

**APPENDIX 16A:**  
**FITZWILLIAM COMMERCIAL AND INDUSTRIAL NOISE ORDINANCE**

## **COMMERCIAL AND INDUSTRIAL NOISE CHAPTER 130**

**1. PURPOSE:** This ordinance is enacted to preserve quality of life, peace and tranquility, and protect the natural environment, and the health and welfare of Fitzwilliam residents. Residents shall be protected from exposure to harmful and excessive noises emitted from commercial and industrial development by regulating noise levels and sound quality. This ordinance establishes the acoustic baseline, background sound levels for project design purposes, and limits the maximum noise level emissions for commercial and industrial developments.

### **2. APPLICABILITY AND LIMITATIONS:**

a. This section applies to all commercial and industrial development noise(s) generated by operating equipment and devices that can be detected by the human ear on another property. Commercial and industrial development includes all facilities used for: commerce, manufacturing of goods, transportation of goods or materials (including all means of transportation), office use, generation and bulk transmission of energy resources and provision of services.

b. The following noise sources are specifically excluded from this ordinance:

- ☐ Residential properties including a home business on the residential property
- ☐ Agricultural use
- ☐ Forestry use
- ☐ Vehicle backup alarms & safety alarms, emergency equipment
- ☐ Short term incidental noise (e.g. lawn mowing or snow removal)
- ☐ Excavation at licensed gravel pits
- ☐ Residential construction (when constructed at the permanent site of the residence)

c. Any alteration, expansion, modification, or increase in any existing commercial or industrial development as defined above shall require compliance with this ordinance. Further, any alteration, expansion, or modification in existing site conditions, including the removal of natural or man-made sound barriers, shall comply with this ordinance.

**3. METHOD:** This ordinance adopts International Standards Organization (ISO 1996-1:2003)<sup>1</sup> as summarized in Table 1. This standard estimates community response by the increase in the overall A-weighted (dBA) noise level. This ordinance also applies response corrections (in units of dBA) for objectionable sound level and quality.

**Table 1 – ISO 1996-1:2003**

<b>dBA Above Background Ambient Noise Level Criterion</b>	<b>Estimated Community Response</b>	
0	None	No Observed Reaction
5	Little	Sporadic Complaints
10	Medium	Widespread Complaints
15	Strong	Threats of Community Action
20	Very Strong	Vigorous Community Action

Note: ISO 1996-1:2003, Acoustics -- Description, measurement and assessment of environmental noise -- Part 1: Basic quantities and assessment procedures

**4. BACKGROUND BASELINE:** The Town of Fitzwilliam is situated in a rural area and is therefore a quiet community. The Town of Fitzwilliam has defined the acoustic baseline as follows.

**Table 2 – Town of Fitzwilliam Background Sound Levels**

<b>Zoning District</b>	<b>Day</b>	<b>Night</b>
	(from 7:00 AM to 10:00 PM)	(from 10:00 PM to 7:00 AM)
<b>Town Center</b>	38 dBA (1 hour L90)	25 dBA (1 hour L90)
<b>Rural Residential District</b>	30 dBA (1 hour L90)	24 dBA (1 hour L90)

Note: L90 is sound level exceeded 90% of the noise measurement interval

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<sup>1</sup> Original data is from "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," Environmental Protection Agency (1974)

**5. NOISE LIMITS:** All commercial and industrial noise emissions shall not exceed the following noise limits anywhere at any time on another property unless the owner of that property has granted a noise easement to the facility. As part of the application the developer shall provide modeling of the anticipated noise emissions. The developer may at its discretion, conduct twenty-four hour noise monitoring at the property line of the proposed site to establish the lowest daytime and nighttime ambient L90 values. Operation L10 noise levels shall not exceed the ambient L90 values by 10 dBA or more.

**Table 3 – Town of Fitzwilliam Operational Noise Limits**

<b>Zoning District</b>	<b>Maximum Noise Limit Day (from 7:00 AM to 10:00 PM)</b>	<b>Maximum Noise Limit Night (from 10:00 PM to 7:00 AM)</b>
<b>Town Center</b>	48 dBA (1 hour L10)	35 dBA (1 hour L10)
<b>Rural Residential District</b>	40 dBA (1 hour L10)	34 dBA (1 hour L10)

Note: L10 is sound level exceeded 10% of the time

**6. SOUND QUALITY CORRECTIONS:** When objectionable sound quality is present, or may become present as a result of the developments, maximum noise level limits on Table 3 shall be reduced as shown in Table 4. These penalties are cumulative up to a maximum of -10 dB.

**Table 4– Town of Fitzwilliam Sound Quality Corrections**

<b>Sound Category</b>	<b>Specific Description</b>	<b>Method</b>	<b>Reduction to Maximum Limit</b>
<b>a. Tone(s)1</b>	1 Steady Tone Fluctuating Multiple Tones	ANSI S1.13; 1/3 Octave Band ANSI S1.13; Narrow Band 5dBA ANSI S1.13; Narrow Band	-5 dBA
<b>b Low Frequency</b>	20 Hz to 1000 Hz	dBC minus dBA >15 dB	-5 dBA
<b>c Infrasound [2]</b>	≤1.0 Hz to 20 Hz	dBL minus dBC >15 dB	-5 dBA

[1] A “pure tone” is defined by the EPA (“Model Community Noise Control Ordinance”, U. S. Environmental Protection Agency, Report 550/9-76-003, September 1975) as a 1/3 octave band level that exceeds the average of the adjacent bands by the following amounts: 15 dB for center frequencies less than or equal to 125 Hz, 8 dB for center frequencies between 160 and 400 Hz, and 5 dB for center frequencies above 500 Hz. Field experience indicates that a more realistic definition of pure tone is 8 dB for center frequencies less than or equal to 125 Hz, 4 dB for center frequencies between 160 and 400 Hz, and 3 dB for center frequencies above 500 Hz.

[2] e.g. Wind Turbine

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**7. PLANNING BOARD RESPONSIBILITY:** The maximum noise level (L10) increase is 10 dB based on the zoning district baseline background L90. The Planning Board shall have discretion to reduce the 10 dB increase to 7 dB when there is potential for project future expansion or for another nearby development.

**8. NOISE COMPLIANCE:** Pre- and post-construction compliance noise measurements are the financial responsibility of the project owner and shall be independently performed by a qualified professional when directed by Code Enforcement, Planning Board, or Zoning Board. Compliance noise measurements shall not exceed the stipulated noise limits herein and shall include Project Sound Quality Corrections or other noise mitigation when warranted and shall be imposed at the discretion of the appropriate municipal authority.

**9. NOISE MEASUREMENTS:** All noise measurements shall (must) exclude/account for contributions from wind on microphone, tree/leaf rustle, flowing water, and natural sounds such as tree frogs and insects.

- a. All acoustic terminology, noise predictions and sound measurements shall comply with recognized international standards (ANSI, IEC & ISO).