



Australian Government

Department of Education, Employment and Workplace Relations

UETTDRSO49A Coordinate power system operations in a regulated energy market

Release: 1

UETTDRSO49A Coordinate power system operations in a regulated energy market

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Competency Standard Unit covers the coordination of system operations in a regulated energy market. It includes the relevant application of knowledge of the National Electricity Market (NEM), the practices and rules used in facilitating the coordination of operations in a regulated energy market.

Application of the Unit

Application of the Unit 2)

This Competency Standard Unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit may require a licence/registration to practice in the work place subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to Occupational Health and Safety, electricity/telecommunications/gas/water industry safety and compliance, industrial relations, environmental protection, anti discrimination and training.

License to practice**3)**

Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of operating certain equipment.

Pre-Requisites**Prerequisite Unit(s)****4)****Competencies****4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s):

Common Unit Group

Unit Code	Unit Title
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 problems
UEENEEE126A	Provide solutions to basic

Prerequisite Unit(s)**4)**

engineering computational problems

UEENEEG101A

Solve problems in electromagnetic devices and related circuits

UEENEEG102A

Solve problems in electromagnetic devices and related circuits

UEENEEG149A

Provide engineering solutions to problems in complex polyphase power circuits

UETTDREL11A

Apply sustainable energy and environmental procedures

UETTDREL16A

Working safely near live electrical apparatus

UETTDRI62A

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

UETTDRI63A

Implement and monitor the power system environmental and sustainable energy management policies and procedures

Distribution and Subtransmission Pathway Unit Group

UETTDRSO37A

Develop high voltage distribution and subtransmission switching programs

UETTDRSO40A

Coordinate high voltage distribution and subtransmission networks

Transmission Pathway Unit Group

UETTDRSO38A

Develop and evaluate power systems transmission switching programs

UETTDRSO47A

Coordinate high voltage transmission network

Literacy and numeracy skills**4.2)**

Participants are best equipped to achieve 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 5 Writing 5 Numeracy 5

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	Plan to coordinate System Operations in a regulated energy market	1.1	OHS practices/procedures and environmental and sustainable energy procedures, which may influence the coordination of the electricity market are reviewed and determined.
		1.2	Energy market requirements are established after data is analysed and expected outcomes of the work are confirmed with the appropriate personnel.
		1.3	Energy market and associated equipment operational prerequisites are identified and established in accordance with manufacturers

ELEMENT	PERFORMANCE CRITERIA
	and/or enterprise/site procedures
	1.4 Electricity market coordination and control procedures are discussed with and/or directed to the appropriate personnel in order to ascertain the project brief.
	1.5 Testing parameters are ascertained from established policies, procedures and specifications.
	1.6 Equipment/tools and personal protective equipment are selected based on specified Performance Criteria and established procedures.
	1.7 Work roles and tasks are allocated according to requirements and individuals' 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 other/authorised personnel, authorities and clients 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 Need for relevant work permits is identified to coordinate the performance of work according to requirements and/or established procedures.
	1.12 Circuit/systems modelling are used to evaluate alternative proposals as per established procedures.
2 Coordinate System Operations in a regulated energy market	2.1 Strategic plans are developed incorporating organisational initiatives as per established procedures
	2.2 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

ELEMENT**PERFORMANCE CRITERIA**

- requirements and/or established procedures.
- 2.3 Decisions concerning the coordination are made on the basis of safety and effective outcomes according to requirements and/or established procedures.
- 2.4 Stakeholders/customers are kept informed of current status regarding plan progress and recent developments
- 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 work within an agreed timeframe according to requirements.
- 2.7 Testing of the decision to be implemented 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.

ELEMENT	PERFORMANCE CRITERIA
3 Complete the coordination of System Operations in a regulated energy market	3.1 Final review of the coordination is undertaken to ensure it complies with all requirements and include all specifications and documentations needed to complete the work.
	3.2 Appropriate personnel are notified of completion and reports and/or completion documents (electronic/paper) are finalised/commissioned.
	3.3 Reports and/or completion documents (electronic/paper) are submitted to relevant personnel/organisations for approval and, where applicable, statutory or regulatory approval.
	3.4 Approved copies of coordination documents (electronic/paper) are issued and records are updated in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) Essential Knowledge and Associated Skills (EKAS): This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of developing and evaluating transmission switching programs.

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

KS01-TSO49A Power system operations in a regulated energy market - coordination

Evidence shall show an understanding of power system operations in a regulated energy market - coordination to an extent indicated by the following aspects:

T1 Generation systems encompassing:

- Methods of generating electricity - types of power stations and reasons for their location, layout of thermal and hydroelectric power stations
- Relationship between power control and load requirements - operating speeds for thermal and hydroelectric generating sets, typical generator voltage levels and output ratings
- The purpose and features of typical types of co-generation systems

T2 Enterprise specific — policy and procedure instructions encompassing:

- Responsibilities and duty of care of employer and employee relationship
- Methods of obtaining the up-to-date information on enterprise policy and procedures
- Rules and regulations
- Induction into workplace - location of work area and storage area, timetable, uniform, personal well-being, housekeeping rules, emergency procedures, evacuation procedures
- Techniques when deal with others - working in teams, customer relation, complaint and issues procedures.
- Overview of enterprise professional development - fire fighting procedures, fatigue management, training and competency development - understanding and promotion

T3 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
- Identify and interpret enterprise demand management procedures

REQUIRED SKILLS AND KNOWLEDGE

- Techniques in the applying enterprise demand management procedures.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of the competency standard unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all component 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's 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. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

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 nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day 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 practiced. 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 shall be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the “Assessment Guidelines – UET12”. Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall 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; and
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and range; and
 - Demonstrate an understanding of the essential knowledge and associated skills described in this unit to such an extent that the learner’s performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment; and
 - Demonstrate an appropriate level of employability skills; and
- Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures; and
- Demonstrated performance across a representative range of contexts from the prescribed items below:

Range of tools/equipment/materials/procedures/workplaces/other variables		
Group No	The minimum number of items on which skill is to be demonstrated	Item List
A	Perform on at least three (3) occasions the following:	Dispatch energy to the electricity market Respond to electricity market fluctuations/demands Manipulate the system to ensure reliable operation in response to electricity market requirements
B	All of the following:	Principals and objectives of the electricity market The role of ancillary services in the operation of the electricity market Service provider obligations in the electricity market Connection and access requirements to the electricity market Analysis of pricing concepts Contractual obligations Scheduling of generation assets
C	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate

		solutions incorporated in the holistic assessment with the above listed items.
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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 the operation of the power system within the NEM

Note:

Access will be needed to: relevant modelling tools, drawings, computerised electrical plant control and monitoring facilities and enterprise operational policies, procedures and work practices.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency working in realistic environment and a variety of conditions.

Method of assessment **9.4)**

This Competency Standard 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 Transmission, Distribution and Rail Traction Industry. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated 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 competency standard 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 shall be demonstrated in relation to the knowledge of the structure, operation of the National Electricity Market and the impact of the National Electricity Rules on the operation of the power system.

It includes but it is not limited to a knowledge of dispatch of energy and ancillary services in the NEM, electrical market auto loading procedures; the ensuing flows and operation of the network, transmission plant loadings, stable system operation, planned and unplanned network outages, restoration of the system following system events, black system restart

The following constants and variables included in the Element/Performance Criteria in this unit are fully described in the Definitions Section 1 of this volume and form an integral part of the Range Statement of this unit:

- Appropriate and relevant persons (see Personnel)
- Appropriate authorities
- Assessing risk
- Assessment
- Authorisation
- Emergency
- Established procedures
- Legislation
- Notification
- OHS practices
- OHS issues
- Quality assurance systems
- Requirements
- Market participant
- Network service providers,
- Non market participants,
- Australian Energy Market Commission
- Australian Energy Regulator
- National Electricity Market Management Company

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	11)
	System Operation Units