Registering a Battery System in the NEM

Fact Sheet

This is a simplified explainer of the options for integrating battery systems into the National Electricity Market (NEM), as at October 2021. AEMO has taken care in preparing it, but it's not comprehensive and we can't guarantee its accuracy. Over time AEMO may need to adjust its approach to registration of battery systems as new technology and configurations emerge, or in response to regulatory changes.

If you intend to operate a battery system within the NEM, you will need to read and understand the National Electricity Rules (NER) relevant to registration and operation. This fact sheet will not give you all the information you need. Please also refer to AEMO's Interim Arrangements for Utility Scale Battery Technology and the National Electricity Market: Guide to Generator Exemptions & Classification of Generating Units, both on AEMO's website.

Frequently asked Questions

What is a battery?

In the context of the NEM, a battery is taken to mean chemical cells, or an electrochemical cell, capable of both storing and exporting electrical energy.

What is a battery system?

AEMO uses the term 'battery system' to describe one or more batteries electrically connected to the national grid, or power system. A battery system can connect to the grid as a stand-alone facility, or as part of a 'hybrid' facility[1].

Is a battery system a generating unit?

Yes, currently a battery that is electrically connected to the grid is typically considered as a generating unit when it exports electricity, but as a load when it imports from the grid.

However, dual classifications for generation and load are not required for small battery systems (<5 MW).

Is registration with AEMO always required for a battery system?

It depends on the size of the battery system and the operational arrangements for importing and exporting.

Typically, anyone that owns, operates or controls a battery system with nameplate rating of 5 MW or above will need to register as both a Scheduled Generator (for the generation/discharge element of the battery) and a Market Customer (for the load/charge element), but there are exceptions. Further information is provided under 'Registration Scenarios' below.

Does a person that owns, operates or controls a battery system always have to register as a Market Customer?

- A battery system that is 5 MW or above and can import electricity from the grid needs to be classified as a market load (Market Customer registration required).
- A battery system that is 5 MW or above and never imports electricity from the grid does not need to be classified as a load (no Market Customer registration required).

How do I register?

For information on how to register and classify a battery system in the NEM, refer to the guides and application forms on AEMO's website.

Registration Scenarios

For all scenarios

Under the NER:

- There is a single financially responsible Market Participant (FRMP) for each identified connection point, at which a generating system or load is connected to the grid.

[1] A system connected to the grid and includes a battery coupled with a generating system and/or load.

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- A NER-compliant metering installation measures electricity flows at each connection point.

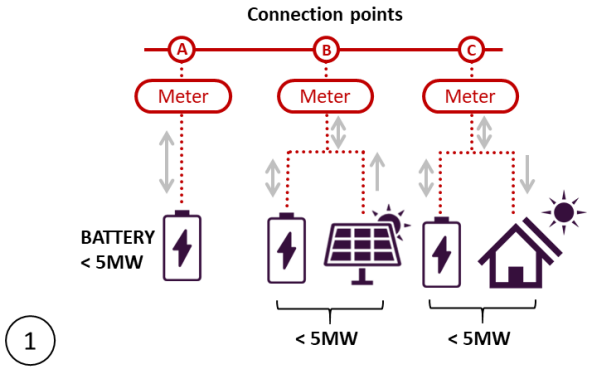
Batteries < 5 MW Scenarios

1. Stand-alone battery, hybrid battery or battery with consumer load < 5 MW

An automatic exemption from the requirement to register as a Generator with AEMO applies, if you have appropriate retail arrangements in place with a Market Participant for the sale of any electricity exported to the grid or purchase of electricity from the grid at the battery's connection point. No application is required in this case. However, you must contact the relevant Network Service Provider for all connection enquiries.

Connection points with exempt batteries and a combined generating unit nameplate rating of <5 MW may be classified:

- By a Market Customer as a market load, where the battery either:
  - has a separate connection point,
  - is coupled with another generating unit and imports from the grid at a single connection point or
  - is located 'behind the meter' at a consumer's premises.
- By a Market Small Generation Aggregator as a market generating unit, where the battery:
  - has a separate connection point, or
  - is coupled with another generating unit at a single connection point.



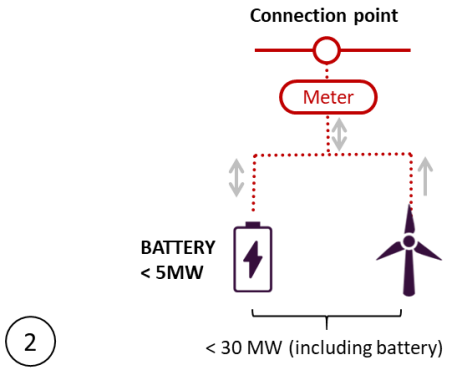
A. Battery system with a separate connection point (stand-alone facility)
B. Battery system coupled with another generating unit (hybrid facility)
C. Battery system located 'behind the meter' at a consumer's premises (battery with consumer load)

2. Battery < 5 MW as part of a generating system with an overall nameplate rating between 5 MW and 30 MW

You may apply to AEMO for an exemption from the requirement to register.

Where AEMO does not grant an exemption, you must register with AEMO as a Generator, and classify the batteries within the generating system - see the options in scenario 3.

Registration as a Market Customer is not required.



3. Battery < 5 MW as part of a generating system with an overall nameplate rating ≥ 30 MW

You must register with AEMO as a Generator for the generating system. The battery component of the system is not eligible for exemption. Depending on operational requirements, you may seek to classify the generating units in the system:

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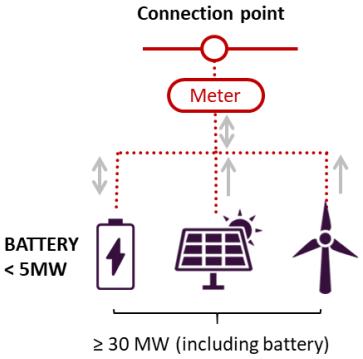
- According to their characteristics:
  - all variable (intermittent) generating units (with common fuel source) as a semi-scheduled
  - generating unit (each with its own dispatch target)[2] and
  - the battery as either:
    - a scheduled generating unit (with its own dispatch target) or
    - a non-scheduled generating unit.
- As scheduled generating units, either as single generating units or aggregated. The aggregated generating units may be combined as a single offer into the market and receive a single dispatch target.

Registration as a Market Customer is not required.



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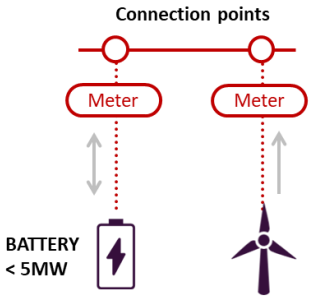
4. Different FRMP for battery < 5 MW and other generating system/s

Where the battery system is to be owned or operated separately from an adjacent generating system:

- Each generating system must be independently controlled, with a separate connection point and NER compliant metering installation, such that the two systems are distinct (effectively the same as scenario 1, stand-alone).
- Registration with AEMO may be required for the non-battery generating system, depending on its size and characteristics.
- An automatic exemption from the requirement to register as a Generator with AEMO applies for the battery system, if you have appropriate retail arrangements in place with a Market Participant for the sale of any electricity exported to the grid or purchase of electricity from the grid at the battery's connection point.



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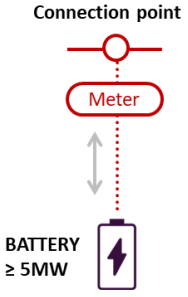
Batteries ≥ 5 MW Scenarios

These scenarios cover the same set of arrangements as set out above, but in each case the nameplate rating of the battery system is 5 MW or more.

5. Stand-alone battery ≥ 5 MW

You must register with AEMO as a Generator and a Market Customer. The battery must be classified as a scheduled generating unit and a scheduled load, which will be bid/offered and dispatched separately.



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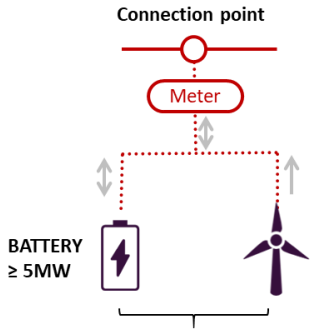
6. Battery ≥ 5 MW as part of a generating system with an overall nameplate rating between 5 MW and 30 MW

You must register with AEMO as a Generator and a Market Customer (if purchasing from the grid). Depending

on operational requirements, you may seek to classify the generating units in the system:

- According to their characteristics:
  - All variable (intermittent) generating units (with common fuel source) as a non-scheduled or a semi-scheduled generating unit[2] and
  - The battery as a scheduled generating unit and a scheduled load. The battery will be required to be scheduled through central dispatch for charging even if there is no import from the grid.
- As scheduled generating units, either as single generating units or aggregated. The aggregated generating units may be combined as a single offer into the market and receive a single dispatch target.



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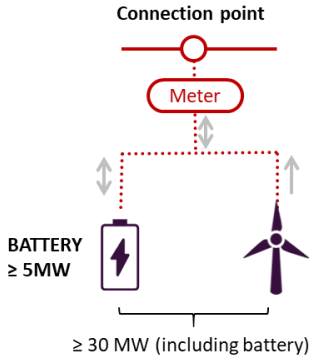
7. Battery ≥ 5 MW as part of a generating system with an overall nameplate rating ≥ 30 MW

You must register with AEMO as a Generator and a Market Customer (if purchasing from the grid). Depending on operational requirements, you may seek to classify the generating units in the system:

- According to their characteristics:
  - All variable (intermittent) generating units (with common fuel source) as a semi-scheduled generating unit[2] and
  - The battery as a scheduled generating unit. Registration as a Market Customer will also be required if it is purchasing from the grid.
- As scheduled generating units, either as single generating units or aggregated. The aggregated generating units may be combined as a single offer into the market and receive a single dispatch target. The battery will be required to be scheduled through central dispatch for charging even if there is no import from the grid.



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8. Different FRMP for battery system ≥ 5MW and other generating system/s

Where the battery system is to be owned or operated separately from an adjacent generating system/s:

- Separate registration applications are required for each system.
- Each generating system must be independently controlled, with a separate connection point and NER compliant metering installation, such that the two systems are distinct.
- This is effectively the same as scenario 5. The battery will be classified as a scheduled generating unit and scheduled load. The generation and load components will be offered and bid separately and receive individual dispatch targets.

[2] Semi-scheduled generating units with different fuel sources (i.e. solar and wind) will be given separate dispatch instructions. There are currently some system limitations in relation to hybrid systems, especially around the aggregation of wind and solar units. Please contact AEMO for further information.

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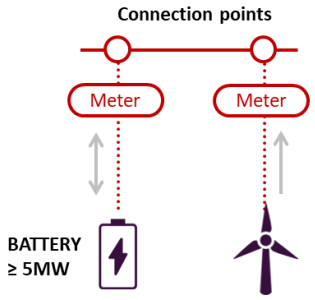

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Participation in Frequency Control Ancillary Services (FCAS) Markets

If registering as a Market Generator for a battery system, you can apply to classify the system to provide FCAS as an ancillary service generating unit. Currently, you can only classify a battery system as an ancillary service load to provide FCAS while importing from the grid if you register as a Market Customer.

The battery system must be able to meet the requirements of AEMO's published Market Ancillary Service Specification (MASS) and participate in central dispatch for FCAS.

Applicants are advised to contact AEMO early in the design phase of their project to confirm the latest registration and technical requirements.

Where can I find more information?

See AEMO's website for the Interim Arrangements for Utility Scale Battery Technology, Generator registration and classification guides, the MASS and AEMO's power system security procedures and guidelines.

The NER are published on the AEMC's website.

For any further enquiries, please contact AEMO's Information and Support Hub via

supporthub@aemo.com.au or

call 1300 236 600