Title	**Install, commission, and maintain a power quality protection system**		
Level	**4**	**Credits**	**4**

Purpose	People credited with this unit standard are able to: – demonstrate knowledge of a system used to provide protection against power supply quality events; – install a system to provide protection against power supply quality events; – commission a system to provide protection against power supply quality events; and – maintain a system over time to provide protection against power supply quality events.

Classification	Electrical Engineering > Electrical Installation and Maintenance

Available grade	Achieved

Guidance Information

1 This unit standard has been developed for learning and assessment on-job.

2 Definitions
CEPC – Critical Essential Performance Capability.
ERAC – Electrical Regulatory Authorities Council.
EWRB – Electrical Workers Registration Board.
Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules).*
UPS – uninterruptible power supply – static, proprietary-type, uninterruptible power supply system of up to 200 kVA.

3 Range
a UPS or power conditioner system to be greater than 2KVA.
b Embedded generation to be greater than 10KW.
c Candidates may refer to current legislation and Standards during assessment.
d Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.

e All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:
- i legislation;
- ii policies and procedures;
- iii ethical codes;
- iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;
- v applicable site, enterprise, and industry practice; and,
- vi where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of a system used to provide protection against power supply quality events.

Range may include but is not limited to – UPS, power conditioner, small local embedded generation sources.
evidence of one is required.

Performance criteria

1.1 Describe how the selected system provides protection against power quality events.

Range may include but is not limited to – voltage sags and surges, transient under-voltage and over-voltage, loss of supply and harmonics.
evidence of two is required.

1.2 Identify and describe the function of three of the major internal components of the system.

Range may include but is not limited to – filters, line-conditioners, constant-voltage transformers, batteries, charging systems, inverters, by-pass and on-line switching functions, monitoring functions.

1.3 Produce a simple line diagram showing how this system is connected into the electrical supply system.

1.4 Identify safety requirements and rules applicable to the use of the selected system based on reference material.

Outcome 2

Install a system to provide protection against power supply quality events.

Performance criteria

2.1 Verify that the selected system will meet the load requirements using manufacturers' specifications and job specification.

2.2 Determine system locations and interconnections using manufacturers' specifications and/or job specification.

Range may include but is not limited to – battery bank, charging units, distribution and control systems, cable routes, earthing.
evidence of three is required.

2.3 Install system in accordance with job specification and/or manufacturers' instructions.

Outcome 3

Commission a system to provide protection against power supply quality events.

Performance criteria

3.1 Test and certify installation.

3.2 Carry out operational tests and adjust system according to job specification and manufacturers' instructions.

Range tests may include but are not limited to – monitoring, control and protection circuitry, test switches, charging circuitry, operation during supply failure or fluctuation.
evidence of three is required.

3.3 Document the installation in accordance with company requirements.

Range drawings, test results, commissioning log.

Outcome 4

Maintain a system over time to provide protection against power supply quality events.

Performance criteria

4.1 Carry out operational tests in accordance with manufacturers' specifications.

4.2 Compare test results with manufacturers' specifications.

4.3 Log faulty systems and devices with fault data and repair or return faulty equipment for repair in accordance with company requirements.

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	21 July 2016	31 December 2027
Revision	2	16 March 2017	31 December 2027
Review	3	24 March 2022	31 December 2027
Rollover and Revision	4	25 May 2023	31 December 2027

Consent and Moderation Requirements (CMR) reference	0003

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