



Australian Government

UEEFS2005 Explore renewable energy systems

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Modification History

Release	Comments
1	This unit of competency was first released in UEE Electrotechnology Training Package Release 10.0.

Unit outcomes

This unit introduces learners to the principles of renewable energy systems, with a focus on how renewable energy systems and technologies are used to support energy needs.

It supports the development of foundation and employability skills, preparing learners for further vocational training, apprenticeships, or employment in the energy sector.

On completion of this unit, learners will be able to demonstrate basic knowledge of how renewable energy systems generate, store, and transfer energy, the main features and components of renewable energy systems, and the types of entry-level roles, emerging energy-related roles and career pathways in related energy sector industries. They will have the skills to plan, assemble, operate and test a basic extra-low voltage (ELV) direct current (d.c.) renewable energy model and communicate information about renewable energy systems using appropriate energy sector terminology.

Licensing/Regulatory Information

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

Knowledge

On successful completion of this unit, learners will have:

- basic factual knowledge of:
 - the purpose and use of renewable energy systems
 - how renewable energy systems generate, store, and transmit electricity
 - how renewable energy systems are used to manage variable energy supply
 - where renewable energy systems are used in local or regional contexts
 - how renewable energy systems contribute to reducing environmental impacts, including key advantages and disadvantages
 - entry-level occupations, emerging roles and career pathways in the energy sector related to the renewable energy industry
- basic technical knowledge of:
 - the main features, components and energy flow of renewable energy systems

- how renewable energy systems capture natural resources, generate electricity, and transfer energy to loads or storage
- how energy flow can be represented in an ELV d.c. renewable energy model
- basic numerical concepts such as interpreting voltage or current readings, measuring angles, and estimating model performance
- faults relevant to small renewable energy projects
- the use of digital tools where required to record, represent, or communicate project information.

Skills

On successful completion of this unit, learners will have:

- cognitive skills to:
 - access and interpret information and project briefs
 - plan a basic ELV d.c. renewable energy project
- technical and procedural skills to:
 - select and check a limited range of tools, components, and materials
 - apply safety procedures
 - assemble, operate and test a basic ELV d.c. renewable energy model
 - make basic adjustments to improve performance
 - record project actions and results
 - use digital tools where required to record, represent, or present project information
- communication skills to:
 - communicate technical information about basic concepts of renewable energy systems
 - communicate information about how the model works and the benefits of renewable energy systems
 - use appropriate energy sector terminology effectively
- collaboration skills to:
 - participate in project activities with others.

Application of Knowledge & Skills

Learners will apply their knowledge and skills in a structured learning environment. They will use autonomy and limited judgement to:

- plan and manage tasks to explore how renewable energy is generated, transferred and stored

- record project actions and results
- communicate information about how the model works and the benefits of renewable energy systems using appropriate energy sector terminology
- interpret a project brief
- apply core principles of renewable energy to plan a basic renewable energy project
- select and check tools, components, and materials
- assemble, operate, test and adjust an ELV d.c. renewable energy system with a single supply path from a renewable source to a load, including storage
- use digital tools where required to record, represent, or present project information.

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

Foundational Skills

Unit sector(s)

Electrotechnology

Range of conditions

N/A

Assessment Requirements for UEEFS2005 Explore renewable energy systems

Performance Evidence

The individual must demonstrate the ability to:

- interpret a project brief to identify requirements and plan a basic ELV d.c. renewable energy project to demonstrate energy generation and transfer from a renewable source to a load or storage device
- select and check ELV components, tools, and materials for correct function and safe condition
- apply safety procedures, including shut-down and isolation procedures, before working on the system
- assemble and operate a basic ELV d.c. renewable energy model with a single supply path from a renewable source to a load, including storage
- test the model to identify basic faults or performance issues
- make a basic adjustment to improve model performance
- record actions and results clearly using written notes, labelled diagrams or digital tools
- communicate information about the renewable energy model while participating in project activities with others, using appropriate energy sector terminology to explain how the model works and describe the benefits of renewable energy systems to support energy needs.

Knowledge Evidence

The individual must demonstrate knowledge of:

- entry-level occupations, emerging roles and career pathways in the energy sector related to renewable energy work
- the purpose of renewable energy systems, including:
 - where they are used locally or regionally
 - their role in reducing environmental impacts
 - how they are used to support traditional electricity supply in residential homes and commercial buildings
- the main features of renewable energy systems used to generate, store and transmit electricity, including:
 - how renewable energy technologies capture energy from natural resources
 - how energy is converted into electricity
 - methods of storing generated energy

- how electricity generated from renewable energy systems can be fed into and drawn from the electricity grid
 - systems used to manage variable supply
- key environmental benefits, advantages and disadvantages of renewable energy
- the basic purpose and function of typical components used in renewable energy systems in supporting energy flow from source to loads and storage, including:
 - wind turbines and blades
 - solar panels (photovoltaic cells)
 - water wheels and turbines
 - motors and generators
 - hardware and meters
- how energy flow can be replicated or represented in an ELV d.c. renewable energy model with a single supply path from a renewable source to a load, including storage
- safety principles when working with ELV d.c. model energy systems relating to renewable energy system project work
- basic numerical concepts relevant to renewable energy project work, including interpreting voltage or current readings, measuring angles, and estimating model performance
- faults or problems that might affect small renewable energy demonstrations or models, and simple adjustments to improve performance.

Assessment Conditions

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

All practical activities and projects involving electrical components must be limited to ELV d.c. systems as defined by relevant jurisdictional standards, to ensure they can be safely delivered and undertaken by individuals who do not require an electrical licence.

Mandatory Workplace Requirements

There are no mandatory workplace requirements for assessment. Assessment of performance evidence may be in a structured learning environment.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is

		not covered by an existing unit of competency
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Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/UEE>.