

19 May 2023

Lodged via the PSMGReview@aemo.com.au email address.

Dear AEMO Power System Modelling Reference Group,

Submission in response to the PSMG Draft Report

The CEC is the peak body for the clean energy industry in Australia, representing over 1,000 of the leading businesses operating in renewable energy, energy storage and renewable hydrogen. We are committed to accelerating the decarbonisation of Australia's energy system as rapidly as possible, while maintaining a secure and reliable supply of electricity for customers.

We welcome the opportunity to comment on the Amendments to the Power System Model Guidelines (PSMG) draft report.

OVERALL STANCE

The CEC is concerned that placing additional requirements on connecting parties as outlined in the draft report will only hinder the shared goal of decarbonising the electricity sector. Increasing the requirements in the PSMG will only make it more onerous and difficult for both loads and generators to connect.

The pace of change in the NEM, and the sheer scale of new connection that must now be assessed, mean it is challenging to find the applied engineering knowledge and experience necessary to effectively progress many connections.

Many CEC members are concerned that this is resulting in an increased and excessive reliance on meeting abstract and overly complex modelling requirements, such as those set out in guidelines like the PSMG. Our members are concerned there is a lack of flexibility to apply sensible engineering judgement, based on learned experience and understanding the needs of the power system.

As we have learned through the connection reform initiative (CRI), iterative and applied engineering solutions must be prioritised over excessive modelling exercises and rigid adherence to predefined processes.

We urge AEMO to revisit the guidelines and, wherever possible, allow for the parties utilising the document to exercise and prioritise sensible engineering practice over strict adherence to modelling. To achieve this, we recommend maximum flexibility and openness be allowed for in the guidelines, as opposed to narrow interpretations and requirements.

We also note references to CIGRE B4.82 and meeting requirements outlined within this document. Not all parties are members of CIGRE and have access to CIGRE publications. Hence any requirements should be contained within the PSMG rather than referring to other documents that are not publicly available.

The need for Small Signal Stability modelling and use of another software package is noted and we urge AEMO to consider minimising the number of software packages that are utilised, especially when existing approved packages (e.g., PSS/e, PowerFactory, etc.) have the same functionality.

SPECIFIC COMMENTS

With this in mind, our two major comments on the draft PSMG are as follows:

- The need for loads to provide models, and
- The lack of any changes to accommodate legacy plant

Load models

Placing additional requirements for loads to provide models will only add complexity and delays to new or modified connections. Furthermore, there appears to be a disconnect between what is required per the draft PSMG and the real world and what is available from suppliers. We strongly recommend AEMO consult with large load customers and OEMs to understand:

- What models are currently available for loads and how they do / do not meet all of the requirements of the PSMG?
- What is the cost and time required to develop models that do not currently meet all of the requirements of the PSMG?

Our members' experiences are that it is difficult enough for generators to meet the requirements of the PSMG and DMAT, let alone loads who do not have a core business process of developing models and optimising performance to benefit the network. For example, it is challenging enough to obtain a harmonic current spectrum from a UPS supplier, let alone a EMT model.

We must not forget that the power system exists to supply loads and loads cannot be held responsible for dealing with changes within the power system. Furthermore, it is up to NSPs and AEMO to ensure the power system operates within the limitations of any load. More generally, care must be taken by AEMO not to develop policies that actively discourage loads from connecting or otherwise delay the connection process for loads.

Legacy Plant Models

We welcome AEMO's consideration of legacy plant models as part of the draft report and in the consultation paper and how they might be dealt with. We are concerned however that there are no changes proposed to the PSMG to address the issues our members and the industry face as listed in our submission to the consultation paper¹.

In summary, as part of the CRI it was identified that complexity associated with retrofitting a battery energy storage system (BESS) behind an existing connection point with a legacy asset has led to many proponents abandoning these kinds of projects. This has resulted in several lost opportunities for helping to install more storage in the NEM, which would help improve security, reliability, and price outcomes for consumers.

We urge AEMO to reconsider the following:

- **Use of generic models** – although the approach to using generic models is welcome, care should be taken in reliance on this approach as it may provide a false sense of security. Generic

¹ "Submission in response to the PSMG Review Consultation", Clean Energy Council, 14 February 2023

models can be used in the absence of an existing model or OEM to support. However, where an OEM can provide an initial model that does not meet all of the requirements of the PSMG, trying to substitute this for a generic model may actually result in more work than trying to resolve issues with the OEM model. It is noted that the members we spoke to whose project did not progress were utilising OEM provided models.

- **Timeframes for resolving model issues generally** – this is mentioned as being beyond the scope of this review in the draft report. However, the need for our members to try and resolve issues upfront has been one of the single biggest barriers for retrofitting a BESS behind an existing connection point.
- **Following the existing process under S8.3 and S8.4 of the PSMG** as per the draft report – unfortunately, the existing approach is not currently working and no change has been proposed. We note AEMO's comments in the draft report that this is to be dealt with outside of the PSMG, however we believe that items 1 (*Issues with EMT models*), 2 (*Inconsistencies in EMT & RMS models*), 3 (*Unclear definitions of error bands and tolerances necessary for benchmarking EMT & RMS models*) and 5 (*NSP to consult with AEMO*) on page 3 of the CEC submission on 14 February are relevant and can help resolve some of the challenges our members have faced.
- **Legacy and new plant interaction** – S4.15.3 (p36) of the AEMO draft report refers to the extent that:

'...legacy plant and the new plant are likely to interact in a manner material for system stability and security, models for the legacy plant are to be provided in accordance with the current PSMG to the extent reasonably practicable.'

Given the control loops of concern mentioned in the draft report, our members experience is that a reasonableness test has not been applied in the past. Thus resulting in projects failing to proceed very early in the connection process.

As always, the CEC welcomes further engagement from the AEMO on this review. Further queries can be directed to Christiaan Zuur at the CEC on czuur@cleanenergycouncil.org.au.

Kind regards

Christiaan Zuur
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