

## **22664VIC Course in Energy Efficiency Management**

**Version 1**

**This course has been accredited under Part 4.4 of the  
*Education and Training Reform Act 2006.***

**Accredited for the period: 1 April 2024 to 31 March 2029**

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## Section A – Copyright and course classification information

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<p><b>2. Address</b></p>	<p><b>Executive Director</b>  Deputy CEO  Victorian Skills Authority  Department of Jobs Skills, Industry and Regions (DJSIR)  GPO Box 4509  Melbourne Vic 3001</p> <p><b>Organisational Contact :</b></p> <p>Manager, Training and Learning Products Unit  Engagement Branch  Victorian Skills Authority  Email : <a href="mailto:course.enquiry@djsir.vic.gov.au">course.enquiry@djsir.vic.gov.au</a></p> <p><b>Day-to-Day contact :</b>  Curriculum Maintenance Manager (CMM)  Electrical/Engineering Industries  Box Hill Institute of TAFE  Private Bag 2014  Box Hill, Victoria 3128  Email: <a href="mailto:cmmei@boxhill.edu.au">cmmei@boxhill.edu.au</a></p>
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<b>6. Course accrediting body</b>	Victorian Registration and Qualifications Authority
<b>7. AVETMISS information</b>	<p><b>ANZSCO code – 6 digit</b>  Australian and New Zealand Standard Classification of Occupations  341111 Electrician (General)</p> <p><b>ASCED Code – 4 digit</b>  Field of Education  0313 Electrical and Electronic Engineering and Technology</p> <p><b>National course code</b>  22664VIC.</p>
<b>8. Period of accreditation</b>	1 April 2024 to 31 March 2029

## Section B – Course information

<b>1. Nomenclature</b>	<b>Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses</b>
1.1 Name of the qualification	Course in Energy Efficiency Management
1.2 Nominal duration of the course	18 nominal hours
<b>2. Vocational or educational outcomes</b>	<b>Standard 5.1 AQTF 2021 Standards for Accredited Courses</b>
2.1 Outcome(s) of the course	<p>The Course in Energy Efficiency Management is designed to provide learners with the skills and knowledge required to:</p> <ul style="list-style-type: none"> <li>• maintain currency of electrical technologies and decarbonisation initiatives</li> <li>• facilitate electrical efficiency awareness to clients</li> <li>• analyse real time energy usage data and evaluate capacity for clean energy technology integration/adoption</li> <li>• develop energy efficient electrification plans for residential applications</li> <li>• undertake sub metering arrangements for commercial building energy efficiency.</li> </ul> <p>This course enhances the capability of licensed electricians. The role of the electrician is extended to include energy efficiency assessment and management with the aim of supporting, where appropriate, fossil fuel energy sources such as gas, with clean energy sources to support decarbonisation.</p>
2.2 Course description	<p>The Course in Energy Efficiency Management provides an accredited training program to enhance the capability of licensed electricians (A grade or equivalent) within the electrotechnology and renewable energy sectors.</p> <p>On completion of the course, graduates will have the skills and knowledge required to assess current and future client energy demands, evaluate alternatives for gas substitution and recommend efficient energy management options that utilise clean energy technology, for residential or commercial applications.</p>
<b>3. Development of the course</b>	<b>Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses</b>
3.1 Industry, education, legislative, enterprise or community needs	Victoria is leading the nation in the transition to clean energy, being one of the first jurisdictions in the world to legislate a net zero emissions



target within the Climate Change Act 2017<sup>1</sup>. Since the release of Victoria's Climate Change Strategy in 2021<sup>2</sup>, new renewable energy targets have been set and emission reduction targets have been accelerated, with net zero emissions to be reached by 2045<sup>3</sup>.

For the construction and electrotechnology sector, change to legislation concerning 'new builds' to support these targets has been swift. In July 2023, the Victorian Government announced that 'from January 1, 2024, planning permits for new homes and residential subdivisions, including public and social housing, will only connect to all-electric networks<sup>4</sup>, i.e. gas installations are banned. In August 2022, the National Construction Code (NCC) was amended to require all new homes built in Victoria (from 1st May 2024) to meet increased minimum energy efficiency standards, changing from 6 to 7 stars<sup>5</sup>.

Several climate action policies and programs have also been developed to support the climate change strategy, including Victoria's Gas Substitution Roadmap, and the Solar Homes program. Both of these initiatives seek to introduce clean energy technologies (in the form of electricity) as alternative sources of power for households and businesses with the added benefit of:

- reducing reliance on fossil fuels
- decarbonising energy use
- reducing emissions
- providing a consistent and reliable form of energy supply
- providing bill savings through affordable energy adoption.

The scale of transition, particularly for gas substitution, is enormous; over two million Victorians use gas in their homes and businesses, more than any other state and territory in the nation<sup>6</sup>. This represents over 80% of Victorian home gas connections.

In order to support the government clean energy strategy and anticipated consumer demand for clean energy substitution, the electrotechnology industry recognised the need to upskill its workforce in electrification practices, specifically to:

- deepen their awareness and technical knowledge of new energy sources
- enhance their energy/literacy soft skills, and

<sup>1</sup> <https://www.climatechange.vic.gov.au/legislation/climate-change-act-2017>

<sup>2</sup> [https://www.climatechange.vic.gov.au/\\_\\_data/assets/pdf\\_file/0026/521297/Victorian-Climate-Change-Strategy.pdf](https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0026/521297/Victorian-Climate-Change-Strategy.pdf)

<sup>3</sup> [https://www.climatechange.vic.gov.au/\\_\\_data/assets/pdf\\_file/0028/635590/Victorias-2035-Climate-Target\\_Driving-Real-Climate-Action.pdf](https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0028/635590/Victorias-2035-Climate-Target_Driving-Real-Climate-Action.pdf)

<sup>4</sup> <https://www.abc.net.au/news/2023-07-28/victoria-bans-gas-new-homes-housing-developments-emissions/102659636>

<sup>5</sup> <https://www.energy.vic.gov.au/for-households/7-star-energy-efficiency-building-standards#:~:text=On%2026%20August%2022%2C%20Victoria,help%20reduce%20greenhouse%20gas%20emissions>

<sup>6</sup> <https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap>



- evolve their current work practices to maximise energy efficiency and management of energy configurations.

A successful Workforce Training and Innovation Fund (WTIF) application was therefore developed by the Electrical Trades Union (ETU) in partnership with industry stakeholders in 2023 to extend workforce capability. The Course in Energy Efficiency Management forms part of that project, demonstrating Victorian Government support for the course.

Anticipated course demand is strong. The Victorian electrotechnology workforce consists of 42,698 licensed electricians and 9,714 apprentices. These practitioners are considered integral in facilitating change in new energy supply requirements. The course will be piloted to 300 learners initially, and feedback will form part of course improvement.

The target group for the proposed course is:

- licensed electricians (A grade or equivalent) seeking to expand their skill base who may be currently employed or seeking to re-enter the workforce
- Vocational Education and Training (VET) trainers and assessors that hold an electrical license.

Course developers undertook preliminary desktop research and stakeholder consultation to determine skill and knowledge outcomes of the course and inform training product development. The members of the project steering committee (PSC) met formally on two occasions to consider and confirm the required skills and knowledge outcomes of the course, course structure and final accreditation submission. Stakeholder feedback was incorporated to refine the technical content and assessment requirements of the course submission and enterprise units, as appropriate.

The project for the development of the Course in Energy Efficiency Management was overseen by a project steering committee comprised of the following industry and RTO representatives:

Karla Paeglis (Chair)	Energy Efficiency Council
Alex Newman	The Centre for U (ETU)
Michael Cullen	Future Energy Skills
Sandy Atkins	Energy Safe Victoria
Marlo Jakob	Solar Victoria
Gavin S Vance	Solar Victoria
Louis Knoops	National Electrical and Communications Association (NECA)



	In attendance										
	<table border="1"> <tr> <td>Damien Moyse</td> <td>Department of Energy, Environment and Climate Action (DEECA)</td> </tr> <tr> <td>Andrew Donnison</td> <td>Future Energy Skills</td> </tr> <tr> <td>Tony Watson</td> <td>Future Energy Skills</td> </tr> <tr> <td>Teresa Signorello</td> <td>Course Developer, TSF Partners</td> </tr> <tr> <td>Susan Fechner</td> <td>Course Writer, TSF Partners</td> </tr> </table>	Damien Moyse	Department of Energy, Environment and Climate Action (DEECA)	Andrew Donnison	Future Energy Skills	Tony Watson	Future Energy Skills	Teresa Signorello	Course Developer, TSF Partners	Susan Fechner	Course Writer, TSF Partners
Damien Moyse	Department of Energy, Environment and Climate Action (DEECA)										
Andrew Donnison	Future Energy Skills										
Tony Watson	Future Energy Skills										
Teresa Signorello	Course Developer, TSF Partners										
Susan Fechner	Course Writer, TSF Partners										
	<p>This course:</p> <ul style="list-style-type: none"> <li>• does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification</li> <li>• is not a subset of a single training package qualification that could be recognised through one or more statements of attainment or a skill set</li> <li>• does not include units of competency additional to those in a training package qualification that could be recognised through statements of attainment in addition to the qualification</li> <li>• does not comprise units that duplicate units of competency of a training package qualification.</li> </ul>										
<b>3.2 Review for re-accreditation</b>	Not applicable.										
<b>4. Course outcomes</b>	<b>Standards 5.5, 5.6 and 5.7 AQTF 2021 Standards for Accredited Courses</b>										
<b>4.1 Qualification level</b>	This course meets an identified industry need, but does not have the breadth, depth or volume of learning of a qualification.										
<b>4.2 Foundation skills</b>	Foundation skills applicable to the outcomes of this course are identified in the units of competency'.										
<b>4.3 Recognition given to the course (if applicable)</b>	Not applicable										

<b>4.4 Licensing/regulatory requirements (if applicable)</b>	NA
<b>5. Course rules</b>	<b>Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses</b>
<b>5.1 Course structure</b>	<p>To achieve the award of 22664VIC Course in Energy Efficiency Management, the learner must successfully complete a total of two (2) units comprising:</p> <ul style="list-style-type: none"> <li>• one (1) core unit</li> <li>• one (1) elective unit, which may be selected from the two (2) elective units listed below.</li> </ul> <p>Where the full course is not completed, a VET Statement of Attainment will be issued for the unit successfully completed.</p>

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
<b>Core units</b>				
VU23663	Communicate electrical efficiency awareness to client	031399	Nil	4
<b>Elective units</b>				
VU23664	Develop an electrification plan for residential electrical efficiency	031399	Nil	14
VU23665	Conduct site assessment and sub metering arrangement for small commercial building energy efficiency	031399	Nil	14
<b>Total nominal hours</b>				<b>18</b>

### Standard 5.11 AQTF 2021 Standards for Accredited Courses

<b>5.2 Entry requirements</b>	<p>Entrants to this course must have an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.</p> <p>Learners are best equipped to achieve the outcomes of the 22664VIC Course in Energy Efficiency Management if they have minimum language, literacy and numeracy skills that are equivalent to Level 3 of the Australian Core Skills Framework (ACSF). ACSF detail may be accessed from <a href="#">here</a>.</p>
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Learners with language, literacy and numeracy skills at a lower level than suggested may require additional support to successfully undertake the course.

## 6. Assessment

### Standard 5.12 and 5.14 AQTF 2021 Standards for Accredited Courses

#### 6.1 Assessment strategy

All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:

- Standard 1 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 4.1 and 4.2 of the VRQA Guidelines for VET Providers,

or

- the Standards for Registered Training Organisations 2015 (SRTOs),

or

- the relevant standards and Guidelines for RTOs at the time of assessment.

The nature of the work undertaken is hands on and practical, and subject to electrical licencing requirements. Assessment strategies should therefore reflect this and utilise:

- holistic assessment approaches, where appropriate, to integrate both units in practical tasks or projects
- simulated environments only, to support student safety and compliance with occupational health and safety (OHS) / work health and safety (WHS) requirements.

Assessment strategies should be designed to:

- cover a range of skills and knowledge required to demonstrate the intended course outcomes
- be appropriate to the skills, knowledge, methods of delivery and needs/characteristics of learners
- assist assessors to interpret evidence consistently
- recognise prior learning
- be equitable to all groups of learners
- be valid, reliable, flexible and fair
- inform learners of the context and purpose of the assessment and the assessment process
- provide feedback to learners about the outcomes of the assessment process and guidance given for future options
- allow reasonable time to complete a task which specifically reflects the industry context in which the task takes place.

	<p>Methods of assessment that are consistent with the practical application of skills within a simulated environment are recommended and may include:</p> <ul style="list-style-type: none"> <li>• direct observation</li> <li>• written and /or oral questioning to assess required knowledge</li> <li>• structured assessment activities including: <ul style="list-style-type: none"> <li>○ scenario exercises</li> <li>○ case study activities.</li> </ul> </li> </ul>
<p><b>6.2 Assessor competencies</b></p>	<p>Assessment must be undertaken by a person or persons in accordance with:</p> <ul style="list-style-type: none"> <li>• Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers,</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• the Standards for Registered Training Organisations 2015 (SRTOs),</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• the relevant standards and Guidelines for RTOs at the time of assessment.</li> </ul> <p>Assessors must also hold an Electrician’s licence (A grade) or equivalent as per jurisdictional requirements.</p>
<p><b>7. Delivery</b></p>	<p><b>Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses</b></p>
<p><b>7.1 Delivery modes</b></p>	<p>This course may be delivered either on a full-time or part-time basis using a combination of delivery modes, including:</p> <ul style="list-style-type: none"> <li>• face-to-face, classroom-based delivery</li> <li>• blended (e-learning) delivery.</li> </ul> <p>This course must be delivered in a simulated only environment.</p> <p>Delivery strategies should recognise the nature of the units and the learning styles of the participants. Some units may address common content, therefore integration may be appropriate. Occupational Health and Safety (OHS) / Work Health and Safety (WHS) must be incorporated at every opportunity.</p> <p>The objective of this course is to develop practical competencies within an industry context. Practical demonstrations in the form of realistic, holistic projects that provide participants with a sense of ‘real-work’ experience are considered most suitable to achieving this aim. Delivery methods of units of competency may involve:</p> <ul style="list-style-type: none"> <li>• practical exercises</li> </ul>

	<ul style="list-style-type: none"> <li>• group discussion</li> <li>• individual assignments</li> <li>• problem solving exercises.</li> </ul>
<p><b>7.2 Resources</b></p>	<p><b>Trainer competence</b></p> <p>Training must be undertaken by a person or persons in accordance with:</p> <p>Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 3 of the VRQA Guidelines for VET Providers,</p> <p>OR</p> <p>the Standards for Registered Training Organisations 2015 (SRTOs),</p> <p>OR</p> <p>the relevant standards and Guidelines for RTOs at the time of assessment.</p> <p>Trainers must also hold an Electrician’s licence (A grade) or equivalent as per jurisdictional requirements.</p> <p>Participants must have access to:</p> <ul style="list-style-type: none"> <li>• training facilities and equipment</li> <li>• simulated workplace environment appropriate to the assessment tasks</li> <li>• industry materials, tools, digital devices and equipment, including personal protective and safety equipment</li> <li>• relevant government clean energy policies and initiatives</li> <li>• local government workplace policies and procedures which cover plans, specifications, industry standards, building codes and regulations and sub metering equipment.</li> </ul> <p>Mandated assessment resources apply to the units. Refer to the Assessment Conditions of the individual units.</p>
<p><b>8. Pathways and articulation</b></p>	<p><b>Standard 5.10 AQTF 2021 Standards for Accredited Courses</b></p> <p>Graduates may choose to undertake further study to extend their skill base for the energy efficiency analysis and management associated with the integration of clean energy options within the electrotechnology and renewable energy sectors. This includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>• UEE43322 Certificate IV in Electrical-Renewable Energy</li> <li>• UEE41020 Certificate IV in Energy Management and Control.</li> </ul> <p>The course consists of enterprise units only. Successful completion of any units comprising the course will be recognised as a credit transfer should they be imported into another accredited course or National Training Package training product.</p>

	<p>There are no formal articulation or credit transfer arrangements into Vocational Education and Training (VET) or higher education qualifications for the Course in Energy Efficiency Management.</p>
<p><b>9. Ongoing monitoring and evaluation</b></p>	<p><b>Standard 5.15 AQTF 2021 Standards for Accredited Courses</b></p> <p>The CMM for Electrical/Engineering Industries is responsible for the ongoing monitoring and evaluation of the Course in Energy Efficiency Management.</p> <p>Formal course evaluations will be undertaken halfway through the accreditation period and will be based on student and teacher evaluation surveys and industry stakeholder surveys/consultations.</p> <p>The Victorian Registration and Qualifications Authority (VRQA) will be notified of any significant changes to the course.</p>

## Section C – Units of competency

Following is the list of units of competency developed for the course, which comply with the [AQTF 2021 Standards for Accredited Courses - Unit of Competency Template](#) and is detailed in this section of the course document:

- VU23663 Communicate electrical efficiency awareness to client
  - VU23664 Develop an electrification plan for residential electrical efficiency
  - VU23665 Conduct site assessment and sub metering arrangement for small commercial building energy efficiency
-

<b>Unit code</b>	<b>VU23663</b>
<b>Unit title</b>	Communicate electrical efficiency awareness to client
<b>Application</b>	<p>This unit describes the performance outcomes, skills and knowledge required to communicate electrical efficiency and electrification awareness to a client.</p> <p>It requires the ability to inform the client of energy demand management concepts and clarify the benefits of electrical efficiency to support the integration of new energy supply technology to their premises.</p> <p>The work context relates to preparing for the development of an electrification plan for a new or existing residential or commercial premises.</p> <p>The unit applies to licensed electrical personnel who work autonomously without supervision.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	Not applicable

<b>Element</b>		<b>Performance Criteria</b>	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Inform client of energy demand management concept	1.1	Advise client of purpose and key aspects of state government decarbonisation policy and its role in optimising electrification
		1.2	Identify and discuss with client types of efficient and clean energy supply technologies that may be used as substitutes for existing energy supply
		1.3	Identify and inform the client of the key principles that underpin electrical demand management
		1.4	Advise client of how demand management and energy efficiency can apply to a premise
2	Clarify benefits of electrical efficiency to client	2.1	Identify and convey the economic and social benefits of electrical efficiency to the client
		2.2	Describe the role of energy management in supporting net zero emissions
		2.3	Advise client of flexible approaches available for the uptake of electrification plans for clean energy adoption





## Range of Conditions

N/A

## Foundation Skills

Foundation skills essential to performance and not explicit in the performance criteria must be assessed.

Skill	Description
Oral communication skills to:	<ul style="list-style-type: none"><li>listen to client comments attentively and check for understanding</li><li>interact positively and professionally</li></ul>
Learning skills to:	<ul style="list-style-type: none"><li>maintain currency on government decarbonisation policy and clean energy product</li></ul>
Initiative and enterprise skills to:	<ul style="list-style-type: none"><li>identify ways to explain clean energy concepts that the client can relate to</li></ul>

## Unit Mapping Information

New unit, no equivalent unit.

## Assessment Requirements

### Title

### Assessment Requirements for VU23663 Communicate electrical efficiency awareness to client

### Performance Evidence

There must be evidence the learner has completed the tasks outlined in the elements, performance criteria and foundation skills of this unit including the ability to communicate electrical efficiency awareness to one client on one occasion based on the client's context.

### Knowledge Evidence

The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements, performance criteria and foundation skills of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:

- common terminology used in the clean energy sector including net zero emissions, decarbonisation, electrification plan, electrical efficiency, demand flexibility, demand management and gas substitution
- features of effective communication
- key features of State and Federal Government electrification and decarbonisation policy
- types and key features of energy efficiency use and clean energy supply
- key principles of electrical demand management include:
  - energy efficiency
  - electrification
  - demand flexibility
- the relationship between key principles of electrical demand management
- economic benefits of electrical efficiency include:
  - energy cost and bill savings
  - affordability of the energy system
- social benefits of electrical efficiency include:
  - carbon emission savings
  - health, comfort and wellbeing from a reliable energy system
- the role of energy management in supporting net zero emissions
- flexible approaches for clean energy adoption include:
  - phased integration over time
  - full adoption at a point in time.

## Assessment Conditions

Skills in this unit must be demonstrated in a simulated environment.

Learners must have access to suitable facilities, equipment and resources including:

- a simulated client considering clean energy adoption as a form of new energy supply
- access to Federal and State Government decarbonisation policy
- a client context based on a scenario.

### Assessor requirements

Assessors must hold an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.

<b>Unit code</b>	<b>VU23664</b>
<b>Unit title</b>	Develop an electrification plan for residential electrical efficiency
<b>Application</b>	<p>This unit describes the performance outcomes, skills and knowledge required to develop an electrification plan that supports electrical efficiency for the integration of clean energy technology to a residential premise.</p> <p>It requires the ability to determine client energy requirements, provide initial advice to client, conduct a site assessment, determine an electrically efficient design, document an electrification plan and communicate the electrification plan to the client.</p> <p>The work context relates to new and existing residential premises that require electrical efficiency assessment to adopt clean energy technology. This unit is limited to the electrification design phase only. It does not address installation practices.</p> <p>The unit applies to licensed electrical personnel who work autonomously without supervision.</p> <p>Licensing or legislative requirements apply to this unit. Users are required to contact the electrical regulator within their jurisdiction for current requirements.</p>
<b>Pre-requisite Unit(s)</b>	Not applicable

<b>Element</b>		<b>Performance Criteria</b>	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Determine client energy requirements	1.1	Discuss and determine client's motivation for energy efficiency and clean energy technology substitution
		1.2	Establish client's existing and future energy usage requirements based on lifestyle considerations
		1.3	Identify client's budget and time frame that supports energy efficiency and clean energy technology substitution options
2	Provide initial advice to client	2.1	Assess client information and provide initial advice to clarify client expectations
		2.2	Advise client of potential clean energy technology options and relevant government subsidy programs for preliminary consideration

3	Conduct site assessment	3.1	Identify location of all energy sources for residential premises, consumer mains, main switchboard, sub boards and solar/battery systems
		3.2	Inspect residential premises to identify existing systems that service water heating, space heating and cooking, and identify possibilities for clean energy technology substitutes
		3.3	Source energy consumption data using energy monitoring devices and energy retailer information
		3.4	Review client current energy usage data to indicate client energy consumption and associated cost
		3.5	Assess capacity of existing energy sources in relation to electrical efficiency and client usage requirements
		3.6	Discuss the capacity of the existing electrical configuration to incorporate potential clean energy technology substitutes to support energy efficiency
4	Determine electrical efficient approaches	4.1	Review and confirm client's existing and future energy usage requirements
		4.2	Determine appropriate types of existing energy technology upgrades and types of clean energy technology according to confirmed client budget, energy requirements and compliant manufacturers specifications
		4.3	Determine switchboard capacity upgrades, supply arrangements and modifications required to integrate clean energy technology substitutes and existing technology upgrades
		4.4	Apply client energy requirements to potential combinations of existing energy technology upgrades, clean energy technology substitutes, including switchboard modifications if necessary, noting costs and benefits of each option
		4.5	Determine the most efficient electrification option for the client according to confirmed client energy requirements and budget
		4.6	Identify energy saving approaches to enhance efficient electrification including insulation, LED lightbulbs, draught stopping devices and window glazing
5	Document electrification plan	5.1	Collate and record information regarding preferred electrification option noting clean energy technology substitutes and existing technology upgrades, associated costs and manufacturers specifications and warranties

		5.2	Prepare and create an electrification plan that incorporates current and future client energy requirements, costs and benefits of alternative options, and a final recommendation for client consideration
6	Communicate electrification plan to client	6.1	Discuss and confirm client understanding of electrification plan and recommendations
		6.2	Advise client of approaches for implementing electrification plan to meet budgetary constraints and time frames
		6.3	Finalise and record implementation approach of electrification plan

### Range of Conditions

New energy technology incorporates combinations of clean energy technology and existing technology upgrades to support electrical efficiency. The extent of new energy technology uptake may vary between clients. This could range from the full adoption of new energy technology at one point in time, to a phased in approach with gradual adoption of new energy technology over time. Types of new energy substitution may vary, including in combination.

### Foundation Skills

Foundation skills essential to performance and not explicit in the performance criteria must be assessed.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret information for client applications</li> </ul>
Oral communication skills to:	<ul style="list-style-type: none"> <li>listen attentively to respond to client queries effectively</li> <li>explain electrical concepts clearly and simply to facilitate client understanding</li> <li>utilise appropriate communication techniques to establish client rapport</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>calculate cost / benefit clean energy options</li> </ul>
Learning skills to:	<ul style="list-style-type: none"> <li>maintain currency of clean energy industry knowledge</li> <li>identify own role as a change agent in realising clean energy government policy</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>access manufacturer specifications and warranties</li> </ul>
Digital literacy skills to:	<ul style="list-style-type: none"> <li>use emails to communicate with clients</li> </ul>





	<ul style="list-style-type: none"><li>• create, save and send clean energy related documents to clients</li><li>• source clean energy information</li></ul>
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<b>Unit Mapping Information</b>	New unit, no equivalent unit.
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## Assessment Requirements

### Title

### Assessment Requirements for VU23664 Develop an electrification plan for residential electrical efficiency

### Performance Evidence

There must be evidence the learner has completed the tasks outlined in the elements, performance criteria and foundation skills of this unit including the ability to develop and communicate one (1) electrification plan for a residential client that incorporates consideration of clean energy technologies and gas substitution, and existing energy technology upgrades that include:

- budgetary considerations now and into the future
- adoption requirements (immediate or phased application)
- an analysis of energy consumption data for electrical efficiency.

### Knowledge Evidence

The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements, performance criteria and foundation skills of this unit, manage the task and manage contingencies in the context of the work role.

This includes knowledge of:

- common motivating factors for client clean energy technology uptake; cost savings and environmental concerns
- terminology related to the clean energy sector
- the distinction between clean energy technology and electrical efficiency
- types and capacity of new energy technology including electric vehicle (EV) charging, and hydronic heating interface
- types of energy substitution including gas stove, gas hot water service (HWS), gas ducted heating
- energy integration uptake options:
  - immediate full adoption
  - partial adoption over time with incremental integration
- types of cost / benefit combinations for clients regarding energy configurations
- types and features of new energy equipment
- benefits of new energy types to consumers
- how to make recommendations based on cost / benefit analysis of client needs now and into the future
- types of excess energy and what to do with it
- return on investment for gas substitution including use of megajoules (gas) to kilojoules (electrical)
- types of system configurations for hot water and space heating





- factors to consider in sub metering analysis to determine energy efficiency options
- types of product that offer immediate energy efficiencies for clients that includes draught stoppers, light globes, double glazed windows, insulation
- types of sub metering and connection configuration within main switchboards
- types and nature of government solar rebate programs
- mandatory requirements for dynamic export distribution.

**Assessment  
Conditions**

Skills in this unit must be demonstrated in a simulated environment.

Learners must have access to suitable facilities, equipment and resources including:

- a simulated client considering new energy technology as a source of energy supply
- Federal and State Government decarbonisation policy and initiatives
- a client premise based on a residential scenario.

**Assessor requirements**

Assessors must hold an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.

<b>Unit code</b>	<b>VU23665</b>
<b>Unit title</b>	Conduct site assessment and sub metering arrangement for small commercial building energy efficiency
<b>Application</b>	<p>This unit describes the performance outcomes, skills and knowledge required to conduct a site assessment and sub metering arrangements in a commercial setting.</p> <p>It requires the ability to conduct a site assessment, prepare sub metering arrangements, test and commission equipment and download and analyse energy data to make energy efficiency recommendations to clients.</p> <p>The work context relates to small commercial premises under 2500 square meters that require an electrical efficiency assessment.</p> <p>The unit applies to licensed electrical personnel who work autonomously without supervision.</p> <p>Licensing or legislative requirements apply to this unit. Users are required to contact the electrical regulator within their jurisdiction for current requirements.</p>
<b>Pre-requisite Unit(s)</b>	Not applicable

<b>Element</b>		<b>Performance Criteria</b>	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Conduct site assessment	1.1	Identify the nature and scope of the commercial operation in terms of physical size and lay out, kilowatt (kW) usage, loads, pattern of energy consumption and expectations of future business activity and growth
		1.2	Locate and note all energy sources for commercial premise including consumer mains, main switchboard, sub mains, sub boards and other energy resources
		1.3	Provide initial advice to client regarding the cost savings of potential energy efficiency and clean energy technology options and relevant government clean energy initiatives
		1.4	Obtain client's energy usage history from their retailer to identify recent operating energy consumption patterns
2	Prepare sub metering arrangements	2.1	Identify and follow relevant occupational health and safety (OHS)/ work health and safety (WHS) regulations and procedures for sub metering work tasks according to safe work method statement (SWMS)

		2.2	Determine placement of sub metering equipment with power distribution system for optimal operation
		2.3	Select equipment to support electrical efficiency data monitoring activities
		2.4	Install all sub metering equipment according to manufacturer's specifications, SWMS and regulatory requirements
3	Test and commission equipment	3.1	Check for correct placement and current direction of the sub metering equipment to support optimum data capture
		3.2	Connect sub metering equipment, set parameters and where required verify communications to external sources are operating effectively
		3.3	Identify wiring issues that may impede the operation of the sub metering equipment
		3.4	Test sub metering installation using methods according to manufacturers' specification and regulatory requirements
		3.5	Document installation of sub metering arrangements accurately to facilitate future stakeholder reference
4	Download and analyse energy data to make recommendations	4.1	Set up custom dashboards and report formats for complete and accurate data capture
		4.2	Identify relevant data points to record energy usage activity and trends over selected time frames
		4.3	Download real-time data of energy consumption, monitor output on devices and collate using predetermined formats
		4.4	Analyse client's energy consumption data to identify load usage patterns and energy usage inefficiencies related to business operating activity
		4.5	Identify opportunities and recommend appropriate energy efficiency improvements to the client

### Range of Conditions

N/A

### Foundation Skills

Foundation skills essential to performance and not explicit in the performance criteria must be assessed.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret workplace related documentation</li> </ul>

Numeracy skills to:	<ul style="list-style-type: none"> <li>• interpret meaning from graphs and charts</li> <li>• document electrical configuration</li> <li>• perform mathematical calculations</li> </ul>
Problem-solving skills to:	<ul style="list-style-type: none"> <li>• identify inefficient energy equipment</li> </ul>
Digital literacy skills to:	<ul style="list-style-type: none"> <li>• manage energy related information</li> </ul>

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**Unit Mapping Information**

New unit, no equivalent unit.

## Assessment Requirements

<b>Title</b>	<b>Assessment Requirements for VU23665 Conduct site assessment and sub metering arrangement for small commercial building energy efficiency</b>
<b>Performance Evidence</b>	There must be evidence the learner has completed the tasks outlined in the elements, performance criteria and foundation skills of this unit including the ability to conduct a site assessment and set up sub metering arrangements for one (1) small commercial premise under 2500 square meters and make three (3) recommendations for energy efficiency improvement.
<b>Knowledge Evidence</b>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements, performance criteria and foundation skills of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"><li>• occupational health and safety (OHS)/ work health and safety (WHS) regulations, SWMS and electrical regulator requirements relating to sub metering</li><li>• correct use of terminology related to new/clean energy</li><li>• typical energy related features and equipment types that support small commercial operations</li><li>• types and operating features of energy sources for small commercial operations</li><li>• types of PPE and safety equipment related to submetering task</li><li>• types and capabilities of energy sub meters</li><li>• components of energy sub meters and their uses</li><li>• factors to consider for optimum positioning of sub metering equipment</li><li>• correct methods of connection of sub metering equipment</li><li>• sections of the National Construction Code related to energy monitoring</li><li>• aim and meaning of green star ratings</li><li>• purpose of the National Australian Built Environment Rating System (NABERS)</li><li>• differences between energy meters/monitoring systems for large commercial premises (over 2500sqm) and small commercial premises (below 2500sqm)</li><li>• current transformer types and ratings</li><li>• method of calculating the current transformer ratio</li><li>• nature and impact of power factor correction, and effect of energy efficiency on loads</li><li>• nature and impact of harmonics, and effect of energy efficiency on loads</li></ul>

- methods of analysis related to energy usage, including qualitative, quantitative graphical data
- common faults associated with energy sub metering systems
- purpose of electrical efficiency data analysis
- types of data analysis findings including:
  - high usage loads
  - energy load usage over time indicating trends, spikes, low tariff usage
  - inefficient and defective electrical technology operation
- type and basic purpose of government energy initiatives applicable to energy saving for small commercial settings.

### Assessment Conditions

Skills in this unit must be demonstrated in a simulated environment.

Learners must have access to suitable facilities, equipment and resources including:

- a simulated client considering new energy technology as a source of energy supply
- relevant PPE and safety equipment
- client premise based on a small commercial (under 2500 square meters) scenario
- Federal and State Government decarbonisation policy and initiatives
- sub metering equipment
- OHS, WHS regulations and workplace procedures for energy metering work activities
- reference information for energy metering work activities.

#### Assessor requirements

Assessors must hold an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.