

<b>Title</b>	<b>Demonstrate and apply knowledge of renewable energy electricity generation systems</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>4</b>

<b>Purpose</b>	<p>This unit standard covers renewable energy systems and associated equipment and is for people in the electrical and related trades.</p> <p>People credited with this unit standard are able to demonstrate:</p> <ul style="list-style-type: none"> <li>– knowledge of renewable energy electricity generation systems; and</li> <li>– and apply knowledge of renewable energy electricity generation system installations.</li> </ul>
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<b>Classification</b>	Electrical Engineering > Core Electrical
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 This unit standard and unit standards 29424, 29438, and 29482 meet the assessment requirements of ERAC EPC 55.
- 3 Definitions
  - d.c.* – direct current.
  - EPC* – Essential Performance Capabilities.
  - ERAC* – Electrical Regulatory Authorities Council.
  - EWRB* – Electrical Workers Registration Board.
  - Industry practice* – those practices that competent practitioners within the industry recognise as current industry best practice.
  - 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)*.
- 4 Range
  - a Candidates may refer to current legislation and Standards during assessment.
  - b Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.

- c 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.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of renewable energy electricity generation systems.

#### Performance criteria

- 1.1 Describe renewable electricity generation systems.  
Range photovoltaic, wind, micro-hydro.
- 1.2 Explain the standards to which the selection, installation, and control equipment of each type of system must comply.
- 1.3 Describe basic requirements of renewable electricity generation systems.  
Range d.c. polarity, switching and protection devices, earthing arrangements.
- 1.4 Explain, with the aid of diagrams, inverter operation principles and the requirements to connect an inverter to a renewable electricity generation system with the aid of diagrams.
- 1.5 Describe stand-alone and grid-connected systems and outline the advantages and disadvantages of each.
- 1.6 Describe safe isolation and testing procedures.
- 1.7 Describe potential hazards associated with renewable energy electricity generation systems and explain precautions to be observed.

### Outcome 2

Demonstrate and apply knowledge of renewable energy electricity generation system installations.

#### Performance criteria

- 2.1 Describe backup battery storage requirements.

- 2.2 Describe uninterruptible power supplies.
- 2.3 Describe arrangement for connecting an alternative supply to an installation in order to maintain supply security.
- 2.4 Explain metering requirements for grid-connected systems.
- 2.5 Describe methods of evaluating the suitability of a site for locating photovoltaic, wind, and micro-hydro systems.
- Range environmental impact, sustainability, construction, disassembly.
- 2.6 Describe ideal locations for the installation of photovoltaic, wind, and micro-hydro systems and explain the reasons for the choice.
- 2.7 Calculate the requirements for a domestic photovoltaic system installation based on a given specification.

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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	21 July 2016	31 December 2027
Review	2	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>.