



Australian Government

UETTDRIS60 Install and replace power system energy meters and associated equipment

Release: 1

UETTDRI60 Install and replace power system energy meters and associated equipment

Modification History

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

Application

This unit involves the skills and knowledge required to install and replace power system energy meters and associated equipment in the electricity supply industry (ESI).

It includes the installation and replacement of whole current energy meters and associated equipment, the identification of faults and returning to service. It also covers normal functions of the meters and associated equipment in accordance with workplace procedures.

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

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

Pre-requisite Unit

All competencies in the Common Unit Group must have been completed, plus all competencies in one (1) of the identified Pathway Unit Group(s).

Common Unit Group

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UETTDREL16 Working safely near live electrical apparatus

Distribution Overhead Pathway Group

UETTDROP12 Maintain overhead energised low voltage conductors and cables

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDRI541 Install network infrastructure electrical equipment

UETTDRI542 Maintain network infrastructure electrical equipment

UETTDRI552 Install and maintain poles, structures and associated hardware

UETTDRI554 Install and maintain poles, structures and overhead conductors and cables

UETTDRI556 Install and maintain low voltage overhead services

Distribution Cable Jointing Pathway Group

UETTDRCJ21 Lay ESI electrical cables

UETTDRCJ26 Install and maintain de-energised low voltage underground polymeric cables

UETTDRCJ27 Install and maintain de-energised high voltage underground polymeric cables

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDRI541 Install network infrastructure electrical equipment

UETTDRI542 Maintain network infrastructure electrical equipment

UETTDRI555 Install and maintain low voltage underground services

Electrotechnology Electrician Pathway Group

UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG033A Solve problems in single and three phase low voltage electrical apparatus and circuits

UEENEEG063A Arrange circuits, control and protection for general electrical installations

UEENEEG103A Install low voltage wiring and accessories

UEENEEG104A Install appliances, switchgear and associated accessories for low voltage electrical installations

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

UEENEEG107A Select wiring systems and cables for low voltage general electrical installations

UEENEEG108A Trouble-shoot and repair faults in low voltage electrical apparatus and circuits

UEENEEG109A Develop and connect electrical control circuits

UEENEEK142A Apply environmentally and sustainable procedures in the energy sector

Competency Field

Industry Specific Cross Discipline

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 for installation and replacement of energy meters and associated equipment

- 1.1** Work schedules, construction plans, drawings, workplace procedures and material lists are received and confirmed
- 1.2** Job requirements and workplace procedures are identified and communicated with relevant personnel
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS), environmental and workplace procedures for the installation and replacement of energy meters and associated equipment are obtained and confirmed for the purposes of the work to be performed
- 1.4** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures identified in accordance with workplace procedures
- 1.6** Plant, equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
- 1.7** Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures
- 1.8** Traffic management plan is confirmed as being applied in accordance with workplace procedures

2 Carry out the installation and replacement of energy meters and associated

- 2.1** WHS/OHS, sustainable energy and environmental principles and practices are monitored and followed to reduce incidents in accordance with workplace

equipment	procedures
	2.2 Requirements for lifting and/or climbing and/or working at heights and the use of power tools/equipment are followed in accordance with workplace procedures 2.3 Installation and replacement of energy meters and associated equipment are performed in agreed timeframes, to quality standards and with a minimum of waste in accordance with workplace procedures 2.4 Installation and/or replacement of energy meters and associated equipment is performed, including required wiring, testing, programming and sealing of meters and associated equipment, in accordance with job requirements and workplace procedures 2.5 Unplanned events are responded to in accordance with workplace procedures 2.6 Quality checks of work are undertaken in accordance with workplace procedures
3 Complete the installation and replacement of energy meters and associated equipment	3.1 Completed work is checked against work schedule, construction plans and drawings for compliance and anomalies are reported in accordance with workplace procedures 3.2 WHS/OHS and environmental incidents are reported in accordance with workplace procedures, as required 3.3 Worksite is rehabilitated, cleaned up and made safe in accordance with workplace procedures 3.4 Tools, equipment and surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with workplace procedures 3.5 Work records, reports and/or documentation are completed in accordance with workplace procedures

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 Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS60A Install and replace power system energy meters and associated equipment.

Links

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

Assessment Requirements for UETTDRIS60 Install and replace power system energy meters and associated equipment

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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 and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- installing whole current energy meters on at least (1) one of the following types of meters:
 - induction disk energy meter
 - electronic energy meters
 - maximum demand meters
 - electronic summators
- installing associated metering equipment, including at least one (1) of the following:
 - service fuses
 - service links
 - meter boards
 - meter panels
- installing associated metering equipment, including at least one (1) of the following:
 - time switches
 - frequency injection relays
 - controlled output meters
 - contactors
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

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

- cable protection and support methods and accessories, including:
 - requirements to protect and support cables adequately - protection against mechanical damage, protection from adverse temperatures and corrosion, and protection from

- magnetic field that may affect the performance of the cable
- cable support and protection devices, accessories and typical applications - metallic and non-metallic conduits, duct and trunking, cable ladder and tray, cable clips and ties and related accessories
- installation techniques - cable installation equipment, cable drawing and hauling techniques
- types of cables used in electrotechnology and their application, including:
 - structural components of cables and their purpose - conductors and conductor material, insulation, sheathings and servings
 - application of various cables types
 - cable varieties - single cables, flexible cables, flexible cords, shielded cables, armoured cables, ribbon cables, other similar and like cables
 - typical characteristics and use of power circuit cables and control circuit cables
- installing cables in buildings, structures and premises, including:
 - building construction method and construction sequence
 - typical cable routes through buildings, structures and premises
 - building codes affecting the installation of cables in buildings, structures and premises - limitation of penetration structural elements and maintenance of fire protection interiority
 - cable segregation requirements
- basic cable and conductor terminations, including:
 - insulation removal and replacement
 - conductor handling and cable terminations - general aspects and soldering involving pins on electronic components and stranded conductors carrying current up to 25 amperes, application of connecting devices for conductors and terminals, continuity through connections and insulation resistance testing, and stress release on cables/conductors
- power cable and conductor terminations, including:
 - types of cable glands and their application - glands for circular sheathed cables, steel wire armoured (SWA) cables and mineral-insulated metal-sheathed (MIMS) cables
 - cable termination techniques
 - terminal types and applications
 - conductor termination techniques - need for sound termination, consequences of poor conductor termination, conductor and terminal preparation
- telecommunication cable and conductor terminations, including:
 - approved termination devices and sockets
 - special termination tools and their use
 - cable colour coding up to 100 pair indoor and outdoor cable
 - end-to-end testing
 - methods of terminating cables - cables less than twenty pair, twenty pair cable and greater
 - cable labelling devices
 - colour coding of cables, sockets and termination modules and standard connectors used with twisted pair, optical fibre and coaxial cables
- terminating cable and conductor used in electronic equipment, including:

- cable and conductor types and characteristics - insulated wire, harness wiring, high performance cables (transmission performance parameters and electrical characteristics), such as:
 - unshielded twisted pair (UTP), foil twisted pair (FTP) and shielded twisted pair (STP)
- coaxial cables types and characteristics - qualshield, trishield coaxial and armour plated coaxial cables
- cable anchoring and support methods
- termination methods
- installation of metering and control equipment, including:
 - standards, codes, legislation, supply authority regulations and or enterprise requirements pertaining to the installation and maintenance of energy meters and associated equipment
 - types of meters - kilowatt-hour meters single and polyphase, demand meters, recording meters and electronic recording metering systems summators
 - installation and removal methods - direct connection and plug in method, enterprise specific
 - types of associated equipment and accessories - meter boards, service fuse, links, contactors, time switch, audio frequency injection relay
 - testing procedures - safety testing, polarity testing
- powerline safety practices, including:
 - protective apparatus and apparel for linework - responsibilities for the selection, use, maintenance and storage of protective apparatus and apparel; and the types of protective apparatus and apparel used for the line worker
 - requirements for the use of ladders - carrying, erecting, collapsing and lowering different types of extension ladder against a standing pole; maintenance checks on different types of ladders; renewal of extension ropes; and the safety issues relating to clearances from overhead conductors
 - requirements for climbing and working aloft - methods used to identify a pole is safe to climb; methods used to inspect a line worker's body belt; application of knots and hitches appropriate to the requirements of a line worker; height safety principles, including personal fall protection, prevention and related requirements; and the practical procedures of climbing an overhead structure and fitting a pole chair
 - traffic management - purpose of traffic management and a line worker's responsibilities in accordance with relevant statutory requirements and electricity supply industry (ESI) requirements, procedures used to provide an effective traffic management scheme and the use of a two-way radio
 - control of small fires - identification, selection and operation of the appropriate extinguishing mediums for various types of fires; general fire prevention methods; and the precautions for personal protection when fighting small fires
 - rescue victims from heights and confined spaces - planning and identifying procedures; establishing responses; developing techniques; involvement of external emergency services; and ; emergency procedures for the rescue of an electric shock victim, including cardio pulmonary resuscitation (CPR)
 - requirements for aerial linework - planning, establishing and implementing relevant aviation authority clearances; determining system requirements; aircrew familiarisation

with network operations and equipment; and requirements for effective communications operations for aerial work.

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:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry for installing and replacing power system energy meters and associated equipment
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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