

<b>Title</b>	<b>Solve basic problems in photovoltaic apparatus and systems</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	<p>This unit standard is for people who work with renewable energy systems and covers problem solving for photovoltaic systems and associated apparatus.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> <li>– prepare to work on a PV system;</li> <li>– solve problems in PV systems and apparatus; and</li> <li>– document completion of work and problems solved.</li> </ul>
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<b>Classification</b>	Renewable Energy Systems > Renewable Energy Systems - Installation and Maintenance
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<b>Available grade</b>	Achieved
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## Guidance information

### 1 References

All Australian Standards (AS) may be found at <https://www.standards.org.au/>;  
 All Australian/New Zealand Standards (AS/NZS) may be found at <http://www.standards.govt.nz/>;  
 AS/NZS 4777.1:2024, *Grid connection of energy systems via inverters, Part 1: Installation requirements*;  
 AS/NZS 4777.2:2020, *Grid connection of energy systems via inverters, Part 2: Inverter requirements (Includes Part 3 Grid Protection Requirements)*;  
 AS/NZS 3000:2018 Amd3: 2023, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;  
 Electricity (Safety) Regulations 2010;  
 Electricity Act 1992;  
 Electricity Industry Participation Code 2010 Part 6 Connection of distributed generation, available at <https://www.ea.govt.nz/>;  
 Health and Safety at Work Act 2015 and associated regulations;  
 and all subsequent amendments and replacements.

### 2 Definitions

*Current regulations and standards* – in this unit standard this term is used to refer to the requirements of the above references.  
*Enterprise policies and procedures* – those practices and procedures that have been promulgated by the company or enterprise for use by their employees.  
*Industry practice* – those practices that competent practitioners within the industry recognise as current industry best practice.  
*OSH* – occupational safety and health.  
*PV* – photovoltaic.

### 3 Range

- a All measurements are to be expressed in Système Internationale (SI) units, and where required, converted from Imperial units into SI units.
- b OSH procedures may include but are not limited to – work permits and clearances, hazard monitoring, evacuation procedures, plant and electrical isolation.
- c Computer based tools can be used to aid calculations.
- d All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with legislation, enterprise policies and procedures, ethical code, current regulations and standards, industry practice; and where appropriate, manufacturer's instructions, specifications, and data sheets.
- e Problem solving on three systems is required.

- 4 It is recommended that candidates have been assessed against Unit 27440, *Install, commission and maintain grid-connected photovoltaic power systems*; and Unit 27444, *Demonstrate knowledge of requirements for connecting photovoltaic arrays* prior to assessment to this unit standard.

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## Outcomes and performance criteria

### Outcome 1

Prepare to work on a PV system.

#### Performance criteria

- 1.1 Determine and adhere to OSH procedures for a given worksite including working at heights.
- 1.2 Implement risk control measures.
- 1.3 Determine and assess problem/s with the apparatus/PV system and nature of work needed to rectify the problems.
- 1.4 Coordinate work with others involved.
- 1.5 Identify and source materials and assess to ensure they comply with standards.
- 1.6 Check tools, equipment and testing devices are safe for operation.

### Outcome 2

Solve problems in PV systems and apparatus.

#### Performance criteria

- 2.1 Conduct, measure and test a live system in accordance with safety regulations.
- 2.2 Check and isolate circuits in accordance with safety regulations, including special precautions required when disconnecting d.c. cabling even when isolated.

- 2.3 Calculate and solve problems within operating parameters without damage to circuits, services or surrounding environment.

### Outcome 3

Document completion of work and problems solved.

### Performance criteria

- 3.1 Complete work in accordance with safety regulations and standards.
- 3.2 Clean work site and make safe.
- 3.3 Complete all certification and documentation requirements for the completed work and notify the appropriate people.

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<b>Planned review date</b>	31 December 2026
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### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 July 2014	31 December 2020
Review	2	24 October 2019	N/A
Rollover and Revision	3	27 March 2025	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>.

### Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council [qualifications@waihangaararau.nz](mailto:qualifications@waihangaararau.nz) if you wish to suggest changes to the content of this unit standard.