

WIND TURBINES

PURPOSE

This interpretation describes the application of the National Building Code-2019 Alberta Edition (NBC(AE)) to wind turbines of all sizes and power generating capacities.

DISCUSSION

The NBC(AE) does not apply to utility towers and poles except where the utility tower or pole is located on or attached to a building. In this situation, the design of the building must take the loads from the utility tower or pole into consideration. The NBC(AE) may also apply to wind turbines where the design and use of a wind turbine supports an occupancy. Wind energy conversion systems are becoming more prevalent across the country. Wind turbines also known as wind generators, wind power units, wind energy converters, or aero generators (as shown in the illustration in Annex A) are designed to convert wind energy into electrical energy. This electrical energy can be used in several different ways:

- At the point of generation as a means of supplementing a land owner's electrical power supply,
- At the point of generation, usually feeding a bank of batteries as the sole supply of electricity,
- At the point of generation as well as feeding electricity back onto the main power grid in times of low- or no-load conditions,
- As a means of generating electricity to be fed directly onto the main power grid at all times.

The use of the electricity will usually determine the size of the wind turbine to be installed. In many cases of electrical energy being fed directly back onto the main power grid, wind turbines are installed in large numbers over a large area of land, known as a "wind farm." These units are typically very large, with individual blades measuring up to, and in some cases beyond, 45 m. They are almost always secured to a deep foundation system, typically concrete or steel screw piles.

In some cases there are accessory buildings that are constructed at the base of the wind turbine or in its immediate vicinity. These buildings are typically used to house control and monitoring equipment for the power generation, but can also be used as storage sheds or warehouses for spare parts, tools or other pieces of equipment. Other wind turbine installations include an observation deck at the top of the pole for sight-seeing or tourist purposes.

Unless stated otherwise, all Code references in this STANDATA are to Division B of the National Building Code-2019 Alberta Edition

Issue of this STANDATA is authorized by
the Provincial Building Administrator

[Original Signed]
Paul Chang

The logo for the province of Alberta, featuring the word "Alberta" in a stylized, cursive font with a small blue square at the end of the word.

Some wind energy conversion systems are designed to convert the wind energy into mechanical energy for the purposes of performing work such as pumping water, cutting lumber or grinding stones. These types of conversion systems are known as windmills. Historically, windmills were installed on farms and in remote regions where electrical power was unavailable. If a windmill supports an occupancy, then the NBC(AE) may also apply.

CODE REFERENCES

Sentence 1.1.1.1.(5) of Division A states:

1.1.1.1. Application of this Code

...

5) This Code does not apply to

...

b) utility towers and poles, television and radio or other communications antennas or towers, except that loads resulting from those located on or attached to a *building* shall be included in the *building* design,

...

f) an accessory *building* not greater than 10 m² in *building area* that does not create a hazard, or

...

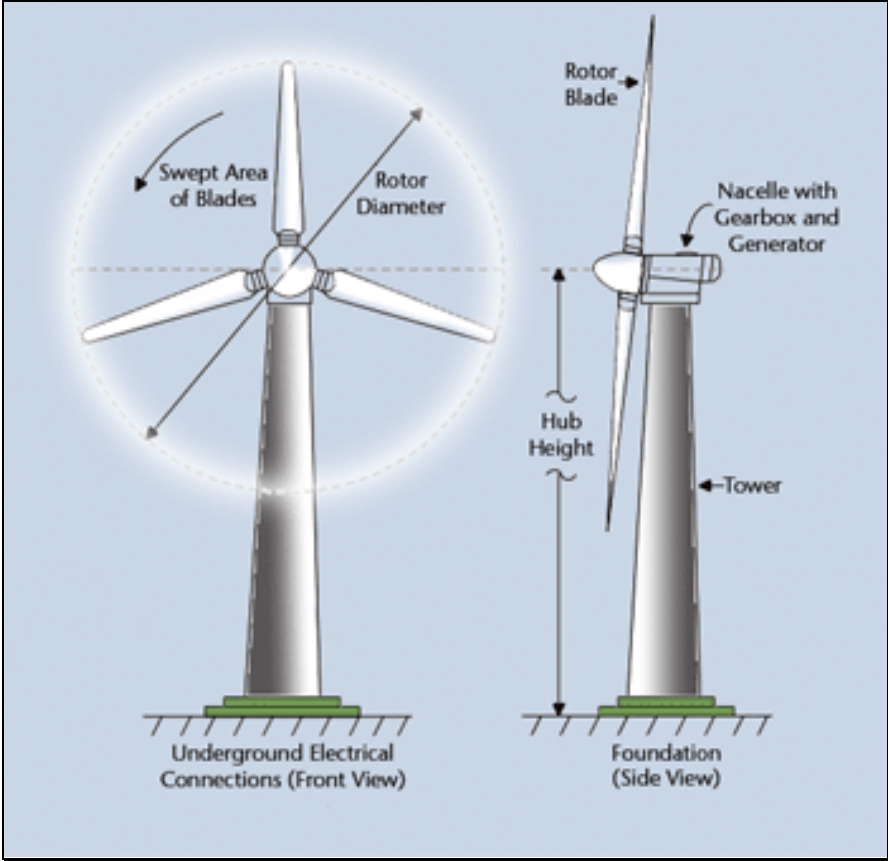
INTERPRETATION

1. Wind turbines and their associated foundation systems classified as utility towers are exempt from the requirements of the NBC(AE) and, consequently, are also exempt from the requirement for building permits under Section 6 and 7 of the Permit Regulation (AR 204/2007)¹.
2. Wind turbines that support an occupancy other than the workforce performing maintenance on the turbine are not considered utility towers and are subject to the requirements of the NBC(AE) and the Permit Regulation. Examples of wind turbines that support an occupancy include elevated observation areas used as a tourist attraction or as a working area, such as observation areas for forest rangers (see photo in Annex B).
3. Where there are accessory buildings greater than 10 m² constructed at the base of the wind turbine, these buildings are subject to the requirements of the NBC(AE) and the Permit Regulation. If the wind turbine is constructed such that it imparts structural loads onto the building, these loads must be accounted for in the building's design at the time of the building permit application.

This INTERPRETATION is applicable throughout the province of Alberta.

¹ Permits in other disciplines, such as electrical or gas, may still be required.

ANNEX A



ANNEX B

