

<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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**Explanatory notes**

- 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 evidence requirements 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 evidence requirements

### Outcome 1

Demonstrate knowledge of renewable energy electricity generation systems.

#### Evidence requirements

- 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.

#### Evidence requirements

- 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.

<b>Planned review date</b>	31 December 2019
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#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 July 2016	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0003
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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.

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#### Comments on this unit standard

Please contact The Skills Organisation at [reviewcomments@skills.org.nz](mailto:reviewcomments@skills.org.nz) if you wish to suggest changes to the content of this unit standard.