

Mr Joel Aulbury
Project Leader (ERC0280)
Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000

11 February 2021

Re: ERC0280 – Integrating energy storage systems into the NEM – Response to Options Paper

Dear Mr Aulbury,

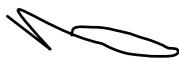
Thank you for the opportunity to provide comments on the Australian Energy Market Commission's (AEMC, the Commission) options paper *Integrating energy storage systems into the NEM* (ERC0280).

I acknowledge the complexities of this rule change and support the Commission's investigation into how to align this rule change with the ESB's two-sided market reforms. My comments on several queries raised in the options paper follow.

Note the comments / discussion listed herein are personal and are not representative of other people, institutions or organisations that I am affiliated with. Any examples provided are examples only for the purpose of the consultation process and are not intended to comment on the performance or actions of any party or project.

If any further clarification is required about this submission, please contact me at the below details.

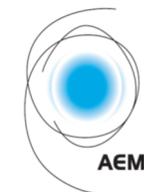
Yours sincerely



Damien Vermeer

Power Engineer

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Integrating storage – options paper: stakeholder feedback template

The template below has been developed to assist stakeholders in providing their feedback on the questions posed in this paper and any other issues that they would like to provide feedback on. The AEMC encourages stakeholders to use this template to assist it to consider the views expressed by stakeholders on each issue. Stakeholders should not feel obliged to answer each question, but rather address those issues of particular interest or concern. Further context for the questions can be found in the consultation paper.

Organisation: **N/A (Personal comments/opinions only)**

Contact name: **Damien Vermeer**

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| Questions | | Feedback |
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| Chapter 1 – Registration and participation framework | | |
| Question 1: Registration and classification (p. 17) | | |
| 1 | Is introducing a new participant category, an Integrated Resource Provider (option 4), to better facilitate entry and participation of storage and hybrid facility, more preferable than modifying existing participant categories (option 3)? Are either option 3 or 4 more preferable to options 1 and 2? | <p>I support the Commission’s aspirations to begin aligning their work with the intended two-sided market reforms, however, caution the Commission from trying to expand the scope of this rule change to that of those reforms.</p> <p>I note the Commission’s comment in Table 2.1 “<i>There may be a need for flexibility in how standards would apply to hybrid facilities (i.e. at the connection point or asset)</i>” identifies a key compromise which may need to be further investigated as part of the rule change. For hybrid facilities, I believe it is very difficult to prove or monitor performance standards at a single connection point.</p> <p>I am aware of a project currently progressing through generator technical performance standard negotiation which is a hybrid facility (synchronous and BESS behind the same connection</p> |

| Questions | | Feedback |
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| | | <p>point). There is some confusion in this project between how to identify the performance standards at single connection point given the two different generator technologies.</p> <p>I believe the location of the obligations of performance standards may need to be reviewed to truly incorporate hybrid facilities.</p> <p>Between option 3 and 4 presented by the Commission, option 4 appears to present more flexibility but I am not familiar with the ESB's post-2025 two-sided market reforms to comment if this model aligns with their vision – or instead makes an assumption on the expected outcome and thus could distort the two sided market reform works.</p> <p>It has been almost 18 months since the rule change was submitted by AEMO and the barriers discussed by AEMO in that rule change are still in play in the industry. Waiting until the full implementation of the two-sided market reforms (2025?) is very likely not in the best interests of the consumers of energy, let alone in alignment with state/federal renewable energy policy – hence an intermediate compromise may be the best way forward.</p> |
| Question 2: Classifying MSGAs (p. 18) | | |
| 1 | Do you agree that, if an Integrated Resource Provider category (option 4) is established, battery aggregators should use that category and MSGAs should not be allowed to classify storage units exempt from the requirements to register as a Generator? And in that case, should the current arrangements regarding the provision of market ancillary services by MSGAs be maintained? | No comment. |

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| Question 3: Existing storage participants (p. 19) | | |
| 1 | Should existing storage participants be transitioned to a single participant category (as they are currently registered as both a Market Generator and Market Customer)? | <p>I believe existing storage participant agreements should be grandfathered and as such would not support a regulatory arrangement which could be interpreted as one which actively disincentivises or penalises early adopters of technology.</p> <p>If these changes were made as part of a wide market reform in which all participants were changed in order to provide a quantifiable outcome in line with the NEO (i.e. two-sided market reform works), I would support such an approach.</p> <p>I strongly recommend that (as far as practical) existing technical performance standards for any facility transitioning categorisation (either via this rule change or the two-sided reforms) are grandfathered. This also extends to any existing generating facility proposing to add a market load or battery, as co-locating storage/load with generation is a highlight efficient way to supply that load with electrical power (due to the minimisation of transmission losses etc) and thus should not be discouraged by the Rules or regulatory framework.</p> <p>In that sense, I encourage the Commission to investigate transferring classifications without progressing through the clause 5.3.9 process (similar as to what was adopted for the mandatory Primary Frequency Response changes).</p> |
| Question 4: Scheduling of hybrid facilities (p. 20) | | |
| 1 | What proportion of a hybrid facility's sent-out generation capacity would need to be dispatchable for the whole of the hybrid facility's sent-out generation to be able to follow dispatch instructions, under a single DUID? | <p>My opinion is that this is not a question of sent-out generation capacity, but a question of generator/load capability. A 100 MW solar farm with an AC-coupled 10 MW battery should not necessitate the hybrid facility becomes a scheduled generator, because it may not be capable of complying with those dispatch instructions.</p> <p>An alternative (which may not be practical in all situations) is to have a 'sub-connection point' within the hybrid facility where a BESS, load and semi-scheduled generator are connected in parallel and that point is used as the points of dispatch, rather than the global connection point. This would also assist with the case of an AC-coupled BESS charging from local generation behind a connection point (which would show no power flow through a 'global' hybrid facility</p> |

| Questions | | Feedback |
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| | | connection point). However, this is simply moving the connection points into the proponent's infrastructure, which may not always be practical. |
| 2 | Would a dynamic approach to scheduling obligations, for example shifting between scheduled and semi-scheduled obligations based on the state of charge of the storage unit, be appropriate, and how should this operate? | No comment. |
| 3 | Could the same approach be taken to scheduling load where storage is added to a Market Customer's site, or should different considerations apply? | No comment. |
| Question 5: Number of price bands (p. 21) | | |
| 1 | Do you agree that 20 price bands would be appropriate for grid-scale batteries or would another number of bands be more appropriate? | No comment. |
| Question 6: Dispatching hybrid facilities (p. 21) | | |
| 1 | Are there certain configurations of hybrid facilities that cannot, or should not, be dispatched at a single connection point? | No comment. |
| 2 | What benefits are achieved by dispatching a hybrid facility at a single connection point, and what issues arise? | See my response to Question 4-1. Additionally, I note a 'hybrid facility' doesn't imply the ability to control the global aggregated generation/load at the connection point at all times, for example a scheduled market load and solar farm behind a single connection point. A hybrid facility also does not need to have a battery or form of energy storage. |
| Question 7: Performance standards (p. 22) | | |
| 1 | What issues may arise if performance and access standards are set at the connection point for hybrid facilities? Would these | Based on projects I am aware of, I believe: <ul style="list-style-type: none"> • Technical performance standards for hybrid facilities can only be reasonably created and proven via system studies on a 'per-asset' level (which may be the terminals of two |

| Questions | | Feedback |
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| | standards need to be amended to provide appropriate flexibility for hybrid facilities? | <p>generator types within a hybrid facility) – not the at a single global facility connection point;</p> <ul style="list-style-type: none"> Such a requirement complicates the application of Schedule 5.2 of the NER to hybrid facilities (as Schedule 5.2 states the obligation is at the connection point), hence I recommend the Commission investigate with stakeholder/industry input how to realign Schedule 5.2 towards assets rather than the global connection point of a facility to facilitate hybrid facilities / microgrids, with the intention of improving the connection studies, review and negotiation process for hybrid facilities – or at least set some industry ground rules to support the technical standard negotiations of these complex projects. |
| Chapter 3 – Recovery of non-energy costs | | |
| Question 8: Options for the recovery of non-energy costs (p. 27) | | |
| 1 | Which option do you consider to be the most appropriate for the recovery of non- energy costs from market participants? Please provide detail on why it would be the most appropriate option. | No comment. |
| 2 | Are there any other factors the Commission should consider when deciding how non-energy costs should be recovered from market participants? | No comment. |
| 3 | Are there any implementation issues the Commission should consider? | No comment. |
| Chapter 4 – Additional issues relating to storage | | |
| Question 9: Network service provider connection points (p. 34) | | |
| 1 | Do you support the solution outlined in this options paper for resolving the potential issues with establishing standards for NSP owned energy storage? | No comment. |

| Questions | | Feedback |
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| 2 | If not, do you consider there to be other potential solutions for resolving this issue? | No comment. |
| Question 10: DC coupled systems (p. 38) | | |
| 1 | What capital, operational or efficiency benefits do DC-coupled systems provide participants and the NEM as a whole, and how might these benefits help consumers in line with the NEO? | <p>DC-coupled systems, such as solar PV coupled with batteries provides two clear benefits which aligns with the NEO, hence I believe they should continue to be investigated by the Commission as part of this rule change:</p> <ul style="list-style-type: none"> • Reduced equipment costs, inverters and primary electrical plant can be shared between solar PV and batteries, reducing capital required for project development; • DC-coupled batteries can store solar energy during time of high solar resource but low electrical demand, as is becoming more prevalent in the NEM (i.e. weekend afternoons). This in theory can lead to reduction in electricity costs for consumers of electricity (in alignment with the NEO). |
| 2 | Do you support amending the NER to permit the registration and operation of DC-coupled systems? If so, how should they register and operate? | <p>I support amending the NER to enable DC-coupled systems due to the benefits above. I acknowledge the complexities identified by the Commission in their options paper and present the following opinion:</p> <p><i>DC-coupled BESS, <u>cannot</u> charge from grid</i></p> <p>I support Kinelli's opinion (in their submission to the consultation paper) that the addition of a DC-coupled battery system to a solar PV power plant should not trigger the change from a semi-scheduled to scheduled generator insofar as the battery system cannot charge from the grid. Forcing a change to a scheduled generator may disincentivise the generator from installing the batteries, despite the alignment with the NEO (see above). However, I note that there is the potential for generators to 'play' the energy market if they are provided with semi-scheduled dispatch instructions they choose to ignore and instead charge the local batteries, waiting for a higher spot price – unfortunately I cannot comment if market driver or a regulatory control is required in this sense.</p> <p><i>DC-coupled BESS, <u>can</u> charge from grid</i></p> <p>I believe that in this situation the DC-coupled system is in effect the same as a stand-alone battery system (albeit with a local ability to charge the batteries). However, I am unsure if the ability for such a system to 'charge by itself (behind-the-meter)' would require amendments to</p> |

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| | | how AEMO currently estimates and tracks battery storage level in the NEM. Apart from this battery storage level estimation query, I do not believe that a DC-coupled solar/BESS system should be treated any differently from a standalone battery system in relation to performance standards nor generator classification. |
| Question 11: Provision of ancillary services (p. 40) | | |
| 1 | Do you support AEMO's proposal to redraft ancillary services provisions in Chapter 2 of the NER to make it more consistent with the services approach to regulation currently being considered by the ESB's two-sided market work? Please explain why or why not. | No comment. |