wind screen shall be used as recommended by the sound level meter manufacturer.

An anemometer shall be used and shall have a range of at least 5 to 15 miles per hour (2.2 to 6.7 meters per second) and an accuracy of at least ± 2 miles per hour (± 0.9 meters per second).

A compass shall be used to measure wind direction to at least an 8-point resolution: N, NE, E, SE, S, SW, W, NW.

Measurements shall be A-weighted, or, alternatively, in one-third-octave bands. For A-weighted measurements, the uncertainty (tolerance) of measurements shall be 1 dB for a type 1 meter and 2 dB for a type 2 meter. For one-third-octave-band measurements, the meter shall meet the type 1 requirements of ANSI S12.4 and S12.4a-1985 (R2006), and the uncertainty of measurements shall be 5 dB in each and every one-third-octave band.

For all measurements, the surface wind speed, measured at a 1.5-m height, shall be less than 5 m/s.

All measurements shall be corrected for the background on the basis of mean square pressures. For one-third-octave-band measurements, each one-third-octave band shall be individually corrected for the background in that band. That is, both the WECS (which always includes the background) and the background alone shall be measured in each one-third-octave band. For either A-weighted data or one-third-octave band data, the background shall be measured during a *like period* when the WECS is not operating, and Table II shall be used to correct for the background, by band in the case of one-third-octave-band data. A *like period* includes the same or like location, like surface wind speed and direction, like time of day and day-of-the-week (e.g., Monday-Thursday night, Friday or Saturday night, or Sunday night), etc.

After correction, when using data measured in one-third-octave bands, all remaining bands, excluding bands set equal to zero, shall be converted to A-weighted bands and then shall be summed on a mean square pressure basis to establish the WECS background-corrected A-weighted sound level.

Table II. Correction in dB that shall be subtracted from the WECS sound level measurement (which always includes the background sound level) because of the background sound so that the result is just the sound level of the WECS alone (See Note 1 below).

Δ , difference (dB)	< 3	3 - 4	5 - 6	7 - 10	>10
K, correction (dB)	Notes 2, 3	3	2	1	0

Notes:

1. This table provides a simple correction to measurements of WECS sound in the presence of the background. For example, the sound of a WECS (along with the background sound which is always present) is measured as 40 dB(A), and the background sound level alone (without the WECS) is measured as 34 dB(A). Then Δ , the difference in decibels is 6 dB (first row, third column), and the corresponding correction shall be 2 dB (second row, third column). That is, 2 dB shall be **subtracted** from the measured 40 dB(A) level, and it is adjusted to and reported as 38 dB(A). The same procedure is followed in each band for one-third-octave-band data.
2. When using directly measured A-weighted levels, if the difference between the WECS sound level (plus background sound level) and the background sound level alone is less than 3 dB, then it shall not constitute a violation of this chapter.
3. When using measured one-third-octave-band data, if the difference between the WECS sound pressure level (plus background sound pressure level) and the background sound pressure level alone, each in the same one-third-octave band, is less than 3 dB, then the WECS level for that one-third-octave band shall be set to zero.

The report shall include a sketch of the site showing distances to the structure(s), to the property line, etc., and several photographs showing the structure(s), the property, and the acoustical instrumentation. All instrumentation shall be listed by manufacturer, model, and serial number. This instrumentation listing also shall include the A-weighted noise floor and the one third octave band noise floors, if utilized, for each sound level meter used.