

Australian/New Zealand Standard™

**Overhead line design**



## **AS/NZS 7000:2016**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-052, Electrical Energy Network, Construction and Operation. It was approved on behalf of the Council of Standards Australia on 17 March 2016 and by the Standards New Zealand Approval Board on 20 April 2016. This Standard was published on 17 May 2016.

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The following are represented on Committee EL-052:

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Electrical Regulatory Authorities Council  
Electricity Engineers Association (New Zealand)  
Energy Networks Association

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*This Standard was issued in draft form for comment as DR AS/NZS 7000:2015.*

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# Australian/New Zealand Standard™

## Overhead line design

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-052, Electrical Energy Networks, Construction and Operation.

The objective of this Standard is to provide Electricity Industry network owners, overhead line maintenance service providers, design consultants, construction contractors, structure designers, and pole manufacturers with an industry standard that replaces all previously used reference guidelines.

This Standard is one of a series of two documents—

- 1 *Overhead line design Standard*, which is a Standard that sets the detailed design requirements for overhead lines.
- 2 HB 331 *Overhead line design*, is a handbook providing supporting information, commentary, worked examples and supporting software (where applicable) for the design of overhead lines.

Statements expressed in mandatory terms in Notes to Tables and Figures are deemed to be requirements of this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendices to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

Major changes in the 2016 edition include the following:

- (a) In Table 6.2, Strength Reduction Factor  $\phi$  for Component Strength, a new category ‘Foundations designed to yield before structure’ with a range from 0.8 to 1.0 has been added. It aligns with the current embedment depths for distribution poles;
- (b) In Appendix B, Paragraph B4.2, it is recommended that in region B until more definitive data is available, designers should select one higher level of line security for convective winds to achieve comparable overhead line reliability in all zones.
- (c) Appendix F, Timber poles, has been made normative;
- (d) A new Appendix FF, structural Test for Prototype Poles, has been added;
- (e) The maximum short-circuit temperatures for conductors in Table BB4, Typical Conductor Operating Temperatures, have been revised;
- (f) Additional guidelines for ice loading have been added to Appendix DD, Snow and Ice loads;
- (g) In Appendix EE the hand reach clearances for poles (1200 mm to the left and right and 1700 mm to the rear) have been clarified.
- (h) A number of editorial changes have been made.

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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

### **Australian/New Zealand Standard** **Overhead line design**

#### S E C T I O N 1    S C O P E   A N D   G E N E R A L

##### **1.1 SCOPE AND GENERAL**

This Standard specifies the general requirements that are to be met for the design and construction of new overhead lines to ensure that the line is suitable for its intended purpose, and provides acceptable levels of safety for construction, maintenance and operation, and meets requirements for environmental considerations.

This Standard is only applicable to new overhead lines and is not intended to be retrospectively applied to the routine maintenance, and ongoing life extension of existing overhead lines constructed prior to the issue of this Standard. Such maintenance and life extension work ensures that lines continue to comply with the original design standards and remain safe and 'fit for purpose'.

Where the additional loading does not exceed the foundation or major structural element capacities, it is not necessary to comply with this Standard. Modifications may be made to comply with the Standard applicable to the original design. Major structural elements include poles, lattice tower legs and foundations.

However, where existing overhead lines are proposed to be altered such that elements of the overhead line may be overloaded or overstressed to the original design standard; then the overhead line is required to be assessed by a competent person for compliance with the provisions of this Standard.

This Standard is applicable to overhead lines supporting telecommunication systems or where they are used on overhead lines either attached to the aerial line conductor/earth wire systems or as separate cables supported by the supports. These telecommunication systems include optical ground wires (OPGWs), optical conductors and all dielectric self supporting (ADSS) cables.

It is also applicable to overhead line structures supporting telecommunications equipment.

The electrical requirements of this standard apply to alternating current (a.c.) systems with a nominal frequency of 50 Hz.

This Standard does not apply to catenary systems of electrified railways.

NOTE: Overhead line design handbook HB 331 complements this Standard providing further information and worked examples.

##### **1.2 USE OF ALTERNATIVE MATERIALS OR METHODS**

This Standard shall not be interpreted so to prevent innovation or the use of materials or methods of design or construction not specifically referred to herein.

Alternative methods, dimensions or materials that provide safety and reliability levels equal to, or greater, than this Standard can be used and are deemed to comply with this Standard.