

16 September 2021

Joel Aulbury
Australian Energy Market Commission
GPO Box 2603
SYDNEY NSW 2001

Dear Joel,

SUBMISSION TO ERC0280 INTEGRATING ENERGY STORAGE SYSTEMS INTO THE NEM

We welcome the opportunity to comment on the Australian Energy Market Commission's (AEMC) Integrating Energy Storage Systems into the NEM Draft Determination. We support the ongoing work to support the integration of flexible technologies, particularly batteries, into the energy system.

Engevity is an Australian strategic advisory firm supporting clients in the energy and infrastructure sector. Our focus is on facilitating a transition to a low emissions economy by providing advice to a broad cross-section of clients on how to take advantage of opportunities in the energy transformation. Our work with energy clients, which include BESS, renewable generators, large and small customers, networks, developers and financiers, has provided us with insight into the practical application of the NER and the impact of different clauses on commercial realities.

Fundamentally, we support energy market reform where it supports clean technology, innovation and ease of participation for increasingly diverse new market players looking to leverage the commercial and ESG opportunities of renewable energy.

This submission provides an overview of our general support for the proposed rule change, as well as some potentially overlooked constraints or barriers to the integration of storage technology that we suggest the AEMC consider further in developing its final rule.

We appreciate the opportunity to engage in this reform and encourage the AEMC to reach out to Engevity discuss the issues raised in this submission or to be involved in any relevant stakeholder groups.

Yours faithfully
Engevity Advisory Pty Ltd
ABN: 77 635 581 645



Signature

Craig Chambers
Managing Director
Date: 16/09/21



Signature

Edward Hawkins
Manager
Date: 16/09/21

Encl: Engevity's Submission to ERC0280

1.0 OUR SUPPORT OF THE PROPOSED RULE

Engevity generally supports the proposed rule change due to its benefits to both the efficiency of the modern energy system (decreasing costs to consumers), as well as its support of the transition to a low emissions, high value economy.

Engevity believes this rule would **benefit end consumers** in the following key ways:

- Better integration of storage supports the growth in the connection of low cost, low emissions VRE.
- Batteries in particular can provide security services, improving system outcomes for both plant and consumers. Creation of a new registration categories could mean, in the future, scheduling of storage for system security can better planned.
- Reliability also increases with the increase of dispatchable energy, storage will be essential to transition away from the retiring thermal fleet.

Engevity sees the cost of implementation of the reforms as reasonable and notes that c. \$20m is negligible compared to the billions of dollars currently being invested in storage technology in the NEM.

Engevity also highlights its specific support of this rule change in **facilitating an energy transition to 100% renewables**:

- We support the AEMC and AEMO draft decision to recognise and support energy storage as part of integrated energy systems in the NEM. It will better reflect the combined services available from bi-directional energy resources as will be increasingly common in the future grid.
- Supporting the uptake of storage is vital for supporting both operating and commercial environment for further VRE uptake and transition.
- Regarding DC coupled IRPs, the commission's decision to allow participants to choose how their IRPs are classified is welcome and will provide participants with flexibility to pursue innovative business models.

While we support the proposed rule, we believe there are potential improvements that can be made to further support the integration of storage into the NEM and increase its benefits to end consumers and the energy transition.

2.0 FURTHER ISSUES THE PROPOSED RULE SHOULD CONSIDER

Engevity considers that the draft rule may leave some issues unsolved that should be considered in developing the final rule. These issues generally relate to complexities or uncertainties surrounding the draft rule that could discourage adoption of storage technologies.

The AEMC should look to reduce all barriers to energy transition; any disincentives for storage technology will delay uptake of renewables and system support for the grid. This will have economic impacts on end-users through higher energy bills, lower security and reliability over the longer term, and through the multifarious impacts of climate change in Australia and beyond.

Engevity steps through these further issues below.

Retrospective application:

- The rule will be difficult to retrospectively apply, especially where financing and offtake arrangements differ between the wind/solar plant and the BESS in currently collocated systems. This will be a substantial challenge to existing plant being required to re-register their storage under this rule, and may result in collocated plant still be registered separately.
- Engevity is uncertain the extent to which performance standards would have to be reassessed following the re-registering of existing plant.

DUoS and TUoS:

- Under transmission pricing arrangements, there are no TUOS charges for storage, whereas distribution pricing arrangements impose TUOS and DUOS charges for the load component. This results in inconsistent charging arrangements between transmission and distribution and may result in less optimal location of storage.
- Engevity supports the principle that a BESS should pay net TUOS as a function of its import/export regime, although subject to how the rule change is implemented, a NSP can simply change the bias from variable to fixed network charges and recover what it wishes from an IRP. However, applying gross TUOS rather than net TUOS to a BESS will erode project economics and limit market uptake, which is counter-productive to an IRP concept.

GPS:

- The proposed approach to Performance Standards is unchanged in that this will remain at the Connection Point as defined in the relevant Connection Agreement. Engevity believes there is a missed opportunity to address issues relating to Performance Standards for both existing plant as well as new projects. **Overall, the expected application of the GPS to storage following this rule change is very unclear and we would appreciate the AEMC considering this further and providing further explanation.**
 - **Modifications to Existing Plant** – For example an existing project that wishes to add a Battery Energy Storage System (BESS) likely has to re-negotiate previously agreed Performance Standards as per the 5.3.9 process in the NER even for even a relatively small BESS. Renegotiating Performance Standards is a costly and time-consuming process in the NEM and increases the time required to bring online new generation. A preferable rule would be to allow the option of having separate of performance standards for the IR and leave previously agreed Performance Standards unchanged.

Engevity acknowledges that reopening GPS to integrate a BESS retrospectively is not always necessary. We have had experience negotiating to change the POC from a G2N to a N2N connection, established an embedded network and did not have to reopen the GPS providing the combined PV and BESS did not adjust the previously agreed GPS – ie a parent/child concept.
 - **New IRP** – Assessing performance at the Connection Point requires complex power system analysis and assessment under various operating conditions depending on the number of technologies.

Performance defined behind the connection point at the terminals of each technology type would be a much simpler approach to developing Performance Standards as well as demonstrating compliance. Note that some clauses can still be assessed at the Connection Point however (eg S5.2.5.3, S5.2.5.4, S5.2.8 etc) so the

approach does not need to be 'all or nothing' and can be assessed on a clause by clause basis.

The Commission's determination mentions that Performance Standards could be at the Connection Point or location other than the connection point (with AEMO agreement). This is not correct in that performance under S5.2.5 is set at the connection point, except for S5.2.5.5 which has provision to agree performance at the unit terminals with AEMO approval.

Engevity is concerned that these GPS issues add complexity to connections, discouraging take up of storage.

MLFs:

- Engevity questions how MLFs will be established for IRPs. Currently, MLF is calculated based on an assumed or historic generation profile, which is reasonably predictable for wind and solar, but add in a BESS and that dispatch profile will change daily if the IRP is responding to market signals. Engevity understands that IRPs will have input and output MLFs applied, but suggests that the AEMC should consider a different MLF for dispatch and settlement as it is counter-productive to forecast a 5-min dispatch schedule to determine an IRP's generation profile when it exists to respond to market signals.

Scheduling and bids of IRP:

- How will AEMO manage dispatch of an IRP? If every IRP is responding to market signals every 5-minutes, this will be hugely disruptive and likely collapse the price signals those IRPs sought to capitalise on. Engevity is keen to understand how intraday re-bidding is managed.
- As a future consideration, the AEMC should be give thought to how energy storage should be scheduled in an energy only market. Unlike other dispatchable generation, energy storage is not continuously dispatchable and chasing a high or negative price event may limit the usefulness of energy storage as a market outcome.

Future markets:

- It would be interesting to understand how an IRP with a storage component can play in the ESB's proposed Capacity Market, accepting this has not yet been adopted by AEMO/AEMC. Engevity believes we should be looking to future proof the IRP concept for at least those known proposals. Similarly, if the IRP is intended to increase the uptake of VRE and storage, it is important to know how services like synthetic inertia and FFS will be valued.

Thermal plant:

- Engevity acknowledges that an existing thermal plant such as coal/gas can qualify as an IRP if integrated with other technologies. As their capacity factor diminishes they have surplus connection capacity which can accommodate VRE and a BESS, and/or the thermal generator provides firming/sleeving behind the meter. While thermal plant could take advantage of this rule change for their own gain, this would not be a good outcome for the energy transition and only serve to prolong coal/gas, resulting worse net outcomes for consumers.

DER

- Continuing to not consider below 5 MW may create an artificial threshold and does not consider the growing volume of virtual IRP or aggregators. The AEMC seems to deal with this by enabling them to register as Market Customers. This brings in RRO obligations and it is unclear whether this option will encourage or discourage storage uptake in the very large DER market. DER is effectively the NEM's largest generator and it is currently largely uncontrollable. Understanding the behaviour and developments in the sub 5MW market is essential to facilitating an efficient transition.
- It is positive to see that market small generation aggregators (MSGAs) can now participate in FCAS markets however the recent MASS review by AEMO appears to make this more challenge due to high metering costs.