



Stakeholder Input to Coordination of Generation and Transmission Investment Options Paper

October 19th, 2018



A Siemens and AES Company

Australian Energy Market Commission (AEMC)
PO Box A2449
Sydney South NSW
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RE: Stakeholder Input to Coordination of Generation and Transmission Investment Options Paper, September 2018

Dear AEMC,

INTRODUCTION

Fluence is a global energy storage technology solutions and services company. Our solutions are built on the foundation of three industry-leading technology platforms that are optimized for different application groupings. To date Fluence has deployed or been awarded over 600 MW of battery-based energy storage capacity, in 16 countries around the world.

Fluence also offers a comprehensive services suite to ensure customers are staying ahead of the market. From early stage feasibility and cost-benefit analyses that stand up in the real world, to ensuring optimal performance of storage assets, Fluence provides the expert advice and services to propel customers forward.

Fluence is part of a consortium with Spotless, AusNet Services, and EnergyAustralia that is building, and soon will operate, one of Victoria's first utility-scale, grid-connected battery-based energy storage systems. The 30 MW, 30 MWh battery-based energy storage system is located at the AusNet Services Ballarat Terminal Station in Warrenheip, Ballarat. It will operate 24/7 to provide peak capacity and frequency control services to improve the security and reliability of Victoria's electricity grid. Additionally, the battery-based energy storage system will support Australia's transition to clean energy and will lower electricity costs for end-users.

Utility-scale battery storage facilities are the most-cost effective way to provide frequency control and manage the second-to-second fluctuations between supply and demand. Battery-based energy storage is bidirectional—it can both deliver and absorb power from the system at speeds that are significantly faster than traditional generators. As a result, it is able to support grid stability from fewer MW of storage compared to traditional generators. This means lower operating costs and increased network reliability; particularly as renewable energy penetration increases. Our battery-based energy storage systems are providing frequency control, peaking capacity and other grid services in the United States, Germany, United Kingdom, Netherlands, Philippines, Chile and the Dominican Republic.

Fluence thanks the AEMC for the opportunity to comment on its preliminary view offered in the

Coordination of Generation and Transmission Investment Options Paper published in September 2018 (the “**Options Paper**”). Fluence offers the attached set of responses to certain specific questions posed by the AEMC in relation to the treatment of energy storage.

FLUENCE COMMENTS

Executive Summary

- *In view of the significant market and regulatory barriers that are currently faced by energy storage systems in accessing the National Electricity Market (**NEM**) (as compared to other grid-connected assets), we believe that the AEMC’s suggested range of circumstances in which battery storage systems may be subjected to transmission use of system charges (**TUOS**) is too broad.*
- *The AEMC’s current definition of who must pay TUOS charges, namely “those who are supplied electricity by means of the grid”, is not sufficiently nuanced to deal appropriately with today’s technology and how the NEM is currently operated (having regard to, among other things, the various grid services and other functions provided by battery storage systems).*
- *In our view, the more consistent and equitable approach in the current market would be to exempt large scale energy storage systems from TUOS charges and for TUOS charges only to apply to “those who end-consume the electricity provided by the grid.”*
- *In particular, we encourage the AEMC to exempt large scale storage from TUOS, unless it is demonstrated that a specific project requires incremental transmission investment.*

Question 21: Storage and TUOS – Issue Definition

AEMC Options Paper: The AEMC intends to determine whether energy storage systems should pay TUOS charges under any future regulatory arrangements, including a new approach to registration. The AEMC suggests that this issue can be addressed by considering the following three questions (and asks whether stakeholders agree with this definition of the issue):

1. Should energy storage systems that do not withdraw electricity from the grid pay TUOS charges?
2. Should energy storage systems that *only* withdraw electricity from the grid (i.e. do not export) pay TUOS charges?
3. Should energy storage systems that withdraw electricity from the grid for the purposes of storage and then export electricity back into the grid at a later time/date pay TUOS charges?

Fluence Comment: Of the three questions proposed by AEMC, we think the most immediate need in the Australian energy storage market (given the current issues encountered by storage assets in effectively accessing the current NEM frameworks) would be addressed by focusing on the third question. We think the current arrangements where generators do not pay TUOS charges if they do not withdraw from the grid is the correct solution as they are not using the transmission system as consumers of energy.

Question 22: Storage and TUOS – Current Arrangements

AEMC Options Paper: Under current interim arrangements, utility-scale battery storage systems are required to be registered as both Market Generators and Market Customers. As Market Customers, these battery storage systems must pay TUOS charges.

TUOS charges are intended to cover the capital investment costs and on-going operational costs borne by transmission network service providers (**TNSPs**) associated with the provision of prescribed TUOS services. Historically, TUOS charges have only been applied to end-users, being traditional load customer and transmission and distribution network service providers that have a connection point with the network. The AEMC imposes the costs borne by TNSPs on end-users by way of TUOS charges because “the current framework is set up around transmission businesses planning to provide transmission services that are for the benefit of”¹ those end-users.

Fluence Comment: In our view, it is inappropriate to require utility-scale battery storage systems² to pay TUOS charges (even in the third scenario contemplated by AEMC under Question 21) for a number of reasons. We have summarized these reasons below.

- Utility-scale battery storage systems are not end-users: Although storage systems charge from the grid, they are fundamentally different from end-users in that they:
 - do not consume electricity on a net basis (excluding losses, which should be considered auxiliary loads);
 - prioritizes charging at periods of low-demand and high-generation, in response to grid price signals, and in most cases doing so in a manner to help the reliability of the grid; and
 - provide network support services which stabilize the grid, often reducing the amount of required investment in transmission infrastructure.

¹ Page 12, Options Paper.

² For the context of these comments, we use the term “utility scale battery storage systems” broadly to mean all storage systems that are not residential in nature.

Utility-scale battery storage systems are exactly that: storage facilities. The purpose of these systems is to load from the grid, store that electricity, and then export it back into the grid at a later point in time so that it may be consumed by an end-user. The operation of utility-scale battery storage systems results in minimal net electricity consumption and therefore such systems cannot accurately be described as end-use customers.

Accordingly, requiring battery storage systems to pay TUOS charges in effect results in at least some degree of “double recovery” of the cost incurred by TNSPs in providing their transmission services, as a TUOS charge will also be paid by the end-user in respect of the same volume of electricity as is being attributed to electricity that is temporarily withdrawn from the grid by the battery storage system.

- Timing of battery charging lowers impact on grid: It is important to note that battery storage systems most often charge from the grid during periods of high generation and low demand (due to the low pricing available at such times). As a result:
 - battery storage system do not ordinarily contribute to peak network congestion; and
 - the continued uptake of these assets will not require significant transmission investment to expand the network.
 - In periods of high-generation and low-demand, battery storage systems can charge from the grid in order to store excess generation, thereby reducing transmission congestion and avoiding the requirement to curtail generation.

The connection of 100MW of battery storage to the grid will have a different impact on peak demand when compared with the connection of an incremental 100MW of end-use consumption. In the latter case, expenditure on transmission infrastructure will need to be increased in order to deal with an increase in peak network demand (and this increased expenditure borne by TNSPs justifies the imposition of TUOS charges on end-users).

The AEMC notes that storage systems that provide these services may have “a negligible impact on transmission investment needs, or indeed have a benefit.”³

This observation is supported by our 10 years of experience in deploying energy storage projects, in which our systems have always had either a negligible impact or provided a benefit to the network that they serve. In fact, the primary purpose of our Punkin Center

³ Page 111, Options Paper.

facility in Arizona, USA, is to provide transmission relief at a lower cost than a traditional transmission solution, lowering costs for customers.⁴ Forcing energy storage resources that reduce or do not change the total transmission costs of the systems to pay TUOS charges is illogical, a violation of the causer pays principals, and increases customer costs.

- Utility-scale battery storage systems provide network support services: AEMO can, and currently does dispatch, battery storage systems to help stabilize the network grid. This is a valuable transmission service and one which battery storage systems provide without fair compensation.

To require such battery storage systems to pay TUOS charges when they fulfill such an important role in network security goes against the first-principles rationale of TUOS charges. The AEMC has previously recognized this by noting that the scheduled load service that generators provide to the network forms part of the reason why generators are not charged TUOS charges.

- Requiring utility-scale battery storage systems to pay TUOS charges will distort bidding and dispatch: The AEMC has previously recognized that requiring generators to pay TUOS charges is not appropriate because such charges “would most likely be ultimately passed on to loads, potentially distorting bidding and dispatch in the process.”⁵ The same logic applies to the application of TUOS charges to battery storage systems, because such systems will need to increase their bids to account for transmission costs charged to them (but not caused by them), leading to more expensive dispatches and higher network costs.

In summary on this question, Fluence does not support the AEMC’s current practice of determining whether TUOS charges apply to utility-scale battery storage systems on a case-by-case basis, noting that this treatment creates potential uncertainties and inconsistencies in the market, and creates challenges for project developers in planning and implementing the financing for their battery storage projects.

For the reasons outlined above, Fluence supports the adoption of a consistent approach which involves the re-definition of those who pay TUOS charges from “those who are supplied electricity by means of the grid” to “those who end-consume the electricity provided by the grid.”

⁴ For more information about the Punkin Center facility, see <https://www.utilitydive.com/news/storage-for-td-deferral-works-arizona-public-service-finds-in-tonto-natio/511485/>

⁵ Rule Determination for National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006, AEMC, page 22, <https://www.aemc.gov.au/sites/default/files/content/dfd89237-4c6b-44ea-a251-c611dc715d21/Rule-Determination.pdf>

We believe that excluding utility-scale battery storage systems from TUOS charges (both on dispatch and charging) is consistent with the original intention of TUOS charges and the re-definition is necessary in order to ensure that the NEM stays up to date with changes in technology. In particular, we encourage the AEMC to exempt large scale storage from TUOS, unless it is demonstrated that a specific project requires incremental transmission investment.

COMMUNICATIONS

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