15 October 2020

Ms Meryn York
Acting Chair
Australian Energy Market Commission

Lodged via the AEMC website

Dear Ms York,

PROJECT ERC0280: INTEGRATING ENERGY STORAGE SYSTEMS INTO THE NEM

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 renewable energy and energy storage along with more than 7,000 solar and battery 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 provide comment on the Integrating Energy Storage Systems into the NEM rule change request submitted by the Australian Energy Market Operator (AEMO) in August 2019. This rule change request presents an opportunity to inject clarity and flexibility into the rules framework and ensure storage technologies are formally recognised and incorporated into the National Electricity Market (NEM). The CEC strongly supports the innovation, development and deployment of storage technologies in the NEM alongside the ever-increasing growth of variable renewable energy generation.

The argument for clarifying and streamlining the framework for integrating storage is clear. The AEMO 2020 Integrated System Plan (ISP) outlines the investment required in storage and dispatchable capacity to support the 26-50GW of new renewable energy that will be developed before 2040[1]. The ISP states that 6-19GW of new dispatchable resources will be required and correctly notes that much of the investment in dispatchable capacity will be in either pumped hydro or battery resources[2]. Figure 2.4 in the consultation paper also notes that over 16GW of storage will be developed under the ISP central scenario by shortly after 2022. It is reasonable to expect, based on ISP scenario data, that real storage development over the next 20 years will fall into the upper ends of ISP predictions.

Given the strong need for investment in storage resources, this rule change is timely to provide investment certainty and clarity for current and future market participants who are considering developing storage assets, either independently or co-locating it with a current or future generator. The Australian Energy Market Commission (AEMC) rightly notes the relationship between this rule change request and the Energy Security Board (ESB) work that is underway to assess the merits and

[1] AEMO, Integrated System Plan, 30 July 2020, p. 50, available https://aemo.com.au/-/media/files/major-publications/isp/2020/final-2020-integrated-system-plan.pdf?la=en&hash=6BCC72F9535B8E5715216F8ECDB4451C
[2] Ibid, p. 50

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design elements of a potential two-sided market. Storage units would play a critical role in any two-sided market design should it eventuate.

The AEMC also notes that they are seeking feedback on whether the outcomes sought through this rule change request could be achieved through changes made to the current framework rather than more wholesale reform to participation and classification categories in the NEM. Our submission does not comment on the interaction with the development of the two-sided market nor the possibility to make minor amendments to the rules to achieve better integration of storage into the NEM. Similarly, we have no comment on whether wholesale changes are required to the rules or if minor amendments would be suitable. Provided stakeholder concerns as outlined below are addressed and the framework sets the stage for the investment required to support the transition in the NEM, the AEMC should continue to be guided by the National Electricity Objective (NEO) to decide the level of changes that are required to the National Electricity Rules (NER) irrespective of the potential interaction with a future two-sided market. The CEC suggests that any amendments or the intent of those changes should be carried forward through any redesigns of the energy market to ensure the frameworks that facilitate continued development of storage persist.

Registration and hybrid facilities

For a participant or developer of renewable energy generators in the NEM, the benefit of adding storage to a project in a hybrid facility arrangement is to increase flexibility for the asset, flexibility in how you engage with the market and to provide flexibility to the system. There are two principles the AEMC must adhere to throughout this rule change process - flexibility and clarity.

As the consultation paper and AEMO in its proposal rightly note, the current framework does allow for storage to register in the NEM and successfully participate in the market. This has been seen in several successful examples of participants adding storage to current projects and developing standalone storage systems. There is also a long history of pumped hydro storage units functioning successfully in the NEM. The success of this small subset (in the context of the investment required) of storage assets is not indicative of the current complexity for registering new storage assets. In particular, the framework for new storage market entrants is unclear and ambiguous.

AEMO's rule change request is well developed, and industry provided significant feedback through the AEMO Emerging Generation and Energy Storage (EGES) consultation process resulting in the rule change lodgement one year ago. The rule change request correctly summarises the confusing and complex approach to registration and classification in the rules. As mentioned above, industry is open to the AEMC exploring alternative options to the model proposed by AEMO, such as amendments to current categories, provided it achieves the outcomes sought by industry of streamlining the registration process, improving clarity and appropriately integrating storage into the rules framework.

Flexibility is the second core principle that should guide the AEMC through assessing the approach to registration and classification for standalone storage assets and hybrid facilities. In particular, the approach to how storage is utilised in tandem with renewable energy generation should be to maximise the flexibility these assets provide to the participant, market and system as a whole. Ensuring a clear and concise framework that incorporates the flexibility to operate the asset in a way that maximises its use will encourage the development of storage. It will also allow for innovative approaches to how proponents maximise their assets, which in turn will lead to better outcomes for consumers.

The CEC suggests that flexibility should be afforded to all storage units in the NEM to optimise the outcomes for the asset and the system across each interval in the energy market. Participants must have the flexibility to design their asset to operate in tandem with co-located generation, maximise opportunities arising through charging and discharging from the grid and to operate as a standalone asset. The inclusion of this level of flexibility would require an open approach to how storage is implemented.

The AEMO registration model presented in the consultation paper presents a suitable model for registering single storage assets operating independently with one dispatchable unit identifier (DUID). The hybrid model appears less suitable as it is not clear if it solves the current issue preventing storage from charging from co-located generation without receiving dispatch instructions through the National Electricity Market Dispatch Engine (NEMDE), which would result in the storage unit paying the regional reference price (RRP) for its own energy. When a generator in a hybrid model is constrained off, there should not be any barrier to that generator sending its energy to a co-located battery. This should be possible whether the storage is behind the generator's DUID or if it is a separate DUID behind the connection point. This opportunity should exist for any hybrid generator / storage project located anywhere on the NEM. This also has the potential to be important for the anticipated development of the many Renewable Energy Zones (REZ) modelled by AEMO's ISP – where the exercise of co-ordinating new transmission capacity with new generation and storage capacity should be seeking to maximise utilisation of the new transmission by enabling storage to capture excess energy produced by a larger number of generation projects than may be the case without storage being able to capture energy generated by the hybrid facility's own generator.

Similarly, we suggest there should be no disincentives to storage units charging from the grid when negative prices occur. Adding load to the system in periods of low demand will be of benefit to the power system.

Co-locating a storage unit behind a generator's DUID also appears to be unaccounted for in AEMO's proposed rule change. In particular, further clarification is required for how a semi-scheduled generating unit's registration would be impacted if a storage facility was co-located within the same DUID – particularly with regards to its classification as a semi-scheduled or scheduled generating unit. When considering this guidance, the CEC requests the following points be taken into consideration:

- A DUID with a co-located storage facility that cannot, and does not intend to, adequately follow dispatch instructions due to inherent characteristics should be allowed to register as a semi-scheduled unit, or maintain a semi-scheduled registration, after co-locating a storage facility.
- The inherent capability to comply with dispatch instructions is likely to require significant additional capital investment and enforcing this on all DUIDs with a co-located storage facility would not result in the economically efficient outcomes required by the NEO.
- Where a hybrid facility with a co-located storage facility intends to develop the inherent capability to comply with dispatch instructions, its registration pathway to becoming a scheduled generator should be, as much as practically possible, the same as the registration pathway for any other technology or fuel type (e.g. gas, hydro or coal).

The CEC suggests that the rules framework should incorporate flexibility in how storage assets are operated when in hybrid facilities. As storage technologies mature, so too will the operational strategies that participants develop to operate the assets. A flexible approach to allow storage assets to be used in a variety of ways will support ongoing innovation in the storage industry and provide benefits to end users and system stability.

Pumped hydro storage units

The rule change consultation paper is seemingly focussed mostly on how to best incorporate storage assets such as batteries in conjunction with other assets on a single site. The stated intention is that the rule change should be technology neutral and apply to all storage units equally. To this end, it is not clear why the AEMO rule change proposes to exclude some pumped hydropower units from participating in new registration categories due to an inability to ramp linearly. The AEMC should set the performance expectations for storage assets to meet the new registration categories.

Our concerns with this approach are twofold. First, it is our understanding that it is not necessarily true that pumped hydro units cannot ramp linearly and this may simply be during start up for some of these

types of units. If this is the case, the CEC suggest, that exclusion on this basis is not justified and that these start up times could be accounted for in some other manner rather than exclusion altogether. This element of the rule change proposal seems to be designed with batteries in mind that have the ability to control their load. For those pumped hydro units that are not able to ramp linearly, further information is required from AEMO for industry to gain a better understanding.

Secondly, it is not clear why these units are required to ramp linearly. There is little justification for this requirement provided and it appears unreasonable to exclude these units on this basis especially considering the limited impact this could have across the system when weighed against the benefits of the proposed changes.

Reduction in bid bands

The CEC strongly opposes the reduction in price bands from the 20 bands that scheduled storage currently receives down to 10 price bands under the proposal. Scheduled storage currently has 20 price bands to optimise their consumption and generation bids. Reducing price bands to 10 is a significant reduction in bidding flexibility for storage assets. We suggest the AEMC assess what would be the appropriate number of price bands for storage assets to ensure they are not at a disadvantage to other assets in the NEM.

Reducing price bands to 10 would lead to additional complexity for storage operation and would not be in line with the intent of the rule change request to improve the situation for storage asset participation. Consultation with CEC members has indicated that if the reduction in price bands remains as part of the rule change model then there is a preference for the whole process to be abandoned.

Treatment of TUOS and DUOS, RRO obligations & SGA's

The CEC supports the intent to clarify the treatment of Transmission Use of System (TUOS) and Distribution Use of System (DUOS) charges for storage units. The varying approach to these charges across the different network service providers (NSPs) is not uniform and creates regulatory risk for NSPs, and ambiguity and uncertainty for battery storage market participants. We support the proposed approach whereby storage units would not pay TUOS charges.

We are however concerned that the approach to DUOS results in storage units still paying DUOS charges upon consumption, which is inconsistent with the approach to TUOS. The CEC strongly suggests that DUOS be treated in the same way as TUOS for storage units. We support AEMO's intent that TUOS and DUOS should only be paid once and that to charge DUOS to a storage unit would essentially be a double charging of DUOS. This is an inefficient outcome, and we propose storage units (scheduled generation and load) should be exempt from being treated as a load for the purposes of DUOS.

Such an approach would ensure consistency between TUOS and DUOS charges for similar assets. A storage unit on the transmission network only pays connection costs. The same unit on a distribution network would pay connection costs and usage charges. There are examples in the market where this inefficient outcome has led to storage assets paying over $1 million a year in DUOS charges.

Similarly, as dispatchable resources, storage units should be excluded from Retailer Reliability Obligations (RRO) on their load. Storage units can provide system benefits and as such it would be counterproductive to require storage participants firming renewable output to procure supply from carbon emitting sources.

The CEC supports the proposed changes to the Small Generator Aggregator (SGA) and the proposed rule amendments.

Performance standards

The AEMO rule change proposes to implement a single set of performance standards for each asset behind the connection point, including a single performance standard for the load and generation component of a storage unit. The CEC provides in principle support for this proposed approach to performance standards, but we note there are further details that should be considered to ensure its success. For example, we would welcome further clarity from the AEMC on the location of the point of measurement for standards to be applied and how hold point testing and other relevant connection and operational tests would be carried out under this new arrangement.

It would be an inefficient outcome if this were to result in the reopening of generator performance standards for current generators. This is especially true in the case of older generators that include older equipment that was not designed to meet the current standards. This would be an expensive outcome and in contradiction to the NEO. Consideration will need to be given to how an older generator approaches co-locating storage with a unit operating with older equipment.

Grandfathering

As with most reform taking place within the energy rules, it is important that consideration is given to grandfathering current participants rights to the new requirements. The CEC suggests current registered participants should have the opportunity to grandfather their rights should they wish to avoid any unnecessary time and costs associated with changing their registration.

Thank you for the opportunity to comment on this consultation. If you would like to discuss any of the issues raised in this submission, please contact Tom Parkinson, Policy Officer, on (03) 9929 4156 or tparkinson@cleanenergycouncil.org.au or myself, as outlined below.

Yours sincerely,

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