



Australian
Industry and
Skills Committee

UET POWER AND NETWORK SYSTEMS

Case for Change

Name of allocated IRC: ESI Transmission, Distribution and Rail
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):	ESI Transmission, Distribution and Rail Industry Reference Committee
-----------------	--

Name of SSO:	Australian Industry Standards
--------------	-------------------------------

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

UET Electricity Supply Industry, Transmission, Distribution and Rail Training Package

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

This Case for Change applies to the electricity networks and substations that are integral to the Electricity Supply Industry.

Energy networks within Australia are evolving on an unprecedented scale requiring an electricity system that can support these changes. Energy Networks Australia, working with the CSIRO, have developed an Electricity Network Transformation Roadmap which provides milestones and actions to guide an efficient and timely transformation of the network over the next decade. Electricity networks are being decentralised due to technological changes, customers taking control of their energy use, and Distributed Energy Resources (DER) such as solar PVs, battery storage, and wind generating units connecting to the electricity grid.

The Certificate IV, Diploma and Advanced Diploma qualifications have not been reviewed since 2012 to address changes to work methods incorporating the connections to DERs, management and infrastructure of electricity networks, and management and safety practices for substations. A review of this essential content is overdue to ensure the qualifications reflect contemporary industry practice, ENA guidelines and align with the Electricity Network Transformation Roadmap. The ESI TDR IRC has also noted changes in the Rail Traction Industry, especially in the processes regarding working with live lines which requires a new competency standard for maintaining and measuring lines.

Without updating the relevant occupational skills standards contained in this Training Package to align with current industry practice, workforce development and the integration of DERs and new technology to complement existing infrastructure will be hindered. This will impact electricity networks as it will reduce the reliability of electricity sources in the long term for the end user and increase electricity costs.

The Qualification and Units of Competency have not been updated since 2012. In 2019 they were transitioned to the Standards for Training Packages as part of UET Training Package Release 1.0. The UET Training Package Release 2.0, submitted to ASIC June 2021, will update the Qualifications with current versions of imported units.

2.2 Evidence for change

DERs can improve electricity supply reliability and reduce load on grids at peak times. It is predicted that more than 40 per cent of industrial customers will use DERs by 2027, and 30-45 per cent of Australia's electricity will be produced by consumers by 2050. To connect Australia to these new energy sources, the national electricity grid needs to be maintained and expanded with greater connectivity of grids on a broader scale. These renewable projects will play a key role in COVID-19 economic recovery.

The Australian Energy Market Operator's (AEMO) ongoing report 2020-22 Integrated System Plan (ISP) highlighted "*continued growth of utility-scale renewable generation, energy storage, distributed energy resources (DER), flexible thermal capacity (including gas-powered generation) and transmission development*" as the means to supply sources for the energy sector.

The Certificate IV, Diploma and Advanced Diploma qualifications require updating to align with industry practices and national guidelines. A few of these guidelines include:

- Electricity Network Transformation Roadmap (ENTR) 2017-2027 - The ENTR provides detailed milestones and actions to guide an efficient and timely transformation of the Electricity Network over the 2017-27 decade with modelling out to 2050. Developed by ENA in partnership with CSIRO.
- ENA National Connection Guidelines 2019 - The guidelines are the first nationally consistent approach for installation of distributed energy resources (DER). They address low voltage connections applicable to household, commercial and industrial premises.
- ENA's Current Industry Guidelines updated August 2020 - Part of ENA's role is the development and management of support material such as codes, specifications, guidelines and handbooks to support the energy industry. These 27 guidelines cover a range of topics from the connection of distributed energy resources, safety, hazards and technical reports and specifications. A full list of documents can be obtained from ENA at <http://www.energynetworks.com.au/industry-guidelines>.

Electricity networks need to look to the future to ensure they have skilled workers to manage the transformation of the grid into a platform for new products and services – rapidly connecting new technologies, while delivering safe, reliable and affordable supply across Australia.

The Prioritisation Framework categorises the qualifications in this case for change as *monitor*, because of the lower-than-average demand and the time since it was last updated. The usage of the qualifications by industry are restrained due to the currency of the content, therefore the low enrolment figures. These qualifications and units of competency were transitioned in 2019 to the Standards for Training Packages but the content has not been reviewed since 2012.

Units of competency that have had no enrolments in the last three years are listed in this review. The AISC agreed that these units were to be retained during the rationalisation process of the zero enrolments project. This was due to enrolments noted for the upcoming year and the need to update out of date content.

2.3 Consideration of existing products

This Case for Change is proposing to review and update existing units and qualifications in the ESI TDR Training Package to meet industry needs and develop one new unit. The new unit of competency will establish the specific skills and knowledge required by Rail Traction Lineworkers. The qualifications included in the review already use existing Electrotechnology Training Package units. The project will consider the usage and appropriateness for the industry of the current versions of these units.

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

The Units of Competency proposed for review in this project cover specific technical skills and knowledge required by ESI Transmission, Distribution and Rail workers to work safely within different states and electricity organisations and networks in Australia. The project will consider streamlining qualifications and ensure that all materials are updated to align with current and future industry practices and emerging technologies. It will consider the possibility of amalgamating the Cert IV and the Diploma respectively into streamed qualifications.

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**.*

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 on the Engagement Hub of the AIS website and feedback invited. Notification of the opportunity to provide feedback through the ESI TDR webinar, or in writing through the Engagement Hub, was provided to over 640 ESI TDR sector stakeholder subscribers including industry representatives from across the states/territories in rural, regional and remote areas.

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 review of the qualification and units were raised during the consultation process. There is strong support of the need for an up-to-date product for the ESI TDR industry.

The project work was outlined during a webinar conducted for the ESI TDR industry on 10 March 2021 which had 42 participants. Three questions about the work were posed in the Q & A section of the webinar. 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.

Further feedback on the need to review the Qualifications and Units of Competency has been provided by previous ESI TDR Technical Advisory Committee members and through online/email enquiries.

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

AIS, on behalf of the ESI TDR 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, phone, emails, video/teleconferencing
- Industry forums and conferences
- Webinars
- Online feedback mechanisms
- STA direct engagement

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

The Qualifications may require a licence/registration to practice in the workplace. This is based on state and territory legislative and regulatory licensing requirements. When reviewing the products, regulators and industry will be involved to ensure that changes made will not impact on licencing/registration outcomes.

5. Project implementation

5.1 Prioritisation category

It is proposed that this update is progressed as a routine project. The Qualifications and Units of Competency in the proposed project have not been reviewed since 2012 and do not meet current industry practices and ENA Guidelines, the ESI TDR IRC is strongly recommending a routine project to ensure that the Units of Competency meet safety and nationally agreed guidelines.

With the increasing reliability on DER's as an energy source for Australia's electricity network. A workforce that can rapidly adapt to these changes will ensure that electricity supply continues to be safe and reliable for all. This project is integral to maintain the stability of electricity grids. The work involved in updating the training products is substantial, therefore the ESI TDR IRC propose a routine project to allow for a detailed and in-depth review.

5.2 Project milestones

Key project milestones include:

- AISC project approval – July 2021
- Technical Advisory Committee (TAC) formed – August 2021
- Draft 1 consultation September – October 2021
- Stakeholder validation – October – November 2021
- Quality Assurance – March – April 2022
- Final consultation with states and territories – April - May 2022
- CfE submitted for approval – 30 June 2022

5.3 Delivery or implementation issues

No delivery or implementation issues 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.

The Qualification is targeted to those in the ESI TDR sector, and the review look at the portability of skills between occupations within the ESI TDR, ESI Generation and Electrotechnology industries.

The project will also seek to remove barriers to the qualification by removing the weighting points and reducing prerequisite units where possible. Consideration will be given to the possibility of amalgamating the Cert IV and the Diploma respectively into streamed qualifications.

This Case for Change was agreed to by the Electricity Supply Industry, Transmission, Distribution and Rail IRC

Name of Chair

Peter Woods

Signature of Chair



Date

14 May 2021

Attachment A: Training Package components to change

Australian Industry Standards Limited

Contact details: David Dixon - Chief Operating Officer

Date submitted: 14 May 2021

Project number	Project Name	Qualification/ Unit / Skillset	Code	Title	Details of last review (endorsement date, nature of this update transition, review, establishment)	Change Required
2	Power and Network Systems	Qualification	UET40419Y	Certificate IV in ESI - Network Systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Qualification	UET40519Y	Certificate IV in ESI - Power Systems Substations	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Qualification	UET40619Y	Certificate IV in ESI - Power Systems Network Infrastructure	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Qualification	UET50219Y	Diploma of ESI - Power Systems	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Qualification	UET50319Y	Diploma of ESI - Power Systems Operations	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Qualification	UET60219Y	Advanced Diploma of ESI - Power Systems	20/Apr/2021 – Review, update imported and superseded units only	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
2	Power and Network Systems	Unit	UETDRRTXX1	Maintain and measure live rail traction lines	N/A	New
2	Power and Network Systems	Unit	UETTDRCJ29 Y	Install gas and oil filled specialised underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCJ30 Y	Maintain gas and oil filled specialised underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCJ31 Y	Install and maintain polymeric specialised underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCJ32 Y	Install and maintain gas and oil pressure systems for specialised underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCJ33 Y	Install and maintain network infrastructure LV underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCJ34 Y	Install and maintain network infrastructure HV underground cables	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTD RDP15 Y	Inspect, maintain and restore energised low voltage overhead distribution network infrastructure	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDARDS31 Y	Draft and layout a power system overhead distribution extension	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS32 Y	Draft and layout a power system underground distribution extension	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS33 Y	Draft and layout a power system street lighting system	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS34 Y	Draft and layout a power system distribution substation minor upgrade	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS35 Y	Design overhead distribution power systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS36 Y	Design underground distribution power systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS37 Y	Design power system distribution substations	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS38 Y	Design power system public lighting systems	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDARDS39Y	Prepare and manage detailed construction plans for electrical power system infrastructure	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS42Y	Investigate quality of power systems supply issues	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS43Y	Develop high voltage and low voltage distribution protection systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS45Y	Organise and implement ESI line and easement surveys	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS46Y	Develop planned power systems outage strategies	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDARDS50Y	Design customer power system substations	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Unit	UETTDREL15Y	Respond to power systems technical enquiries and requests	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRI46Y	Install and maintain ESI network infrastructure electrical equipment	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRIS47 Y	Sample, test, filter and reinstate insulating oil	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS48 Y	Develop high voltage switching schedule	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS49 Y	Develop low voltage switching schedule	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS50 Y	Coordinate power system permit procedures	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS51 Y	Coordinate and direct power system switching schedules	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS62 Y	Implement and monitor the power system organisational WHS/OHS policies, procedures and programs	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS63 Y	Implement & monitor power system environmental & sustainable energy management policies & procedures	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS64 Y	Install mobile generation set for synchronised HV Genset	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRIS65 Y	Contribute to coordinated HV live working	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS67 Y	Solve problems in energy supply network equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS68 Y	Solve problems in energy supply network protection equipment and systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS69 Y	Diagnose and rectify faults in energy supply apparatus	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS70 Y	Diagnose and rectify faults in electrical energy distribution systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS71 Y	Diagnose and rectify faults in electrical energy supply transmission systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS72 Y	Diagnose and rectify faults in distributed generation systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS73 Y	Develop engineering solutions for energy supply power transformer problems	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRIS74 Y	Develop engineering solutions for energy supply system protection problems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRIS81 Y	Install telecommunications infrastructure on electricity supply industry assets	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRRT31 Y	Maintain energised d.c. traction overhead wiring system	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRRT32 Y	Maintain energised traction overhead electrical apparatus using stick techniques	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRRT33 Y	Maintain energised traction overhead electrical apparatus using glove techniques	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB21 Y	Diagnose and rectify faults in substation environment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB22 Y	Carry out power systems substation inspection	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB23 Y	Install and maintain substation direct current systems	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRSB24 Y	Maintain high voltage power system circuit breakers	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB25 Y	Maintain high voltage power and instrument transformers	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB26 Y	Install high current d.c. equipment and switchgear	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB27 Y	Maintain high current d.c. equipment and switchgear	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB29 Y	Maintain capacitor bank equipment for voltage regulation	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB30 Y	Maintain high voltage power system static VAR compensators (SVC)	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB31 Y	Maintain high voltage power system synchronous condensers	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB32 Y	Maintain power transformer on load tap changers (OLTC)	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB33 Y	Install high voltage plant and equipment	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRSB34 Y	Carry out surveys using thermovision techniques	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB35 Y	Maintain discrete control and protection systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB36 Y	Commission discrete control and protection systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB37 Y	Maintain power system distribution field devices	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSB38 Y	Commission power system distribution field devices	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRS032 Y	Manage power systems network faults	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Unit	UETTDRS035 Y	Manage high voltage distribution and sub-transmission network demand	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRS036 Y	Develop low voltage distribution switching programs	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRSO37 Y	Develop high voltage distribution and sub-transmission switching programs	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO38 Y	Develop and evaluate power systems transmission switching programs	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO40 Y	Coordinate high voltage distribution and sub-transmission networks	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO41 Y	Manage power systems transmission networks	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO45 Y	Operate and monitor system SCADA equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO46 Y	Monitor and control the field staff activities	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO47 Y	Coordinate high voltage transmission network	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO48 Y	Respond to discrete and interdependent protection operations	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRSO49Y	Coordinate power system operations in a regulated energy market	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRSO50Y	Respond to complex power system protection operations	20/Apr/2021 – Review, update imported and superseded units only	Update
2	Power and Network Systems	Unit	UETTDRTP34Y	Install/maintain overhead transmission network infrastructure	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTP35Y	Install/maintain transmission network infrastructure electrical equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS21Y	Maintain interdependent network protection and control systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS22Y	Commission interdependent network protection and control systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS23Y	Conduct evaluation of power system substation faults	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS24Y	Design testing and commissioning procedures for field devices and substations	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRTS25 Y	Maintain and test and metering schemes	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS26 Y	Commission power systems metering schemes	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS27 Y	Perform accuracy checks on power systems instrument transformers	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS28 Y	Repair, test and calibrate protection relays and meters	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS29 Y	Develop power systems secondary isolation instructional documents	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS30 Y	Design power systems secondary isolation instructional documents	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS31 Y	Maintain, test and commission power systems voltage regulating equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS32 Y	Conduct evaluation of power systems primary plant	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRTS33 Y	Undertake power systems project management of substation augmentation and maintenance	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS34 Y	Install and maintain power system communication equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS35 Y	Maintain complex network protection and control systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS36 Y	Commission complex network protection and control systems	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS37 Y	Perform current injection testing using phantom load	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS38 Y	Install and replace high voltage metering and associated equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS39 Y	Maintain compliance with national electricity market metrology practices and procedures	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS40 Y	Test and maintain energy/revenue metering schemes	25/Sep/2019 - 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
2	Power and Network Systems	Unit	UETTDRTS41 Y	Install and replace complex energy/revenue metering schemes and associated equipment	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS42 Y	Management of energy registration data errors for revenue billing purposes	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS43 Y	Commission energy/revenue metering schemes	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS44 Y	Test and maintain energy/revenue metering schemes (complex)	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS45 Y	Manage compliance with national electricity market metrology practices and procedures	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS46 Y	Verification and certification of revenue metering/energy measurement instruments	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRTS47 Y	Commission energy/revenue metering schemes (complex)	25/Sep/2019 - Transition	Update
2	Power and Network Systems	Unit	UETTDRCV30 Y	Coordinate vegetation control operations	25/Sep/2019 - Transition	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)
(342315) Electronic Instrument Trades Worker (Special Class) Live Line Worker Powerline Supervisor Line Worker	UET40419Y Certificate IV in ESI - Network Systems	101	2	5
(342211) Electrical Linesworker Substation Maintenance Electrician Electrical Technician (ESI) Powerline Supervisor Substation Electrician	UET40519Y Certificate IV in ESI - Power Systems Substations	129	8	4
(342211) Electrical Linesworker Powerline Supervisor	UET40619Y Certificate IV in ESI - Power Systems Network Infrastructure	17	0	0
(233311) Electrical Engineer Senior Systems Operator (Electricity Supply Industry) Power Systems Technical Officer	UET50219Y Diploma of ESI - Power Systems	189	1,100	3

(312312) Electrical Engineering Technician Power Systems Technical Officer High Voltage Substation Project Manager Senior Systems Operator (Electricity Supply Industry)	UET50319Y Diploma of ESI - Power Systems Operations	36	67	1
(233311) Electrical Engineer Power Systems Senior Technical Officer Power Transmission and Distribution System Engineer	UET60219Y Advanced Diploma of ESI - Power Systems	107	31	3
	UETTDRCJ29Y Install gas and oil filled specialised underground cables	0	0	5
	UETTDRCJ30Y Maintain gas and oil filled specialised underground cables	0	0	5
	UETTDRCJ31Y Install and maintain polymeric specialised underground cables	0	0	5
	UETTDRCJ32Y Install and maintain gas and oil pressure systems for specialised underground cables	0	0	5

	UETTDRCJ33Y Install and maintain network infrastructure LV underground cables	0	0	0
	UETTDRCJ34Y Install and maintain network infrastructure HV underground cables	0	0	0
	UETTDSDP15Y Inspect, maintain and restore energised low voltage overhead distribution network infrastructure	0	0	0
	UETTDSDS31Y Draft and layout a power system overhead distribution extension	15	7	9
	UETTDSDS32Y Draft and layout a power system underground distribution extension	12	5	9
	UETTDSDS33Y Draft and layout a power system street lighting system	1	1	9
	UETTDSDS34Y Draft and layout a power system distribution substation minor upgrade	13	0	9
	UETTDSDS35Y Design overhead distribution power systems	21	13	4

	UETTD RDS36Y Design underground distribution power systems	25	14	4
	UETTD RDS37Y Design power system distribution substations	5	5	4
	UETTD RDS38Y Design power system public lighting systems	0	0	4
	UETTD RDS39Y Prepare and manage detailed construction plans for electrical power system infrastructure	24	10	4
	UETTD RDS42Y Investigate quality of power systems supply issues	21	6	4
	UETTD RDS43Y Develop high voltage and low voltage distribution protection systems	62	24	4
	UETTD RDS45Y Organise and implement ESI line and easement surveys	25	11	4
	UETTD RDS46Y Develop planned power systems outage strategies	5	3	4
	UETTD RDS50Y Design customer power system substations	2	2	3

	UETTDREL15Y Respond to power systems technical enquiries and requests	70	43	5
	UETTDRIS46Y Install and maintain ESI network infrastructure electrical equipment	0	0	0
	UETTDRIS47Y Sample, test, filter and reinstate insulating oil	28	12	16
	UETTDRIS48Y Develop high voltage switching schedule	4170	4121	14
	UETTDRIS49Y Develop low voltage switching schedule	8	2	5
	UETTDRIS50Y Coordinate power system permit procedures	2493	2456	13
	UETTDRIS51Y Coordinate and direct power system switching schedules	2488	2460	13
	UETTDRIS62Y Implement and monitor the power system organisational WHS/OHS policies, procedures and programs	217	105	11
	UETTDRIS63Y Implement & monitor power system environmental & sustainable energy	216	101	11

	management policies & procedures			
	UETTDRIS64Y Install mobile generation set for synchronised HV Genset	0	0	5
	UETTDRIS65Y Contribute to coordinated HV live working	107	92	10
	UETTDRIS67Y Solve problems in energy supply network equipment	4890	4502	30
	UETTDRIS68Y Solve problems in energy supply network protection equipment and systems	372	113	24
	UETTDRIS69Y Diagnose and rectify faults in energy supply apparatus	5	6	5
	UETTDRIS70Y Diagnose and rectify faults in electrical energy distribution systems	4	4	12
	UETTDRIS71Y Diagnose and rectify faults in electrical energy supply transmission systems	8	8	12
	UETTDRIS72Y Diagnose and rectify faults in distributed generation systems	0	0	12

	UETTDRIS73Y Develop engineering solutions for energy supply power transformer problems	56	52	11
	UETTDRIS74Y Develop engineering solutions for energy supply system protection problems	25	23	9
	UETTDRIS81Y Install telecommunications infrastructure on electricity supply industry assets	0	0	1
	UETTDRRT31Y Maintain energised d.c. traction overhead wiring system	0	0	5
	UETTDRRT32Y Maintain energised traction overhead electrical apparatus using stick techniques	0	0	5
	UETTDRRT33Y Maintain energised traction overhead electrical apparatus using glove techniques	0	0	5
	UETTDRSB21Y Diagnose and rectify faults in substation environment	51	12	4
	UETTDRSB22Y Carry out power systems substation inspection	40	18	5

	UETTDRSB23Y Install and maintain substation direct current systems	329	23	16
	UETTDRSB24Y Maintain high voltage power system circuit breakers	40	5	4
	UETTDRSB25Y Maintain high voltage power and instrument transformers	42	10	4
	UETTDRSB26Y Install high current d.c. equipment and switchgear	42	4	4
	UETTDRSB27Y Maintain high current d.c. equipment and switchgear	41	7	4
	UETTDRSB29Y Maintain capacitor bank equipment for voltage regulation	0	0	16
	UETTDRSB30Y Maintain high voltage power system static VAR compensators (SVC)	0	0	4
	UETTDRSB31Y Maintain high voltage power system synchronous condensers	0	0	4
	UETTDRSB32Y Maintain power transformer on load tap changers (OLTC)	3	0	4

	UETTDRSB33Y Install high voltage plant and equipment	36	8	4
	UETTDRSB34Y Carry out surveys using thermovision techniques	14	7	4
	UETTDRSB35Y Maintain discrete control and protection systems	5	5	4
	UETTDRSB36Y Commission discrete control and protection systems	0	0	4
	UETTDRSB37Y Maintain power system distribution field devices	0	0	4
	UETTDRSB38Y Commission power system distribution field devices	0	0	4
	UETTDRSO32Y Manage power systems network faults	12	8	3
	UETTDRSO35Y Manage high voltage distribution and sub-transmission network demand	12	12	3
	UETTDRSO36Y Develop low voltage distribution switching programs	48	25	4

	UETTDRSO37Y Develop high voltage distribution and sub-transmission switching programs	21	7	4
	UETTDRSO38Y Develop and evaluate power systems transmission switching programs	3	0	4
	UETTDRSO40Y Coordinate high voltage distribution and sub-transmission networks	11	9	4
	UETTDRSO41Y Manage power systems transmission networks	11	3	3
	UETTDRSO45Y Operate and monitor system SCADA equipment	37	36	5
	UETTDRSO46Y Monitor and control the field staff activities	8	3	4
	UETTDRSO47Y Coordinate high voltage transmission network	4	4	4
	UETTDRSO48Y Respond to discrete and interdependent protection operations	9	9	4

	UETTDRSO49Y Coordinate power system operations in a regulated energy market	8	7	4
	UETTDRSO50Y Respond to complex power system protection operations	14	10	3
	UETTD RTP34Y Install/maintain overhead transmission network infrastructure	0	0	0
	UETTD RTP35Y Install/maintain transmission network infrastructure electrical equipment	0	0	0
	UETTD RTS21Y Maintain interdependent network protection and control systems	55	26	4
	UETTD RTS22Y Commission interdependent network protection and control systems	56	32	4
	UETTD RTS23Y Conduct evaluation of power system substation faults	29	14	3
	UETTD RTS24Y Design testing and commissioning procedures for field devices and substations	0	0	3

	UETTDRTS25Y Maintain and test and metering schemes	36	16	4
	UETTDRTS26Y Commission power systems metering schemes	13	3	4
	UETTDRTS27Y Perform accuracy checks on power systems instrument transformers	27	13	4
	UETTDRTS28Y Repair, test and calibrate protection relays and meters	91	39	4
	UETTDRTS29Y Develop power systems secondary isolation instructional documents	73	29	4
	UETTDRTS30Y Design power systems secondary isolation instructional documents	0	0	3
	UETTDRTS31Y Maintain, test and commission power systems voltage regulating equipment	30	14	4
	UETTDRTS32Y Conduct evaluation of power systems primary plant	8	8	3
	UETTDRTS33Y Undertake power systems project	9	9	3

	management of substation augmentation and maintenance			
	UETTDRTS34Y Install and maintain power system communication equipment	25	14	4
	UETTDRTS35Y Maintain complex network protection and control systems	38	19	4
	UETTDRTS36Y Commission complex network protection and control systems	37	20	3
	UETTDRTS37Y Perform current injection testing using phantom load	0	0	0
	UETTDRTS38Y Install and replace high voltage metering and associated equipment	0	0	0
	UETTDRTS39Y Maintain compliance with national electricity market metrology practices and procedures	0	0	0
	UETTDRTS40Y Test and maintain energy/revenue metering schemes	0	0	0
	UETTDRTS41Y Install and replace complex	0	0	0

	energy/revenue metering schemes and associated equipment			
	UETTDRTS42Y Management of energy registration data errors for revenue billing purposes	0	0	0
	UETTDRTS43Y Commission energy/revenue metering schemes	0	0	0
	UETTDRTS44Y Test and maintain energy/revenue metering schemes (complex)	0	0	0
	UETTDRTS45Y Manage compliance with national electricity market metrology practices and procedures	0	0	0
	UETTDRTS46Y Verification and certification of revenue metering/energy measurement instruments	0	0	0
	UETTDRTS47Y Commission energy/revenue metering schemes (complex)	0	0	0
	UETTDRCV30Y Coordinate vegetation control operations	27	6	5

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
Elizabeth Joannou	Training Programmes Manager	Global Sustainable Energy Solutions	Employer RTO	NSW / Sydney
Tim Roberts	Industry Skills Advisor	ESQ	Peak body	QLD / Brisbane
Anita Talberg	Director Workforce Development	Clean Energy Council	Peak body	VIC / Melbourne
Leonie McCallum	Training Manager	TransGrid	Employer	NSW / Wagga Wagga
Lynda Green	Training Package Content Officer	AATIS	Other	VIC / Melbourne
Geoff Fairweather	Technical Specialist and Systems Trainer	MSA	Other	VIC / Hallam
Hayley Goode	Training Coordinator	Arbtrack Australia	RTO	VIC / Narre Warren South
Fil Ross	Manager Industry Engagement and Training Products	The Department of Employment, Small Business and Training	Other	QLD / Brisbane
Tiffany Young	Competency Assessor	Transport Sydney Trains	Employer	NSW / Sydney

Andrew Bartle	Teacher	Chisholm Institute	RTO	VIC / Frankston
Helen Magnussen	RTO Compliance Manager	Accell Pty Ltd	RTO	QLD / Rockhampton
Suzie Hounsham	Senior Program Officer	DTWD	Other	WA / Perth
Guy Broadbent	Head of Training and Assessment	Thomson Bridge	RTO	VIC / Logan
Douglas Cavanaugh	General Manager	IAC Group	Employer RTO	NSW / Blacktown
Robin Boughen	Senior Trainer and Assessor	DNA Training Solutions	RTO	VIC / Hallam
Josephine Manfield	Training Support Team Leader	SA Power Networks	Employer RTO	SA / Adelaide
Stephen Pike	Director	Intuitive Training	RTO	QLD / Thornlands
David Britten	Operational Training Manager	Essential Energy	Employer RTO	NSW / Port Macquarie
Xavier Walker	Education Manager	Box Hill Institute	RTO	VIC / Wodonga
Mark Burgess	National Apprenticeship Officer	ETU	Union	VIC / Geelong
Alex Newman	CEO	ETU Centre for U	RTO	VIC / Melbourne
Kevin Spies	Technical Training Specialist	Energy Qld	RTO	QLD / Burleigh Heads

David Hahn	Technical Trainer Supervisor	Energy Qld.	RTO	QLD / Toowoomba
Justin Cuthbert	Electrical Trainer and Assessor	Chisholm Institute	RTO	VIC / Berwick
Gracie Ng	Senior Electrical System Engineer	Thomson Bridge	RTO	VIC / Melbourne
Leslie Young	Senior Industry Engagement Officer (Accreditation)	VRQA	Regulator	VIC / Melbourne
Verity Watson	head of transmission	Energy Networks Australia	Peak body	VIC / Melbourne
Kriti Nagrath	Senior research consultant	Uts	Other	NSW / Sydney
Rusty Langdon	Research Consultant	UTS	Other	NSW / Sydney
Chris Briggs	Research Principal	ISF	Other	NSW / Sydney
Tim Sealey	Assistant Director Analytics and Policy	ACT Govt	Employer	ACT / Canberra
Michael Dunn	Trainer & Assessor	Burton Training and Consultancy	RTO	QLD / Townsville
Supritha Sk	Officer	TAFE NSW	Employer	NSW / Sydney
Anieke Skaiaa	Contact & Content Officer	AATIS	Other	VIC / Melbourne

Dave Clews	Technical Officer	Energy Qld	Employer	QLD / Bunalow
Sean Forsyth	Training Team Leader	Energy Qld	RTO	QLD / Townsville
Boeta Kotze	Training Team Leader	Energy Qld	RTO	QLD / Toowoomba
Bill Jenkins	Training Team Leader	Energy Qld	RTO	
Gordon Edwards	Training Team Leader	Energy Qld	RTO	QLD / Hervey Bay
Ken Simpson	Training Team Leader	Energy Qld	RTO	QLD / Maryborough
ESI TDR IRC	Various	Various	Employers, Associations, Unions, Regulators	National

The Case for Change development also involved contacting stakeholders from the following organisational types across all states and territories within Australia as required:

- Industry Reference Committee (IRC) Representatives
- Employers (Non-IRC)
- Peak Industry Bodies
- Unions
- Regulators
- RTOs
- Other/Consultants

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		
Peak Industry Bodies		
Employers (Non-IRC)		
Regulators		
Registered Training Organisations (RTOs)	<p>Is there any intention to look at UEE units to align them more to an ESI level of core skills/knowledge? I understand these were Electrotechnology related core units were included back in the mid 90's when ESI trades moved to a cert3 level. I haven't ever found an ESI trade worker who uses a Cathode Ray Oscilloscope (if you can find one outside a museum), works through capacitor time constants needs in circuitry, fixes wall plates to plasterboard walls and so on.</p> <p>We might be at the point we have to make subjects related to DER's core competencies (not electives) and incorporated to every level from Cert I through to Engineering degrees? The DER penetration and supply of energy is</p>	<p>The review of the UEE units sits with the Electrotechnology IRC but as part of the review of the Power and Network Systems the IRC are looking to update to current industry practices with the ESI industry in mind, this will include reviewing the suitability of UEE units with the UET Training Package.</p> <p>The Power and Network Systems review hopes to address the DER integration with the network. To help address the knowledge of existing workforce the IRC will look at developing skill sets for these workers.</p>

	<p>growing and changing rapidly by a small percentage of the work force, most of the workforce is not involved. Plus how do we bring in CPD for existing workforce that have so far missed the DER boat to keep their knowledge relevant and aware of how to work safely.</p> <p>Has there been a consideration on getting electricians and electrical apprentices involved in the ESI and rail industry? Such as strategy for combining units that allows Electrical apprentices or Electricians to be provided with a dual qualification. This would then offer help to the ESI and Rail industry. Maybe this is similar to a previous question.</p>	<p>As part of the Power and Network Systems review the qualifications will be updated to reflect the current UEE units in use. This will help with the portability of skills between the sectors.</p>
Training Boards/Other		
State and Territory Training Authorities (STAs)		
Unions		
<i>Please add other categories as appropriate</i>		

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
Elizabeth Joannou	Training Programmes Manager	Global Sustainable Energy Solutions	Employer RTO	NSW / Sydney
Tim Roberts	Industry Skills Advisor	Energy Skills Qld	Peak body	QLD / Brisbane
Anita Talberg	Director Workforce Development	Clean Energy Council	Peak body	VIC / Melbourne
Leonie McCallum	Training Manager	TransGrid	Employer	NSW / Wagga Wagga
David Britten	Operational Training Manager	Essential Energy	Employer RTO	NSW / Port Macquarie
Mark Burgess	National Apprenticeship Officer	ETU	Union	VIC / Geelong
Robert Foord	Technical Training Officer	Energy United	Employer	VIC / Melbourne
Barry Heywood	Work Practices Advisor	Energy Safe Victoria	Regulator	VIC / Melbourne

Pam O'Neill	Training Compliance Team Leader	CitiPower, Powercor and United Energy	Employer	VIC / Melbourne
Jill Cainey	General Manager Networks	Energy Networks Australia	Peak Body	National
Gerard Coad	Technical Standards & Practices Team Leader	TasNetworks	Employer	TAS / Hobart
Peter Woods	Principal Assessor	Sydney Trains	Employer	NSW / Sydney
Mike Millard Hurst	Training Delivery Team Leader	Western Power	Employer	WA / Perth
Robert Taylor	CEO	Energy Space	Peak body	ACT / Canberra
Yvonne Webb	Industry Engagement Officer	ISACNT Advisory Council	Peak body	NT / Darwin
Troy Bond	Industry Consultant	UEEA Training Council	Peak body	WA / Perth
ESI TDR IRC	Various	Various	Employers, Associations, Unions, Regulators	National

The Case for Endorsement development will also involve contacting stakeholders from the following organisational types across all states and territories within Australia as required:

- Industry Reference Committee (IRC) Representatives
- Employers (Non-IRC)
- Peak Industry Bodies
- Unions

- Regulators
- RTOs
- Other/Consultants