

19 June 2025

Christian Dunk
Acting Director
Australian Energy Market Commission
REF: ERC0394

Dear Mr Dunk

Ausgrid response to AEMC Consultation Paper on Improving the NEM Access Standards (Package 2)

Ausgrid welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Consultation Paper on the National Electricity Amendment (Improving the NEM access standards - Package 2) Rule 2025 (**Consultation Paper**). Ausgrid operates a shared electricity network that powers the homes and businesses of more than 4 million Australians living and working in an area that covers over 22,000 square kilometres from the Sydney CBD to the Upper Hunter in NSW.

This Consultation Paper primarily considers the second of two rule change requests submitted by the Australian Energy Market Operator (AEMO) in April 2024¹ following its Review of Technical Requirements for Connection.² Broadly, Ausgrid agrees with the objectives of these requests to simplify the connections process, and accommodate new and emerging technologies, under the National Electricity Rules (NER).

The key driver for AEMO's second rule change request is the projected increase of large loads, such as data centres and hydrogen electrolyzers. Load is a critical component of Australia's energy transition and the exponential growth in data centre demand, or more specifically the exponential growth in *data centre load applications*, presents both a challenge and an opportunity for market bodies, network service providers (NSPs) across the National Electricity Market (NEM), and the wider Australian economy. It is a particularly important issue for Ausgrid. Our network currently hosts over 50 data centres of varying sizes today, with the majority located in Sydney. A significant proportion of Australia's data centres are expected to continue to seek to locate in Ausgrid's network area due to strong access to fibre connectivity, a skilled local workforce, and proximity to load centres.

We welcome efforts by AEMO to engage with us to date, through its Large Load Workshop, to inform its Schedule 5.3 Large Loads Access Standards Review. Ausgrid understands and appreciates the risks being considered, and agrees that an appropriate and measured mitigation of these risks is warranted. However, given the nascent stage of this emerging industry, currently we consider that not enough is known about the demand trends and operating behaviour of these connections, or the risks they pose to the NEM, to justify the extent of amendments proposed by AEMO. Ausgrid is concerned that moving too quickly or enacting overly onerous technical standards will meaningfully slow the growth of Australia's digital economy, driving some proponents to shift their business to overseas jurisdictions, and would forego the numerous benefits these large load connections can offer to our nation's energy system as we navigate the energy transition.

¹ AEMO, [Request for fast track rule](#), April 2024; AEMO, [Request for standard Rule](#), April 2024;

² [AEMO Review of Technical Requirements for Connection – National Electricity Rules Schedules 5.2, 5.3 and 5.3a](#), Dec 2023

Our submission details several unresolved issues that could have a material impact on the operation of the amendments. In our view, further stakeholder consultation, including more detailed consideration through further Large Load Workshops, is needed to assess the implications of AEMO's rule change request before the AEMC publishes a draft rule change determination.

The risks to the NEM's distribution system are not well defined or understood

AEMC's Consultation Paper references AEMO's estimate that data centre connections in the NEM will grow to over 30 GW by 2035.³ Ausgrid notes that the methodology for forecasting data centre demand is in its early days, and there is considerable uncertainty around this number. AEMO is currently engaging with NSPs, including Ausgrid, to refine its methodology and assumptions around data centre growth. This work should be allowed to progress further before any amendment to the connections process for load in the NER is made. This will ensure the technical requirements and costs associated with connections are justified and proportionate to the risks being mitigated, importantly reflecting how these risks differ by location and between different levels of the network.

The Consultation Paper also states that "large loads have the potential to adversely impact the power system"⁴, and points to large load loss incidents in North America to illustrate the broader risks these connections can have to the grid. The impact data centres can have on a transmission network will be different in every system and is highly dependent on the location of their connection, the inertia within the surrounding system, and the technology the connecting party (or network operator) has chosen to install. We therefore do not consider these international examples provide sufficient justification for the proposed changes to the NER, and we urge the AEMC to consider whether localised studies are required before this rule change progresses further.

For example, AEMO has proposed an amendment to require NSPs to work with connecting parties to design protection systems and settings that maximise ride-through capability. While we note AEMO's assurance that the intention of this rule change is not to increase costs for connecting parties⁵, we are deeply concerned that it will result in a need for more modelling which will result in increased costs and material time delays. We are not satisfied that the evidence provided to date justifies this potentially onerous provision. Importantly, Ausgrid has not observed any unstable operating behaviours from the large inverter-based loads connected within our network to date.

In April 2023, Ausgrid experienced a sealing end failure resulting in a single line to ground fault. This fault caused a voltage dip which propagated through the network, affecting several large inverter-based load connections at Macquarie Park. Based on relay recordings, we saw that, while these load connections did trip due to the voltage change, they were reconnected within two seconds of the fault. The speed in which these connections reconnected means Ausgrid saw no flow-on adverse network impact.

Even in rare situations, such as three phase faults within the transmission network that cause accumulative inverter-based load sites to trip, it is not clear – and has not been proven – that current ride-through capabilities would exacerbate transmission network security.

If AEMO considers that the current settings are not adequate to protect the system, it would need to conduct localised risk assessments to understand what the risks and potential problems are. Specifically, we would

³ AEMC Consultation Paper, p 18

⁴ AEMC Consultation Paper, p 18

⁵ AEMC Consultation Paper, p 38

like to see AEMO conduct studies to assess the impact to system security that the mass disconnection of load could have at various points within the network. These studies could be limited to specific locations within the network where proposed data centre 'clusters' are emerging. While we understand AEMO may have some transmission level studies underway, to develop a strong evidence base for action, AEMO should also work with DNSPs to conduct similar studies within the distribution network. Ausgrid would be very happy to work with AEMO to support any such exercise.

We have also been engaging with the Federal Department of Climate Change, Energy, the Environment and Water and their working group, which includes AEMO and the AEMC, as they develop advice for Energy and Climate Change Ministers on the impact of data centres on Australia's energy system. This work was highlighted in the Consultation Paper, and we note this advice will include consideration of options to minimise system impacts and whether existing regulatory frameworks for data centres remain appropriate. Ausgrid considers that it would be prudent for the AEMC to consider the outcomes from this advice before progressing this rule change further due to the overlap of issues being assessed.

Noting this, Ausgrid does support the proposed requirement for connecting larger inverter-based load to provide further information to NSPs about their ride-through capabilities. This information will be important for grid operators to better understand how the grid will respond in certain events, allowing for more informed investments, and more sensible reforms, to be made in the future.

Applying a 5 MW threshold for large load will disincentivise much needed connections

In Ausgrid's January 2025 submission to the AEMC on its Improving the NEM Access Standards (Package One) draft rule change determination, we noted our concerns about the current definition for large load. Under the NER⁶, 'large inverter-based load' is defined in accordance with AEMO's System Strength Impact Assessment Guidelines (**SSIAG**), which states "the key criterion for classifying" an inverter-based load as large is a minimum capacity of 5 MW or 5 MVA.⁷

We thank the AEMC for acknowledging this feedback in its May 2025 final rule change determination and accept its view that amending the definition fell outside the scope of the fast-track rule change.⁸ However, as this second rule change request considers proposed amendments to Schedule 5.3 of the NER to facilitate the planning and design of large loads, the AEMC must reconsider the definition for large load as part of this process.

Our primary concern is that the current threshold of 5 MW or 5 MVA is considerably too low. Progressing this rule change with the current definition would immediately create an administrative burden on DNSPs who must process connection applications. It would also create a significant financial burden on load facility proponents. On this point, we note that the financial capacity of a 5 MW load proponent is not comparable with proponents of significantly larger load facilities, and any additional modelling required as part of a connection application risks disincentivising these proponents from progressing their projects.

In establishing a new definition for large load, we propose the AEMC consider:

⁶ National Electricity Rules, Rule 5.3.1A

⁷ AEMO [System Strength Impact Assessment Guidelines](#), CI 2.2(d) Classification of IBL and IBR

⁸ AEMC, [Rule Determination: National Electricity Amendment \(Improving the NEM access standards – Package 1\) Rule 2025](#), p17-18

1. **Increasing the size threshold:** AEMO's Review of Technical Requirements for Connection notes possible risks associated with load systems "more than 100 MW in size, and up to 600 MW"⁹. The AEMC may wish to consider increasing the threshold for large load so that the application of any new technical standards is limited to the facilities that AEMO is concerned about.
2. **Limiting to transmission-connected load:** It is arguable that load connecting into the distribution network is sufficiently "electrically and geographically distant" from the transmission network and therefore are less relevant to the potential risks AEMO has identified. The AEMC may wish to consider limiting the definition of large load to those facilities connecting directly into the transmission network.
3. **NSP flexibility based on perceived network impact:** Alternatively, the AEMC may wish to consider introducing a more flexible definition for large load that allows DNSPs to assess the possible network impact of a connecting project before determining what access standards to apply. To ensure a consistent approach to this assessment, AEMO could provide guidance on the methodology that NSPs would need to use.

In presenting these options, we note that it is critical this rule change is not progressed without amending the definition for large load. We also note it is unclear how a sensible, proportionate definition can be set until market bodies and DNSPs develop a more fulsome understanding of the risks posed by large load facilities.

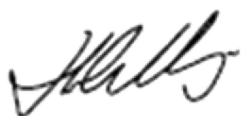
Establishing flexibility through the rules should be deliberate or it could create confusion

In its rule change request, AEMO asked the AEMC to consider "additional lighter-handed requirements in the Schedule 5.3 access standards to manage the risks created by prospective large load connections."¹⁰ Generally, Ausgrid supports principles-based regulation as a way to support innovation and economic growth and, largely, the Consultation Paper has proposed amendments that are appropriately flexible.

However, we do not consider it appropriate to create discretionary and/or advisory powers for AEMO over processes that are reliant on the expertise of DNSPs. AEMO's current models do not completely capture the sub-transmission and distribution networks. As a result, AEMO does not, and is unable to, identify many system needs at a distribution level. If flexibility and discretion is to be built into the NER around the technical assessment of connecting load facilities, this discretion must be given to the DNSP responsible for managing the connection application rather than AEMO.

Ausgrid would be happy to discuss our submission further. Please contact Emma Vlatko, Senior Policy Advisor at emma.vlatko@ausgrid.com.au if you would like to arrange a discussion.

Regards,



Junayd Hollis
Group Executive Customer Assets & Digital

⁹ AEMO [Review of Technical Requirements for Connection – National Electricity Rules Schedules 5.2, 5.3 and 5.3a](#), Dec 2023, p 11

¹⁰ AEMO [Request for standard rule](#), April 2024 p6