

Registering a Battery in the NEM

Fact Sheet

This fact sheet provides a simplified explanation of potential approaches to registering battery systems into the National Electricity Market (NEM), as of June 2024.

This fact sheet is only a summary of the relevant provisions of the National Electricity Law (NEL) and National Electricity Rules (NER) and AEMO's Guide to Registration Exemptions and Production Unit Classifications which prevail in the case of any inconsistency. Applicants are responsible for ensuring they read and understand those documents and should obtain advice on their specific circumstances.

If you intend to operate a battery system within the NEM, you will need to read and understand the NER relevant to registration and operation. This fact sheet will not give you all the information you need. Please also refer to AEMO's Guide to Registration Exemptions and Production Unit Classifications 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 consuming, storing, and exporting electrical energy.

What is a battery system or BESS?

The term battery, battery system or battery energy storage system (BESS) is commonly used 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' facility¹.

Is a battery system classified as a generating unit?

No, a battery system that is electrically connected to the grid is classified as a bidirectional unit. Unless it is a small resource, i.e., <5 MW, it is scheduled. A registered battery system, either stand alone or part of a hybrid system, is always part of an integrated resource system.

Is registration with AEMO always required for a battery system?

It depends on the size of the battery system, whether it is part of a larger hybrid system and if it consumes from the grid. Typically, anyone that owns, operates or controls a

battery system with nameplate rating of 5 MW or above, or that is part of an integrated resource system with a total nameplate of 5 MW or above, will need to register as an Integrated Resource Provider. Further information is provided under 'Registration Scenarios' below.

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

- Since June 2024 a battery system that is 5 MW or above must be classified by an Integrated Resource Provider as a scheduled bidirectional unit. The Integrated Resource Provider is responsible for consumption at the connection point and no Market Customer registration is required.
- A battery system that is less than 5 MW is a small resource and its connection point can be classified as the market connection point of an Integrated Resource Provider – Small Resource Aggregator, an Integrated Resource Provider or a Market Customer.

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](#). The [registration fact sheets](#) on hybrid systems and coupled production units may also provide useful information.

¹ A system connected to the grid that includes a battery and other technology production units, e.g., wind, solar, or a load.

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Registration Scenarios

For all scenarios

Under the NER:

- There is a single financially responsible Market Participant (FRMP) for each identified connection point, at which an integrated resource system is connected to the grid.
- A NER-compliant metering installation measures electricity flows at each connection point.

Legend for pictorials in this fact sheet are:

- Connection Point
- ⬭ Meter
- ⬭ Meter (NMI)
- Inverter

Batteries < 5 MW Scenarios

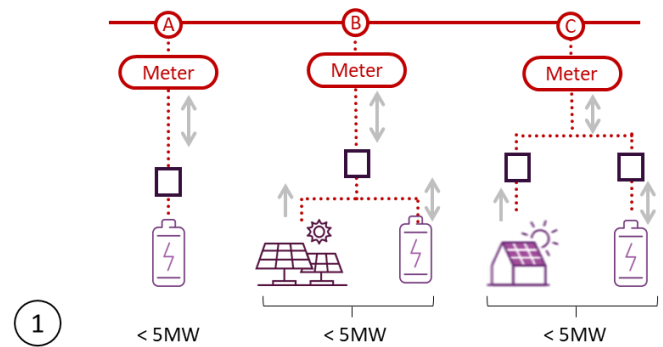
1. Stand-alone battery, hybrid production system that includes a battery

An automatic exemption from the requirement to register as an Integrated Resource Provider 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 production unit nameplate rating of <5 MW may be classified:

- By a Market Customer or Integrated Resource Provider as a market connection point, where the battery either:
 - has a separate connection point,
 - is coupled with another production unit and consumes from the grid at a single connection point or
 - is located 'behind the meter' at a consumer's premises.
- By an Integrated Resource Provider – Small Resource Aggregator (SRA) as a small resource connection point, where the battery:

- has a separate connection point, or
- is coupled with another technology, for example solar PV, at a single connection point.



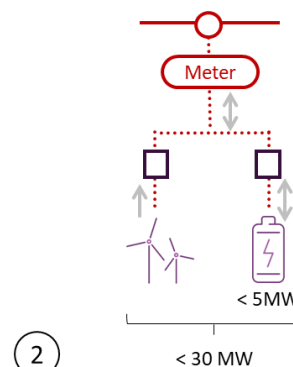
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- A. Battery system at a small resource connection point
- B. Coupled system at a small resource connection point
- C. Battery system located 'behind the meter' at a market connection point

2. Battery < 5 MW as part of an integrated resource 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 an Integrated Resource Provider and classify the battery system within the integrated resource system as a scheduled or non-scheduled bidirectional unit. A scheduled unit will receive and must meet dispatch instructions.



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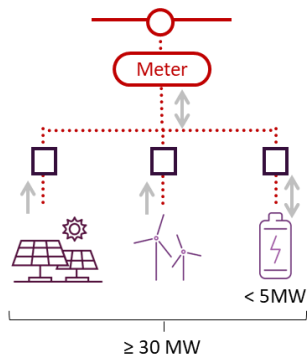
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3. Battery < 5 MW as part of an integrated resource system with an overall nameplate rating ≥ 30 MW

You must register with AEMO as an Integrated Resource Provider for the integrated resource system. The battery component of the system is not eligible for exemption. Depending on operational requirements, you may seek to classify the production units in the system:

- 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 bidirectional unit (with its own dispatch target) or
 - a non-scheduled bidirectional unit.



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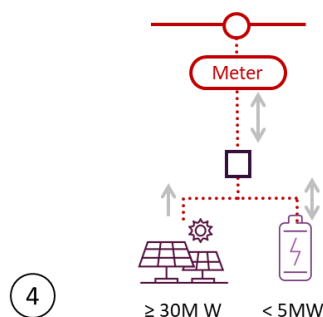
4. Battery < 5 MW as part of a coupled production unit with an intermittent technology ≥ 30 MW

A battery can be part of a bidirectional unit that has more than one technology behind the inverter, for example, solar. In specific circumstances, if the solar is significantly greater in volume and no consumption occurs at the connection point the bidirectional unit may be classified as a semi-scheduled generating unit.

Otherwise, depending on operational requirements, you may seek to classify the component technology within the unit:

- According to their characteristics:

- all variable (intermittent) technology (with common fuel source) as semi-scheduled generating unit (each with its own dispatch target)² and
- the battery as either:
 - a scheduled bidirectional unit (with its own dispatch target) or
 - a non-scheduled bidirectional unit.



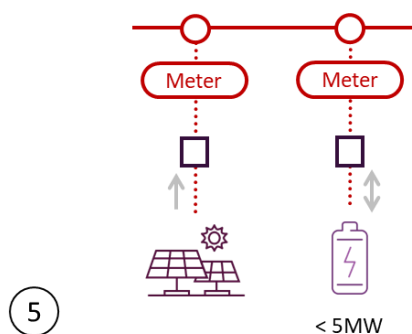
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Further information on coupled production units can be found in the [coupled production units fact sheet](#) on the AEMO website.

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

Where the battery system is to be owned or operated as an integrated resource system separately from, for example, an adjacent generating system:

- Each 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 separate generating system, depending on its size and characteristics.
- An automatic exemption from the requirement to register as an Integrated Resource Provider with AEMO applies for the battery system, if you have appropriate arrangements in place with a Market Customer or Integrated Resource Provider for the sale of electricity exported to the grid or purchase of electricity from the grid at the battery's connection point.



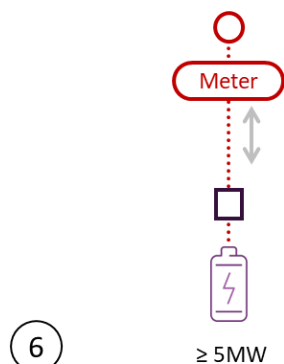
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Batteries ≥ 5 MW Scenarios

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 and must be classified as a scheduled bidirectional unit.

6. Stand-alone battery ≥ 5 MW

You must register with AEMO as an Integrated Resource Provider with respects to an integrated resource system. The battery must be classified as a scheduled bidirectional unit which will bid via 20 price bands, 10 for generation, 10 for consumption.



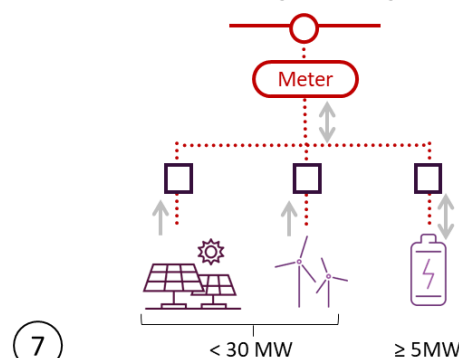
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7. Battery ≥ 5 MW as part of an integrated resource system with the overall nameplate rating of generating units < 30 MW

You must register with AEMO as an Integrated Resource Provider. Depending on operational requirements, you

must seek to classify the production units in the system according to their characteristics:

- The battery as a scheduled bidirectional unit.
- All variable (intermittent) generating units (with common fuel source) as a non-scheduled or a semi-scheduled generating unit²

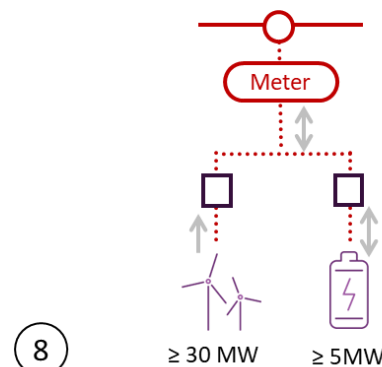


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8. Battery ≥ 5 MW as part of an integrated resource system with the overall nameplate rating of generating units ≥ 30 MW

You must register with AEMO as an Integrated Resource Provider. Depending on operational requirements, you must seek to classify the production units in the system:

- According to their characteristics:
 - The battery as a scheduled bidirectional unit.
 - All variable (intermittent) generating units (with common fuel source) as a semi-scheduled generating unit²



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² Semi-scheduled generating units with different fuel sources (i.e. solar and wind) will be given separate dispatch instructions. There are system limitations in

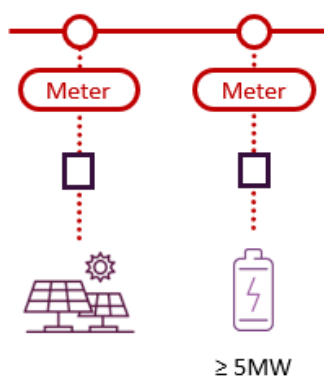
relation to hybrid systems, especially around the aggregation of wind and solar units. Please contact AEMO for further information.

Each production unit will have a single conformance cap unless aggregate conformance applies³.

9. Different FRMP for battery system $\geq 5\text{MW}$ and other generating system/s

Where the battery system is to be owned or operated as an integrated resource system separately from, for example, an adjacent generating system/s:

- Separate registration applications are required for each system.
- Each 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 bidirectional unit which will bid via 20 price bands, 10 for generation, 10 for consumption.



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Participation in Frequency Control Ancillary Services (FCAS) Markets

You can apply to classify a battery system as an ancillary service unit to provide FCAS as:

- A Market Customer or Integrated Resource Provider that has classified the connection point as a market connection point ($< 5\text{MW}$)

- An Integrated Resource Provider – Small Resource Aggregator that has classified the connection point as a small resource connection point
- An Integrated Resource Provider that has classified the battery as a bidirectional unit in an integrated resource system

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 Integrated Resource Provider 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

³ <https://aemo.com.au/-/media/files/initiatives/integrating-energy-storage-systems-project/aemo-factsheet-aggregate-dispatch-conformance.pdf>