23 June 2022

Ms Anna Collyer
Chair
Australian Energy Market Commission

Lodged via the AEMC website

Dear Ms Collyer,

PROJECT ERC0272: Efficient reactive current access standards for inverter-based resources

The Clean Energy Council (**CEC**) is the peak body for the clean energy industry in Australia. We represent over 1,000 of the leading businesses operating in renewable energy, energy storage and renewable hydrogen. We are committed to accelerating Australia's clean energy transformation.

The CEC welcomes the opportunity to comment on this rule change and recognises the need to resolve ongoing issues in access standards which impede generation investment and connection. We also recognise that this issue has been explored more broadly within the Connection Reform Initiative (CRI) as well as within the New South Wales Renewable Energy Zone (REZ) access standards[1], as mentioned in the consultation paper. We strongly encourage national consistency and applicability of standards across jurisdictions, as well as within and outside of REZs, in order to provide investment certainty and reduce unnecessary complexity in the connection process across the NEM. Now more than ever, the NEM is experiencing difficulties in providing a secure and reliable power system at least cost. Amending the access standard explored in this paper is an important step in streamlining the connection process and accelerating the transition in a secure and reliable manner.

It is critical that the amended standard reflects current market conditions and technical capability of plant while reflecting how technology capability of connection plant will change in the future. The AEMC must amend the standard to encourage innovation and drive efficiencies in both the plant and the control systems needed to support the grid. This is also important in considering the implications of inverter-based loads such as electrolytic loads, which will play a prominent role in the system in the near future.[2]

The AEMC has correctly identified the challenges around the allocation of costs between connection proponents and Network Service Providers (NSPs) and the complexity caused by ambiguity in the current Rules and how connections are assessed. We note that any solution to this must balance the need for a more streamlined connection process and adequate control systems in line with the proposed assessment criteria of the rule change.

[1] NSW REZ Access Standards intended to apply to Central-West Orana REZ, https://www.energy.nsw.gov.au/sites/default/files/2022-04/nsw-rez-access-standards-intended-to-apply-to-central-west-orana-rez-consultation-package-220203.pdf
[2] 2022 Integrated System Plan, AEMO, https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp

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The CEC supports the amendment of the standards to better support proponents in the connection process, whilst encouraging the efficient buildout of centralised or scale-efficient solutions where needed by NSPs. We encourage the AEMC to seek technical advice from AEMO and NSPs on how responsibilities are best shared between NSPs, AEMO and generators to deliver overall system hosting, security and resilience targets.

The remainder of this submission will outline the key issues and solutions which have been identified through these recent processes, which the CEC believes should be progressed in this rule change. These include:

- The relaxation of performance standards below AAS, including the MAS, amending the reactive current contribution requirements to better reflect the benefits of centralised, scale-efficient solutions
- The relaxation of the rise and settling time given difficulties in measurement during faults
- The amendment of the point of assessment to better deal with the mismatch between capability of the relevant control systems located at generating unit terminals vs measurement of response at the point of connection of the generating system
- Greater clarity of definitions outlined in the Rules, namely 'maximum continuous current'

Reactive current injection requirements

The CEC welcomes the relaxation of requirements where this is expected to result in a faster connection process, where generators avoid unnecessary investment in reactive capability which could be delivered more cost-efficiently by NSPs and ultimately result in greater investment in renewable projects that provide reliable, secure and affordable supply to consumers.

The CEC supports the AEMC considering how the proposed changes in the CRI related to minimum access standards for S5.2.5.5 are relevant to this rule change. This work also informed the development of the NSW REZ access standards and has been undertaken with holistic consideration for broader connection standards and issues facing both proponents and NSPs. We encourage the AEMC to engage with EnergyCo and review our submission to that process, to see where learnings can be applied to the AEMC's processes.

The AEMC should also consider the implications of changes to the standards on the system strength framework and ensure scale-efficient solutions are appropriately incentivised. For example, in the situation where a proponent is required to provide reactive current capability behind the PoC, they may be disincentivised from procuring system strength from in front of the PoC (as opposed to self-remediating); proponents may need to install additional plant to meet reactive current requirements which is also capable of providing system strength. The AEMC should consider how perverse outcomes such as this can be avoided.

Timing of response

The CEC supports the easing of rise and settling time requirements where this simplifies the design process for proponents without worsening disturbance conditions or risking system security. We support the easing of rise time in the current standards, given the existing arrangements do not consider the generating system design or capability, and may in fact result in settings that are not appropriate to system conditions at the point of connection.

While we agree in principle to ensure adequate timing of reactive response, we recognise the difficulty in use of rise time and damping requirements under fault conditions. Any changes to the standards should therefore support and prioritise the principle of the response not exacerbating or prolonging the disturbance, rather than focussing on the principle of providing an adequate response over the duration of the fault. This avoids the difficulties around the current criterion (of being 'adequately damped').

Assessment at Point of Connection

We acknowledge the technical complexity underpinning the decision on the point of assessment of reactive current response and recognise the difficulties which existing proponents, particularly those with large internal reticulation, face in meeting current requirements. We understand that Point of Connection (PoC) requirements may not be appropriate and could have the effect of materially increasing the cost of connections for proponents, which are currently allocated the cost of meeting the requirements.

This issue was also considered by the CRI, which recognised that electrical separation between the control systems at the generating unit terminals and the measurement at the PoC had the potential to cause suboptimal responses. The changes to the NER around the measurement at either point have also caused uncertainty and confusion in the past, as different standards may apply to different points of the generating system.

We encourage the AEMC to fully consider the ongoing rationale for the PoC being the point of assessment for GPS. While it may be efficient for power system operation to measure generator performance at PoC, this has become difficult in practice. As such, we support changes to the standard which would result in improved reactive response by proponents. We encourage the AEMC to consider whether this could be best achieved by moving to consideration of GPS assessment at parts of a generating system other than the PoC.

Required NER updates

We support consequential changes to the NER and necessitated through the above discussed changes to the standards. In particular, there is a clear need to adapt the Rules and remove uncertainty in the reactive current standards – namely, by defining maximum continuous current and voltage under fault conditions.

The CEC also encourages national consistency and applicability of the Rules and recognise the need for alignment with jurisdictional processes. The AEMC should also work with AEMO to consider the proposed changes to the NER made by the CRI.

Thank you for the opportunity to comment on the Issues Paper. If you would like to discuss any of the issues raised in this submission, please contact Jordan Ferrari, Policy Officer, jferrari@cleanenergycouncil.org.au or myself, as outlined below.

Kind regards,

Christiaan Zuur
Policy Director – Energy Transformation