



Australian Government

UETTDRSO35 Manage high voltage distribution and sub-transmission network demand

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.

Application

This unit covers the management of the switching of high voltage (HV) network components with due regard to the loadings and prevailing network constraints and includes scheduling of generators, VAR compensators, load shedding and non-essential loads in response to National Electricity Market Management Company (NEMMCO) or network requirements. It also includes voltage control equipment.

The application of the skills and knowledge described in this unit may require 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 licencing 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

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

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

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG149A Provide engineering solutions to problems in complex polyphase power circuits

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL16 Working safely near live electrical apparatus

UETTDRI62 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

UETTDRI63 Implement & monitor power system environmental & sustainable energy management policies & procedures

UETTDRSO48 Respond to discrete and interdependent protection operations

UETTDRSO49 Coordinate power system operations in a regulated energy market

Distribution and Sub-transmission Pathway Unit Group

UETTDRSO37 Develop high voltage distribution and sub-transmission switching programs

UETTDRSO40 Coordinate high voltage distribution and sub-transmission networks

Transmission Pathway Unit Group

UETTDRSO38 Develop and evaluate power systems transmission switching programs

UETTDRSO47 Coordinate high voltage transmission network

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1 Plan for the management of HV distribution and sub-transmission network demand

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) practices/procedures and environmental and sustainable energy procedures, which may influence the management of HV distribution and sub-transmission network systems, are reviewed and determined
- 1.2 Purpose of the management is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
- 1.3 Organisational established procedures on policies and specifications for the management of the network

demand are obtained or established with appropriate personnel

- 1.4** Testing procedures are discussed with/directed to the appropriate personnel in order to ascertain the project brief
- 1.5** Testing parameters are established from organisational established procedures on 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 land owners 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 work permits are secured to coordinate the performance of work according to requirements and/or established procedures

2 Carry out the management of HV distribution and sub-transmission network demand

- 2.1** Circuit/systems modelling is used to evaluate alternative proposals in accordance with established procedures
- 2.2** WHS/OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated into the project in accordance with requirements and/or established procedures
- 2.3** Management of HV distribution and sub-transmission network demand decisions are made on the basis of safety and effective outcomes according to requirements

and/or established procedures

- 2.4 Mathematical models of the HV distribution and sub-transmission network demand are used to analyse the effectiveness of the finished project in accordance with requirements and established procedures
- 2.5 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
- 2.6 Essential knowledge and associated skills are applied to analyse specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements
- 2.7 Testing of HV distribution and sub-transmission network demand is undertaken according to requirements and established procedures
- 2.8 Work teams/groups are arranged/coordinated/evaluated to ensure planned goals are met according to established procedures
- 2.9 Solutions to non-routine problems are identified and actioned using acquired essential knowledge and associated skills according to requirements
- 2.10 Quality of work is monitored against personal performance agreement and/or established organisational and professional standards
- 2.11 Strategic plans are developed incorporating organisation initiatives in accordance with established procedures

3 Complete the management of HV distribution and sub-transmission network demand

- 3.1 Final inspections of the network demand are undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the project
- 3.2 Appropriate personnel are notified of completion and reports and/or completion documents are finalised/commissioned
- 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 the managed HV distribution and sub-transmission network demand documents are issued and records are 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 Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRSO35A Manage high voltage distribution and subtransmission network demand.

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 UETTDRSO35 Manage high voltage distribution and sub-transmission network demand

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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
- demonstrating at least three (3) system manipulations that encompass the following:
 - high voltage (HV) sub-transmission distribution network
 - transmission network manipulation to control loading on equipment
 - transformers with HV windings
 - HV busbars
 - HV isolators
 - HV switchgear (applicable to enterprise equipment)
- managing multiple switching instructions
- coordinating the status of access permits/authorities on HV network equipment
- ensuring network plant operates within design and regulatory requirements on a real time basis
- calculating line loading
- preparing and authorising HV distribution switching programs
- demonstrating application of supervisory control and data acquisition (SCADA) or equivalent
- analysing, diagnosing and reporting system failures
- calculating and analysing paralleling conditions on the interconnected HV system as applicable to the entity
- preparing, writing and checking switching sheets to undertake all of the following:
 - managing load
 - managing voltage
 - minimising loss
 - maximising system reliability
 - allowing safe network access for maintenance activities
 - allowing safe network access for construction activities
 - validating fault reports arising from system disturbances

- 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:

- enterprise-specific procedures and work practices relating to managing network demand encompassing:
 - Commonwealth/state/territory and local government legislation, supply authority regulations, standards, codes and/or enterprise requirements applicable to the procedures and work practices relating to managing network demand
 - requirements for the use of demand management manuals, system diagrams/plans and drawings
 - identifying and interpreting enterprise demand management procedures
 - techniques in applying enterprise demand management procedures
- effective management and communication encompassing:
 - Commonwealth/state/territory and local government legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to assisting in effective management and communication
 - enterprise operational principles - workplace WHS/OHS enterprise plan, environmental enterprise policies and procedures, industrial relations policies and procedures, and anti-discrimination policies and procedures
 - relationship between the management and employees - methods used to collate and distribute/disseminate information, responsibilities of each member of the work team, staff development activities and legislation requirements with regard to WHS/OHS training, methods of addressing barriers such as literacy and cultural differences, and provisions relating to WHS/OHS issue resolution
 - techniques associated with organisational policies and procedures related to human resources - relevant awards and certified agreements, legislation impacting on people management, range of support services and expertise available
 - techniques in managing relationships - identifying problems; methods of conflict resolution; methods of consultation, communication, negotiation and mentoring; and strategies for positive feedback
 - techniques in leadership in achieving enterprise strategic and operational plans
 - techniques in managing relationships under stress - stress management
- methodology used in writing enterprise-specific management reports encompassing:
 - Commonwealth/state/territory and local government legislation, supply authority regulations, standards, codes and/or enterprise requirements applicable to the writing enterprise-specific management reports
 - techniques in researching, collating and analysing information for the report - recording, filing, retrieving systems, and storing and retrieving data from computer systems
 - relationship of management reports to enterprise policies and procedures - enterprise structure and resources, workplace WHS/OHS and risk management enterprise data,

financial and operational data, environmental enterprise policies and procedures, industrial relations policies and procedures, and anti-discrimination policies and procedures

- techniques in writing enterprise-specific management reports - methods used to disseminate information and facilitate enterprise requirements, document proformas, and compliance and legislative requirements to produce effective reports in the appropriate format.

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, protection, control, metering and alarm equipment, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry
- applicable documentation including, workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

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