



Australian Government

UEERE4011 Install bidirectional electric vehicle systems in a low voltage environment

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Modification History

Release	Comments
1	This unit of competency was first released in UEE Electrotechnology Training Package Release 11.0.

Application

This unit describes the skills and knowledge required to install, commission, and test bidirectional Electric Vehicle (EV) systems for safe and compliant operation within low voltage electrical systems.

The skills and knowledge are applied in electrical and energy industries where bidirectional EV systems are integrated with electrical installations, electric vehicles, and the electricity grid. Work is undertaken in low voltage (LV) environments and involves interpreting technical documentation, applying safety and regulatory requirements, and ensuring correct installation, isolation, energy export, and control system configuration in accordance with manufacturer specifications, industry standards, and regulatory obligations.

This unit applies to individuals who are competent in the core skills of an electrician and are undertaking further development in specialist renewable energy systems, energy storage, and advanced electrical system design, and who take responsibility for planning and installing, interpreting technical and regulatory information, and completing work in line with established industry procedures and workplace expectations.

Licensing/Regulatory Information

This unit applies to licensed electricians or individuals that have been deemed competent in their final licensing assessment (capstone) or an equivalent pathway recognised by the relevant state or territory regulatory authority.

Work associated with this unit is subject to electrical licensing requirements and grid connection approvals governed by jurisdictional regulators and electricity distributors. All tasks must be carried out under applicable workplace and regulatory arrangements.

Licensing, legislative, and regulatory requirements can vary between states and territories; relevant jurisdictional information must be sourced prior to commencing the unit.

Pre-requisite unit(s)

UEERE4010 Plan the installation of bidirectional electric vehicle systems in a low voltage environment

Competency field(s)

Renewable Energy

Unit sector(s)

Electrotechnology

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to install	1.1 Notify relevant parties involved for the installation of the bidirectional EV equipment
	1.2 Obtain the system designs, relevant party requirements and expectations for the bidirectional EV equipment
	1.3 Review the work health and safety (WHS) requirements from the site survey and design documentation
2. Installation	2.1 Conduct a pre-work briefing including manufacturer requirements, standards, regulatory and site installation requirements, scheduling and the roles and responsibilities of relevant parties involved in the installation and commissioning
	2.2 Identify and arrange plant, tools, equipment, and Personal Protective Equipment (PPE) required for the work, and confirm they are in safe working order
	2.3 Apply and monitor WHS requirements, including isolating all sources of energy and components
	2.4 Install the system components
	2.5 Terminate wiring at components and associated equipment
	2.6 Configure system and apply software, firmware, export limits, design updates and program system
	2.7 Conduct quality checks of installed components
3. Verification and testing	3.1 Conduct verification and testing of the bidirectional EV equipment in accordance with regulators, standards and manufacturer requirements

	3.2 Rectify any identified faults or non-compliance
	3.3 Record verification and testing results
4. Complete and report installation	4.1 Clean and make the worksite safe
	4.2 Complete and submit 'as-installed' work records, reports, and compliance documentation
	4.3 Compile a system manual in line with standards
	4.4 Provide a system manual and conduct a handover to the client, obtain client acceptance for the completed installation

Range of conditions

N/A

Assessment Requirements for UEERE4011 Install bidirectional electric vehicle systems in a low voltage environment

Performance Evidence

To demonstrate competent application of the skills and knowledge in this unit, evidence must show that the individual can:

- conduct site surveys to plan, install and commission bidirectional EV systems for:
 - design and install one standalone bidirectional EV system
 - design and install one bidirectional EV system integrated with an additional renewable energy resource

Each must include the following:

- perform installation and commissioning activities that include control system checks, verification processes and performance testing
- plan and prepare for installation by:
 - interpreting survey and design documentation
 - confirming installation readiness, including safety, compliance and equipment availability
- apply safety and isolation requirements by:
 - implementing correct electrical isolation procedures before commencing work
 - applying WHS procedures and risk control measures throughout installation and commissioning
- install bidirectional EV equipment in accordance with design documentation, manufacturer instructions and regulatory requirements, including required labelling
- configure and integrate systems by completing:
 - system configuration and programming
 - export limit settings
 - software installation and firmware updates
- verify, test and rectify systems by:
 - conducting mandatory verification and testing in line with industry standards and regulatory requirements
 - identifying and rectifying non-compliance issues
- complete documentation and reporting requirements by:
 - submitting as-installed documentation, test results and compliance reports
 - providing clients with system induction, user manuals, operating instructions, safety guidance and maintenance recommendations.

Knowledge Evidence

To demonstrate competent application of the skills and knowledge in this unit, evidence must show that the individual has knowledge of:

- standards, regulations and approvals, including:
 - industry standards and regulatory requirements for EV equipment installations
 - DNSP and grid connection requirements, approvals, notifications and metering changes
 - installation requirements for alternating current (a.c.) and direct current (d.c.) circuits for bidirectional EV equipment
- safety, isolation and protection, including:
 - WHS requirements for electrical installation work and associated risk control measures
 - isolation and lock-out tag-out (LOTO) requirements and verification of a de-energised state prior to commencing work
 - protection requirements for power conversion equipment (PCE), electric vehicle supply equipment (EVSE), bidirectional EV equipment, residual current device (RCD) selection and residual direct current detection devices (RDC-DD)
- communications, smart grid and control systems, including:
 - EV equipment communications, stability of communications, energy management systems (EMS), current transformers (CTs), export limiting and control functions
 - baseline charger-to-vehicle and charger-to-backend communication principles
 - metering and export arrangements, including import and export metering configurations, tariff implications and export limit compliance requirements for EV equipment
- testing, commissioning and diagnostic processes, including:
 - verification and test instruments used during commissioning
 - diagnostic methods applied during commissioning
- interpretation of test results against industry standards, regulatory requirements and manufacturer specifications to confirm compliance and identify faults.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must be conducted in a real or simulated workplace environment that reflects typical installation conditions for bidirectional EV equipment. The assessment process must require candidates to demonstrate practical skills and underpinning knowledge consistent with workplace expectations and industry standards.

Learners must be licensed electricians, or have been deemed competent in their final licensing assessment (capstone) or equivalent pathway, as recognised by the relevant regulatory authority. Assessment must demonstrate compliance with current electrical safety legislation, applicable service rules, and electricity network standards.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency

Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/UEE>.