

# Revenue Metering Requirements for a Generating System

## Fact Sheet

This fact sheet explains the metering requirements for a generating system under the National Electricity Rules (NER) as at Nov 2019.

This fact sheet is only a summary of the relevant provisions of the National Electricity Law (NEL) and NER, 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. AEMO's fact sheets on Connecting and Energising a Generating System Prior to Registration and Registering a Hybrid Generating System in the NEM also have relevant information on metering requirements. You should also consult your Network Service Provider (NSP) and AEMO regarding individual proposals.

AEMO may also adapt its approach as new technology and configurations emerge, and as market rules and technology regulations change.

If you intend to operate a generating system within the National Electricity Market (NEM), you will need to read and understand the NER and Procedures relevant to registration, metering and operation.

This fact sheet details revenue metering requirements at both the transmission and distribution level. This fact sheet does not relate to SCADA, protection or other metering installations associated with generating system requirements.

## Frequently Asked Questions

### Why do I need revenue metering?

Each generating system must have an NEM-compliant revenue metering installation which is located as close to the connection point as practicable to accurately measure the export of energy (and any associated import) to the grid. The purpose of the metering installation is to provide metering data for NEM settlement. You must not connect any part of a generating system to the grid without NEM-compliant metering in place.

### When is revenue metering required?

Revenue metering installations are required for every generator connection point, and this:

- is the agreed point of supply or point at which power flows between one entity to another i.e. a customer or generator and an NSP, between NSPs or an NSP and Embedded Network
- allow different energy flows to be priced differently

NEM-compliant metering installations may not be able to accommodate financial arrangements outside of the NEM such as power purchase agreements and/or energy credits, and therefore other off-market arrangements may be required. AEMO has no role in these off-market arrangements.

### What type of revenue metering is required for generating systems connecting to the NEM?

The metering installation requirements should be included at the planning stage for the generating system. A registered Metering Coordinator should be engaged at this stage to provide advice on the appropriate metering installation as defined in NER Chapter 7.

### Who approves generating system metering?

AEMO's metering team will approve your metering installation during the generating system registration process. This process includes the following:

- Review of single line diagrams to ensure the physical connection detail meets the requirements of the NER.
- Review of metering installation equipment accuracy tests to ensure quality and accuracy requirements are being met. Test certificates must have traceability to a NATA or ILAC accredited body.
- Establishing the necessary parameters in market systems are able to be applied.
- Ensuring the appropriate market roles have been assigned in the Market Settlement and Transfer Solutions (MSATS) system.

Approval is based on the requirements of the NER.

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### What roles are associated with a metering installation?

Each metering installation requires:

- A financially responsible Market Participant (FRMP) responsible for settlement of all amounts at the connection point.
- A Metering Co-ordinator (MC) who is responsible for metering obligations under Chapter 7 of the NEM.
- A Metering Data Provider (MDP) who reads, audits and provides the metering data – nominated by the MC.
- A Metering Provider (MP) who manages the physical installation – nominated by the MC.
- A Network Service Provider (NSP) responsible for the connection point that the meter installation is connected to and for issuing and registering National Metering Identifiers (NMIs) for metering installations.
- An Embedded Network Manager (ENM) if the generating system is connected to an embedded network.

### What parameters are necessary for each Connection Point?

All generating system connection points must have the following:

- An NEM-compliant revenue metering installation.
- A NMI, obtained from the NSP.
- A transmission node identifier (TNI) code from the NSP reflective of the transmission connection point location the generating system is connecting to. **Note:** New codes are created by AEMO in consultation with the jurisdictional TNSP.
- A marginal loss factor calculated by AEMO, initially based on a generation profile provided by the registering participant.
- A connection point name and identifier (CPID) from AEMO which is unique to the generating system.
- A Market Participant, who is financially responsible for the connection point.

Distribution connected metering also require:

- An AER-approved distribution loss factor from the NSP.

### Who sets generator metering installations up in the market systems?

A registered generating system will be set up in AEMO's production systems and MSATS system by AEMO and Market Participants.

A generator exempt from registration will have metering assessed by the NSP and the MC.

The NSP will create the NMI in MSATS.

The MC is responsible for the meter and data-stream set-up in MSATS

The FRMP is responsible for assigning the Market Participant to the NMI in MSATS.

### What other differences are there between transmission and distribution connected generating systems?

Where the installation is at a generating system connection point on a transmission network, the MC appointed to the installation can only be the TNSP or the FRMP. To be appointed, the FRMP or TNSP will need to be registered by AEMO as a TNSP MC for the generating system.

Where the installation is at a generating system connection point on a, the MC can only be the generator registered as MC for that connection point or a contestable MC. A contestable MC is an MC whose registration allows the MC to be appointed in respect of any connection point on any distribution network, excluding Local Network Service Providers (LNSP) that were appointed as initial MC for type 5 or 6 metering installations connected to the LNSP's network when Power of Choice for metering was introduced from December 2017. For an installation at a generating system connection point on an embedded network, the MC must be a contestable MC.

A generating system, connected to a distribution or embedded network, that has a generation >10 MW (actual or forecast) will require a site specific DLF to be calculated by the NSP.

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### Generator Metering Scenarios

The requirements for metering will depend on the connection configuration and the size of your generating system

There can only be a single FRMP assigned to a market connection point and metering installation

The following are common large-scale configurations.

AEMO also has a [Small Generation Aggregator](#) fact sheet which illustrates metering requirements for small generating units under an SGA.

#### Solar Farm or Wind Farm connecting to the Grid

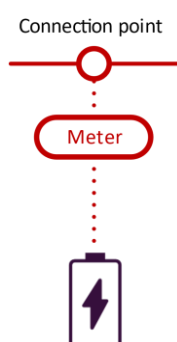


A single metering installation is required, at the connection point in the above scenario with:

- Parameters: NMI, TNI, TCPID, MLF
- Roles: FRMP, MC, MDP, MP

If it were connected to distribution or within an embedded network it would also require a DLF

#### Battery connecting to the Grid



A single metering installation is required, at the connection point in the above scenario with:

- Parameters: NMI x 2, TNI, TCPID x 2, dual MLFs
- Roles: FRMP, MC, MDP, MP

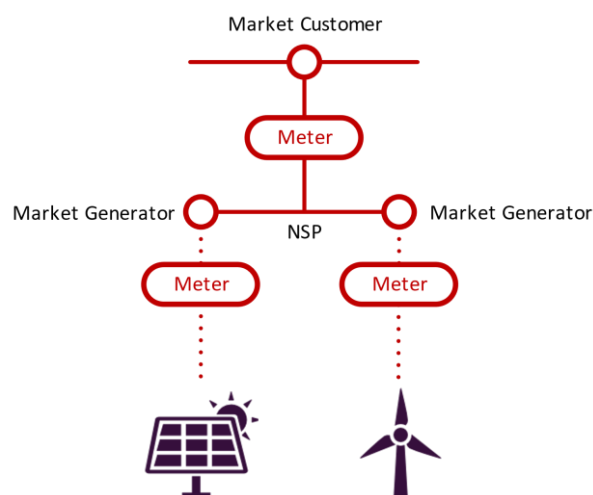
As the battery will be registered as both a scheduled generator and a scheduled load with the FRMP registering as both a Market Generator and Market Customer, it is necessary for the Meter Data Provider (MDP) to provide data from the B data-stream as market generation and E data-stream as market load for the purpose of settlement. Due to current market system limitations, a second (virtual) NMI will need to be established to separate the data.

The MLF for export and import will differ and therefore dual MLFs will be assigned to the TNI.

Two Transmission Connection Point IDs will be established for the load and generation components of the installation.

If it were connected to distribution or within an embedded network, it would also require a DLF.

#### Solar Farm and Wind Farm Connecting to the Grid via an Embedded Network



In the above scenario, the proponent has elected to establish two separate generating systems within an embedded network for business reasons. To meet rule requirements, the Embedded Network will need to be a registered Network. This requires a parent child metering arrangement to be established, for settlement purposes.

The parent metering installation requires:

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- Parameters: NMI, TNI, MLF
- Roles: FRMP, MC, MDP, MP

The FRMP is required to be a Market Customer for settlement purposes. The embedded network requires registration by an NSP.

If it were distribution connected it would also require a DLF

Each child metering installation requires:

- Parameters: NMI, TNI, TCPID, MLF, DLF
- Roles: FRMP, MC, MDP, MP

To settle the solar farm and wind farm at their connection points, the FRMP's Participant ID assigned to the solar farm and wind farm must be different to the parent FRMP Participant ID.

In the case of the child metering installations, the NMI is provided by the embedded network manager and the DLF is provided by the embedded network owner.

If the proponent has elected to operate the solar and wind farms as a single generation system, they can be established behind a single connection point, see the [Registering a Hybrid Generating System in the NEM](#) fact sheet.



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?

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

- [supporthub@aemo.com.au](mailto:supporthub@aemo.com.au) or
- call 1300 236 600