



Australian Government

UETDRTS003 Commission energy/revenue metering schemes (complex)

Release: 1

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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 2.0.

Application

This unit covers the commissioning of energy/revenue metering schemes in complex situations, including summation, subtraction, generation, bulk supply, interconnector and wholesale metering installations. This includes isolation, inspection, monitoring, testing, adjustment, repair, refurbishment and/or overhaul and functional checks of complex revenue metering schemes. It includes the requirements to prove the functionality of the metering scheme in accordance with electrical installation (state and national) standards, metrology procedures and compliance to tariff requirements.

The application of the skills and knowledge described in this unit requires a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

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

UEENEED104A Use engineering applications software on personal computers

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

UEENEEE124A Compile and produce an energy sector detailed report

UEENEEE125A Provide engineering solutions for problems in complex multiple path circuits

UEENEEE126A Provide solutions to basic engineering computational problems

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

UEENEEG076A Install and replace low voltage current transformer metering

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG103A Install low voltage wiring and accessories

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

UEENEEG105A Verify compliance and functionality of low voltage general 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

UEENEEG149A Provide engineering solutions to problems in complex polyphase power circuits

UEENEEG171A Install, set up and commission interval metering

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS005 Implement & monitor power system environmental & sustainable energy management policies & procedures

UETDRIS006 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

UETDRTS002 Commission energy/revenue metering schemes

UETDRTS012 Install and replace complex energy/revenue metering schemes and associated equipment

UETDRTS013 Install and replace high voltage metering and associated equipment

UETDRTS016 Maintain compliance with national electricity market metrology practices and procedures

UETDRTS020 Management of energy registration data errors for revenue billing purposes

UETDRTS022 Perform current injection testing using phantom load

UETDRTS024 Test and maintain energy/revenue metering schemes

UETDRTS025 Test and maintain energy/revenue metering schemes (complex)

UETDREL15 Respond to power systems technical enquiries and requests

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan for the commissioning of energy/revenue metering schemes (complex)

PERFORMANCE CRITERIA

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

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) practices/procedures and environmental and sustainable energy procedures, which may influence the commissioning of energy/revenue metering schemes (complex), are reviewed and determined
- 1.2** Purpose of the commissioning of energy/revenue metering schemes (complex) is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
- 1.3** Organisational established procedures, policies and specifications for the commissioning of energy/revenue metering schemes (complex) are obtained or established with appropriate personnel
- 1.4** Commissioning of energy/revenue metering schemes (complex) procedures are discussed with/directed to appropriate personnel in order to ascertain the project brief
- 1.5** Commissioning parameters are established from organisational established procedures, policies and specifications
- 1.6** Equipment/tools and personal protective equipment (PPE) are selected based on specified performance criteria and established procedures
- 1.7** Work roles and tasks are allocated according to requirements and individual competencies

- 1.8** Work is prioritised and sequenced for the most efficient/effective outcome, completed within an acceptable timeframe, to a quality standard and in accordance with established procedures
 - 1.9** Liaison and communication issues with others/authorised personnel, authorities, clients and customers are resolved and activities coordinated to carry out work
 - 1.10** Risk control measures are identified, prioritised and evaluated against the work schedule
 - 1.11** Relevant internal/external work permits are obtained to coordinate the performance of work according to requirements and/or established procedures
- 2 Carry out the commissioning of energy/revenue metering schemes (complex)**
 - 2.1** WHS/OHS and sustainable energy principles, functionality and practices to prevent the incidents of accidents and minimise waste are incorporated into the project in accordance with requirements and/or established procedures
 - 2.2** First aid, rescue and other related work procedures are performed according to requirements and/or established procedures
 - 2.3** Lifting, climbing and use of power tools/equipment, techniques and practices are safely exercised according to requirements
 - 2.4** Hazard warnings and safety signs are recognised and hazards and assessed WHS/OHS risks are reported to immediate authorised personnel for directions according to established procedures
 - 2.5** Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures
 - 2.6** Testing equipment is used in accordance with the work schedule and requirements and/or established procedures
 - 2.7** Commissioning of energy/revenue metering schemes (complex) is carried out in accordance with the work schedule
 - 2.8** Technical advice is given regarding potential hazards, safety risks and control measures so that monitoring and

preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures

- 2.9** Essential knowledge and associated skills are applied in the safe commissioning of energy/revenue metering schemes (complex) to ensure completion in an agreed timeframe according to requirements
- 2.10** Solutions to non-routine problems are identified and actioned, using essential knowledge and associated skills, according to requirements
- 2.11** Quality of work is monitored against personal performance agreement and/or established organisational and professional standards

3 Complete the commissioning of energy/revenue metering schemes (complex)

- 3.1** Final inspections of the commissioning of energy/revenue metering schemes (complex) using routine tests and acceptance tests are undertaken to ensure they comply with all requirements and include all specifications and documents needed to complete the project
- 3.2** Appropriate internal/external personnel are notified of completion and reports and/or completion documents are finalised/commissioned according to established procedures and timeframes
- 3.3** Reports and/or completion documents are submitted to relevant personnel/organisations for approval and, where applicable, statutory or regulatory approval
- 3.4** Approved copies of routine testing and acceptance testing procedures/activities/results, for the commissioning of energy/revenue metering schemes (complex), documents are issued and records updated in accordance with established 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 UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTS47 Commission energy/revenue metering schemes (complex).

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 UETDRTS003 Commission energy/revenue metering schemes (complex)

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 2.0.

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
- performing, on at least three (3) occasions, the commissioning of at least seven (7) of the following complex metering scheme types:
 - multiple feeder high voltage (HV) and low voltage (LV) customers
 - summation
 - subtraction
 - interposing
 - voltage changeover schemes
 - generation
 - zone substation
 - bulk supply
 - interconnector
 - wholesale metering
- performing, on at least three (3) occasions, at least six (6) of the following activities:
 - isolation
 - inspection
 - monitoring
 - testing
 - adjustment
 - repair
 - refurbishment and/or overhaul
 - functional checks of complex revenue metering schemes
- performing, on at least three (3) occasions, all the following activities:
 - ensuring meter function using multiple proprietary software applications
 - determining energy flows, voltage, current and phasor relationships

- validating against independent information sources and test results to ensure that the installation is operating within prescribed limits (enterprise, manufacturer and regulated energy market requirements)
- validation of the actual meter energy data against meter data provider remote data streams
- calculating and recording the overall installation site
- ensuring compliance with regulated energy market compliance
- endorsing the site overall accuracy and installation compliance as the technical representative authorised by the metering provider
- ensuring all records of the commissioning of energy/revenue metering schemes (complex) are complete and forwarded to the appropriate authority in accordance with regulatory requirements
- 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:

- additional hardware components which add complexity and the possibility for greater uncertainty in overall accuracy
- calculations are more complex and require consideration of multiple sources of errors to accurately determine the overall site errors
- calculation and verification of correct application of transformer losses, transmission line losses and correction factors in meter programming
- determining the inputs and relationships required of physical metering points to establish and verify logical metering schemes
- consideration to all sources of burden on the metering instrument transformers and ensuring the instrument transformer is operating within its accuracy limits
- communicating with market participants, including meter data provider and responsible person
- knowledge of high fault currents
- risk assessments and safe systems of 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
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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