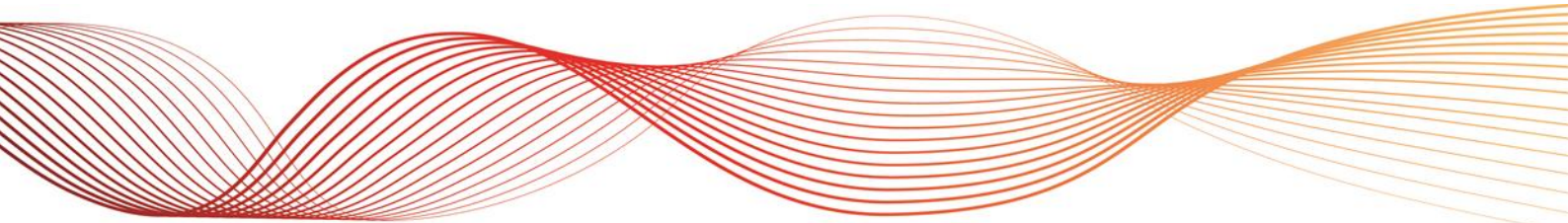




# POWER SYSTEM MODEL GUIDELINES

ISSUES PAPER

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## EXECUTIVE SUMMARY

The publication of this Issues Paper commences the first stage of the Rules consultation process conducted by AEMO to develop and publish the Power System Model Guidelines under the National Electricity Rules (**NER**).

In summary, the key proposals involve:

- Updating and expanding the Power System Model Guidelines (previously known as the Generating System Model Guidelines) to:
  - Leverage the practical knowledge since the application of the Generating System Model Guidelines.
  - Clarify long-standing issues.
  - Capture the modelling requirements to be able to securely operate and plan the NEM with a rapidly changing mix of technologies.
  - Capture the modelling requirements for the extended set of studies now required to correctly assess plant performance under reduced system strength conditions.
- Updating and expanding the Power System Design Data Sheets to be consistent with the new Power System Model Guidelines and to capture new and emerging generation technologies.

AEMO invites stakeholders to suggest alternative options where they do not agree that AEMO's proposals would achieve the relevant objectives.

AEMO also asks stakeholders to identify any unintended adverse consequences of the proposed changes.

Submissions on these and any other matters relating to the matters under consultation must be made in accordance with the Notice of First Stage of Consultation published with this paper by 5.00 pm (Melbourne time) on 12 April 2018.



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# 1. STAKEHOLDER CONSULTATION PROCESS

AEMO is consulting on the development of the Power System Model Guidelines, Power System Design Data Sheet and Power System Setting Data Sheet in accordance with the Rules consultation procedures in clause 8.9 of the National Electricity Rules (**NER**).

A glossary of terms used in this Issues Paper can be found at Appendix A.

AEMO's indicative timeline for this consultation is outlined below. Dates may be adjusted depending on the number and complexity of issues raised in submissions and any meetings with stakeholders.

Deliverable	Indicative date
Issues Paper published	5 March 2018
Submissions due on Issues Paper	12 April 2018
Draft Report and Determination published	10 May 2018
Submissions due on Draft Report and Determination	25 May 2018
Final Report and Determination published	29 June 2018

Prior to the submissions due date, stakeholders can request a meeting with AEMO to discuss the issues and proposed changes raised in this Issues Paper.

During the consultation AEMO also intends to work with the Power System Modelling Reference Group.

## 2. BACKGROUND

### 2.1 NER requirements

This consultation is being conducted under clauses S5.5.7 of the NER, and the Rules consultation procedures detailed in clause 8.9 of the NER.

The purpose of the Power System Model Guidelines, Power System Design Data Sheet and Power System Setting Data Sheet is contained in clause S5.5.7(b), which is reproduced here for ease of reference:

- (1) allow *plant* and equipment to be mathematically modelled by AEMO with sufficient accuracy to permit:
  - (i) the *power system* operating limits for ensuring *power system security* to be quantified with the lowest practical safety margins;
  - (ii) the assessment of proposed *negotiated access standards*;
  - (iii) settings of *control systems* and *protection systems* of *plant* and *networks* to be assessed and quantified for maximum practical performance of the *power system*; and
  - (iv) the efficient procurement of *system restart ancillary services* and *network support and control ancillary services*; and
- (2) identify for each type of data its category in terms of clause S5.5.2.

The contents of the Power System Model Guidelines are specified in clause S5.5.7(b1) and the draft Power System Model Guidelines published with this Issues Paper includes those contents.

Finally, clause S5.5.7(c) specifies three further matters AEMO must have regard to when developing the Power System Model Guidelines, Power System Design Data Sheet and Power System Setting Data Sheet:

- (1) The reasonable costs of efficient compliance by Registered Participants compared to the likely benefits from the use of the information provided.



- (2) Any requirements to protect the intellectual property and confidential information of third parties, including where those third parties are not Registered Participants.
- (3) Distribution Network Service Providers' and Transmission Network Service Providers' requirements for data and modelling information that is reasonably necessary for them to fulfil their obligations under the NER or jurisdictional electricity legislation.

## 2.2 Context for this consultation

The National Electricity Amendment (Generating System Model Guidelines) Rule 2017 No.11 (**Amending Rule**) will commence on 1 July 2018.<sup>1</sup> The transitional provisions require AEMO to develop and publish the Power System Model Guidelines, the Power System Design Data Sheet and the Power System Setting Data Sheet taking into account the Amending Rule by 1 July 2018.

A draft of the proposed Power System Model Guidelines was developed by AEMO with input from the Power System Modelling Reference Group, which included representatives from industry experts, Network Service Providers and AEMO. AEMO sought to:

- Leverage the practical knowledge since the application of the Generating System Model Guidelines.
- Clarify long-standing issues.
- Capture the modelling requirements to be able to securely operate and plan the NEM with a rapidly changing mix of technologies.
- Capture the modelling requirements for the extended set of studies now required to correctly assess plant performance under reduced system strength conditions.

## 3. DRAFT POWER SYSTEM MODEL GUIDELINES

AEMO has published a draft of Power System Model Guidelines AEMO proposes for consultation.

## 4. DATA SHEETS

The draft Power System Design Data Sheets will be published alongside the draft Power System Model Guidelines as part of this consultation process. The Data Sheets remain in an early draft form and not included for this public consultation. This is because:

- As the contents of the data sheets are strongly linked to the content of the final model guidelines, updates will be made in line with feedback received from the model guidelines public consultation process.
- To date, AEMO has received very limited feedback on the current state of the data sheets.

AEMO will improve the Data Sheets to capture increased information from a range of power system plant suitable for the suite of studies that will be required now and in the future (as documented within the draft Power System Model Guidelines).

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<sup>1</sup> The transitional provisions in Schedule 5 of the Rule commenced on 19 September 2017.



## 5. EXEMPTIONS

Section 3.3 within the draft Power System Model Guidelines has provision for exemptions from providing some plant models, where it is determined that the plant will have no adverse impact on system security, and on network or neighbouring plant for the foreseeable future.

With the principles above, and with the current and future challenges of securely planning and operating the power system in mind, AEMO seeks feedback from participants to identify any additional circumstances that may not warrant the full suite of modelling information to be provided.

This feedback will be considered and included in the exemption conditions where appropriate.

## 6. CONSEQUENTIAL CHANGES TO OTHER DOCUMENTS

The Power System Model Guidelines and Data Sheets will cover the provision of models and other information to AEMO by prospective NSCAS tenderers and SRAS Providers matters that are currently addressed in the NSCAS Tender Guidelines and SRAS Guideline.

AEMO proposes to make consequential amendments to the NSCAS Tender Guidelines and SRAS Guidelines as follows:

### 6.1 NSCAS Tender Guidelines

AEMO proposes to amend section 3.1(c)(iv) of the NSCAS Tender Guidelines by including reference to the Power System Model Guidelines as follows:

- “(iv) plant and equipment models and data in the form required by the *Power System Model Guidelines*, and as specified in the Request for EOI, as required by AEMO to facilitate assessment of the *network* and *power station* impacts of the use of the NSCAS.”

### 6.2 SRAS Guideline

AEMO proposes to amend section 5.2(a)(ii) of the SRAS Guideline by including reference to the Power System Model Guidelines as follows:

- “(a) For the purposes of AEMO’s SRAS modelling and assessment, SRAS Providers must give AEMO:
- (i) ...
  - (ii) the Generator Modelling Data in the form required by the *Power System Model Guidelines* listed in the spreadsheet published from time to time on AEMO’s website;<sup>3</sup> and
  - (iii) ...

AEMO also proposes to amend section 5.2(b) of the *SRAS Guideline* as follows:

- (b) “If the SRAS Provider is unable to give AEMO all Generator Modelling Data relevant to its offered SRAS, it must apply to give AEMO: using the appropriate form seeking permission to provide alternative data as detailed in Section 9 of the *Power System Model Guidelines*.
- (i) ~~a list of missing data and reasons why it could not be provided; and~~
  - (ii) ~~any alternative data or assumptions the SRAS Provider considers could be substituted for the missing data, and their source.~~



### 6.3 Power to Amend

AEMO is given the power to make administrative and minor changes to the NSCAS Tender Guidelines<sup>2</sup> and SRAS Guideline<sup>3</sup> and considers that the proposed changes are administrative and do not require a separate consultation.

AEMO also considers this to be a more efficient way in which to give effect to the necessary changes to the NSCAS Tender Guidelines and SRAS Guideline as a result of the publication of the Power System Model Guidelines and not have inconsistent guidelines in place.

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<sup>2</sup> Clause 3.11.5(d) of the NER.

<sup>3</sup> Clause 3.11.7(g) of the NER.





## APPENDIX A - GLOSSARY

Terms defined in the National Electricity Rules have the same meanings when used in this document. The meaning of other terms or acronyms used in this document are listed in the table below.

Term or acronym	Meaning
Amending Rule	National Electricity Amendment (Generating System Model Guidelines) Rule 2017 No.11
Data Sheets	The Power System Design Data Sheet and Power System Setting Data Sheet (as defined in the NER), collectively.
NER	National Electricity Rules
NSCAS	Network Support and Control Ancillary Services
SRAS	System Restart Ancillary Service