



Australian Government

Department of Education, Employment and Workplace Relations

UEENEEK112A Provide basic sustainable energy solutions for energy reduction in residential premises

Release: 1

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Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers monitoring energy use and providing basic sustainable energy options to reduce the energy consumption in residential premises. It encompasses working safely and providing basic sustainable energy solutions for energy reduction in domestic premises.

Application of the Unit

Application of the Unit 2)

This unit shall apply to persons entering work in electrotechnology and may be used in school-based vocational programs.

Licensing/Regulatory Information

License to practice

3)

The skills and knowledge described in this unit do not require a license to practice in the workplace. However, practice in this unit is subject to regulations directly related to occupational health and safety and contracts of training such as new apprenticeships.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting

License to practice

3)

equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting, risk safety measures etc

Pre-Requisites

Prerequisite Unit(s)

4)

Competencies

4.1)

There are no prerequisite competencies for this unit.

Literacy and numeracy skills

4.2)

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills

5)

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

- 6) Elements describe the essential outcomes of a competency standard unit. Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to monitor energy usage and provide basic solutions for energy reduction	1.1 Monitoring activities are planned and prepared for to ensure OHS policies and procedures are followed with the work appropriately sequenced in accordance with requirements
	1.2 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved
	1.3 Materials are obtained and checked in accordance with established procedures and to comply with requirements
	1.4 Location in which monitoring activities are to be undertaken is determined from job requirements
	1.5 Materials necessary to complete the work are obtained in accordance with established procedures and checked against job requirements
	1.6 Materials needed to carry out the monitoring are obtained in accordance with established procedures
2 Undertake monitoring of energy usage and provide basic solutions for energy reduction	2.1 OHS policies and procedures for undertaking monitoring activities are followed
	2.2 Monitoring activities are undertaken in accordance with requirements, without damage or distortion to the surrounding environment or services
	2.3 Unplanned events or conditions are responded to in accordance with established procedures
	2.4 Approval is obtained in accordance with

ELEMENT	PERFORMANCE CRITERIA
	established procedures from appropriate personnel before any contingencies are implemented
	2.5 Ongoing checks of the quality of the work are carried out in accordance with established procedures
3 Complete monitoring activities and provide and provide reports where necessary	3.1 Documentation/reports are completed to ensure administrative requirements are met
	3.2 Work completion is notified in accordance with established procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence must show that knowledge has been acquired of safe working practices and providing basic sustainable energy solutions for energy reduction in domestic premises.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01- EK112A Concepts of renewable energy

Evidence shall show an understanding of concepts of renewable energy to an extent indicated by the following aspects:

- T1 Non-technical issues encompassing:
- current economic, social, environmental and political issues, impact on a renewable energy technology
- T2 Energy services/demand encompassing:
- terminology
 - energy, power, temperature, symbols, units
 - energy conversion and efficiency
 - domestic dwelling: energy services and energy demand of individual appliance,

REQUIRED SKILLS AND KNOWLEDGE

- energy efficient appliances
 - primary energy and end use energy
 - embodied energy
- T3 Solar radiation resource encompassing:
- terminology
 - units, symbols, conversions
 - sun path diagrams
 - solar contour maps
 - solar window
- T4 Solar thermal systems encompassing:
- terminology
 - components
 - applications
 - types of hot water systems
- T5 Photovoltaic arrays encompassing:
- terminology
 - current, voltage and power
 - modules: types, efficiency, applications
 - IV curve
 - irradiance and temperature effects
 - array configurations
- T6 Wind energy resource and technology encompassing:
- terminology, units, symbols
 - wind speed, direction, turbulence, wind power,
 - vertical wind speed profile (wind shear)
 - local terrain roughness
 - isovent maps
 - measuring instruments
 - Wind Energy Conversion Systems (WECS)
 - terminology
 - characteristics
 - applications
- T7 Micro-hydro resource and technology encompassing:
- terminology, units, symbols

REQUIRED SKILLS AND KNOWLEDGE

- flow rate, head, assessment
- turbine types and applications

T8 Stand-alone power system configuration encompassing:

- basic configuration series systems
- components: functions, efficiencies; regulators, inverters, battery chargers, generators

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety issues inherent in working with electricity, electrical equipment, gas or any other hazardous substance/material present a challenge for those determining

competence. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit must be considered holistically. Each element and associated performance criteria must be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence must also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this must incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures

- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Provide basic sustainable energy solutions for energy reduction in domestic premises as described in 8) and including:

A Providing basic sustainable energy solutions for energy reduction in domestic premises

B Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence must be clearly identified

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to providing basic sustainable energy solutions for energy reduction in domestic premises.

**Method of
assessment**

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent
assessment and
relationship with
other units**

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit must be demonstrated in relation to the provision of basic sustainable energy solutions for energy reduction in domestic premises in any of the following disciplines:

- Appliances
- Business equipment
- Computers
- Data Communications
- Electrical
- Electrical Machines
- Electronics
- Fire protection
- Instrumentation
- Refrigeration and Air Conditioning
- Renewable / sustainable energy
- Security technology

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	11)
	Renewable and Sustainable Energy