



National Certificate in Electricity Supply (Operator) (Level 3) with strands in Network and Hydro Operator, and Thermal Operator

Level 3

Credits 61-70

Purpose

This National Certificate is awarded to people who have demonstrated competence in the intermediate skills and knowledge required for employment in the Electricity Supply Industry as an Operator in Hydro, Networks, or Thermal Operations areas.

Holders of this qualification will be able to:

- Explain the properties of conductors, insulators, and semiconductors
- Demonstrate knowledge of electromotive force production
- Demonstrate knowledge of electromagnetism theory
- Apply earths to and remove earths from electrical conductors, plant and equipment
- Operate electrical switchgear
- Demonstrate knowledge of electricity supply systems
- Demonstrate knowledge of single and three phase transformers
- Demonstrate knowledge of the fundamentals of electricity generation in New Zealand
- Read and interpret single line diagrams
- Develop and action an operating sequence
- Apply and remove safety measures
- Demonstrate familiarity with common faults, relay systems, and components of diagrams in power system protection systems
- Maintain and update operating logs.

Holders of this qualification with the Network and Hydro Operator Strand will also be able to:

- Demonstrate the requirements for holding permits on high voltage electrical equipment
- Manage electricity supply work control systems
- Remove electricity supply network equipment from service for access to work
- Demonstrate knowledge of SCADA systems in the Electricity Supply power system.

Holders of this qualification with the Thermal Operator Strand will also be able to:

- Carry out switching operations on metal clad switchgear
- Demonstrate knowledge of New Zealand Electricity Market generation dispatch
- Carry out operations on a DC System associated with a power station electrical system.

This qualification includes optional unit standards covering introductory concepts in power system protection, knowledge of the New Zealand Electricity Market generation dispatch, and using SCADA. Whilst these unit standards are not required to achieve the qualification, they may be considered necessary for some employment contexts in the electricity supply industry.

This qualification builds on the National Certificate in Electricity Supply (Level 2) with optional strands in Electrical, Electrical Fitter, and Line Mechanic [Ref: 1293].

The National Certificate in Electricity Supply (Operator) (Level 3) [Ref: 1375] with the Network and Hydro Operator strand is designed as a prerequisite to the National Certificate in Electricity Supply (Network Operator) (Level 4) [Ref: 0892] and the National Certificate in Electricity Supply (Hydro Operator) (Level 4) [Ref: 1405]. Candidates intending to progress on to the National Certificate in Electricity Supply (Thermal Operator) (Level 4) with strands in Thermal Operations, Combined Cycle Operations, and Geothermal Operations [Ref: 0894] should undertake the Thermal Operator strand of this qualification.

Special Notes

Prerequisite: National Certificate in Electricity Supply (Level 2) with optional strands in Electrical, Electrical Fitter, and Line Mechanic [Ref: 1293], or demonstrate equivalent knowledge and skills.

Recognition of prior learning will be carried out by organisations with consent to assess or Electricity Supply Industry Training Organisation (ESITO) registered workplace assessors.

Credit Range

	Compulsory	Network and Hydro Operator Strand	Thermal Operator Strand
Level 2 credits	15	-	-
Level 3 credits	27	4	-
Level 4 credits	10	14	9
Totals	52	18	9
Qualification total with strand		70	61

Requirements for Award of Qualification

Award of NZQF National Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided on the New Zealand Qualifications Authority (NZQA) website: <http://www.nzqa.govt.nz/qualifications-standards/standards/standards-exclusion-list/>.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same ID may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Summary of Requirements

- Compulsory standards

One of the following strands is required

- Network and Hydro Operator Strand
- Thermal Operator Strand

Detailed Requirements

Compulsory

The following standards are required

Engineering and Technology > Electrical Engineering > Core Electrical

ID	Title	Level	Credit
25070	Explain the properties of conductors, insulators, and semiconductors and their effect on electrical circuits	2	7
25071	Demonstrate knowledge of electromotive force (e.m.f.) production	2	3
25072	Demonstrate knowledge of electromagnetism theory	2	5

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
12296	Apply earths to and remove earths from electrical conductors, plant and equipment	3	2
12387	Operate electrical switchgear in the electricity supply industry	4	6
12390	Demonstrate knowledge of electricity supply systems	3	5
19323	Demonstrate knowledge of single and three phase transformers used in the electricity supply industry	3	4
19325	Demonstrate knowledge of the fundamentals of electricity generation in New Zealand	3	3
20091	Read and interpret single line diagrams in the electricity supply industry	3	3

ID	Title	Level	Credit
20093	Develop and action an operating sequence in the electricity supply industry	4	4

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Maintenance

ID	Title	Level	Credit
14700	Apply and remove safety measures in an electricity supply environment	3	3
27655	Demonstrate familiarity with common faults, relay systems, and components of diagrams in power system protection systems	3	4

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Management

ID	Title	Level	Credit
16281	Maintain and update operating log for electricity supply operational purposes	3	3

Network and Hydro Operator Strand

The following standards are required

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
17028	Demonstrate the requirements for holding permits on high voltage electrical equipment	3	2

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Maintenance

ID	Title	Level	Credit
14701	Manage electricity supply work control systems	4	4

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Management

ID	Title	Level	Credit
16284	Remove electricity supply network equipment from service for access for work (System Operation)	4	10
27654	Demonstrate knowledge of SCADA systems in the Electricity Supply power system	3	2

Thermal Operator Strand

The following standards are required

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
20090	Carry out switching operations on metal clad switchgear	4	3

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Management

ID	Title	Level	Credit
26748	Carry out operations on a DC system associated with a power station electrical system	4	6

Optional standards

The following standards are optional

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
24668	Demonstrate knowledge of New Zealand Electricity Market generation dispatch	3	4

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Maintenance

ID	Title	Level	Credit
26019	Demonstrate knowledge of introductory concepts in power system protection	4	10

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Management

ID	Title	Level	Credit
19479	Use SCADA to manage the power system	3	5

Transition Arrangements**Version 4**

Version 4 was issued following a revision in order to make standards 24668, 26019 and 19479 optional, and add standard 27655 to the compulsory section and standard 27654 to the Network and Hydro Operator strand.

Changes to structure and content

- total credits changed from 69-77 to 61-70 credits
- standard 27655 was added to the compulsory section
- standard 27654 was added to the Network and Hydro Operator strand
- standard 26019 was removed from the compulsory section but included as an optional standard

- standard 24668 was removed from the Thermal Operator strand but included as an optional standard
- standard 19479 was removed from the Network and Hydro Operator strand but included as an optional standard.

For detailed information see [Review Summaries](#) on the NZQA website.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring or replaced standards are exempt from the requirement to gain credit for the replacement standards – see table below.

Credit for	Exempt from
15843	25070, 25071, 25072
26019	27655
19479	27654

All existing candidates may either complete the requirements of version 3 of the qualification or transfer to version 4. Candidates intending to complete version 2 must gain credit for standard 19324 before it expires on 31 December 2012.

All new trainees will be enrolled in programmes leading to version 4 of the qualification.

It is not intended that anyone is disadvantaged by this review and the above arrangements have been designed for a smooth transition. However, anyone who feels they have been disadvantaged may appeal to the Electricity Supply Industry Training Organisation at the address below.

Previous versions of the qualification

Version 3 was issued following a review. The qualification was restructured to incorporate a Network and Hydro Operator strand, and a Thermal Operator strand.

Version 2 was issued following a revision in order to include new magnetism and electricity standards 25070-25072, which replaced expiring standard 15843 to improve assessability.

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	April 2008	December 2011
Revision	2	January 2009	December 2013
Review	3	March 2011	N/A
Revision	4	June 2012	N/A

Standard Setting Body

Electricity Supply Industry Training Organisation
PO Box 1245
Waikato Mail Centre
Hamilton 3240

Telephone 07 834 3038
Facsimile 07 834 8160
Email info@esito.org.nz

Planned Review

Any person or organisation may contribute to the review of this qualification by sending feedback to the standard setting body at the above address.

Next Review	2014
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Other standard setting bodies whose standards are included in the qualification

ElectroTechnology Industry Training Organisation

Certification

This certificate will display the logos of NZQA, the Electricity Supply Industry Training Organisation and the organisation that has been granted consent to assess against standards that meet the requirements of the qualification (accredited).

Classification

This qualification is classified according to the classification system listed on the Directory of Assessment Standards (DAS) and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

DAS Classification		NZSCED	
Code	Description	Code	Description
318	Engineering and Technology > Electricity Supply	031313	Engineering and Related Technologies > Electrical and Electronic Engineering and Technology > Electrical Fitting, Electrical Mechanics

Quality Management Systems

Providers and Industry Training Organisations must be granted consent to assess by a recognised Quality Assurance Body before they can register credits from assessment against standards. Organisation with consent to assess and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Consent to assess requirements and the moderation

system are outlined in the associated Consent and Moderation Requirements (CMR) for each standard.