Australian Industry and Skills Committee

UEE REFRIGERATION AND AC

Case for Change

Name of allocated IRC: 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that all qualifications related to refrigeration and air conditioning (RAC) contained content which was significantly out of date and the qualification pathway does not accurately align to job roles within the sector.

This project will review the Certificate III RAC qualification and related units of competency. It will determine the Essential Performance Capabilities (EPCs) of a RAC tradesperson and identify amendments required to existing content within the qualification to provide the required knowledge, skills and performance. This will involve amendments to existing units but may also identify new units required to replace current units where EPCs do not readily align.

In addition, the IRC is proposing to develop a new unit of competency and skill set to enable refrigeration and air-conditioning technicians to competently assess and report on a building's smoke control features of mechanical services systems. This work relates to Essential Services Fire Measures legislation.

The transition of the UEE Training Package to the 2012 Standards for Training Packages involved minimal review of and changes to refrigeration and air conditioning content, hence the need for a more broad-based review now.

2.2 Evidence for change

To reduce global warming, refrigeration and air conditioning equipment manufacturers are moving from HFC refrigerants to lower GWP natural and synthetic refrigerants, and more energy efficient technologies.

UEE Air-conditioning and Refrigeration qualifications were first endorsed in 1999 based on modules developed in the early 1990's. Reviews of content since have been ad hoc in response to new technologies, standards, regulations and practices; but little has been removed. A holistic review of qualifications is required. This work will be underpinned by the creation of the EPCs mentioned in the previous section.

There have been recent changes to Australian Regulations and Standards related to the design, installation, maintenance, and assessment of equipment in commercial buildings that have fire separated compartments. The design and installation of Essential Services Fire Measures must meet legislation and Australian Standard requirements. Assessors who do building condition reports require specific competencies to understand the regulatory framework and specific reporting requirements.

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. The project will be a broad-based review of EPCs for a RAC Technician and will result in the rationalisation of current content.

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

This project will provide the basis for rationalisation of higher-level content, and the removal of any nesting in higher level RAC qualifications in the future.

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

Industry licencing and regulatory linkages to material being reviewed exist which will need to be considered and accommodated.

5. Project implementation

5.1 Prioritisation category

It is proposed that this be complex review conducted over an eighteen-month period to enable 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: June 2021
- Technical Advisory Committee (TAC) formed: August 2021
- Draft 1 consultation: April-May 2022
- Stakeholder validation: August-September 2022
- Quality Assurance: September-October 2022
- Final consultation with states and territories: October-November 2022
- Case for Endorsement submitted for approval: 31 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

Name of Chair	
Signature of Chair	
Date	

Attachment A: Training Package components to change

Australian Industry Standards

Contact details: David Dixon, Chief Operating Officer

Date submitted: TBA

Note: qualifications where the code is marked with * are not being reviewed, but contain units that are being reviewed as part of this project, as such may need to be submitted for endorsement due to the 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
7	Refrigeration and Air Conditioning	Qualification	UEE32220Y	Certificate III in Air Conditioning and Refrigeration	05/Oct/2020 - Transition	**Update**
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE20120Y*	*Certificate II in Split Air Conditioning and Heat Pump Systems*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE32120Y*	*Certificate III in Appliance Service*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE40520Y*	*Certificate IV in Electrical - Air Conditioning Split Systems*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE42720Y*	*Certificate IV in Air Conditioning and Refrigeration Servicing*	*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
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE42820Y*	*Certificate IV in Air-conditioning Systems Energy Management and Control*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE42920Y*	*Certificate IV in Refrigeration and Air Conditioning Systems*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE50320Y*	*Diploma of Electrical and Refrigeration and Air Conditioning*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE51220Y*	*Diploma of Air Conditioning and Refrigeration Engineering*	*05/Oct/2020 - Transition*	***Update***
7	*Refrigeration and Air Conditioning*	*Qualification*	** UEE62520Y*	*Advanced Diploma of Air Conditioning and Refrigeration Engineering*	*05/Oct/2020 - Transition*	***Update***
7	Refrigeration and Air Conditioning	Unit	UEERA0005Y	Apply safety awareness and legal requirements for ammonia refrigerant	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0006Y	Apply safety awareness and legal requirements for carbon dioxide refrigerant	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0007Y	Apply safety awareness and legal requirements for flammable refrigerants	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
7	Refrigeration and Air Conditioning	Unit	UEERA0031Y	Diagnose and rectify faults in air conditioning and refrigeration control systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0035Y	Establish the basic operating conditions of air conditioning systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0036Y	Establish the basic operating conditions of vapour compression systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0044Y	Find and rectify faults in single phase motors and associated controls	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0045Y	Find and rectify faults in three phase motors and associated controls	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0046Y	Install and commission ammonia refrigeration systems, components and associated equipment	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0047Y	Install and commission carbon dioxide refrigeration systems, components and associated 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
7	Refrigeration and Air Conditioning	Unit	UEERA0048Y	Install and commission flammable refrigerant air conditioning and refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0050Y	Install refrigerant pipe work, flow controls and accessories	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0051Y	Install, commission, service and maintain air conditioning systems	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0052Y	Install, commission, service and maintain low temperature systems	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0053Y	Install, commission, service and maintain medium temperature systems	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0054Y	Maintain microbial control of refrigeration and air conditioning systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0057Y	Operate ammonia refrigeration plant	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0059Y	Prepare and connect refrigerant tubing and fittings	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
7	Refrigeration and Air Conditioning	Unit	UEERA0062Y	Recover and charge refrigerants	05/Oct/2020 - Establishment	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0065Y	Repair and service ammonia refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0066Y	Repair and service carbon dioxide refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0067Y	Repair and service secondary refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0068Y	Repair and service self-contained carbon dioxide refrigeration and heat pump systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0069Y	Resolve problems in beverage dispensers	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0070Y	Resolve problems in central plant air conditioning systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0071Y	Resolve problems in dairy refrigeration 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
7	Refrigeration and Air Conditioning	Unit	UEERA0072Y	Resolve problems in hydronic systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0073Y	Resolve problems in ice making systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0074Y	Resolve problems in industrial refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0075Y	Resolve problems in post-mix refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0076Y	Resolve problems in refrigerated beverage vending cabinets	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0077Y	Resolve problems in transport refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0078Y	Resolve problems in ultra-low temperature refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0079Y	Safely handle refrigerants and lubricants	05/Oct/2020 - Establishment	**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
7	Refrigeration and Air Conditioning	Unit	UEERA0081Y	Select refrigerant piping, accessories and associated controls	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0084Y	Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0092Y	Solve problems in low voltage refrigeration and air conditioning circuits	05/Oct/2020 - Transition	**Update**
7	Refrigeration and Air Conditioning	Unit	UEERA0094Y	Verify functionality and compliance of refrigeration and air conditioning installations	05/Oct/2020 - 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)
342111 Airconditioning And Refrigeration Mechanic	UEE32220Y Certificate III in Air Conditioning and Refrigeration	15739	2624	0
899914 Electrical Or Telecommunications Trades Assistant	UEE20120Y Certificate II in Split Air Conditioning and Heat Pump Systems	5680	3772	20
341111 Electrician (General)	UEE32120Y Certificate III in Appliance Service	512	58	5
342111 Airconditioning And Refrigeration Mechanic	UEE40520Y Certificate IV in Electrical - Air Conditioning Split Systems	0	0	0
342111 Airconditioning And Refrigeration Mechanic	UEE42720Y Certificate IV in Air Conditioning and Refrigeration Servicing	31	6	2
342111 Airconditioning And Refrigeration Mechanic	UEE42820Y Certificate IV in Air-conditioning Systems Energy Management and Control	0	0	0
342111 Airconditioning And Refrigeration Mechanic	UEE42920Y Certificate IV in Refrigeration and Air Conditioning Systems	28	12	2
342111 Airconditioning And Refrigeration Mechanic	UEE50320Y Diploma of Electrical and Refrigeration and Air Conditioning	0	0	0

342111 Airconditioning And Refrigeration Mechanic	UEE51220Y Diploma of Air Conditioning and Refrigeration Engineering	326	91	5
342111 Airconditioning And Refrigeration Mechanic	UEE62520Y Advanced Diploma of Air Conditioning and Refrigeration Engineering	2	0	1
	UEERA0005Y Apply safety awareness and legal requirements for ammonia refrigerant	1047	880	5
	UEERA0006Y Apply safety awareness and legal requirements for carbon dioxide refrigerant	1252	1098	8
	UEERA0007Y Apply safety awareness and legal requirements for flammable refrigerants	3236	2450	9
	UEERA0031Y Diagnose and rectify faults in air conditioning and refrigeration control systems	4421	2834	5
	UEERA0035Y Establish the basic operating conditions of air conditioning systems	6652	4437	35
	UEERA0036Y Establish the basic operating conditions of vapour compression systems	7254	4145	22
	UEERA0044Y Find and rectify faults in single phase motors and associated controls	0	0	10
	UEERA0045Y Find and rectify faults in three phase motors and associated controls	0	0	10
	UEERA0046Y Install and commission ammonia refrigeration systems, components and associated equipment	17	0	5
	UEERA0047Y Install and commission carbon dioxide refrigeration systems, components and associated equipment	17	0	5

	UEERA0048Y Install and commission flammable refrigerant air conditioning and refrigeration systems	2	2	5
	UEERA0050Y Install refrigerant pipe work, flow controls and accessories	5173	3047	7
	UEERA0051Y Install, commission, service and maintain air conditioning systems	0	0	5
	UEERA0052Y Install, commission, service and maintain low temperature systems	0	0	5
	UEERA0053Y Install, commission, service and maintain medium temperature systems	0	0	5
	UEERA0054Y Maintain microbial control of refrigeration and air conditioning systems	626	469	5
	UEERA0057Y Operate ammonia refrigeration plant	16	5	0
	UEERA0059Y Prepare and connect refrigerant tubing and fittings	13647	9889	39
	UEERA0062Y Recover and charge refrigerants	0	0	7
	UEERA0065Y Repair and service ammonia refrigeration systems	22	22	5
	UEERA0066Y Repair and service carbon dioxide refrigeration systems	164	161	5
	UEERA0067Y Repair and service secondary refrigeration systems	2	2	5

	UEERA0068Y Repair and service self-contained carbon dioxide refrigeration and heat pump systems	0	0	8
	UEERA0069Y Resolve problems in beverage dispensers	301	212	5
	UEERA0070Y Resolve problems in central plant air conditioning systems	902	621	5
	UEERA0071Y Resolve problems in dairy refrigeration systems	4	3	5
	UEERA0072Y Resolve problems in hydronic systems	97	92	5
	UEERA0073Y Resolve problems in ice making systems	721	519	5
	UEERA0074Y Resolve problems in industrial refrigeration systems	36	33	4
	UEERA0075Y Resolve problems in post-mix refrigeration systems	97	32	8
	UEERA0076Y Resolve problems in refrigerated beverage vending cabinets	91	27	8
	UEERA0077Y Resolve problems in transport refrigeration systems	2	2	5
	UEERA0078Y Resolve problems in ultra-low temperature refrigeration systems	4	4	5
	UEERA0079Y Safely handle refrigerants and lubricants	0	0	7

	UEERA0081Y Select refrigerant piping, accessories and associated controls	4989	2839	5
	UEERA0084Y Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems	1629	1224	9
	UEERA0092Y Solve problems in low voltage refrigeration and air conditioning circuits	5336	3397	8
	UEERA0094Y Verify functionality and compliance of refrigeration and air conditioning installations	4229	2635	5

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

Active participation has included stakeholders from the following organisations across all states and territories within Australia:

- Industry Reference Committee (IRC) Representatives
- Technical Advisory Committees
- 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	NIL	NA
Peak Industry Bodies	NIL	NA
Employers (Non-IRC)	NIL	NA
Regulators	NIL	NA
Registered Training Organisations (RTOs)	NIL	NA
Training Boards/Other	NIL	NA
State and Territory Training Authorities (STAs)	NIL	NA
Unions	NIL	NA
Please add other categories as appropriate	NIL	NA

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

The Case for Endorsement development will involve contacting stakeholders from the following types of organisations across all states and territories within Australia:

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