

Title	Demonstrate knowledge of the New Zealand electricity supply system		
Level	3	Credits	2

Purpose	<p>This unit standard covers the generation and distribution of electricity in New Zealand and is intended for people in the electrical and related trades.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of the New Zealand electricity generation, transmission, and distribution system; and – demonstrate knowledge of the multiple earthed neutral (MEN) system of supply.
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Classification	Electrical Engineering > Core Electrical
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Available grade	Achieved
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Explanatory notes

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 References
Electricity (Safety) Regulations 2010;
AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*, including Amendment 1;
and all subsequent amendments and replacements.
- 3 The term *current regulations and standards* is used in this unit standard to refer to the requirements of the above references.

Outcomes and evidence requirements

Outcome 1

Demonstrate knowledge of the New Zealand electricity generation, transmission, and distribution system.

Evidence requirements

- 1.1 Generation methods used in New Zealand are described.

Range hydro, thermal, geothermal, wind, solar.

1.2 The operation of the New Zealand transmission system from power station to consumer is explained with the aid of a diagram.

Range diagram shows – alternator, transformers, transmission lines, typical voltages before and after transformation, connection details for single-phase, two-phase, and three-phase consumers. The diagram is to be fully labelled and identifies phase, neutral, and earth conductors wherever used.

1.3 Reasons for using alternating current (a.c.) for generation, transmission, and distribution to end users are explained in terms of ease of transformation and simplicity of electric motors.

1.4 Advantages of three-phase over single-phase supply systems are listed in terms of economies in generation, transmission, and induction motors.

1.5 The reasons for using direct current (d.c.) to interconnect the North and South Islands of New Zealand via the Cook Strait cable are stated in terms of economies in transmission.

Outcome 2

Demonstrate knowledge of the multiple earthed neutral (MEN) system of supply.

Evidence requirements

2.1 The MEN system of supply is explained with the aid of a diagram showing a typical distribution system from supply transformer to consumer’s main switchboard.

2.2 The reasons for earthing the neutral at multiple points are stated.

Range line voltage is fixed to a known value, operation of protective devices, reduced resistance in fault current path, consumer’s contribution to the MEN system.

2.3 The maximum allowable neutral-to-earth resistance is stated in accordance with current regulations and standards.

2.4 A single wire earth return system is described as an alternative means of supply that may be connected to a MEN system.

Replacement information	This unit standard replaced unit standard 748. This unit standard has been replaced by unit standard 29477
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	10 February 1999	31 December 2013
Revision	2	3 April 2001	31 December 2013
Review	3	26 May 2005	31 December 2021
Rollover and Revision	4	15 March 2012	31 December 2021
Revision	5	15 January 2014	31 December 2021
Review	6	21 July 2016	31 December 2021

Consent and Moderation Requirements (CMR) reference

0003

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.