



Australian Government

UETDRDS020 Design overhead distribution systems

Release: 1

UETDRDS020 Design overhead distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design overhead distribution systems in the electricity supply industry (ESI).

It includes distribution layout principles and infrastructure, including construction types, structures and clearances.

It also includes material lists, conductor specifications, and types and characteristics of overhead assets and associated equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Prepare to design overhead distribution systems

- 1.1** Project requirements are determined
- 1.2** Design specifications are determined in accordance with workplace requirements
- 1.3** Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
- 1.4** Requirements for site inspections are determined in accordance with workplace requirements
- 1.5** Work is prioritised and sequenced for completion in accordance with workplace requirements

2 Design overhead distribution systems

- 2.1** Site inspection is performed
- 2.2** Overhead distribution systems are designed in accordance with workplace requirements
- 2.3** Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
- 2.4** Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
- 2.5** Design is checked for compliance against legislation, regulations, standards and codes of practice
- 2.6** Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
- 2.7** Quality checks of work are undertaken in accordance with workplace requirements

3 Complete work and documentation

- 3.1** Completed work is checked against project and workplace requirements

- 3.2** Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

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 UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS002 Design overhead distribution power systems.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRDS020 Design overhead distribution systems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- designing of overhead distribution systems, including:
 - specifications
 - requirements for site inspection
 - systems modelling to evaluate and determine best outcomes
 - sustainable energy principles and practices
 - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
 - identifying minimising or eliminating health and safety risks by using safety and control measures
 - environmental sustainability principles
 - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
 - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing six (6) overhead distribution or sub-transmission system designs for at least three (3) of the following:
 - residential subdivision developments
 - industrial/commercial subdivision developments
 - upgrade/alteration to existing assets
 - multi-pole extensions
 - in-line pole relocations
 - multi-circuit overhead lines
- completing all of the following for each design:
 - a design control checklist

- rectifying errors.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- overhead distribution systems design, including:
 - project requirements
 - design specifications
 - hazard, risk assessment and risk control requirements, including potential hazards
 - types and application of PPE
 - site inspections
 - prioritisation and sequencing of work for completion
 - use of systems modelling to evaluate and determine best outcomes
 - application of environmental sustainability principles and practices
 - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
 - work records, reports and documentation
- distribution infrastructure, including:
 - manuals and diagrams
 - residential subdivision developments
 - industrial/commercial subdivision developments
 - upgrade/alteration to existing assets
 - multi-pole extensions
 - in-line pole relocations
 - multi-circuit overhead lines
 - construction types, structures and clearances
 - material lists, conductor size, type and route length
- control procedures and documents, including:
 - design control checklists
 - common design errors
 - rectification of errors
- layout principles for overhead distribution, including determination of:
 - conductor size, type and route length
 - materials, equipment and tools
 - component types, quantities and costing
 - component and equipment spacing
- resources required for stringing and maintenance of conductors
- types and characteristics of poles and associated equipment
- buried services and other infrastructure, including:

- telecommunications
- power
- water
- sewerage
- gas
- calculation of voltage drop in relation to length of cable run
- methods of joining and terminating conductors
- techniques in the installation of conductors
- techniques in location of conductor faults
- techniques in conductor drawing
- principles of computer-aided drafting.

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 workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational 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:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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