



Australian Government

UEERE0067 Develop engineering solutions to renewable energy (RE) problems

Release: 1

UEERE0067 Develop engineering solutions to renewable energy (RE) problems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

This unit replaces and is not equivalent to UEERE0033 Develop engineering solutions to renewable energy (RE) problems. Modifications include:

- Prerequisites changed
- Significant amendments made to Elements and Performance Criteria
- Range of conditions updated
- Significant amendments to Performance and Knowledge Evidence and CVIG content developed.

Application

This unit involves the skills and knowledge required to apply engineering principles to develop engineering solutions to renewable energy (RE) problems.

It includes determining and applying engineering solutions to RE systems and components and their operating parameters. It also includes applying problem-solving techniques, and testing and documenting alternative engineering solutions to RE problems.

This unit is appropriate for Licenced Electricians or Electrical Engineers with responsibility for developing engineering solutions to renewable energy (RE) problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0062 Write specifications for renewable energy engineering projects

UEERE0055 Conduct site survey for off-grid photovoltaic/generating set systems

UEERE0063 Design off-grid photovoltaic/generating set systems

and

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

or

UEERE0051 Apply electrical principles to renewable energy design

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Determine RE problem and plan work

2 Develop engineering solutions for RE problem

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|------------|--|
| 1.1 | Nature and scope of the RE problem is determined from relevant documentation and consultation with relevant person/s |
| 1.2 | Relevant work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures are identified |
| 1.3 | Established technical and practical engineering methods are identified for application to solution development |
| 1.4 | Technical and practical techniques, tools and resources appropriate for solution development are identified and planned |
| 1.5 | Personnel required to support solution development and implementation are identified, consulted and roles and responsibilities confirmed |
| 1.6 | Project plan including quality measures is developed and tested in consultation with relevant person/s |
| 2.1 | WHS/OHS risk control measures and workplace procedures are followed for carrying out work |
| 2.2 | Information/data is gathered and analysed in accordance with project plan |
| 2.3 | RE systems, components, construction, operation characteristics and applications are analysed in accordance with project plan |

	2.4	Parameters, specifications and performance requirements in relation to RE work are determined in accordance with project plan
	2.5	Systematic synthesis and design processes are applied to development of engineering solution options to achieve project requirements
	2.6	Work is monitored in accordance with established quality measures, relevant industry standards and project plan
3 Test, document and implement engineering principles	3.1	Engineering solution/s are tested to determine their effectiveness and modified, as required
	3.2	Engineering solutions are documented and instructions for implementation that incorporate risk control measures included
	3.3	Competent person/s to implement engineering solutions are identified and coordinated in accordance with regulatory requirements and workplace policies
	3.4	Justification for engineering solution/s used are documented and included in work/project records in accordance with relevant industry standards

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Must include developing at least two different solutions to solve the problem. The solutions must involve at least two of the following areas:

- energy efficiency
- demand management
- heat loss management
- electrical equipment options
- renewable energy
- non-electrical resource management.

Unit Mapping Information

This unit replaces and is not equivalent to UEERE0033 Develop engineering solutions to renewable energy (RE) problems.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0067 Develop engineering solutions to renewable energy (RE) problems

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two occasions and include:

- determining the nature and scope of renewable energy (RE) problem
- developing and implementing a project plan appropriate for the nature and scope of the RE problem
- identifying and applying technical and practical engineering methods, techniques, tools and resources to development of solution
- identifying and consulting personnel and stakeholders required to support solution development and implementation
- developing and testing effective engineering solution/s and modifying as/if required
- selecting, documenting and implementing engineering solution/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of (refer UEE Training Package Companion Volume Implementation Guide for more detail about each item):

- energy resources
- energy and humanity
- basic energy concepts
- monitoring, measurement and verification of data management and cyber security
- energy application technologies

- electrical application technologies
- energy transfer in closed and open systems
- AC v DC power generation/transmission
- Gases
- heat engines and their performance
- electrical power distribution systems operation
- protection and relaying
- distributed generation issues
- RE supply issues
- factors affecting the uptake of distributed generation
- asset management
- life-cycle management
- impact of climate change on electrical infrastructure
- benefits, issues and impacts of options and solutions to problems
- relevant manufacturer specifications
- jurisdictional Electrical Licencing requirements relevant to RE
- technical and non-technical jurisdictional requirements related to grid connection
- relevant workplace documentation, policies and procedures
- relevant WHS/OHS requirements including:
 - risk assessment and mitigation
 - legislated requirements
 - design and implementation of site-specific guidelines for access to apparatus
 - requirements for working with HV versus LV
 - safe systems of work
- engineering methods, tools and techniques relevant to solving RE problems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry

- resources that reflect current industry practices in relation to developing engineering solutions to RE problems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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