

## SMALL RENEWABLE SYSTEM INTEGRATION

The transmission of power from an energy generation project forms a key component of project viability and early planning can facilitate a clear understanding of risks and how they can be avoided or managed.

This course provides an overview of the key risks and issues that affect successful small-scale system integration planning. Importantly, it covers the specific technical complexities and requirements for integrating renewables and how significant delays can be avoided.

The course draws on Entura's depth of experience based on our long history of involvement in the development, operation and maintenance of electricity networks in Australia and, in particular, the transmission planning for a host of renewable energy projects around Australia and internationally.

After completing the course, participants will have a good familiarity of the key risks associated with small-scale renewable integration and approaches for avoiding or mitigating those risks, saving time and money for their projects.

### COURSE CONTENT

#### INTRODUCTION TO SMALL RENEWABLES

- Typical examples:
  - off-grid or remote
  - islands
  - mobile structures
- Typical resource types and energy recovery methods:
  - solar and wind
  - mini/micro hydro
- Drivers for renewable energy development in small systems

#### OVERVIEW OF CONNECTION AND GRID CONTROL REQUIREMENTS FOR SMALL RENEWABLE SYSTEMS

- Voltage control/co-ordination
- Frequency control/co-ordination
- Power quality
- Protection and reliability

#### KEY RISKS AND THEIR RELATIONSHIPS

- Route selection
- Voltage
- Reliability and variability
- System losses/efficiency
- Effect of generation on local loads/customers

#### MITIGATION AND CONTROL

- Control systems to allow for variability of output
- Energy storage
- Optimisation of installed capacity (wind and solar)
- Frequency controls
- Voltage controls

### PARTICIPANT PROFILE

- Junior engineers
- Energy project developers
- Managers with project or general oversight responsibilities

### LEARNING OBJECTIVES

To provide participants with an understanding of:

- key risks and issues associated with planning for small-scale system integration
- ways to manage for the specific requirements for renewables and how to avoid delays

### LEARNING METHODS

- Lectures
- Case studies and scenarios
- Discussions

### COURSE PROVIDERS

Entura's lecturers include:

- Accredited training professionals
- Technical specialists and professionals with extensive experience and qualifications across a broad range of disciplines

### CUSTOMISATION

This course can be customised to suit specific regional, program, or project needs and/or can be combined with other technology specific courses on project development.

COURSE DURATION  
2 DAYS

LOCATION:  
Tasmania, Australia  
(includes site visits)  
Client site as negotiated

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