



Ms Merryn York
Chair, Australian Energy Market Commission
Level 15, 60 Castlereagh St
Sydney NSW 2000

15 October 2020

Dear Ms York,

ERC0280 Integrating Energy Storage systems into the NEM – Consultation Paper

ENGIE Australia & New Zealand (ENGIE) appreciates the opportunity to respond to the Australian Energy Market Commission (“the Commission”) in response to the Integrating Energy Storage systems into the NEM – Consultation Paper (“the Consultation”).

The ENGIE Group is a global energy operator in the businesses of electricity, natural gas and energy services. In Australia, ENGIE has interests in generation, renewable energy development, and energy services. ENGIE also owns Simply Energy which provides electricity and gas to more than 720,000 retail customer accounts across Victoria, South Australia, New South Wales, Queensland, and Western Australia.

Storage trends

ENGIE agrees with the assessment of both the Commission and the Australian Energy Market Operator (AEMO) that storage resources are likely to play a growing role in the NEM over the coming years, although one cannot be certain about the precise trajectory of that growth. While the Commission’s approach should be technology neutral and thus able to accommodate other types of storage, it appears likely that this storage will take a few primary forms:

- pumped hydro storage such as snowy 2.0 and ‘Battery of the Nation’;
- rechargeable batteries, ranging from behind the meter household batteries and electric vehicles to large utility projects such as Hornsdale Power Reserve (HPR); and
- renewable gases, like hydrogen which continues to evolve given opportunity for flexibility and scale, turn renewable energy into gas for storage to be re-electrified later.

In this light, it is reasonable for the Commission to check that the regulatory settings are appropriate for storage. To this end, we commend AEMO for the work it has done to review the National Electricity Rules (NER) in the context of how they apply to storage. As our detailed response below indicates, ENGIE consider that it may not be





proportionate to implement a major rule change process at this point and that AEMO is able to improve processes and outcomes for participants within the existing NER. In the light of the potential for other rule changes that may have a material impact on storage registration and operation through the post-2025 market reform process, there is a risk that rule changes now may be quickly superseded.

Assessment framework

ENGIE is broadly supportive of the Commission's assessment framework. One aspect that is not directly covered is the importance of flexibility for storage proponents. Whether it is more efficient from a system perspective to set up storage as a standalone resource, as a hybrid asset with a renewable or thermal generator (which may or may not seek to import from the grid at times) or co-located with load as a behind-the-meter asset should be driven by the underlying physics and economics not by quirks of the regulatory framework.

A useful thought experiment could be to consider two similar configurations in the same location of the grid. One consists of two DUIDs: a generator and a storage asset that connect next to each other on the grid. The other is a hybrid where the two assets are behind the same meter. Setting aside that the former configuration will attract additional connection and metering costs, all things being equal, the two configurations should have essentially the same impact on the grid, providing they are operated the same way in each case. It follows that they should collectively be treated the same in terms of dispatch, network use of system charges, ancillary services cost allocation and so on. This could be a useful cross-check of whether either the current rules or proposed rule changes are appropriate.

Is a new participant registration type required?

ENGIE considers it is not clear that, to the extent there are issues with storage that require rule changes, that it necessarily follows that a new registration category is required as AEMO suggests.

ENGIE notes the potential interaction with the two-sided markets reform proposal, specifically the Commission's view that this could result in a reorientation of the NER towards placing obligations on services rather than on registration types. While ENGIE is wary of the risks entailed in such a major reframing of the way the NER work, the approach is conceptually attractive.

Therefore, to the extent these reforms appear likely to be worked through (which is presumably dependent on the outcome of the final post-2025 market reform proposals that the Energy Security Board puts to energy ministers next year), then it may be preferable to avoid a proliferation of new registration types.

ENGIE notes that in a recent consultation relating to semi-scheduled generation, the AER chose the option of minimal reform to target current issues rather than the major overhaul that would have been required in abolishing the category¹. While the question here is whether or not to add a new category, the salient point is market participants' preference for the minimum reform necessary to achieve the current goals. If the long-term needs of the system are being addressed through the post-2025 market reform process, then this rule change process may be best focussed on the issues in front of us today.

¹ [Proposed rule change - Semi scheduled generators and dispatch instructions, AER, September 2020](#)



With these considerations in mind, ENGIE suggests that the Commissions explore ways to address any issues relating to the treatment of storage within the context of the existing registration categories. For example, if the current approach of registering as a generator and a customer is maintained but the Commission considers the registration fees are too high, then such double registrations could simply pay the higher of the two fees (whether this is an appropriate solution depends on the extent to which the fee structure is genuinely reflective of the costs AEMO incurs in registering storage assets).

As part of this, ENGIE would like the Commission and AEMO to further explore the extent to which AEMO's concerns about the cost and complexity of the registration process are due to:

- underlying irreducible technical complexity - in which case changing the NER doesn't in itself address that complexity;
- temporary complexity due to AEMO's relative unfamiliarity with registering storage assets (and is this particularly applicable to batteries rather than, say, pumped hydro, which has existed on the NEM since market start) – in which case the issue may simply resolve itself as more storage is registered;
- ambiguities and other elements of the NER that mean AEMO has to exercise its judgment more than it is comfortable with – in which case the NER can potentially be clarified without introducing a new category for energy storage; or
- that the NER are genuinely unfit for purpose with regards to storage.

Even if it is the last of these, there may be other solutions within the existing categorisations. It also would be surprising if it was the case – at least in respect of the operation of storage, given that several pumped hydro units have been operating since market start so such issues would likely have been uncovered sooner. This suggests it may be the character of new installations (different technology types with different ramping characteristics, asynchronous rather than synchronous, generally smaller scale) that has led AEMO to the conclusion that reform is required.

If so, and while ENGIE is supportive of technology neutrality, it does raise the question of whether a one-size fits all solution is appropriate. One solution could be to allow market participants some discretion as to how to register provided their registration still requires them to be accountable for the way their resource is operated.

ENGIE's own experiences suggest that there are opportunities to improve processes and outcomes for participants within the existing NER. That is, ENGIE consider the issue is at least partly one of temporary complexity as AEMO and project proponents learn "on the job" how best to integrate storage and hybrid assets into the existing frameworks.

For example, there is scope to better align the performance standards for load to those applicable to generators, which would simplify the registration and connection process for proponents of assets that can both import and export – whether storage or a hybrid system.

ENGIE's experience is that AEMO's power system modelling requirements change rapidly, making it difficult for proponents and their suppliers to keep up. A consequence of this may be that original equipment manufacturers may exit, or choose not to enter, the Australian market because the compliance requirements for a relatively small market are too onerous. This would reduce competition in the sector and push up costs.



Modelling is also challenging where a single DUID is used for a system comprising assets from multiple vendors, which is a likely to be a common occurrence in hybrid systems.

Transitional arrangements

ENGIE is supportive of allowing grandfathering arrangements (to the extent required) for existing storage assets (including aggregated distributed resources). This is consistent with the point above that participants should have some flexibility in choosing the appropriate registration type for their resources that is consistent with the way they intend to operate them.

Bidding and dispatch

ENGIE's understanding of AEMO's proposal for a new single registration for storage is that AEMO is intending to upgrade its systems as required to facilitate a single DUID being able to bid both load and output profiles. If this is the case, then an alternative solution to the conflicting dispatch outcomes issue AEMO has highlighted would be to allow participants with dual registration to bid its combined load/output profile through the same DUID, i.e. either the generator or load DUID.

If this was to occur, ENGIE believes greater assessment of the need to restrict the number of price/volume bands, as proposed by AEMO, is required.

Aggregation and ramp rates

An appropriate framework for aggregation of smaller storage resources is important. Such approaches are already manifesting themselves through the Virtual Power Plant (VPP) Demonstrations trial run by AEMO, and in which ENGIE is a participant through its retail arm, Simply Energy.

In general, and as far as possible, aggregated facilities, whether VPPs or a collection of aggregated small units, should be able to participate in the wholesale market as if they were a single entity. This appears consistent with the Commission's ambitions in respect of two-sided markets.

Accordingly, the ramp rate issue that AEMO has identified should be addressed. The key issue appears to be the rounding requirement for individual units in an aggregation. Relaxing this requirement somewhat would largely address the conflict between chapter 3 and chapter 2. Such an approach would be necessary for the participation of VPPs made up of aggregated small customer resources in any case.

While the principle that assets (including aggregated systems) should be treated the same if they have the same impact on the power system is generally appropriate, its application may be limited by practical considerations. It may simply not be feasible to get aggregated small storage units to comply with the same performance requirements as a single large storage unit of equivalent total capacity and energy availability. Providing that a different standard for the aggregated system does not compromise system security, it's better to err on the side of allowing the aggregated system in order to maximise the options for participants. More participation by flexible dispatchable resources should generally, other things being equal, increase competition and lower costs for consumers.

There are also valuable learnings from the VPP demonstration program, and the relevant regulatory settings should be extended where possible to maintain the opportunities for VPP participation.



Fees and charges, including use of system charges

The overarching principles should be that double-charging should be avoided and that charges should be applied consistently. ENGIE agrees that the current situation whereby it appears to be at the discretion of individual TNSPs whether or not to charge transmission use of system (TUOS) charges is not tenable.

A simplifying arrangement could be to treat storage assets as generators for the purposes of fee allocation, including TUOS. To be clear, this could not be used by customers as a way of avoiding fees but would apply where the only purpose of the load was to allow the storage unit to provide energy and other services at a later time.

This means, where storage is located behind a customer meter, that customer would still be paying fees and charges relating to its customer status accordingly. Liabilities would need to be calculated by summing output (and input for customers with storage) on a trading interval basis. In other words, participants would not be able to avoid fees if they, for example, generated for half the day, then imported the same amount of energy over the other half of the day.

ENGIE notes that AEMO is currently reviewing the structure of participant fees² and this may be an opportunity to improve the treatment of storage without

Retailer Reliability Obligation (RRO)

ENGIE considers it unlikely that storage assets would be drawing power from the grid during periods of peak demand, i.e. when the maximum demand calculation is made for RRO purposes. Nonetheless, we appreciate the analysis by the Commission that illustrates that storage does sometimes draw energy even at high prices. Aggregated assets, for example, may be dependent on automated bidding software that is not susceptible to override. Given the valuable role such assets can play in increasing competition in energy and FCAS markets, the Commission should weight up the costs, risks, and benefits of bringing storage into the RRO regime at this time, given that it may force storage operators to over-contract as protection against the risk of an automated response in peak demand periods.

Notwithstanding the caution above, a potential solution to any perverse outcomes would seem to be that a storage unit is in principle included for the purposes of calculating RRO requirements for liable entities, but only to the extent it is actually drawing energy at qualifying peak times.

This means a storage operator that otherwise has no responsibility for load would become a liable entity, which would place an additional regulatory burden on them. Potentially, such participants could be allowed to make a binding declaration to the AER that they will not draw energy during the qualifying peak periods and be subject to penalties if they breached this condition. An exception should be made for the purposes of FCAS market participation, in order to maximise effective participation in these markets.

Other issues

Storage does not need specific representation on the Reliability Panel. Participants with storage will typically also have generation assets and/or be a market customer. If necessary, one of the discretionary positions can be awarded to a market participant with storage assets.

² Australian Energy Market Operator, *Electricity Fee Structures Consultation Paper*, August 2020



ENGIE is not offering comment on specific drafting issues at this time. Until some of the fundamental questions around whether a new registration category is required are resolved it's not possible to determine the optimal drafting of the NER in respect of storage.

Should you have any queries in relation to this submission please do not hesitate to contact me on (03) 9617 8415. This submission draws on ENGIE's experiences both with its VPP and with the development process for a utility-scale battery system. ENGIE would be happy to facilitate a discussion between Commission staff and ENGIE staff who have worked on these projects and had to deal with the practicalities of the existing NER and the way AEMO applies them.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "J. Lowe".

Jamie Lowe

Head of Regulation