



Ms Anna Collyer
Chair, Australian Energy Market Commission
GPO Box 2603
Sydney, NSW, 2000

11 February 2021

Dear Ms Collyer,

Re: ERC0280 Options Paper – Integrating Energy Storage Systems into the NEM

1. Introduction

Highview Power Pty Ltd, an Australian wholly owned subsidiary of the UK based Highview Enterprises Limited (together Highview Power) welcomes the opportunity to provide a response to the Australian Energy Market Commission (AEMC) Options Paper on Integrating Energy Storage Systems into the National Electricity Market (NEM).

Highview Power utilises a successfully developed and demonstrated Cryogenic Energy Storage technology (CRYOBattery™) to produce an electricity storage solution using tanks of liquid air (liquid nitrogen and oxygen) as the storage medium. It is the only long duration energy storage solution available today that offers multiple gigawatt hours of storage, is scalable with no size limitations or geographic constraints, and produces zero emissions. The liquid air energy storage system delivers the lowest-cost clean energy storage solution for large scale, long duration applications.

The attached Highview Power Information Sheet provides further detail.

Highview Power have successfully demonstrated the CRYOBattery™ via projects in the UK and are currently developing commercial projects in the UK, the USA and Australia, focusing on delivering arbitrage services to market participants and ancillary system services (including frequency/voltage control and system strength via inertia).

2. Storage Technologies / Focus

Highview Power recognises that to date the electricity storage technologies in the NEM have been limited to legacy Pumped Hydro Energy Storage (PHES) and newer lithium -ion (L-ION) battery systems.

There are, however, many other types of electricity storage options that can deliver critical support to the Australian system as it transitions away from conventional synchronous large-scale generation.

Highview Power is therefore of the view that it is critical that any arrangements developed for electricity storage create a robust and long-term framework that supports investment and operation in a variety of storage technologies and is not just focused on the established technologies of PHES and L-ION batteries.

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3. Participant Categories

Highview Power notes that this work stream has significant interactions with the Energy Security Board (ESB) Post-2025 Market Design program, particularly the concept in the 2-Sided Market workstream of defining services, rather than categories of participants.

While “two-sided” bidding is complex there are approaches that can effectively manage this complexity, without the need for the creation of a specific storage participant category. It is not clear what, if any benefits a new storage category would deliver.

Highview Power supports the ESB work and suggest that rather than create either a new “Bi-directional” or the “Integrated Resource Provider” participant categories, the AEMC should consider modifying the “Generator” category to facilitate recognition of the dual (load and generation) nature of electricity storage. This would be a helpful “first step”, which does not preclude other options in the future and accommodates the completion of the ESB work.

4. Connections

Highview Power deploys its technology in both grid-connected and behind-connection applications.

Where electricity storage is grid-connected the technical performance specifications are likely to be relatively straightforward for export (generation), via the current Generator Technical Performance Standards. The Customer Technical Performance Standards (CPS) that apply to transmission-connected load, may need to be modified to specifically accommodate the technical capabilities of electricity storage versus “traditional” load, and Highview Power would welcome the opportunity to support the development of appropriate CPS’s.

However, the options for “Hybrid” connection arrangements seem unnecessarily complex. Defining and identifying every asset behind a connection will reduce the flexibility of those behind the connection to manage their energy position (noting that the owners and operators of assets behind the connection point may not all be the same). The critical issue is that the connection to the system is defined and the requirements at that connection point are defined, rather than metering, identifying and defining each unit behind a connection point.

Highview Power therefore supports Option 3 – Modify existing categories to accommodate bi-directional flows.

5. Use of System Charging

Electricity storage should not attract import Use of System charges, since the storage is not the “end user” of the electricity and following export (generation) the electricity will be delivered to the true “end user” who already pays a Use of System charge.

Levying import charges on storage would result in a double charge, which would have negative impacts on consumers.

The incumbent PHES do not pay Transmission Use of System (TUoS) charges on imported electricity, as (a) PHES are registered as Generators and (b) auxiliary load is used to charge and auxiliary load does not attract TUoS or AEMO non-energy charges.

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Highview Power supports the modification of the Generator participant category to accommodate bi-directional flows and suggest that the load/charging of electricity storage continue to be treated as auxiliary load, whether directly transmission-connected or as part of a “Hybrid” connection.

Highview Power understands that where TNSPs own batteries they have successfully applied to the Australian Energy Regulator to have import for charging treated as auxiliary load and this as well as a negotiated transmission service, means that import for a storage device is exempt from TUoS. This sets a precedent for the treatment of the charging of storage, that we support.

Consistent with the above principle related to avoiding double charging of Use of System also applies at the distribution level. Electricity storage should attract no Distribution Use of System (DUoS) charges when charging.

The current rule change proposal to allow DUoS to be levied on the export from distribution-connected storage is not supported by Highview Power and the AEMC should ensure that the interactions between this rule change and ERC0309, 0310 and 0311 are coordinated to ensure that the intent to support investment in storage is not undone by the Access and Pricing rule changes.

6. AEMO Non Energy Fees

Non-energy participant fees can be significant for electricity storage businesses. Highview is aware that as a generator market participant, storage businesses would pay non-energy fees on export. However, and consistent with the principle relating to DUoS and TUoS charges on import (load) and the avoidance of double charging, Highview Power does not support AEMO levying additional participant fees and non-energy costs on electricity storage (at both the transmission and distribution level).

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7. Contact

Highview Power has been pleased to provide this submission and welcomes any contact for clarification or expansion of our views. Further enquiries should be directed to Mr Neil Roberts, General Manager, Australia on 0423 167111; EMail: neil.roberts@highviewpower.com.

Yours faithfully

A handwritten signature in black ink, appearing to read 'N. Roberts', with a long, horizontal flourish extending to the right.

Neil Roberts
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