STANDARDS Australia

AS 4959—2010

Acoustics—Measurement, prediction and assessment of noise from wind turbine generators

This Australian Standard® was prepared by Committee EV-016, Acoustic—Wind Turbine Generator Noise. It was approved on behalf of the Council of Standards Australia on 19 January 2010.
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The following are represented on Committee EV-016:

- Association of Australian Acoustical Consultants
- Association of Consulting Engineers Australia
- Australian Acoustical Society
- Clean Energy Council
- Department of the Environment, Water, Heritage and the Arts
- Environment Protection and Heritage Council
- University of Newcastle

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Australian Standard®

Acoustics—Measurement, prediction and assessment of noise from wind turbine generators

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PREFACE

This Standard was prepared by the Standards Australia Committee EV-016, Acoustics—Wind Turbine Generator Noise.

The objective of this Standard is to provide wind farm developers and relevant regulatory authorities with a suitable framework to develop a method for the measurement, prediction and assessment of noise from wind turbine generators (wind farms).

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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1 SCOPE

This Standard provides a methodology for assessing the impact of noise from wind turbine generators (WTGs) at all receivers in the vicinity of a wind farm.

This Standard deals specifically with noise from wind farms in the presence of wind—a situation that can result in large variations in measured noise levels due to the windspeed-dependence of both the background noise and wind turbine generator noise. The measured noise levels will be reasonably accurate and repeatable if the recommended methodology is followed.

This Standard is applicable to both horizontal and vertical axis WTGs generating electricity. Other noise sources may be more appropriately measured and assessed using other Standards (see list of referenced documents).

The scope of this Standard does not include:

(a) The methodology for sound power level measurements of WTGs (see IEC 61400-11).

(b) The methodology for measurement of other characteristics that may be present in the noise emission of WTGs such as infrasound, low frequency noise (noise outside the normal auditory range of the human ear), impulsivity, and low frequency modulation of broad band or tonal noise (see IEC 61400-11).

(c) The methodology for measuring, predicting and assessing the noise from small WTGs used as generators in standalone power systems or used for water pumping, milling or other purposes.

Small WTGs are those with a swept rotor area of less than 200 m^2 (See IEC 61400.2.)

(d) The methodology for measuring, predicting and assessing the noise from service equipment used at the wind farm for maintenance and construction. (See AS 1055.2 and AS 2436).

(e) The methodology for measuring, predicting and assessing the noise from other equipment such as switchyards or substations. (See AS 1055.2).

NOTES

1 Appendix A provides a flow chart of the methodology contained within this Standard.

2 Appendix B contains an informative worked example on prediction of sound pressure levels, monitoring background levels, and compliance testing.

3 Appendix C gives an informative guide on wind impact effects on microphones and spectrum analysers. It also gives guidance to the visual inspection of physical damage to microphone windshields.