



This fact sheet details processes for changes or upgrades at a Sugar Mill facility. Key topics include the difference between registered and exempted Generators, the processes to be followed when altering a generating system, and modelling requirements.

## Context

Requirements under the National Electricity Rules (NER) have progressively changed as technology has advanced and Generator impact has grown across the National Electricity Market (NEM). To operate the NEM and maintain power system security and stability in the ever-changing electricity landscape, the NER sets out obligations and expectations on existing and connecting Generators.

The Network Service Provider (NSP) and AEMO need to be informed and understand the impact of changes that have the potential to affect the generating system's response or performance, to comply with their obligations and meet their responsibilities under the NER.

Changes and upgrades to generating systems are an expected part of operation in the NEM. The approach to these changes can vary depending on the registration status of the generating system and existing connection agreements with the NSP.

## Registration as a Generator in the NEM

The National Electricity Law (NEL) prohibits any person engaging in the activity of owning, controlling, or operating a generating system in the NEM unless registered as a Generator or the person:

- is the subject of a derogation that exempts that person from the requirement to be registered as a Generator;
- is exempted by AEMO from the requirement to be registered as a Generator for that generating system, as provided for in NER 2.2.1(c); or
- appoints an intermediary that is registered as the Generator for that generating system, in accordance with NER 2.9.3.

There are four categories of Generator exemption AEMO provides, that are based on the characteristics of the generating system (nature, size, type, and operation):

1. Standing exemptions for generating systems less than 5 megawatts (MW) (automatic exemptions).
2. Generating systems less than 30 MW that are not eligible for the standing exemption.
3. Generating systems 30 MW or above.
4. Temporary notifiable exemptions.

For more information about Generator exemptions, please also read AEMO's *Guide to Generator Exemptions and Classification of Generating Units*<sup>1</sup> and the *Exemption from Registering as a Generator*

<sup>1</sup> [https://aemo.com.au/-/media/Files/Electricity/NEM/Participant\\_Information/New-Participants/Generator-Exemption-and-Classification-Guide.docx](https://aemo.com.au/-/media/Files/Electricity/NEM/Participant_Information/New-Participants/Generator-Exemption-and-Classification-Guide.docx)



*Based on Appointment of an Intermediary fact sheet*<sup>2</sup>. These explain when you may be entitled to an exemption from the requirement to register as a Generator for a particular generating system. If you do need to register, they also explain the available classifications for generating units.

## Conditions for connection of a generating system in the NEM

NER Schedule 5.2 sets out additional requirements which a Generator must satisfy as a condition of connecting a generating system to the power system.

This schedule generally does not apply to a person who has received an exemption from registering as a Generator under NER 2.2.1(c) or is eligible for an automatic exemption.

However, a person who is exempted from registering as a Generator in the NEM may still be required to satisfy some or all of the requirements set out under NER Schedule 5.2 as a part of the terms and conditions imposed by AEMO for that exemption or by the NSP.

Therefore, registration or exemption in respect of a generating system could result in one of the following three categories:

1. Registered as a Generator and subject to NER Schedule 5.2.
2. Exempt from registering as a Generator and subject to some or all of NER Schedule 5.2.
3. Exempt from registering as a Generator and NER Schedule 5.2.

## Establishing or altering a generating system in the NEM

### Summary

A Generator who intends to alter an existing connected generating system must follow NER 5.3.9.

A person establishing a new connection for a generating system must follow rule 5.3, including NER 5.3.2 and 5.3.4.

In both cases, the person is required to provide to AEMO and the NSP information about their generating system as specified in NER S5.2.4.

### Establishing a connection under NER 5.3.4

NER 5.3.4 relates to an application to connect by a person who is a Generator, or intends to become one, for connection of a generating system to a network or modification of a connection to a network.

This clause is applicable where a generating system does not have a previously agreed set of performance standards and the proposed alteration requires a person in respect of the generating system to be registered as a Generator.

Where a generating system cannot meet the automatic access standard for a technical requirement, a negotiated access standard for the relevant technical requirement is determined in accordance with NER 5.3.4A.

### Altering a generating system under NER 5.3.9

NER 5.3.9 of the NER describes the process to be followed by a Generator who is proposing to alter a generating system with previously accepted performance standards or that is already connected to a network.

NER 5.3.9 applies if the proposed alteration:

<sup>2</sup> [https://aemo.com.au/-/media/files/electricity/nem/participant\\_information/new-participants/fact-sheet-nem-generator-exemption-intermediary.pdf](https://aemo.com.au/-/media/files/electricity/nem/participant_information/new-participants/fact-sheet-nem-generator-exemption-intermediary.pdf)



1. will affect the performance of the generating system with respect to the technical requirements under NER Schedule 5.2; or
2. in AEMO's reasonable opinion, will have an adverse system strength impact; or
3. in AEMO's reasonable opinion, will adversely affect network capability, power system security, quality or reliability of supply, inter-regional power transfer capability or the use of a network by another network user.

If the proposed alteration will affect the performance of the generating system and require amendments to its performance standards in relation to any technical requirement under NER Schedule 5.2, NER 5.3.4A applies. Technical requirements that are not affected by the alteration do not need to be renegotiated as part of the 5.3.9 process.

For examples on alterations and the technical requirements which are deemed to be affected by the alterations, please see the table in NER 5.3.9(d).

If NER 5.3.9 does not apply, AEMO and the NSP may agree to modifications to a performance standard under the process in NER 4.14(p).

## Negotiating performance standards

An alteration to a generating system is likely proposed for a good reason, such as replacing or improving an existing control system or generating unit. The process under NER 5.3.4 or 5.3.9 is not intended to be a deterrent to these alterations but rather provide the framework to advise AEMO and the NSP of the proposed changes, assess their impact and approve them.

NER 5.3.4A describes the negotiation framework to be followed when proposing a negotiated access standard for a technical requirement. This framework applies to negotiations under NER 5.3.4 (for establishing new connections) and 5.3.9 (for alterations to existing generating systems).

When proposing a negotiated access standard for a technical requirement as part of a NER 5.3.4A

process, the negotiated access standard should be proposed as close as practicable to the corresponding automatic access standard, if applicable, given the technical and commercial considerations, and what impact the proposed standard will have on power system security and power quality.

Reasons must be provided to AEMO and the NSP as to why the proposed standard is appropriate and why the automatic access standard cannot be met.

Proposed alterations under NER 5.3.9 are assessed on a case-by-case basis and negotiation of performance standards is based on the nature of the alteration and other current circumstances. The negotiating range for altering a performance standard of an affected technical requirement is between the automatic access standard of the current NER and the accepted performance standard for the corresponding technical requirement. This recognises the possibility that an existing generating system may not be capable of achieving the minimum access standard under the current NER in some circumstances, for example, older technology in use, or material changes in network characteristics since its original connection date.

AEMO will consider the specific circumstances of each change and take a pragmatic approach to assessing the commercial and technical feasibility of complying with the automatic access standard. For alterations that are intended to replace or improve existing equipment or systems of a generating system, AEMO is more likely to accept a proposed performance standard that is no more onerous than the previously accepted performance standard for the relevant technical requirement. This could include the replacement of equipment reaching end-of-life, the replacement of a transformer or an upgrade to excitation and control systems.

In cases where a generating system does not have a performance standard for a particular technical requirement prior to its proposed alteration under NER 5.3.9, then the existing performance capability of the generating system in respect of the technical



requirement is to be captured as the performance standard at a minimum.

## Modelling requirements

With evolving and changing network characteristics and plant technology in the power system, AEMO and NSPs require a deeper understanding of all generating systems connected or connecting to the grid, including small generating systems, that have the potential to affect power system security and reliability.

A person required to comply with NER Schedule 5.2 must provide models and other information to AEMO and the NSP in accordance with the requirements under NER S5.2.4 and the Power System Model Guidelines<sup>3</sup>. The information to be provided includes but is not limited to:

1. completed Power System Design Data Sheets and Power System Setting Data Sheets;
2. site-specific PSS@E models of the generating system including model block diagrams and model source code;
3. site-specific PSCAD™/EMTDC™ models of the generating system; and
4. a Releasable User Guide for both PSS@E and PSCAD™/EMTDC™ models in the template specified in the Releasable User Guide Template<sup>4</sup>.

A Generator making alterations to a generating system may be required to provide modelling information for new, and in some cases existing, plant. The requirements to provide certain modelling information are dependent on the alteration being proposed and the extent of the impact it may have on the power system.

Providing models and other information is essential for AEMO and the NSP to assess the impact of a proposed alteration on the performance of a

generating system with regards to its technical requirements.

Furthermore, the modelling information is used in the planning and day-to-day operation of the power system to ensure that the power system is operating in a safe, secure, and reliable state.

For more information on modelling requirements including model adequacy, accuracy and documentation requirements, please refer to the Power System Model Guidelines. These detail the type of information you must provide, why they are required, when to provide them and what other requirements are applicable to your models.

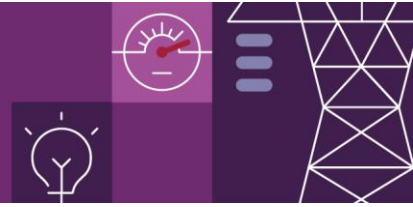
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<sup>3</sup> [https://aemo.com.au/-/media/files/electricity/nem/security\\_and\\_reliability/system-security-market-frameworks-review/2023/power\\_systems\\_model\\_guidelines\\_2023\\_published\\_.pdf](https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/system-security-market-frameworks-review/2023/power_systems_model_guidelines_2023_published_.pdf)

<sup>4</sup> [https://aemo.com.au/-/media/files/electricity/nem/network\\_connections/transmission-and-distribution/guideline-and-template-for-preparation-of-a-releasable-user-guide.pdf](https://aemo.com.au/-/media/files/electricity/nem/network_connections/transmission-and-distribution/guideline-and-template-for-preparation-of-a-releasable-user-guide.pdf)



## Frequently asked questions

### **I have questions about registering my sugar mill facility or making changes to my machinery, who should I speak to?**

Early engagement with both your NSP and AEMO is always recommended, especially if unsure about the process.

If you are looking to make upgrades or changes, it is recommended that you speak to your NSP first to discuss the impact of any changes on existing connection agreements. The NSP will be able to advise you on the scope of works required to process these changes.

### **My generating system includes some small generating units that will rarely be in operation. Are these still included in the nameplate rating of the generating system for purposes of an exemption?**

Yes. All generating units are included in the nameplate rating of the generating system regardless of mode of operation.

### **If I am exempt from registration as a Generator, are there any technical requirements that I need to comply with?**

Yes, there may be technical requirements under NER Schedule 5.2 imposed for your exempt generating system as part of your conditions of exemption. There will also be technical requirements outlined in your connection agreement with the NSP.

### **If I am exempt from registration as a Generator, do I need to have remote control and remote monitoring equipment for transferring or receiving signals from a control centre via the Supervisory Control and Data Acquisition (SCADA) system?**

No, unless NER Schedule 5.2 applies to you, or your exemption requires you to as a condition to the exemption.

### **I am required to provide remote monitoring signals to AEMO. What signals should be provided?**

The list of signals to be provided depends on the classification of the generating system or any conditions imposed as part of an exemption. NER S5.2.6.1 provides a list of remote monitoring quantities that AEMO may request to reasonably discharge its market and power system security functions.

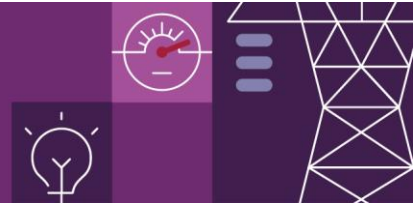
### **Do I need to notify AEMO of a deed of variation to my connection agreement with the NSP?**

Yes, if the application of NER 5.3.9 leads to a deed of variation to an existing connection agreement between yourself and the NSP, you and the NSP must jointly advise AEMO in accordance with NER 5.3.9(h).

### **How long will the assessment under NER 5.3.4 and 5.3.9 take?**

This can vary depending on the scope of the change to the generating system. Early engagement with your NSP and AEMO is recommended to ensure clear expectations on the scope for all parties.





**My generating system has previously operated for many years with no models. Why is a model required as part of the change or upgrade?**

The power system has changed and evolved in recent years, with increased visibility and modelling required to maintain system security and reliability. But the modelling is also important to protect existing generating systems. For example, if a new generating system is constructed near the sugar mill, having a model of the sugar mill will ensure the new generating system is appropriately tuned to avoid impacting the performance of the sugar mill.

**I noticed a small issue with my generating system's settings on site. I tweaked the settings to fix the issue. Is this the correct process?**

No. Intended settings changes must be notified to AEMO and the NSP and approved in writing before any changes are made. The required process is set out under NER S5.2.2 and it is typically faster than the process under NER 5.3.9. It is unlikely that a NER 5.3.9 process would be required in this case, but any changes that would trigger NER 5.3.9 must follow that process.

## Where can I find more information?

Applicants are advised to contact their NSP and AEMO early in the design phase to discuss the registration and technical requirements for an alteration of a generating system.

For any further enquiries, please contact AEMO's Onboarding and Connections team regarding

- registration and exemption matters via [onboarding@aemo.com.au](mailto:onboarding@aemo.com.au) and
- technical matters via [NEM.connections@aemo.com.au](mailto:NEM.connections@aemo.com.au)

This fact sheet is only a summary of the registration and exemption categories and the processes to be followed when altering a generating system. Applicants are responsible for ensuring they understand the relevant provisions of the National Electricity Rules and other applicable instruments, which prevail in the case of any inconsistency.