Australian Industry and Skills Committee

# UEE RENEWABLES

Case for Change

Name of allocated IRC(s): Electrotechnology
Name of the SSO: Australian Industry Standards

## 1. Administrative information

For a list of the products proposed to be reviewed as part of this project, please see **Attachment A**.

| | |
|---|---|
| Name of IRC(s): | Electrotechnology |
| Name of SSO: | Australian Industry Standards |

### 1.1 Name and code of Training Package(s) examined to determine change is required

UEE Electrotechnology

## 2. The Case for Change

For information on the job roles to be supported through the proposed qualifications updates, enrolments data, completion rates, and the number of RTOs delivering these qualifications please see **Attachment B**.

### 2.1 Rationale for change

During transition of the UEE Training Package several issues were identified by stakeholders which fell outside of the scope of the transition project.

It was identified that all qualifications related to renewables were no longer fit for purpose because they contain outdated content. The review will update these qualifications and related units and skill sets to reflect current technologies, industry practices, regulations, and accreditation.

Most of this content was last updated over 10 years ago. Renewable systems, technology and industry practices have evolved significantly since that update.

All renewables content was a straight transition into the new templates for compliance with the 2012 Standards for Training Packages. The transition project did not allow for a review of content.

Renewable energy developers and installers are facing challenges in recruiting skilled and experienced workers. The Electrotechnology workforce will need to have the necessary skills for the installation and maintenance of renewable energy technologies to provide new services to domestic and commercial customers. To meet demand, industry will need to focus on skills and training, and continue to create career pathways for workers.

### 2.2 Evidence for change

Solar installation has been steadily growing with currently over two and a half million installations in Australia, which is anticipated to double by the mid-2020s. Investments in solar and other renewables can jumpstart Australia's economic recovery from the pandemic. The renewable sector has the potential to employ over 44,000 by 2025. With the right policy settings, regional areas are poised to benefit as about 70 per cent of these jobs could be in regional Australia by 2025. As many as 50 per cent of clean energy jobs are projected to be in operation and maintenance by 2035. The industry has emphasised the role of training and upskilling workers to leverage from these opportunities.

### 2.3 Consideration of existing products

Existing units of competency will be reviewed to bring them in line with current industry practice.

The suitability of units that can be imported from other industry training packages to cover transferable skills will be considered.

### 2.4 Approach to streamlining and rationalisation of the training products being reviewed

The units to be reviewed in this project primarily cover specific technical skills and knowledge required of workers.

Imported units will be considered where possible for transferrable skills and knowledge.

Any nested content contained in qualifications in this pathway will be removed and replaced with entry requirements or replaced.

The appropriateness of all prerequisites of units in the Case for Change will be reviewed.

Packaging rules of the qualification will be reviewed to ensure they provide flexibility and best reflect industry's needs and vocational pathways.

## 3. Stakeholder consultation

### 3.1 Stakeholder consultation undertaken in the development of Case for Change

For a full list of industry-specific stakeholders that actively participated in the stakeholder consultation process undertaken to develop the Case for Change, please see **Attachment C**.

The need for a review of these qualifications was identified during the broad consultation conducted for Release 2.0 of the UEE Electrotechnology Training Package.

Development of the Case for Change involved consultation with stakeholders via the following communication mechanisms:

- Stakeholder webinars
- Face to Face meetings (Virtual)
- AIS Website
- Stakeholder networks
- Teleconferences
- Emails

The work was outlined during a webinar which included representatives from all States/Territories and regional areas of those jurisdictions. Feedback on the proposed work was invited during the webinar.

The work was posted in the Engagement Hub of the AIS website and feedback invited.

Notification of the opportunity to provide feedback through the Electrotechnology webinar, or in writing through the Engagement Hub, was provided to over 1,100 Electrotechnology sector stakeholder subscribers.

### 3.2 Evidence of Industry Support

For a list of the issues raised by stakeholders during consultation and the IRC's response to these, please see **Attachment D.**

No objections to the proposed review were raised during the consultation process. There is strong support for the review because the current qualifications and units of competency are not fit for purpose and their content significantly out of date.

The work was outlined during a webinar conducted for the Electrotechnology industry on 26 March 2021 which had 80 participants. The proposed work was also detailed in the Engagement Hub of the AIS website for stakeholders to review and provide feedback, and no issues were raised in response.

### 3.3 Proposed stakeholder consultation strategy for project

Note: For a full list of industry-specific stakeholders who are planned to be contacted to participate in the stakeholder consultation process undertaken for this project, please see **Attachment E**.

Key Industry stakeholders will be identified in consultation with industry regulators, associations, and the Electrotechnology IRC.

A general invitation to participate on the project Technical Advisory Committee (TAC) will be sent to all Electrotechnology subscribers. Targeted invitations will also be sent to known technical experts.

AIS, on behalf of the Electrotechnology IRC, will promote the opportunity to contribute through stakeholder webinars, the AIS website, EDM's, AIS newsletter and public notifications. Stakeholders will also be notified of key milestones throughout the life of the project, including requests for feedback on draft materials.

Stakeholder engagement and consultation will occur over the life of the project via a combination of the following methods:

- Direct engagement: Face to face consultations, Site visits, Phone, emails, video/teleconferencing meetings
- Industry forums and conferences
- Webinars
- Online feedback mechanisms
- STA direct engagement

Given the size of Australia and all stakeholders are not centrally located in major cities, a range of consultation strategies will be used so stakeholders in rural, regional and remote areas, and in smaller jurisdictions have multiple avenues to provide feedback.

This includes but is not limited to, online/video consultation, email correspondence and promotional activity via targeted communications including social media. A recently developed Engagement hub on the AIS website provides a one stop portal for information about how all stakeholders can participate and inform Training Package development work.

## 4. Licencing or regulatory linkages

No licencing or regulatory implications.

Some units lead to industry accreditations.

## 5. Project implementation

### 5.1 Prioritisation category

It is proposed that this be complex review conducted over an eighteen-month period to enable a considered review of a large amount of highly technical content.

Release 2.0 of the UEE Training Package was primarily a transition project and did not include the review of content in its scope. The need for this review was identified during the transition of UEE11 content which was identified as substantially out of date.

### 5.2 Project milestones

Key project milestones include:

- AISC project approval – August 2021

- Technical Advisory Committee (TAC) formed – September 2021
- Draft 1 consultation - July 2022
- Stakeholder validation - September 2022
- Quality Assurance - October 2022
- Final consultation with states and territories - November 2022
- CfE submitted for approval - December 2022

### 5.3 Delivery or implementation issues

None have been identified to date.

## 6. Implementing the Skills Minister's Priority reforms for Training Packages (2015 and October 2020)

The project submission will support industry's expectations for training delivery and provide a revised Companion Volume Implementation Guide (CVIG) to support delivery of the new products.

Consideration of imported units will be a focus of this project.

Existing Skill Sets will be updated, and possibly new ones created if required.

This Case for Change was agreed to by the Electrotechnology IRC

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|---|---|
| Name of Chair | Larry Moore |
| Signature of Chair |  |
| Date | 14 May 2021 |

## Attachment A: Training Package components to change

Australian Industry Standards

Contact details: David Dixon, Chief Operating Officer

Date submitted: 14May 2021

Note: Qualifications where the code is marked with * are not being reviewed but contain units that are being updated as part of this project. AIS will update these Qualifications as Training Package maintenance function.

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Qualification | UEE32020 | Certificate III in Renewable Energy – ELV | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE41620 | Certificate IV in Renewable Energy | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE41920 | Certificate IV in Electrical - Renewable Energy | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE42020 | Certificate IV in Electrical - Photovoltaic systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE43120 | Certificate IV in Energy Efficiency and Assessment | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE50720 | Diploma of Renewable Energy Engineering | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Qualification | UEE60920 | Advanced Diploma of Renewable Energy Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | UEE62020 | Advanced Diploma of Engineering Technology - Renewable Energy | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE10120 | Certificate I in ElectroComms Skills | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE20520 | Certificate II in Computer Assembly and Repair | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE20720 | Certificate II in Data and Voice Communications | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE20920 | Certificate II in Electronic Assembly | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE21420 | Certificate II in Remote Area Power Supply Maintenance | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE22120 | Certificate II in Sustainable Energy (Career Start) | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE30220 | Certificate III in Computer Systems Equipment | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Qualification | * UEE30620 | Certificate III in Electrical Machine Repair | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE30720 | Certificate III in Switchgear and Controlgear | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE30820 | Certificate III in Electrotechnology Electrician | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE33020 | Certificate III in Electrical Fitting | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE40120 | Certificate IV in Computer Systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE40220 | Certificate IV in Electrical - Data and Voice Communications | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE40320 | Certificate IV in Installation Inspection and Audits | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE40620 | Certificate IV in Electrotechnology - Systems Electrician | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE41020 | Certificate IV in Energy Management and Control | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Qualification | * UEE41220 | Certificate IV in Electrical – Rail Signalling | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE42120 | Certificate IV in Electrotechnology - Electrical Contracting | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE42620 | Certificate IV in Hazardous areas - Electrical | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE43020 | Certificate IV in Electrical Equipment and Systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE50120 | Diploma of Computer Systems Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE50420 | Diploma of Electrical Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE51120 | Diploma of Engineering Technology - Refrigeration and Air Conditioning | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE53020 | Diploma of Electrical Systems Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE61220 | Advanced Diploma of Engineering - Explosion protection | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Qualification | * UEE62120 | Advanced Diploma of Engineering Technology - Electrical | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE62220 | Advanced Diploma of Electrical - Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE62320 | Advanced Diploma of Electrical Engineering - Coal Mining | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE62420 | Advanced Diploma of Engineering Technology - Air Conditioning and Refrigeration | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Qualification | * UEE63020 | Advanced Diploma of Electrical Systems Engineering | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0001 | Apply environmentally and sustainable procedures in the energy sector | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0002 | Assemble and connect remote area power supplies | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0003 | Assess energy loads and uses for energy efficiency in commercial facilities | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0004 | Assess energy loads and uses for energy efficiency in industrial properties and enterprises | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0005 | Assess energy loads and uses for energy efficiency in residential, office and retail premises | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0006 | Conduct periodic maintenance of remote area power supply battery banks | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0007 | Conduct periodic maintenance of remote area power supply generator sets | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0008 | Conduct periodic maintenance of remote area power supply photovoltaic arrays | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0009 | Conduct periodic maintenance of remote area power supply wind generators | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0010 | Design energy management controls for electrical installations in buildings | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0011 | Design grid-connected photovoltaic power supply systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0012 | Develop effective engineering strategies for energy reduction in buildings | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0013 | Develop strategies to address environmental and sustainability issues in the energy sector | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0014 | Develop strategies to address sustainability issues for electrical installations | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0015 | Implement and monitor energy sector environmental and sustainable policies and procedures | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0016 | Install, configure and commission LV grid-connected photovoltaic power systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0017 | Maintain and repair facilities associated with remote area essential service operations | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0018 | Maintain and repair remote area power generation facilities | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0019 | Maintain safety and tidiness of remote area power supply systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0020 | Promote sustainable energy practices in the community | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0021 | Provide basic sustainable energy solutions for energy reduction in residential premises | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0022 | Solve basic problems in photovoltaic energy apparatus and systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0023 | Work safely with remote area power supply systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0024 | Attend to breakdowns in remote area power supplies (RAPS) | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0025 | Carry out basic repairs to renewable energy (RE) apparatus | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0026 | Conduct checks in the demand side use of remote area power supplies (RAPS) | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0027 | Coordinate maintenance of renewable energy (RE) apparatus and systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0028 | Design hybrid renewable power systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0029 | Design micro-hydro systems rated to 6.4 kW | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0030 | Design renewable energy (RE) heating systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0031 | Design stand-alone renewable energy (RE) systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0032 | Design wind energy conversion systems (WECS) rated to 10 kW | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0033 | Develop engineering solutions to renewable energy (RE) problems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0034 | Diagnose and rectify faults in renewable energy (RE) control systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0035 | Install ELV stand-alone photovoltaic power systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0036 | Install small wind energy conversion systems rated up to 10 kW for ELV standalone applications | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0037 | Install, configure and commission LV micro-hydro systems rated up to 6.4 kW | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0038 | Install, configure and commission LV wind energy conversion systems rated up to 10 kW | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0039 | Install, set up and maintain ELV micro-hydro systems rated up to 6.4 kW | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0040 | Maintain and monitor remote area essential service operations | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0041 | Maintain operation of remote area power generation plant | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0042 | Manage renewable energy (RE) projects | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0043 | Plan periodic maintenance schedules of remote area power supplies (RAPS) | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0044 | Plan renewable energy (RE) projects | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0045 | Solve basic problems in micro-hydro systems | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0046 | Solve problems in stand-alone renewable energy (RE) systems | 05/Oct/2020 - Transition | **Update** |

| Project number | Project Name | Qualification/ Unit / Skillset | Code | Title | Details of last review (endorsement date, nature of this update transition, review, establishment) | Change Required |
|---|---|---|---|---|---|---|
| 8 | Renewables | Unit | UEERE0047 | Solve problems in wind energy conversion systems (WECS) rated up to 10 kW | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE0048 | Verify compliance and functionality of an extra-low voltage renewable energy installation | 05/Oct/2020 - Transition | **Update** |
| 8 | Renewables | Unit | UEERE4001 | Install, maintain and fault find battery storage systems for grid-connected photovoltaic systems | 18/04/2017 - Establishment | Update |
| 8 | Renewables | Unit | UEERE5001 | Design battery storage systems for grid-connected photovoltaic systems | 18/04/2017 - Establishment | Update |

## Attachment B: Job role, enrolment information, the number of RTOs currently delivering these qualifications

Please set out the job roles to be supported through the updated qualifications, enrolment data over the past three years in which data is available for each qualification, completion rates for each qualification, and the number of RTOs delivering these qualifications.

| Job role | Qualification to be updated to support the job role | Enrolment data (for the past three years) | Completion rates (for the past three years) | Number of RTOs delivering (for the past three years) |
|---|---|---|---|---|
| 340000, Electrotechnology and Telecommunications Trades Workers | UEE32020 Certificate III in Renewable Energy – ELV | 9 | 0 | 2 |
| 340000, Electrotechnology and Telecommunications Trades Workers | UEE41620 Certificate IV in Renewable Energy | 16 | 0 | 1 |
| 341112, Electrician (Special Class) | UEE41920 Certificate IV in Electrical - Renewable Energy | 0 | 0 | 3 |
| 341111, Electrician (General) | UEE42020 Certificate IV in Electrical - Photovoltaic systems | 913 | 137 | 6 |
| 341112, Electrician (Special Class) | UEE43120 Certificate IV in Energy Efficiency and Assessment | 0 | 0 | 1 |
| 341112, Electrician (Special Class) | UEE50720 Diploma of Renewable Energy Engineering | 0 | 0 | 1 |
| 312312, Electrical Engineering Technician | UEE60920 Advanced Diploma of Renewable Energy Engineering | 19 | 0 | 2 |

| | | | | |
|---|---|---|---|---|
| 340000, Electrotechnology and Telecommunications Trades Workers | UEE62020 Advanced Diploma of Engineering Technology - Renewable Energy | 798 | 140 | 1 |
| | UEERE0001 Apply environmentally and sustainable procedures in the energy sector | 63340 | 46441 | 69 |
| | UEERE0002 Assemble and connect remote area power supplies | 0 | 0 | 1 |
| | UEERE0003 Assess energy loads and uses for energy efficiency in commercial facilities | 27 | 3 | 4 |
| | UEERE0004 Assess energy loads and uses for energy efficiency in industrial properties and enterprises | 25 | 6 | 4 |
| | UEERE0005 Assess energy loads and uses for energy efficiency in residential, office and retail premises | 29 | 7 | 4 |
| | UEERE0006 Conduct periodic maintenance of remote area power supply battery banks | 0 | 0 | 2 |
| | UEERE0007 Conduct periodic maintenance of remote area power supply generator sets | 0 | 0 | 2 |
| | UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays | 0 | 0 | 2 |
| | UEERE0009 Conduct periodic maintenance of remote area power supply wind generators | 0 | 0 | 2 |
| | UEERE0010 Design energy management controls for electrical installations in buildings | 397 | 217 | 10 |
| | UEERE0011 Design grid-connected photovoltaic power supply systems | 5615 | 4723 | 33 |

| | | | | |
|---|---|---|---|---|
| | UEERE0012 Develop effective engineering strategies for energy reduction in buildings | 503 | 241 | 11 |
| | UEERE0013 Develop strategies to address environmental and sustainability issues in the energy sector | 2219 | 1324 | 17 |
| | UEERE0014 Develop strategies to address sustainability issues for electrical installations | 29 | 14 | 4 |
| | UEERE0015 Implement and monitor energy sector environmental and sustainable policies and procedures | 5489 | 3961 | 32 |
| | UEERE0016 Install, configure and commission LV grid-connected photovoltaic power systems | 5369 | 4687 | 26 |
| | UEERE0017 Maintain and repair facilities associated with remote area essential service operations | 0 | 0 | 3 |
| | UEERE0018 Maintain and repair remote area power generation facilities | 1 | 1 | 2 |
| | UEERE0019 Maintain safety and tidiness of remote area power supply systems | 36 | 36 | 12 |
| | UEERE0020 Promote sustainable energy practices in the community | 53 | 58 | 8 |
| | UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises | 3399 | 2922 | 11 |
| | UEERE0022 Solve basic problems in photovoltaic energy apparatus and systems | 6695 | 5560 | 34 |

| | | | | |
|---|---|---|---|---|
| | UEERE0023 Work safely with remote area power supply systems | 27 | 27 | 12 |
| | UEERE0024 Attend to breakdowns in remote area power supplies (RAPS) | 0 | 0 | 3 |
| | UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus | 967 | 582 | 12 |
| | UEERE0026 Conduct checks in the demand side use of remote area power supplies (RAPS) | 0 | 0 | 3 |
| | UEERE0027 Coordinate maintenance of renewable energy (RE) apparatus and systems | 0 | 0 | 2 |
| | UEERE0028 Design hybrid renewable power systems | 388 | 221 | 10 |
| | UEERE0029 Design micro-hydro systems rated to 6.4 kW | 385 | 221 | 10 |
| | UEERE0030 Design renewable energy (RE) heating systems | 226 | 113 | 10 |
| | UEERE0031 Design stand-alone renewable energy (RE) systems | 874 | 635 | 18 |
| | UEERE0032 Design wind energy conversion systems (WECS) rated to 10 kW | 173 | 98 | 11 |
| | UEERE0033 Develop engineering solutions to renewable energy (RE) problems | 393 | 215 | 10 |
| | UEERE0034 Diagnose and rectify faults in renewable energy (RE) control systems | 436 | 248 | 5 |
| | UEERE0035 Install ELV stand-alone photovoltaic power systems | 852 | 631 | 12 |

| | | | | |
|---|---|---|---|---|
| | UEERE0036 Install small wind energy conversion systems rated up to 10 kW for ELV standalone applications | 0 | 0 | 4 |
| | UEERE0037 Install, configure and commission LV micro-hydro systems rated up to 6.4 kW | 0 | 0 | 1 |
| | UEERE0038 Install, configure and commission LV wind energy conversion systems rated up to 10 kW | 0 | 0 | 1 |
| | UEERE0039 Install, set up and maintain ELV micro-hydro systems rated up to 6.4 kW | 392 | 219 | 3 |
| | UEERE0040 Maintain and monitor remote area essential service operations | 0 | 0 | 1 |
| | UEERE0041 Maintain operation of remote area power generation plant | 0 | 0 | 3 |
| | UEERE0042 Manage renewable energy (RE) projects | 390 | 223 | 1 |
| | UEERE0043 Plan periodic maintenance schedules of remote area power supplies (RAPS) | 0 | 0 | 3 |
| | UEERE0044 Plan renewable energy (RE) projects | 393 | 217 | 1 |
| | UEERE0045 Solve basic problems in micro-hydro systems | 405 | 218 | 3 |
| | UEERE0046 Solve problems in stand-alone renewable energy (RE) systems | 868 | 642 | 12 |
| | UEERE0047 Solve problems in wind energy conversion systems (WECS) rated up to 10 kW | 386 | 218 | 4 |

| | | | | |
|---|---|---|---|---|
| | UEERE0048 Verify compliance and functionality of an extra-low voltage renewable energy installation | 0 | 0 | 3 |
| | UEERE4001 Install, maintain and fault find battery storage systems for grid-connected photovoltaic systems | 1818 | 1481 | 25 |
| | UEERE5001 Design battery storage systems for grid-connected photovoltaic systems | 1756 | 1407 | 22 |

## Attachment C: List of stakeholders that actively participated in the consultation process of the Case for Change

| Name of Stakeholder | Title | Organisation | Organisation type (e.g. Employer, peak body, union, RTO, regulator) | Jurisdiction/town/city (e.g. NSW/Sydney) |
|---|---|---|---|---|
| **State Training Authorities** | | State Training Authorities | State Training Authorities | All States and Territories |
| **Frances Parnell** | Manager | Department of Training and Workforce Development | Other | WA / Perth |
| **Neda Aleksic** | Industry Engagement - VET product development | ISACNT | Other | NT / Darwin Nt |
| **Elizabeth Joannou** | Training Programmes Manager | Global Sustainable Energy Solutions | RTO | NSW / Sydney |
| **Jakes Jacobs** | Industry Workforce Planner | Energy Skills Queensland | Other | QLD / Brisbane |
| **Veronica Mauri** | Training and Safety Consultant | V Mauri Training & Safety Consulting | Other | QLD / Hollywell |
| **Paul Govett** | Competency Specialist - S&C | V/Line Corporation | Employer | VIC / Bendigo |
| **Greer Novak** | Principal Advisor | Electrical Safety Office | Regulator | QLD / Bowen Hills |
| **Kevin O'Shea** | President | RACCA | Peak body | NSW / Sydney |

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| **Jamie Hall** | Technical Support Training Officer | Mitsubishi Electric Australia | Employer | NSW / Rydalmere |
| **Brett Willowhite** | Team Leader Electrotechnology & Plumbing | Charles Darwin University | RTO | NT / Darwin |
| **Nate James** | RTO Compliance Officer | V/Line Corporation | Employer \| RTO | VIC / Melbourne |
| **Geoff Corkery** | Training Specialist | Powerlink | Employer | QLD / Brisbane |
| **Joshua Macphail** | ElectroTechnology Teacher | TAFE Queensland SkillsTech | RTO | QLD / Bracken Ridge |
| **Cindy Marett** | Education, Advisor and Assessor | Energy Safe Victoria | Regulator | VIC / Tarneit |
| **Jesse Collins** | Compliance Officer | Energy Safe Victoria | Regulator | VIC / Glen Waverley |
| **Karen Ruppert** | RTO Manager | Catholic Education Archdiocese Canberra Goulburn | RTO | ACT \| NSW / Manuka |
| **Steve Gale** | Teacher ICT | The Gordon TAFE | RTO | VIC / Geelong |
| **Claire Bennett** | Manager - Learning and Development | A.G.Coombs | Employer | VIC / Moorabbin |
| **Benjamin Hawkins** | Policy Manager | AMCA | Peak body | VIC / Burwood |
| **Katie Tunnah** | Apprenticeship Program Coordinator | APA Group | Employer | NSW \| NT \| QLD \| SA \| VIC \| WA / Southbank |

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| **Sue Sheppard** | General Manager RTO | Electro Group Training QLD | Employer \| RTO | QLD / Rocklea |
| **Ryan Flack** | Project Engineer/RTO Trainer | Global Sustainable Energy Solutions | RTO | NSW / Sydney |
| **Peter B** | Assessor | Vetassess | RTO | VIC / Melbourne |
| **Norma Angeloni Tomaras** | Product Manager Electrotechnology | TAFE NSW | RTO | NSW / Mount Druitt |
| **Mark Burgess** | National Apprenticeship Officer | ETU | Union | VIC / Gherang |
| **Peter Collins** | Program Leader - Electrical | Melbourne Polytechnic | RTO | VIC / Heidelberg |
| **Travis Hayes** | Education Manager | Chisholm Institute | RTO | VIC / Melbourne |
| **Pravneel Singh** | Technical Manager | Daikin Australia | Employer | NSW / Sydney |
| **Gregory Kempton** | Trainer | CIT | RTO | ACT / Canberra |
| **Maria Zarkovic** | RTO Manager | V?line Corporation | RTO | VIC / Melbourne |
| **Sue Sizer** | Senior Compliance Officer, Education and Assessmen | Energy Safe Victoria | Regulator | VIC / Melbourne |
| **Alexander Newman** | CEO | Centre for U | RTO | VIC / Melbourne |
| **Angelo Scanu** | Manager | Victoria University | RTO | VIC / Melbourne, Victoria |

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| **Jason Aquilina** | Electro Teacher | Sunshine College - Harvester Campus | RTO | VIC / North Sunshine |
| **Marie Previte** | Skills and Training | Edmund Rice Education Australia - Office | RTO | QLD / Brisbane |
| **Matt Houston** | Manager - Field Operations | AG Coombs Servicings | Employer | VIC / Port Melbourne |
| **Harry Melzer** | Teacher | Harvester Technical College | RTO | VIC / Melbourne |
| **Darron Febey** | Teacher | Tastafe | RTO | TAS / Devonport |
| **John Ingram** | Teacher | Melb. Polytechnic | RTO | VIC / Melbourne |
| **Supritha S** | Skills Outlook Officer | TAFE NSW | RTO | NSW / Sydney |
| **Neil Roberts** | State Inspector - Engineering | Safework NSW | Regulator | NSW / Parramatta |
| **Steve Bryant** | Project Specialist | Box Hill Institute | RTO | VIC / Tarneit |
| **Robert Tischler** | Electrical Teacher | Boxhill Institute | Employer | VIC / Melbourne |
| **Lachlan Searle** | Teacher | Federation TAFE | RTO | VIC / Ballarat |
| **Gayathri Dhanashekar** | Education Manager | Chisholm Institute | RTO | VIC / Dandenong, Victoria |
| **Tim Sealey** | Assistant Director Analytics and Policy | ACT Govt | Other | ACT / Canberra |

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| **Darren Ballard** | Electrotechnology Teacher | Federation Tafe | RTO | VIC / Ballarat |
| **Chris Stark** | Product Innovation Lead | NECA Education & Careers | RTO | VIC / Carlton |
| **Ian Harrison** | Resource developer/teacher | NECA Education & Careers | RTO | VIC / Carlton |
| **Wayne Jones** | Technical Training Manager | Melbourne Water | Employer | VIC / Melbourne |
| **Tony Palladino** | Executive Officer | NSW U&E ITAB | Other | NSW / Beakfast Point |
| **Luke O'Sullivan** | Director | Livewire Training and Consultancy | RTO | NSW / Rozelle |
| **James Charlton** | Electrical Teacher | Chisholm Tafe | RTO | VIC / Frankston |
| **Mick Cullen** | EO | Future Energy Skills | Peak body | VIC / Clayton, Melbourne |
| **Craig Turner** | Teacher | TAFENSW | RTO | NSW / Glendale |
| **Tobias Keating** | Developer | NECA Training | Employer \| RTO \| Other | ACT \| NSW \| QLD / Chullora |
| **Patrick Scharf** | Head of Electrotechnology Faculty | Australian Trade Training College | RTO | ACT \| NSW \| NT \| QLD \| SA \| VIC / Banyo |
| **Jared Barclay** | Electrical training and assessment | NECA | Peak body | NSW / Sydney |
| **David Muller** | Head Teacher | TAFE NSW | RTO | NSW / Granville |
| **Jenny James** | Teacher | Swinburne Tafe | RTO | VIC / Wantirna |

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| **Kyle Mounser** | Head Teacher, Electrotechnology | TAFE NSW | RTO | NSW / Newcastle |
| **Gary Ainsworth** | Head Teacher Electrotechnology | TAFE NSW | RTO | NSW / Miller |
| **Neil Waixel** | teacher | swinburne | RTO | VIC / Wantirna, Melbourne |
| **Adam Riley** | Teacher | TAFE | RTO | NSW / Tamworth |
| **Greg Keep** | Compliance Specialist | Energy Queensland | Employer \| RTO | QLD / Brisbane |
| **Tim Bolam** | Electrical Reliability Leader | Tomago Aluminium Co. Pty Ltd | Employer | NSW / Newcastle |
| **Blake Mortimer** | Engineering support manager | Daikin | Employer | NSW / Chipping Norton |
| **Ian Eggleton** | TEACHER | TAFE | Employer | NSW / Newcastle |
| **Nathanael Out** | Teacher | Swinburne University | RTO | VIC / Wantirna |
| **Ted Jenkinson** | Electrical Teacher | Swinburne | RTO | VIC / Melbourne |
| **Jo O'Mahony** | Trainer and Assessor | GOTAFE | RTO | VIC / Shepparton |
| **Dorothy Bakens** | Education Consultant | McGraw Hill Australia Pty Ltd | Other | VIC / Richmond |
| **Ian Maguire** | Educator | Swinburne0 | RTO | VIC / Melbourne |
| **Nick Achelles** | Education Consultant | McGraw Hill Education | Other | NSW / Sydney |

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| **Russell Feldtmann** | Trainer and Assessor | Goulburn Ovens Institute of Tafe (GOTAFE) | RTO | VIC / Shepparton |
| **Steve Hall** | General Manager | ECAWA College of Electrical Training | RTO | WA / Perth |
| **Troy Bond** | Industry Consultant | UEEA Training Council | Other | WA / Perth |
| **Manuel Barragan** | Manager, Strategy and Policy | Artibus Innovation | Other | TAS / Sandy Bay |
| **Electrotechnology IRC** | Various | Various | Employers, Associations, Unions, Regulators | National |

## Attachment D: Issues Raised by Stakeholders during consultation on the development of the Case for Change

| Stakeholder Type | Issues Raised | IRC's Response to Issues Raised |
|---|---|---|
| **Industry Reference Committee (IRC) Representatives** | NIL | NA |
| **Peak Industry Bodies** | NIL | NA |
| **Employers (Non-IRC)** | NIL | NA |
| **Regulators** | NIL | NA |
| **Registered Training Organisations (RTOs)** | I strongly support the need to review and update the renewable energy units, particularly those that lead to Clean Energy Council accreditation. I noticed that the battery storage units UEERE5001 and UEERE4001 were not included in the list. I believe they should also be reviewed; due to the fast change in battery storage technology, a number of the knowledge evidence are no longer relevant (e.g. the 5 different configurations, focus on charge controllers as distinct from inverters). | Feedback supports the need for the review.<br>Two battery storage units added to initial unit list proposed. |
| **Training Boards/Other** | From WA UEEA. WA stakeholders agree with the proposed Cases for Change for the UE Training Packages. No stakeholders have reported issues with the proposals. | Feedback supports the need for the review. |
| **State and Territory Training Authorities (STAs)** | The **Victorian STA** recognises the need to update products in this evolving industry | The project will include review of prerequisites of all units of competency in the Case for Change. |

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| | and supports the progress of the Case for Change to the AISC conditional on the following inclusions.<br>• The removal of weighting points<br>• The review of the extensive use of prerequisites; and attention to missing prerequisites (examples provided)<br>We note A further thirty (30) qualifications, beyond the eight qualifications (and 48 units) that will be updated, contain units that are being reviewed and may need to be submitted for endorsement. | The project will include a review of packaging rules of the qualification. Options for how packaging rules can be improved to better meet the needs of industry (including removal of weighting points) will be provided to the Technical Advisory Committee and the IRC for their consideration. The IRC will direct how the packaging rules are formed in the final qualification submitted for endorsement.<br>Where units included in this Case for change appear in qualifications not being reviewed the qualifications will be updated in accordance with Training Package Products Policy. |
| **State and Territory Training Authorities (STAs)** | Given the importance of renewable energy to the economy and the climate, this body of work is important therefore the **WA STA** supports this body of work. | Feedback supports the need for the review. |
| **Consultant** | There is an impending need for these competencies to be deliverable in the near future for electricians and Restricted Electrical Licensing (REL) for plumber gas fitters.<br>• Prepare safe design specifications for the monitoring and control components of hydrogen systems.<br>• Prepare safe design specifications for the electrical components of hydrogen fuel cell systems. | A separate Case for Change will be developed for Hydrogen training needs in consultation with other Industry refence Committees to ensure there is no duplication across training packages, and that all current and future needs are covered appropriately. Requires broader consultation. |

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| | • Prepare safe design specifications for the electrical components of water electrolysis systems.<br>• Commission, decommission, operate and maintain (fault find and repair) the electrical components of hydrogen fuel cell systems.<br>• Commission, decommission, operate and maintain (fault find and repair) the electrical components of water electrolysis systems.<br>• Commission, decommission, operate and maintain (fault find and repair) monitoring and control components of hydrogen systems. | |
| **Unions** | NIL | NA |

## Attachment E: List of stakeholders to be contacted as part of the development of the Case for Endorsement

Relevant Stakeholders identified in attachment C and the following:

| Name of Stakeholder | Title | Organisation | Organisation type (e.g. Employer, peak body, union, RTO, regulator) | Jurisdiction/town/city (e.g. NSW/Sydney) |
|---|---|---|---|---|
| **State Training Authorities** | | State Training Authorities | State Training Authorities | All States and Territories |
| **State Electrical Regulators** | Various | Various | Regulator | All States and Territories |
| **RTOs with scope to deliver current qualifications** | Various | Various | RTO | All States and Territories |
| **State Industry Training Bodies/Boards/Councils** | Various | Various | Other | All States and Territories |
| **Employers (small/medium/large)** | Various | Various | Employers | All States and Territories |
| **Peak Industry Bodies** | Various | Various | Associations | National and State bodies |
| **Australian Defence force** | Various | Australian Defence Force | Employer | National |
| **Electrotechnology IRC** | Various | Various | Employers, Associations, Unions, Regulators | National |