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Australian Energy Market Commission
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Lodged electronically: www.aemc.gov.au

RE: Generator Technical Performance Standards Draft Rule Determination (ERC0222)

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, hydro, bioenergy, marine and geothermal energy, energy storage and energy efficiency along with more than 5,000 solar installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

The CEC welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC's) Generator Technical Performance Standards (GTPS) Draft Rule Determination. The AEMC should be congratulated for its significant efforts in engaging stakeholders and considering feedback in the development of its draft rule determination.

It is reasonable that the performance standards applied to equipment connecting to the power system and the framework for negotiating access standards are reviewed regularly. However, the justification for the current proposed changes to the negotiation framework and generator access standards is not supported by a strong evidence base. Adequate evidence has not been provided to demonstrate that the changing generation mix is the cause of declining voltage and frequency control. Contrary to the rule change proposal's assertion, recent analysis and evidence show that synchronous generators have driven the decline in frequency control observed in the National Electricity Market (NEM)[1]. Placing technical requirements on new connections penalises generators that do not contribute to the magnitude of the frequency issues observed. Pre-emptively requiring non-synchronous generators to deliver a range of system support prior to the completion of the Frequency Control Frameworks Review is duplicating efforts to deliver a stable system. Outcomes of that review may negate the need for the revised GTPS as currently specified.

[1] http://www.wattclarity.com.au/2017/03/fast-frequency-service-treating-the-symptom-not-the-cause/

The lack of an evidence base to support the AEMC's suggested changes may result in outcomes in contradiction to the National Electricity Objective (NEO). Placing greater technical requirements on generators for an undemonstrated benefit inevitably increases costs for connecting applicants, which would only result in increased costs to consumers. The AEMC must consider whether the increase in consumer costs expected from the implementation of the GTPS rule change is consistent with the NEO.

The CEC suggests that rather than increasing technical requirements, generators need the flexibility to adapt to a changing system. The system is expected to change as the clean energy transition progresses and it is reasonable to expect connected generators to be required to operate within changed technical settings in the future. Generators must have the flexibility, within reasonable bounds, to adjust their performance as the system changes.

As raised in the CEC submission to the Coordination of Generation and Transmission Investment Review Stage 2 Discussion Paper, this draft rule determination highlights that there are a number of reform processes currently underway in the NEM with a focus on network investment and operation:

- AEMC's Coordination of Generation and Transmission Investment Review
- AEMC's System Security Market Frameworks Review rule changes
- Australian Energy Market Operator's (AEMO's) Integrated System Plan
- Energy Security Board's (ESB) responsibility for coordinating the work of the energy market bodies on planning and regulation of the transmission system and interconnection.

It is important for energy market institutions to coordinate the market reform processes currently underway and progress them holistically. This is likely to achieve better outcomes for the network and ultimately consumers than uncoordinated processes.

The following discussion outlines the CEC's views on specific details of the GTPS draft rule determination.

Negotiation process

It is reasonable to review the current arrangements of the negotiation of access standards to ensure their ongoing adequacy to support the security and efficient operation of the power system. The CEC supports the AEMC's balanced decision to place requirements on all negotiating parties, rather than exclusively placing new requirements on connection applicants. We also support the AEMC's view that there are areas of the negotiation process that could be clarified and improved, particularly through enhancing the transparency of the process.

All parties to a negotiation would benefit through improved timing of information provision in the negotiation process. Connection applicants would benefit from receiving adequate and user-friendly information earlier in the negotiation process that clearly identifies what the proposed connection's impact on the network would be. This has the potential to create efficiencies in the negotiation process for all parties as shared information and expectations reduces the likelihood of rejected proposals for negotiated standards.

The negotiation process would also be improved through clarity on what projects AEMO and the network service provider (NSP) consider are impacting the network when they are making decisions on proposed negotiated access standards. Under the current arrangements, the connection applicant is required to include committed projects in their studies as part of a connection application. CEC members have provided feedback that AEMO is considering planning models in their decision-making during the negotiation process of a connection application. This is not in line with the requirements on the connection applicant, and allows AEMO to inappropriately enforce their planning power through the generator performance negotiation process. We recommend the AEMC remove the words "at least" from clause S5.2.5.1(c)(1) to ensure that only existing projects and committed projects are required to be assessed by all parties in the negotiation process.

A complicating factor is that a consistent definition of a "committed project" is not being used by all negotiating parties. It has been identified through the recently published System Strength Impact Assessment Guidelines and anecdotally that AEMO is currently applying a definition which is not consistent with the rules. This can lead to material impacts for connection applicants.

The draft rule creates an expectation that the technical performance of connecting generators must be as close as technically possible to the Automatic Access Standard (AAS). The CEC believes AEMO should not be able to reject a proposed access standard lower than the AAS if that proposed access standard does not present an adverse effect on power system security or the quality of supply. Under the current arrangements, the connection applicant is required to propose an access standard that meets technical and commercial requirements of the project. However, AEMO has no obligation to consider the commercial aspects of the project when providing a decision on the adequacy of the technical performance provided in a proposed negotiated standard. This affords AEMO a higher level of negotiating power and warrants revision. The CEC suggests that the AEMC consider scope for an independent technical adviser function to be made available for connection applicants when negotiating technical aspects, similar to that under the Transmission Connection and Planning Arrangements rule change.

It is reasonable to expect that connection applicants should provide the NSP and AEMO reasons and evidence as to why a proposed negotiated access standard is appropriate.

However, there should be clarity on the type and form of evidence required by the NSP and AEMO in the negotiation process. Similarly, the criteria used by AEMO and the NSP to reject a proposed negotiated standard should be evidence-based, consistently used and transparent.

Voltage disturbance ride through – S5.2.5.4

The AEMC's draft rule determination places obligations on generators to withstand higher voltages than the system standard. Rather than placing this requirement solely on generators, there should be an alignment between the generator's obligations and the NSP's obligations for managing power system voltages.

Generator requirements for voltage withstand should not be greater than the system standard as this places disproportion costs on the generator to maintain voltages. The NSPs should be expected to remain responsible for the voltage control of the network. To address this, it is recommended that S5.2.5.4(a) be amended to remove reference to specific normal voltage ranges over 110% and replaced with:

"over 110% for the durations after T(ov) permitted under clause S5.1a.4;"

Multiple Voltage Disturbance Ride-Through (MVDRT) requirements - S5.2.5.5(b)(1A) and (c)(1A)

The AEMC has made significant changes to this standard. These changes have been based on the importance for generating systems to have the ability to maintain operation in response to a number of disturbances.

However, the draft rule appears to justify the significant proposed changes based on the extreme event of cascading outages that led to the 2016 black system event in South Australia. Extreme events which have a low likelihood of occurrence are not a reasonable basis to justify significant additional requirements to generators. These requirements place significant costs on generators, while ignoring the low likelihood of these events occurring in the future and the right of generators to disconnect from the network for equipment protection purposes.

The AEMC has placed criteria in the AAS for connecting generators to maintain Continuous Uninterrupted Operation (CUO) for a total of 15 disturbances within five minutes. The CEC argues that connection applicants should be expected to ride through a reasonable number of faults. The number of total disturbances as drafted in the AAS is too high and presents a technical challenge for connection applicants.

Furthermore, this presents a challenge in terms of demonstrating compliance with the significant modelling requirements that S5.2.5.5(b)(1A) and (c)(1A) would place on

connection applicants. The time and cost to undertake the studies required would be considerable, as the connection applicants would be obliged to demonstrate compliance with a significant number of disturbance combinations.

This is problematic for several reasons:

- Compliance assessment through studies would be time consuming as various combinations of faults would require assessment. A potential solution for solar PV and large-scale battery technologies is to have an equipment or plant standard. A type test associated with a plant standard would save significant time and costs of going through numerous studies on a per project basis. This could be either a type test with actual hardware connected in the factory, or a hardware in the loop test based on actual equipment controls and simulated network voltages.
- Rotating plant which are not completely electrically decoupled from the network (e.g. type 3 wind turbines and synchronous generators) are unlikely to be able to demonstrate compliance with the MVDRT requirements as defined by the AEMC due to the mechanical stress placed on the generator and turbine shafts.
- In the absence of a plant standard, compliance can only be demonstrated as part of a longer term monitoring program following an actual event.

For this reason the CEC suggests that the AEMC consider that MVDRT be assessed by a relevant plant standard and not be assessed on a project by project basis.

It is also reasonable that if multiple faults cause a unit to become unstable, that it be allowed to disconnect to protect the generating unit and/or the power system. To address this, it is recommended that S5.2.5.5(b)(1A) be updated through the following additional clauses:

> *S5.2.5.5(1A)(x) cause the generating unit's active power, reactive power or voltage at the connection point to become unstable as assessed in accordance with the power system stability guidelines established under clause 4.3.4(h).*
>
> *S5.2.5.5(1A)(xi) cause a material reduction in system strength by removing network elements or synchronous generating units from service affecting the stability of the generating system;*

A similar statement is suggested for the Minimum Access Standard (MAS).

Remote monitoring and control

The CEC appreciates the preference for the facilitation of automation and coordination of systems through increasing generator remote monitoring and control capabilities. Remote monitoring capabilities allow for the real time provision of data to AEMO's control centre regarding the status of the generating system and other equipment. This

reflects AEMO's preference for increased information sharing on generating systems and remote control capability for voltage control, active power and automatic generation control (AGC).

However, the CEC cautions against rapid implementation of requirements that increase the level of data that will be expected to be transferred on the NSP SCADA systems. The NSP SCADA system is currently experiencing significant communication signal congestion in the absence of new requirements. It is likely that new requirements will place increased congestion on the SCADA network and provide little additional benefit. It should also be considered whether the increased remote monitoring and control capabilities are required in the context of the generators ability to provide local control.

Transitional arrangements

The CEC appreciates the AEMC's efforts to establish transitional arrangements. The draft rule determination intends to strike a balance between the immediate implementation of the arrangements from when the final rule is confirmed with the need to draw a line in the sand to ensure the effectiveness of implementing a new rule, given the significant number of existing connection applications currently under consideration to be connected under the current arrangements.

It is important to implement transitional arrangements that will not cause connection applicants who are significantly progressed in commercial negotiations for project financing to be forced to renegotiate their financial arrangements. Similarly, transitional arrangements should not penalise connection applicants who are currently actively engaging with AEMO and the NSP through the generator performance standards negotiation process.

It is the CEC's view that the proposal to apply a final rule that is 8 weeks from the date of the final determination is insufficient for connection applicants who are progressing through the negotiations phase yet do not have an offer to connect or an agreed set of access standards. These connection applicants are likely to be exposed to financial risks to the project if the new rules are applied to their negotiations 8 weeks from the date of the final determination. The CEC strongly recommends a longer time period for the application of a final rule.

We recommend the final rule come into effect from 1 February 2019. This will allow connection applicants who are significantly progressed in the negotiation process sufficient opportunity to finalise an agreed set of performance standards under the existing rules and avoid costly commercial renegotiations. Similarly, connection applicants who are currently early in the financing process will have sufficient time to consider the new rules in their commercial decision-making.

The AEMC should also ensure there is a clearly understood definition of "*a full set of access standards agreed for the proposed connection*", as there is no formal stage in the connection process between the submission of a connection application (and accompanying GPS) and receipt of acceptance of performance by the NSP/AEMO (a process that can take anywhere from two months to eight months).

Thank you for the opportunity to contribute to provide our views on this matter. Please contact Emma White on 03 9929 4107 or at ewhite@cleanenergycouncil.org.au for any queries regarding this submission.

Yours sincerely,

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