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Australian Energy Market Commission  
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## **Generating System Model Guidelines - ERC0219**

### **Draft Determination and Rule**

Energy Networks Australia welcomes the opportunity to make a submission to the Australian Energy Market Commission's (AEMC) draft determination and draft rule on the Australian Energy Market Operator's (AEMO) Generating System Model Guidelines (GSMG) rule change proposal.

Energy Networks Australia is the national industry body representing businesses operating Australia's electricity transmission and distribution and gas distribution networks. Member businesses provide energy to virtually every household and business in Australia.

Energy Networks Australia and its members are generally supportive of the direction the AEMC has taken in its draft determination. In doing so, the AEMC clearly recognises the need for better system modelling to maintain power system security and to enhance existing network planning processes, new connections, generator performance standard assessments and processes when parties assess changes to existing plant and equipment.

The extended application of the model data requirements are welcomed, as is the AEMC's acknowledgement of electricity transmission and distribution issues in connecting a growing number of smaller new generators and modified operations of existing generators in a transforming energy sector.

Our comments in this submission fall under the following headings:

- » Need for clarity of roles, clearer interpretations and understanding
- » Model formats, satisfactory model testing, software and model accuracy
- » Governance and legal arrangements
- » Appropriate timing of rule introduction, and
- » Satisfactory regulatory cost-recovery arrangements

#### Need for clarity of roles, clearer interpretations and understanding

The draft rule provisions appear to adequately address the needs and requirements of AEMO. However, there appears to be a lack of equivalent clarity and certainty in the draft rules about the position of Network Service Providers (NSPs).

The clearest example of this is in the Draft Determination's discussion on page 44-45 and specifically Footnote 131. This indicates that "The draft rule is intended to apply more generally..." the ability of AEMO or the relevant network service provider to request model information under NER clause S5.2.4 (d). However, while this section of the Draft Determination infers an equivalent capacity for NSPs to seek information, the actual drafting in the proposed Draft Rule appears to provide:

- the right to AEMO (not the Network Service Provider) to request information (e.g. modified Clause S5.2.4(b)(6); and
- the obligation on generators to submit information to AEMO (not the Network Service Provider), for instance in modified Clause S5.3.1 (a1)

To address this issue, the drafting should be thoroughly reviewed to ensure no oversight. It should be made clear in the AEMC's Final Determination and Final Rule that NSPs have the right to ask for electromagnetic transient (EMT) modelling and data information from existing and new generators.

Energy Networks Australia also requests that the AEMC more clearly address how it determined the **threshold of 20,000 MWh p.a.** consumption for users to submit information about the control systems of the equipment being connected. NSPs may need better information on, and understanding of, large network loads' responses to network disturbances through power system study simulations.

The threshold proposed equates to between a 6 to 10 MW generator (depending upon its capacity factor). Such a threshold could inadvertently result in an NSP – when assessing future connections - being unable to fully consider a scenario in which a multiple number of 5 MW or less-sized generators are progressively connected. This issue is becoming a more practical concern, with heightened risks in areas of the network where low fault levels (system strength) are being confronted.

Energy Networks Australia suggests that it may be administratively simpler and clearer, if a **5MW threshold be consistently applied to generators**. This has recently been proposed by AEMO in its 31 March 2017 "[Recommended Technical Standards for Generator Licensing in South Australia](#)" advice to the Essential Services Commission of South Australia. At page 3 of the report, "*AEMO recommends that standards should apply consistently to all generation types (greater than 5 MW)*".

Similarly, members also consider it is appropriate that modelling requirements of many small generators collectively participating in the market via an Aggregator be addressed by this rule change. It is recommended that the AEMC considers this as it proceeds to its Final Determination.

## Model formats, satisfactory model testing, software and model accuracy

Energy Networks Australia provides the following feedback on these issues:

1. There should be **some limitations and specificity around the software packages available for use by participants**. While we understand why the AEMC provides for lower cost modelling options in the draft determination, this approach will lead to higher costs, which the Commission has not recognised. Both NSPs and AEMO will

incur higher costs when converting models to a common analysis platform in undertaking analyses involving multiple models. Model accuracy is also likely to be compromised.

2. The final rule must clearly state that the responsibility rests with the proponent to provide the model to AEMO in the correct format. The descriptor of the Model provided must include the Version number of the Software/firmware.
3. Due to the increased focus on generator performance during and immediately following balanced and unbalanced faults, Energy Networks Australia supports the requirement that generators must provide a three phase model to AEMO and NSPs.
4. Given the importance of power system security, Energy Networks Australia strongly considers that generators should positively comply with S (standard planning data), D (detailed data), R1 and R2 model accuracy and verification requirements. This is particularly the case in jurisdictions that have to engage, negotiate and deal with a growing number of connection applicants in clusters, renewable energy zones and sub-regions that have weak system strength.
5. Current Rules in relation to the reporting and accuracy of R1 testing processes should better reflect and facilitate changes in the National Electricity Market (NEM) where a number of parties are connecting either concurrently or in quick succession. Energy Networks Australia recommends the AEMC consider a reassessment of NER clause 5.8.3 Control and protection settings for equipment, which states in part
  - (a) Not less than 3 months prior to the proposed commencement of commissioning by a *Registered Participant* of any new or replacement equipment that could reasonably be expected to alter performance of the *power system* (other than replacement by identical equipment), the *Registered Participant* must submit to the relevant *Network Service Provider* sufficient design information including proposed parameter settings<sup>1</sup> to allow critical assessment including analytical modelling of the effect of the new or replacement equipment on the performance of the *power system*.Given the importance of power system security in a changing generation environment, industry could consider moving to a revised obligation where the provision of this design information by a Registered Participant or new generator is to be provided to the relevant NSP at the time of the signing of a connection agreement.
6. Energy Networks Australia urges the Commission to ensure the current rule change determination is cognisant of, and consistent with, a number of related rule changes, technical and policy reviews including:
  - an impending AEMO rule change on technical standards; and
  - the [Blueprint for the Future: Independent Review into the Future Security of the National Electricity Market](#) Final Report's Recommendation 2.1.3 (a) on connection standards.

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<sup>1</sup> These can be considered as categories of R1 data.

7. Energy Networks Australia suggests that the Final Determination and Rule should require that any update to any Software/firmware for each connection must be provided to AEMO 15-business days prior to the change. It should be the responsibility of the relevant generator to test the update or re-model the connection, rather than AEMO. While AEMO would not be obligated to approve the change, should the generator, or the NSP subsequently identify that the change has caused any 'non-compliance', the generator must clearly remedy the situation.
8. A useful, recent precedent on generating system models in the NEM that should be considered by the AEMC, is provided in AEMO's 31 March 2017 "[Recommended Technical Standards for Generator Licensing in South Australia](#)" advice to the Essential Services Commission of South Australia. In that advice AEMO argued that:
  - *"The provision of more detailed models will be required where standard generating system models are deemed insufficient.*
  - *Adjustment of control systems and/or settings of individual generating system elements will be required<sup>2</sup> if the submitted models exhibit uncharacteristic or unexpected responses.*
  - *Pre-validation against the actual response of generating system elements, including all protection or control systems deployed with the operational generator will significantly reduce risks of non-compliance in the commissioning process set out in the NER<sup>3</sup>. Pre-validation of simulation models can be demonstrated using a type test approach".*

## Governance and legal arrangements

Energy Networks Australia suggests the framework should introduce a more rigorous approach to confidentiality agreements and commercial in confidence arrangements, as to the application of a revised S5.2.4 to data provided by proponents or generation owners.

We seek additional clarity as to whether the draft determination and rule:

- has adequately covered the sharing of the PSCAD/EMTDC models and how this relates to registered participants or stakeholders who are at different points in time in, or of, the enquiry/application process, and
- places clear responsibility upon AEMO to become the repository/custodian of the PSCAD/EMTDC models, similar to the structure in place surrounding the PSS/E models, which enables and facilitates the sharing of models to the relevant stakeholders and parties.

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<sup>2</sup> Refer NER clause S5.2.4

<sup>3</sup> Refer to NER clause 5.7.3 (a).

It is important that the framework does not unduly introduce liability for data provided by NSPs to AEMO. When NSPs source and provide model data to AEMO, it is on the understanding that it has been provided on a reasonable endeavours basis. If this is the basis on which the NSP has undertaken this data provision, there should be no subsequent liability unduly created as a result of the rule change.

### Appropriate timing of rule introduction

It is recommended that the AEMC should propose some form of transitional implementation, such that interim AEMO guidelines are in place by the end of 2017 or Quarter 1, 2018, noting that September 2018 is quite some time away. A large contingent of NSPs are currently dealing with numerous proponents in their connection negotiation processes. We consider that an effective date of 1 July 2018 is more reasonable to address the ongoing issues facing NSPs and industry, to help address wider system security concerns in the NEM.

### Satisfactory regulatory 'cost-recovery' arrangements

The cost recovery option for NSPs of cost-pass through outlined by the AEMC appears quite problematic as most businesses are very unlikely to reach the cost pass through provisions, even if costs are aggregated over a financial year. The threshold is set at one per cent of Maximum Allowable Revenue and is contained in relevant clauses of Chapters 6 and 6A of the National Electricity Rules relating to the provision of relevant NSP model data information re: proposed clause 4.3.4 (j). The proposed approach does not appear to realistically provide for the recovery of costs but for the transfer of implementation costs. Energy Networks Australia urges the Commission to more thoroughly address these issues in the Final Determination, including outlining how the proposed approach would work in practice.

Should you have any additional queries, please feel free to contact Norman Jip, Energy Network Australia's Senior Program Manager - Transmission on (02) 6272 1521 or [njip@energynetworks.com.au](mailto:njip@energynetworks.com.au).

Yours sincerely



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