Addendum to draft report Stakeholder feedback template:

AEMO Review of technical requirements for connection (NER 5.2.6A)

Stakeholders making a submission on the recommendations set out in the addendum to the draft report may use the below template to provide feedback. Feedback on the **addendum** is due to AEMO by **5:00 pm, 23 May 2023** (please note the earlier submission date for feedback on the primary draft report).

Please consider the confidentiality disclaimer at the end of this document.

Stakeholder: Amp Power Australia – Amp Energy

Schedule 5.3 Conditions for Connection of Customers

Issue	Schedule 5.3 Recommendations
Policy positions	
Recognition of different load technologies	We agree that it is important to recognise different load technologies. However, we are concerned that by setting two sets of requirements with the more onerous one applied to IBL just because they may be able to meet does not appropriately address the impact of a new load connection to the network. For example, the impact of a 500 MW "other" load tripping during voltage disturbances can be much higher than the impact of a 100 MW IBL in the same area tripping during the same voltage disturbances but AEMO's proposal would require a much higher technical performance standards from the IBL than the bigger "other" load. In the other words, the IBL is being penalised for having better controllability. This is similar to the issue which has been identified in Schedule 5.2 for generators, in relation to S5.2.5.1 and S5.2.5.5 (the use of the installed MVA rating for the calculation of the maximum current during faults). In addition, the definition of IBL is quite broad which means there are likely many different types of IBL with different control/performance characteristics. Until they are well understood, it is not appropriate to set technical requirements based on "perceived" capability. We also propose that any technical requirements need to be set based on the impact of the load on the network and what we need to do to mitigate the risk.
Size and technology-based thresholds for ride through capability requirements	As outlined above, we generally support technical requirements set based on the impact on the network and hence size can be used as a good indicator. Technology-based requirements can hinder investment in certain types of technology. The argument to "capture the inherent low-cost ride-through capability of many IBL" is not a really valid reason to set a higher requirement on IBL compared to "other" loads. If it is an inherent performance at no cost to an IBL project, it can be captured easily in its relevant technical performance standard as long as all relevant parties are comfortable with it. However, if it becomes a mandate in the rule, it will trigger the need for detailed modelling, tuning and potential additional equipment to be compliant with the rule which means additional cost to IBL projects compared to "other" load projects which may have similar sizes and network impacts. This is not a fair approach and does not align with the NEO. In addition, as noted above there are many types of IBL technology and a number of them are still under development, having a very strict/high technical requirement can hinder efficient development and investment in this area. Therefore, we do not support AEMO's proposal. We support Option 3 and a careful consideration of Option 1.
Treatment of different load technologies within a load facility	This is related to our comments in the previous two points.

Issue	Schedule 5.3 Recommendations
Continuous uninterrupted operation (CUO) requirements	We generally support AEMO's proposal but would like to propose that the tolerance size needs to be reviewed carefully.
Treatment of loads with uninterruptible power supplies	We generally support AEMO's proposal.
AEMO advisory matters	
New definitions – for use with ride-through requirements	
Single facility load	
Large single facility load	
Large single facility inverter-based load	
New/amended clauses for ride-through requirements	
Operation of large loads during frequency disturbances	We generally support AEMO's proposal but would like to note that the connection process needs to be efficient so that it does not slow down investment and connection of new loads unnecessary. From the experience of generator connections, the performance standard negotiation can cause significant delay to new projects especially with the need to aim for AAS.
Operation of large loads during contingency events	We generally agree with AEMO that Option 1 "Do nothing" is not preferred. However, AEMO's proposal to go with Option 2 can pose significant barriers to connection of new loads. The assumption that IBL have inherent fault ride through capability needs to be confirmed and well analysed to understand what can and cannot be achieved and the potential impact on the network, especially with the multiple fault ride through requirements. Careful consideration needs to be given to not only the capability of the inverter-based interface (e.g., power electronics converters) of the load but also the remaining components of the load facility to comply with the multiple fault ride through requirements. For example, an ammonia production plant can have steam turbine generators to use the excessive steam generated in the production process. It also has various types of compressors. The capability of those components to ride through multiple faults. It is also unclear what are the exact clauses in S5.2.5.5 will be applied to IBL, especially whether any reactive current support is required.
Operation of large loads during voltage disturbances	We generally agree with AEMO that Option 1 "Do nothing" is not preferred. However, AEMO's proposal to go with Option 2 can pose significant barriers to connection of new loads. It is well known that the S5.2.5.4 AAS requirements have caused several issues to new inverter-based connections in the last 4-5 years and in some cases resulting in significant additional CAPEX. Therefore, AEMO should carefully review and update Option 2 accordingly, especially the application of S5.2.5.4 AAS. We propose a new option which is similar to Option 2 but without the S5.2.5.4 AAS or with a modified (less onerous version) of S5.2.5.4 AAS.
NER S5.3.3 – protection systems and settings	
Link to 'ride through' requirements and maximising protection	We generally support AEMO's proposal.
NER S5.3.10 – Load shedding facilities	
Emergency Under-frequency ramp down of large loads	We generally support AEMO's proposal.
New clause for instability monitoring and prevention	
Stability of IBL – monitoring, protection and performance	We support Options 3, 7, 8. We caution that careful consideration needs to be given to Options 5 and 6 (which AEMO propose).

Confidentiality disclaimer

Under clause 5.2.6A(d)(2), AEMO is required to publish all submissions received about this Review on its website. Please identify any part of your submission that is confidential, which you do not wish to be published. Please note that if material identified as confidential cannot be shared and validated with other interested persons, then it may be accorded less weight in AEMO's decision-making process than published material. AEMO prefers that submissions be forwarded in electronic format.