



STUDENT INFORMATION GUIDE

Design, Install, Maintain and Fault Find Battery Storage Systems for Grid Connected Photovoltaic Systems

A course for Electricians with Solar Grid-Connect Units of Competency.

About Future Skills

Future Skills is an industry owned and operated registered training organisation, specialising in post trade electrical and work health and safety training in Queensland and the Northern Territory. We have scope to deliver and assess against a range of qualifications in these areas, including the two (2) units of competency UEERE4001 Design Battery Storage Systems for Grid Connected Photovoltaic Systems and UEERE5001 Install, Maintain and Fault Find on Battery Storage Systems for Grid Connected PV Systems. Our national training provider number is 32052 (refer to www.training.gov.au or www.futureskills.asn.au for further information).

Smart Energy Training Centre

Future Skills is offering this training program in a partnership with the Smart Energy Training Centre, an initiative of the Australian Solar Energy Society and a not-for-profit non-government organisation supporting the renewable energy and associated industries across Australia. See <http://www.energystorage.org.au/latest-news/smart-energy-training/> for further information.

About this Program

This course has been designed to provide electricians with the knowledge and skills to design battery storage systems and to safely and effectively install, maintain and fault find battery storage systems for grid-connected photovoltaic (PV) systems.

Licensing Requirements:

In order to enrol in this course program you **MUST** hold a current electrical mechanic or electrical mechanic fitter's licence.

Prerequisites

In addition to holding a current unrestricted electrical licence, you must also have completed the following units of competency to enrol in this program:

UEENEEK148A Install, configure and commission LV grid connected photovoltaic power systems

UEENEEK135A Design grid connected photovoltaic power supply systems

Recognition of Prior Learning

You can apply for Recognition of Prior Learning (RPL) or Credit (where relevant) for the two (2) prerequisite photovoltaic units of competencies or for the grid connect battery storage competencies. You will need to provide valid, sufficient, current and authentic evidence of your skills and knowledge.

For instance, if you hold previous units of competency for installing or designing grid connected photovoltaic systems you will need to provide copies of your original Statements of Attainment and verified evidence of work within the past two-three years of designing and installing PV systems.

Note: An assessor can talk to you in further detail about the specific type of evidence you will need to submit to us if this is required.

Please talk to a Future Skills trainer prior to, or at enrolment, in this program to discuss the types of evidence you can submit with such an application and the full process and procedures that this entails.

Course Structure & Outcome

The objective of this post trade course is to provide existing licensed electricians with the skills and knowledge to design, install, maintain and fault find on grid connected battery storage systems. Because of its prerequisites, it assumes student competency in being able to design and install grid connected photovoltaic systems.

The course is comprised of two (2) units of competency:

- UEERE4001 Install, maintain and fault find battery storage systems for grid-connected photovoltaic systems
- UEERE5001 Design battery storage systems for grid-connected photovoltaic systems

On successful completion of the training program, you will be issued with a Statement of Attainment in the above units of competency.

Training Program

The course program is structured to provide students with five (5) days of face to face training including assessments. This is an intensive course program and participants will be expected to attend all training days and complete practical based assignments during the course of the week.

The following areas are covered:

- Energy consumption and peak demand assessment
- Inverter types and configurations incorporating energy storage
- Energy storage types and characteristics
- Energy storage considerations to meet client requirements

- Site survey
- System design
- Component sizing and selection
- Tariff optimisation strategies
- Electrical diagrams
- Installation and maintenance
- Circuit protection
- Fault finding and rectification
- System documentation
- WHS and OHS practices

All assessments are conducted in class. It is therefore mandatory for students to attend all of the scheduled training dates to ensure they are able to undertake the learning and practical assessments that are required.

As this is an intensive course, training hours are generally limited to eight (8) hours per day, although students will be expected to undertake revision or some learning and assessment activities after hours in order to complete within the prescribed timetable.

Language, Literacy and Numeracy

In order to successfully complete this learning program you must have sufficient reading and writing skills. For example, you will need to be able to read and interpret technical standards and manuals and to write short answer questions.

To assist all learners to achieve their goals through training, Future Skills seeks to assess each applicant's existing language, literacy and numeracy (LLN) abilities and learning needs prior to the commencement of training.

This enables Future Skills to understand the skills and needs of each individual learner so we can offer suitable assistance or learning support if needed, or outline alternative pathways for learners to achieve their desired goals.

The **Australian Core Skills Framework** sets out five key areas that RTOs such as Future Skills can investigate to determine if any additional support or alternative pathways should be offered to a learner.

These five areas are: **Learning, Reading, Writing, Oral Communication** and **Numeracy**.

To help diagnose an individual learner's core skill levels, Future Skills uses a pre course questionnaire which all students are required to complete prior to commencement of the course. A copy of the course questionnaire will be provided to you on confirmation of your enrolment in the program.

Please note: it is your responsibility to complete and return this questionnaire prior to the commencement of the course. Failure to do so will mean that Future Skills is not obliged to provide any further assistance or learning support than would ordinarily be provided to all students in a program.

For the battery storage units of competency, Future Skills has made an assessment that the following core skill levels apply. A number of generic sample activities of what a student would be expected to be able to competently do at these levels have also been included for each nominated level along with some sample activities a person would be expected to generally complete at these levels.

Note: these sample activities do not necessarily reflect the actual learning and assessment activities in the training course. They are provided for guidance only.

Core Skill	Sample Activities
Learning (3)	<ul style="list-style-type: none"> Plans and organises a routine job, identifying possible risks and accesses relevant resources Transfers key principles and concepts to new situations, allowing for some contextual differences Identifies and evaluates several options for addressing an issue Learns how to use new software
Reading (3)	<ul style="list-style-type: none"> Selects and applies the procedures and strategies need to perform a range of tasks after reading appropriate texts, e.g., machinery/equipment manuals, standard operating procedures or work instructions Interprets information gained from tables, charts and other graphic information Reads and interprets diagrammatic/graphic texts e.g., a flow chart Identifies relevant information from a range of written texts
Writing (2)	<ul style="list-style-type: none"> Completes a range of forms requiring routine, factual data, e.g. OHS records, maintenance records Writes brief systems-related texts using an established format, e.g. a brief shift report, an OHS incident report on a standard workplace form/pro-forma Enters routine data associated with production processes and control procedures into a database using familiar software
Oral Communication (2)	<ul style="list-style-type: none"> Explains routine procedures to others, e.g. workplace safety procedures or fire drill Participates in straightforward face to face discussions with customers or co-workers
Numeracy (4)	<ul style="list-style-type: none"> Uses appropriate technological devices to measure and record data and interpret the results Calculates, compares and interprets the probabilities of some given or described events in both numerical and qualitative terms

Where your skills are assessed at a level lower, Future Skills may require you to undertake learning in the area prior to the course commencement. For example, you may need to review your skills in relation to interpreting system data. In this case, Future Skills may offer some reasonable additional assistance/adjustments within the training program.

Please note: An assessor will speak to you and explain any differences or questions that you may have after you have submitted your documentation.

Student Guarantees

Future Skills is required to outline the nature of the guarantee given by Future Skills to prospective clients and clients to complete the training and/or assessment once they have commenced study in their chosen qualification or course.

This guarantee is outlined as follows:

Where a student commences training and/or assessment in the Future Skills course program they have enrolled within, Future Skills provides a guarantee that the course program as advertised will proceed as advertised, except in the following circumstances:

- (i) where a cancellation of a course or week of training is outside of its control e.g., where a trainer is ill and unable to take the course and a backup trainer is not available to take the course; or
- (ii) by agreement between Future Skills and the majority of students enrolled within a course to transfer dates of the whole or part of the course.

In both such cases, Future Skills will liaise directly with the students concerned and provide them with the option to transfer to a further scheduled course by Future Skills without incurring any additional transfer fees, or where the course has not already commenced, a full refund of all fees paid for the course.

Please note: Future Skills is not liable for any additional costs incurred by the student as a result of these changes.

Completion of Training

On completion of training each student is required to have completed or submit the assessment tasks and activities for the program.

A Future Skills trainer/assessor will complete marking of these assessments and where you are deemed *Competent* in all aspects of the program, you will be issued with your qualification or relevant Statements of Attainment within a twenty-one (21) day period from receipt of the final assessments.

For those students who are deemed *Not Yet Competent* on completion of training and assessment in a course program for either the whole qualification or for a unit(s) of competency, the following will apply.

Each student will be provided with two (2) assessment attempts for each assessment, either during the training program or afterwards.

For written or project based assessments students will be asked to provide additional evidence, or the trainer/assessor may make a reasonable adjustment to the assessment, such as asking additional questions to determine competency, either orally or in writing.

Where the assessment involves a practical skills based assessment, a time to undertake the second assessment attempt is to be offered within a six (6) month period at a time nominated by Future Skills.

Please note: an assessment of Not Yet Competent (NYC) is not a failure. It simply means that you will need to provide further information or further confirmation of the knowledge and skills required.

Outline of Assessment Activities

In order to complete this program you will need to demonstrate that you have the requisite knowledge and skills to perform specific work activities and tasks to the standard required for each unit of competency.

The Future Skills Grid Connect Battery Storage Systems training course includes a number of different assessment activities, which are summarised following.

Each assessment projects includes a number of different methods of assessment, including completion of practical activities, writing short answer questions, reviewing different scenarios and case studies, and through direct observations of your ongoing learning and performance by the relevant trainer.

Assessment Summary:

UEERE4001 Design Battery Storage Systems for Grid Connected Photovoltaic Systems

Two (2) design assessments for a domestic household and for a commercial business including Site Assessment and Layout, Load sizing, battery sizing and selection, PV array sizing, Solar Charge Controller sizing, Inverter sizing, Wiring sizes and Protection Sizing.

Energy Assessment and Plan

Short Answer Questions

UEERE5001 Install, Maintain and Fault Find on Battery Storage Systems for Grid Connected PV Systems

Three (3) assessments covering:

- 1) Installation of a new battery storage system on an existing PV system
- 2) Perform maintenance on an existing battery storage system
- 3) Perform fault-finding on existing battery storage systems

Short Answer Questions