

**CORPORATION OF THE TOWN OF PLYMPTON-WYOMING**

**BY-LAW Number 62 of 2014**

**Being a by-law to provide for the regulation of wind turbine noise within the  
Town of Plympton-Wyoming**

WHEREAS section 9 of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS subsections 11(2) and 11(3) of the *Municipal Act, 2001* provides that a municipality may pass by-laws respecting: in paragraph 5 of s.11(2), Economic, social and environmental well-being of the municipality; in paragraph 6 of s.11(2), Health, safety and well-being of persons; in paragraph 7 of s.11(2), Services and things that the municipality is authorized to provide under subsection (1); in paragraph 8 of s.11(2), Protection of persons and property; in paragraph 9 of s.11(3), Animals; in paragraph 7 of s.11(3), Structures including fences and signs;

AND WHEREAS subsection 14(1) of the *Municipal Act, 2001* provides that a by-law is without effect to the extent of any conflict with, (a) a provincial or federal Act or a regulation made under such an Act; or (b) an instrument of a legislative nature, including an order, licence or approval, made or issued under a provincial or federal Act or regulation;

AND WHEREAS subsection 14(2) of the *Municipal Act, 2001* provides that, without restricting the generality of subsection 14(1) of the *Municipal Act, 2001*, there is a conflict between a by-law of a municipality and an Act, regulation or instrument described in that subsection if the by-law frustrates the purpose of the Act, regulation or instrument.

AND WHEREAS section 128 of the *Municipal Act, 2001* provides that a municipality may prohibit and regulate with respect to public nuisances, including matters that, in the opinion of Council are or could become public nuisances;

AND WHEREAS section 129 of the *Municipal Act, 2001* provides that, without limiting sections 9 and 10 of the Act, a municipality may: (a) prohibit and regulate with respect to noise, vibration, odour, dust and outdoor illumination, including indoor lighting that can be seen outdoors; and (b) prohibit the matters described in clause (a) unless a permit is obtained from the municipality for those matters and may impose conditions for obtaining, continuing to hold and renewing the permit, including requiring the submission of plans;

AND WHEREAS in the opinion of Council of the Corporation of the Town of Plympton- Wyoming, certain kinds of noise are or could become a public nuisance;

AND WHEREAS section 444 of the *Municipal Act, 2001* provides that the municipality may make an order requiring the person who contravened the by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to discontinue the contravening activity, and any person who contravenes such an order is guilty of an offence;

AND WHEREAS section 447.8 of the *Municipal Act, 2001* provides that a by-law of a municipality made under this or any other Act may, (a) adopt by reference, in whole or in part, with such changes as the council considers appropriate, any code, standard, procedure or regulation as it stands at a specific date, as it stands at the time of adoption or as amended from time to time; and (b) require compliance with any code, standard, procedure or regulation so adopted;

AND WHEREAS the people have a right to and should be ensured an environment free from unusual, unnecessary, or excessive sound (i.e. noise) or vibration which may degrade the quality and tranquility of their life or cause nuisance; and

AND WHEREAS it is the policy of the Council to reduce and control such noise or vibration;

NOW THEREFORE, the Council of the Corporation of the Town of Plympton-Wyoming enacts as follows:

1 Interpretation

In this by-law:

"A-weighted Sound Pressure Level" means the Sound Pressure Level modified by application of an A-weighting network. It is measured in decibels, A-weighted, and denoted "dBA";

"A-weighting" means the frequency weighting characteristic as specified in the International Electrotechnical Commission (IEC) Standard 61672, and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound. It is denoted as "A";

"Decibel" means a dimensionless measure of Sound Level or Sound Pressure Level, denoted as dB;

"Equivalent Sound Level" is the value of the constant sound level which would result in exposure to the same total A-weighted energy as would the specified time-varying sound, if the constant sound level persisted over an equal time interval. It is denoted  $L_{eq}$  and is measured in dB A-weighting (dBA); Other weightings including un-weighted time varying sound can also be expressed as equivalent sound levels.

"Infrasonic Barometric Pressure Disturbance" (IBPD) refers to Barometric Pressure Disturbances inside any home in the frequency range of from 0.2 Hz to 20Hz.

"Infra-sound" means sound with energy in the frequency range of 0-20 Hz. It is often considered to be inaudible for most people unless at a relatively high amplitude but has been shown to be perceived via other senses at lower amplitudes especially for complex non-steady, non-sinusoidal pressure waves. Modern utility scale wind turbines produce an infrasonic blade passage tone typically centered at a frequency of 1 Hz or lower. [E.G. a wind turbine with hub rotation of 10 rpm would have a blade pass frequency of 0.5 Hz.] The most significant noise inside of a dwelling occurs from tones produced by the rotating blades of the wind turbine in the frequency range between 0.25 Hz and 10 Hz. Most of this energy is below 3 Hz with sound pressures increasing as frequency decreased down to the blade pass frequency.

"Inhabitants" means one or more persons who reside in the Town of Plympton-Wyoming;

"Low Frequency Noise" (LFN) refers to sounds with energy in the lower frequency range of 20 to 200 Hz.

"Municipality" means the geographic area whose Inhabitants are incorporated as the Corporation of the Town of Plympton-Wyoming;

"Noise" means unwanted sound;

"Proponent" means a person who has been issued a Renewable Energy Approval for a Wind Facility;

"Renewable Energy Approval or REA" means an approval authorizing the construction, installation, operation, use and retiring of a Wind Facility, issued pursuant to section 47.5 of the *Environmental Protection Act*, R.S.O. 1990, Chapter E.19;

"Sound" is an oscillation in pressure, stress, particle displacement or particle velocity, in a medium with internal forces (e.g. elastic, viscous), or the superposition of such propagated oscillations, which may or may not cause an auditory sensation;

"Sound Level" means the A-weighted Sound Pressure Level;

"Sound Level Limit" is the limiting value described in terms of the one hour A-weighted Equivalent Sound Level;

"Sound Pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given location. The unit of measurement is the micro pascal ( $\mu\text{Pa}$ );

"Sound Pressure Level" means twenty times the logarithm to the base 10 of the ratio of the effective pressure ( $\mu\text{Pa}$ ) of a sound to the reference pressure of 20  $\mu\text{Pa}$ ;

"Wind Facility" means a renewable energy generation facility at which wind is used to generate electricity through the use of one or more Wind Turbines and associated infrastructure;

"Wind Turbine" means (a) the structure that supports an electrical generator used to convert wind energy into electricity, (b) the electrical and mechanical equipment, including electrical generators, used to convert wind energy into electricity, and (c) the base and foundation to which the structure mentioned in clause (a) is attached;

## 2. Regulation

(a) A Proponent shall ensure that a Wind Facility for which the Proponent has been issued an REA, is operated in compliance with the REA, specifically the Sound Level Limits stated in the REA.

(b) A Proponent shall submit an electronic copy of final versions of the following to the clerk of the Municipality at the same time as it is being submitted to an office of the Ontario Ministry of the Environment:

(i) Acoustic Audit Report – Immission, if one is required by an REA issued to the Proponent for a Wind Facility;

(ii) Acoustic Audit Report – Emission, if one is required by an REA issued to the Proponent for a Wind Facility;

(iii) A record of any complaint alleging an Adverse Effect due to noise caused by the operation of a Wind Facility operated by the Proponent pursuant to an REA, if such record is required to be created and provided to an office of the Ontario Ministry of the Environment by the REA.

(c) A Proponent shall provide the clerk of the Municipality with a toll-free number and email address for noise complaints at least 60 days prior to generating electricity for the first time, at the Wind Facility for which the Proponent has been issued an REA.

- (d) No Wind Facility shall make, cause or permit the emission of Infra-sound in the frequency between 0 Hz and 20 Hz. Infra-sound is deemed to be excessive when measurements inside of dwellings, using instruments suitable for sound pressure measurements at frequencies of 0.1 Hz to 20 Hz identify blade pass tones and their harmonics, present during wind turbine operation, when the following conditions are present and limits are exceeded:
- i) Tests inside a dwelling at locations associated with complaints show that there is a tone at the blade pass frequency (or its harmonics) during periods of wind turbine operation that are not present when wind turbines are not operating confirms the presence of wind turbine blade pass tones and/or harmonics.
  - ii) If the blade pass tone, or any of its harmonics, produce a sound pressure level of 50 dB or more when energy averaged over a period of one to several minutes or more, and,
  - iii) The crests (peaks) of the sound pressure exceed this average by 10 dB or more.
- (e) No Wind Facility shall make, cause or permit the emission of LFN, where the difference between a C-weighted sound level and an A-weighted sound level is greater than 15 decibels at any measurement point inside or outside an occupied structure, or the difference between an un-weighted sound level (including infrasound from 0.1 Hz and above, using an instrument rated to measure infrasound down to 0.1 Hz) and an A-weighted sound level is greater than 20 decibels at any such measurement point.
- (f) No Wind Facility shall make, cause or permit IBPD, where any cyclic pressure disturbance having amplitude at any given frequency in the stated frequency range exceeds 2 milli-Pascal's RMS (0.002 Pascal RMS) for a repeatable duration of 10 seconds or more in any 40-second period:
- i) Given frequency: Means an identifiable repetition rate, which is continuous for the 10-second measurement, having at least 2 full cycles that exceed +/- 2.828 milli-Pascal peak (=0.002 Pa RMS). The IBPD measurements shall be made with doors and windows closed. Equivalence: 0.002 Pascal RMS is equivalent to 40dBZ.
  - (ii) Measurement Approach: Micro-Barometer transducers may be used in conjunction with modern digital Oscilloscopes and Spectral Analysis equipment to perform this measurement. Some special purpose microphones may also be used (Infrasonic microphones). Standard noise measurement meters cannot generally be used to make this measurement.
  - (iii) Source Identification: The source of IBPD can be identified as required by incorporating Cross-Correlation techniques available in modern spectral analysis equipment, in conjunction with optical or other correlation devices or remote transducers.
- (g) Without limiting the generality of the foregoing, no Wind Facility shall emit or cause or permit the emission of a nuisance resulting from any act listed herein, within the geographical limits of the Town of Plympton-Wyoming, except as permitted by Section 3.

(h) The Wind Facility and associated equipment shall, at all times, conform to Ministry of Environment Noise Guidelines. An analysis, prepared by a qualified acoustician, shall be presented to demonstrate compliance with these noise standards and be consistent with all Ministry of the Environment Noise Guidelines then in force.

3. Exemptions Granted by the Municipality

(1) Application to the Municipality

Notwithstanding anything contained in this by-law, any person may make application to the Municipality for an exemption from any of the provisions of this by-law with respect to any source of sound and the Municipality may refuse to grant any exemption or may grant the exemption applied for or any exemption of lesser effect and any exemption granted shall specify a time period during which it is effective and may contain such terms and conditions as the Municipality deems appropriate.

(2) Details of Application to the Municipality

The application mentioned in subsection (1) shall be made in writing, in the form attached as Schedule 1, and shall contain:

- (a) The name, address and telephone number of the applicant;
- (b) A description of the source and location of sound in respect of which exemption is sought;
- (c) A statement of the particular provision or provisions of this by-law from which the exemption is sought;
- (d) The period of time, of a duration not in excess of six months, for which the exemption is sought;
- (e) The reasons why the exemption should be granted;
- (f) A statement of the steps, if any, planned or presently being taken to bring about compliance with the by-law;

(3) Breach

Any breach of the terms or conditions of an exemption granted by the Municipality that is caused or permitted by the applicant shall render the exemption null and void.

4. Severability

If a court of competent jurisdiction should declare any section or part of a section of this by-law to be invalid, such section or part of a section shall not be construed as having persuaded or influenced Council to pass the remainder of the by-law and it is hereby declared that the remainder of the by-law shall be valid and shall remain in force.

5. Offence and Penalties

- (a) Every person who contravenes any provision of this by-law is guilty of an offence.
- (b) A person who is convicted of an offence under this by-law is liable, for each day or part of a day that the offence continues, to a minimum fine of \$500 and a maximum fine of \$10,000, and the total of all daily fines may exceed \$100,000.
- (c) A person who is convicted of an offence under this by-law is also liable to pay all reasonable costs incurred by the Municipality in conjunction with

obtaining the conviction of that person. With respect to the costs of acoustical testing performed to obtain the conviction, the costs will only be considered reasonable if the acoustical testing was performed under the supervision of an engineer licensed to practice engineering in the Province of Ontario who meets the definition of Acoustical Consultant set out in the REA for the person's Wind Facility;

- (d) The court in which the conviction has been entered and any court of competent jurisdiction thereafter may make an order prohibiting the continuation or repetition of the offence by the person convicted, and such order shall be in addition to any other penalty imposed on the person convicted.

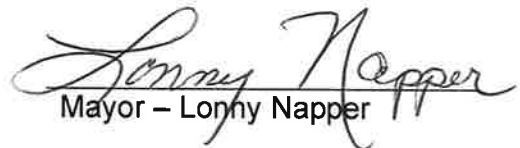
6. Enforcement

This by-law shall be enforced by a By-law Officer of the Town of Plympton-Wyoming in accordance with Part III of the *Provincial Offences Act*, R.S.O. 1990, c.P.33.

A By-law Officer may enter on land at any reasonable time for the purpose of carrying out an inspection to determine whether or not this bylaw is being complied with. Entry to any place actually being used as a dwelling unit shall be subject to the requirements of the *Municipal Act*, 2001, as amended.

7. This by-law may be referred to as the Wind Turbine Noise By-Law.
8. This by-law 37 of 2014 be withdrawn and that all other by-laws or parts of by-laws inconsistent with this by-law are hereby repealed.
9. This by-law shall come into full force and effect on the date of the final passing thereof.

Read a first and second this 24<sup>th</sup> day of September, 2014.

  
Mayor – Lonny Napper

  
Clerk – Brianna Coughlin

Read a third time and finally passed this 8<sup>th</sup> day of October, 2014.

  
Mayor – Lonny Napper

  
Clerk – Brianna Coughlin