



Australian Government

Department of Education, Employment and Workplace Relations

MSS405070A Develop and manage sustainable energy practices

Release: 1

MSS405070A Develop and manage sustainable energy practices

Modification History

New unit, superseding MSACMT670A Develop and manage sustainable energy practices - Equivalent

Unit Descriptor

This unit of competency covers the skills and knowledge required to identify opportunities for, and make improvements in, sustainable energy practices in an organisation. Areas covered include efficient use of raw materials, management of waste, electricity conservation, heat conservation and management, water management, environment protection and environment obligations of enterprises.

Application of the Unit

This unit applies to an individual who is required to establish systems for improved energy practices in an organisation. The unit involves analysis of energy used in processes and operations and categorising the energy use according to lean principles. The unit covers categorising energy into necessary use and waste with the waste being further categorised into necessary waste and unnecessary waste. Strategies for eliminating or minimising energy waste are covered with benefit/cost analyses being required for strategies.

This unit primarily requires the application of communication and problem solving skills associated with collecting and analysing information. An ability to analyse energy use of technology or processes will be applied. Initiative and enterprise, and planning and organising are also required to develop plans for efficient energy use. This unit also requires aspects of self-management and learning to ensure feedback and new learning is integrated into the development of processes.

Where the quantum of energy used is not easily available or a formal calculation of energy use is required through an energy balancing calculation (e.g. for regulatory purposes) the unit *MSS015011A Conduct a sustainability energy audit* may also be required.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Analyse energy use	1.1	Identify all energy consuming processes
		1.2	Determine quantity and nature of energy consumed
		1.3	Analyse energy consumed and generated in different parts of the process
		1.4	Determine source of energy consumed in process
2	Develop energy conservation plans	2.1	Determine the efficiency of use of energy by all energy consuming processes
		2.2	Determine causes of low efficiency of use
		2.3	Develop plans for increasing the efficiency of energy use
		2.4	Determine benefit/cost of plans
3	Develop energy trading plans	3.1	Compare energy generating activities with energy consuming activities
		3.2	Determine feasibility of energy consuming activities using energy generated by other activities
		3.3	Develop plans for energy trading

- 3.4 Determine benefit/cost of plans
- 4 Investigate alternative sources of energy
 - 4.1 Develop a specification for energy required
 - 4.2 Identify a range of sources for that energy
 - 4.3 Determine benefit/cost for alternative energy sources
- 5 Develop plans for more efficient energy use
 - 5.1 Compare benefit/costs for different alternatives developed
 - 5.2 Rank proposals based on benefit/cost compare to limited resources
 - 5.3 Check proposals meet regulatory requirements
 - 5.4 Recommend proposals for improving energy efficiency
- 6 Implement selected plans
 - 6.1 Liaise with relevant people to implement energy efficiency plans
 - 6.2 Follow through to ensure implementation occurs
 - 6.3 Monitor implementation and make adjustments, as required
 - 6.4 Check new energy usage to ensure improvements have occurred

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- using common units, symbols and formulae common in energy-related calculations
- applying mathematics
- communicating with a variety of groups and individuals using different media
- solving complex problems individually and as part of a team
- reviewing range of existing data for suitability and determining where new data gathering is required
- planning and organising complex whole of organisation activities relating to energy use, including objectives, timelines, implementation procedures and monitoring strategy
- determining where energy balancing techniques are required
- accessing manufacturers' data and other sources of energy consumption for individual equipment and processes
- mapping processes and energy flows
- calculating, manipulating and interpreting numerical data
- ranking energy consumption and waste for area, sites or processes
- calculating the efficiency of use of energy by equipment and processes
- consulting with technical and operative staff on possible non-obvious energy wastes
- consulting and negotiating with stakeholders on implementation process for sustainability improvement

Required knowledge

Required knowledge includes:

- types and sources of energy
- methods of analysing energy efficiency for different types of energy
- methods of converting energy values from one form to another
- alternative sources of energy
- principles of energy efficiency
- relevant regulatory/legislative requirements
- energy trading schemes and procedures
- organisation and process needs for energy

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>A person who demonstrates competency in this unit must be able to provide evidence of their ability to:</p> <ul style="list-style-type: none"> • gather appropriate data to allow energy analyses • categorise energy use into necessary use and waste • develop options for energy reduction including presenting of alternatives and benefit/cost analyses • develop strategies and plans for energy use and monitor implementation.
<p>Context of and specific resources for assessment</p>	<p>Assessment of performance must be undertaken in a workplace using or implementing one or more competitive systems and practices.</p> <p>Access may be required to:</p> <ul style="list-style-type: none"> • workplace procedures and plans relevant to work area • specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the assessee • documentation and information in relation to production, waste, overheads and hazard control/management • reports from supervisors/managers • case studies and scenarios to assess responses to contingencies.
<p>Method of assessment</p>	<p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> • demonstration in the workplace • workplace projects • suitable simulation • case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on) • targeted questioning • reports from supervisors, peers and colleagues (third-party reports) • portfolio of evidence. <p>In all cases it is expected that practical assessment will</p>

	<p>be combined with targeted questioning to assess underpinning knowledge.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p>
Guidance information for assessment	<p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.</p>

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Competitive systems and practices	<p>Competitive systems and practices may include, but are not limited to:</p> <ul style="list-style-type: none"> • lean operations • agile operations • preventative and predictive maintenance approaches • monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time
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	<ul style="list-style-type: none"> • process mapping • problem solving • run charts • standard procedures • current reality tree <p>Competitive systems and practices should be interpreted so as to take into account:</p> <ul style="list-style-type: none"> • the stage of implementation of competitive systems and practices • the size of the enterprise • the work organisation, culture, regulatory environment and the industry sector
Waste	<p>Waste (also known as muda in the Toyota Production System and its derivatives) is any activity which does not contribute to customer benefit/features in the product.</p> <p>Within operations, categories of waste include:</p> <ul style="list-style-type: none"> • excess production and early production • delays • movement and transport • poor process design • inventory • inefficient performance of a process • making defective items • activities which do not yield any benefit to the organisation or any benefit to the organisations customers
Necessary waste	<p>Necessary waste is:</p> <ul style="list-style-type: none"> • any activity or cost which does not contribute directly to customer benefit/feature in the product, and which cannot be avoided (e.g. regulatory compliance and fixed costs). Necessary waste cannot be eliminated but should be managed
Unnecessary waste	<p>Unnecessary waste is:</p> <ul style="list-style-type: none"> • any activity or cost which does not contribute directly to customer benefit/features in the product and can be avoided. Unnecessary waste should be eliminated as quickly as practical
Energy	<p>Energy includes:</p> <ul style="list-style-type: none"> • all sources of energy used by the process be it electricity, gas or mobile transport fuel

	<p>The uses of the energy will also be potentially wide and include:</p> <ul style="list-style-type: none"> • heating and cooling • moving materials (e.g. pumps and conveyors) • modifying materials (e.g. cutting, forming, weaving, knitting, reacting, moulding, extruding and mixing) • generating pressure/vacuum or providing motive power for equipment and transport
<p>Energy trading</p>	<p>Energy trading means both formal trading where the organisation investigates alternatives to:</p> <ul style="list-style-type: none"> • the buying of energy through alternative suppliers and tender processes • selling of excess energy produced by the organisation to energy companies or other producers <p>and</p> <ul style="list-style-type: none"> • internal trading of excess energy from one area to an energy consuming area elsewhere in the organisation

Unit Sector(s)

Unit sector

Competitive systems and practices

Custom Content Section

Not applicable.