5 November 2015

Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Dear Mr Pierce

Integration of Energy Storage: Regulatory Implications Discussion Paper (SEA0002)

Energex Limited (Energex) welcomes the opportunity to comment on the Australian Energy Market Commission's (AEMC's) discussion paper on the integration of energy storage into the National Electricity Market (NEM).

The discussion paper raises important issues regarding the economic regulation of energy storage services under the national regulatory framework, including issues associated with network businesses integrating storage. It is important that the challenges and opportunities associated with integrating energy storage in the NEM are understood and that prudent policies and standards are adopted to drive efficient investments that meet the National Electricity Objective (NEO) while remaining technology neutral and flexible.

Energex's response to the discussion paper is provided in **Attachment A**. As a member of the Energy Networks Association (ENA), Energex also supports the views expressed in the ENA's submission. As such, this submission does not respond to each of the specific questions raised by the AEMC in the discussion paper, focussing instead on areas of particular interest to Energex. Energex also supports the ENA's recommendation for a coordinated approach by the AEMC and the Australian Energy Regulator (AER) to aspects of the national regulatory framework, such as ring-fencing and service classification, to ensure outcomes are in alignment with policy objectives.

Energex would welcome the opportunity for further engagement with the AEMC on how best to incorporate energy storage into the existing electricity infrastructure for the long-term benefit of electricity consumers. Should you have any queries regarding this submission, please do not hesitate to contact Ms Nicola Roscoe, Acting Network Regulation Manager, on (07) 3664 5891.

Yours sincerely

Neil Andersen
Group Manager Regulation & Pricing

Reference SEA0002

Enquiries
Nicola Roscoe
Telephone
(07) 3664 5891
Facsimile
(07) 3664 9840
Email
nicolaroscoe
@energex.com.au

Corporate Office
26 Reddacliff Street
Newstead Qld 4006
GPO Box 1461
Brisbane Qld 4001
Telephone (07) 3664 4000
Facsimile (07) 3025 8301
energex.com.au

Energex Limited
ABN 40 078 849 055

Attachment A

Energex

Integration of Energy Storage: Regulatory Implications Discussion Paper (SEA0002)

November 2015

positive energy

Energex Limited (Energex) is a Queensland Government Owned Corporation that builds, owns, operates and maintains the electricity distribution network in the growing region of South East Queensland, including the poles and wires and underground cables used to connect houses and businesses to the electricity network. We provide distribution services to almost 1.4 million domestic and business connections, delivering electricity to a population base of around 3.2 million people.

Group Manager
Strategic Customer Interactions
Energex
GPO Box 1461
BRISBANE QLD 4001

Table of Contents

1 INTRODUCTION 3

2 GENERAL COMMENTS 4

3 RESPONSE TO SPECIFIC ISSUES 6

3.1 Connection processes 6

3.2 Technical requirements and standards 6

3.3 Aggregators using storage 7

3.4 Ownership and control of energy storage systems 7

3.5 Ring-fencing 8

1 Introduction

On 9 October, the Australian Energy Market Commission (AEMC) published a discussion paper that examines whether changes to regulatory frameworks are required to integrate energy storage into the electricity supply chain.

This discussion paper follows a technical assessment by the CSIRO on the potential application of different storage technologies across the electricity supply chain and the likely rate of mass-market uptake.

As part of stakeholder engagement, the AEMC is now seeking feedback on a range of issues, including issues associated with:

- End users and aggregators using storage;
- Network businesses integrating storage;
- Ownership and control; and
- Storage at the wholesale electricity level.

The AEMC has requested submissions on the discussion paper by 5 November 2015.

2 General comments

Energex acknowledges that energy storage systems have the potential to offer significant benefits to customers, particularly existing customers with rooftop solar PV. Storage gives customers the ability to reduce electricity costs by storing excess energy for use during peak demand periods and can act as a backup system in the event of a power supply interruption on the network.

While high prices have limited the uptake of storage technologies to date, inverter technology has now become commonplace as a result of the growth in solar PV. The success of solar PV, in conjunction with improvements in battery technology, is enhancing the economics of more efficient energy storage for residential customers. In Energex's view, if managed appropriately, energy storage can be integrated with the existing electricity infrastructure to the benefit of customers.

Energex supports a diverse range of models for the ownership and control of energy storage systems. As highlighted in the AEMC's discussion paper, the benefits of energy storage could accrue to a variety of parties. Energex considers that the regulatory regime should not favour any particular outcome and that the market should be allowed to determine where the largest benefit sits without the regulatory regime distorting the market outcome.

As a network service provider, Energex recognises the potential opportunities for integrating energy storage within the existing electricity infrastructure for the long-term benefit of electricity consumers, the community and the economy generally. In particular, energy storage can effectively be utilised to:

- Provide network support as an alternative to the traditional approach of building more network infrastructure;
- Provide emergency power during network contingencies in the form of portable storage units;
- Replace diesel generation currently used for isolated area operation; and
- Support remote electricity systems where extension or upgrade of the electricity network is too costly, such as remote rural networks.

Historically, network businesses have invested in network options to meet their licence obligations. The costs of these investments have flowed through to customers as increases in electricity prices, which have been further exacerbated by the downward trend in energy consumption in recent years as a result of high electricity prices and solar PV uptake. Energy storage systems provide network businesses with a valuable option to improve the utilisation of the existing network and defer capital expenditure, in particular where a small amount of storage capacity can defer a large network investment. With advances in technology and associated decreasing costs, it is increasingly likely that energy storage will become a cost-effective and efficient solution to address network constraints, improve power

quality and reliability and, if managed effectively, allow networks to potentially increase the quantity of renewable energy available from the grid. It is therefore important that network businesses should not be constrained from using energy storage as a potential non-network alternative.

Energex supports the AEMC's objective of ensuring that the market is flexible and resilient enough to accommodate new technologies. It is important that the challenges and opportunities associated with integrating energy storage in the National Electricity Market (NEM) are understood and that prudent policies and standards are adopted to drive efficient investments that meet the National Electricity Objective (NEO).

While Energex agrees with the AEMC's assessment that the current regulatory framework and associated processes are sufficiently robust to support the deployment of energy storage in the NEM with minimal change, it is also important to ensure that the regulatory framework is balanced, encourages efficient utilisation of infrastructure and ensures appropriate allocation and alignment of costs and benefits.

As a member of the Energy Networks Association (ENA), Energex supports the views expressed in the ENA's submission in response to the discussion paper. As such, Energex has not responded to the specific questions raised by the AEMC in this submission, focussing instead on areas of particular interest. Energex would also like to express its support for the ENA's recommendation that there should be a coordinated approach by the AEMC and the Australian Energy Regulator (AER) to aspects of the regulatory framework, such as ring-fencing and service classification, to ensure outcomes are in alignment with policy objectives.

3 Response to specific issues

3.1 Connection processes

Energex agrees with the AEMC's assessment that the existing connection process under Chapter 5A of the National Electricity Rules (NER) for micro-embedded generators sufficiently accommodates customers seeking to install storage behind-the-meter. As the AEMC has acknowledged in the discussion paper, the existing definition of "micro-embedded generator" covers energy storage systems connecting to the distribution system with the intention of exporting electricity to the grid.

Energex has successfully connected over 300,000 solar PV systems and approximately 60 energy storage devices to date and has one of the highest penetrations of solar PV in the world. As connecting energy storage devices is effectively no different to connecting solar PV systems, Energex does not consider that current connection processes or requirements are a barrier to customers seeking to connect energy storage to the distribution network.

Energex also does not consider there to be any significant process issues or barriers associated with connecting large-scale storage systems under Chapter 5 of the NER that would warrant special attention.

3.2 Technical requirements and standards

Energex notes the AEMC's concern that technical requirements and standards, such as AS/NZS 4777, may give network businesses too much control over energy storage systems connected to the distribution network. However, Energex does not believe this to be a valid concern as the primary purpose of AS/NZS 4777 is not to provide control to any one party but to ensure the overall safety, reliability and performance of the inverter when connected to the electricity distribution system. Nor does standardising control interfaces constitute a barrier to competition. It simply provides a standard interface to enable control rather than having numerous proprietary control systems. Coordinating control across multiple control systems with differing interfaces poses a substantial cost to any participant looking to maximise the benefit of energy storage systems.

AS/NZS 4777 was developed in consultation with a wide range of industry and technical experts, including not only distribution businesses but also representatives from the solar industry and inverter manufacturers. It has been aligned, wherever possible, with international standards, including the International Electrotechnical Commission (IEC) standards. Given that Part 2 of AS/NZS 4777 has only just been released in October 2015 and Part 1 will be released in the near future, Energex considers that a review of the technical requirements covered by this standard is neither necessary nor appropriate at this time. Australian standards are reviewed on an "as needs" basis and Standards Australia is responsible for coordination of those reviews.

Energex also notes the AEMC's preliminary finding that there may be merit in investigating the potential for standardising technical requirements applied to behind-the-meter storage systems connecting to distribution networks. While Energex appreciates that having standard connection requirements is attractive in theory, it should be borne in mind that distribution networks vary greatly in their nature and configuration, from high-density urban networks to remote rural networks. This diversity of configuration would therefore make it problematic to develop a "one size fits all" connection standard for the entire NEM.

3.3 Aggregators using storage

Energex encourages the aggregation of energy storage in the right locations, particularly as distribution businesses will be seeking access to those services to manage excess solar PV generation and peak demand in localised constraint areas of their networks.

However, the development of adequate protocols will be necessary to prevent potential system instability issues which may arise when large concentrations of storage are used by aggregators to respond to market events such as pool prices or frequency excursions.

Energex considers that connection requirements should be flexible enough to allow transparent decision-making by the network service provider to manage the network risks arising from localised and large-scale energy storage in the same way that a large-scale generator would be required to satisfy connection requirements.

AS/NZS 4777 has been designed with features such as reactive power control and the ability to set ramp rates that can help manage these issues and increase the amount of available aggregation.

3.4 Ownership and control of energy storage systems

In its discussion paper, the AEMC has raised concerns regarding the degree of control distributor businesses ostensibly may have over customer- or retailer-controlled storage and whether connection processes and technical standards should be reviewed with a view to limiting that control and removing perceived barriers to competition.

Energex does not consider that there is any justification for energy storage to be treated differently to other devices currently controlled by distribution networks. Energex has, for many years, had demand management programs in place to control customers' hot water, pool pump and air-conditioner loads. There are currently around 750,000 customers in South East Queensland with appliances under control either through the customer choosing a lower-cost tariff option or taking up direct incentives offered by Energex. It is a misconception that distribution businesses are in a position to force customers to allow them to control their devices without consent. Control exercised by distribution businesses is facilitated through customer choice, i.e. through tariffs, incentives or loading shedding agreements.

Energex is already actively trialling the connection of energy storage systems on its network under the demand management incentive allowance to better understand how energy storage will interact with the network and provide benefits to customers. These market-based trials are being conducted in partnership with companies selling energy storage systems to customers. Trial participants will be paid an incentive by Energex for controlling their storage device in a way that is beneficial to the network and other customers. Energex will also obtain power quality data from the metering installation at participating customers' premises to understand the impact energy storage systems are having on the network and the potential benefits for solar PV hosting capacity.

Where economically viable, Energex will continue to offer a value proposition to customers to permit some level of control. Appropriately designed network tariffs can encourage optimal use of energy storage systems for customers, retailers and networks. Where tariffs are not able to deal with localised constraints and power quality problems such as voltage rise and unbalance, Energex intends to continue to offer direct incentives to encourage control.

Energex can also see a role for network operators in aggregating the benefits of control of certain technologies such as energy storage systems. Energex would compensate customers for this level of control, working with customers to ensure their level of utility from their technology investment is not compromised. The benefits of the load control would then be shared with all customers in the form of lower network costs over the medium to longer term.

If distribution businesses are prevented from being able to offer a tariff or value proposition to customers that permits the control of energy storage devices, there will be flow-on implications to the overall cost of supplying electricity. Preventing network business from having ownership and control of behind-the-meter storage devices could result in loss of efficiency in delivery and reduced customer benefit through increased transaction costs (which will ultimately flow on to customers).

3.5 Ring-fencing

Energex does not agree with the AEMC's assessment that "strict" ring-fencing provisions must be applied to network businesses seeking to install energy storage behind-the-meter in order to facilitate effective competition in the market. While some degree of ring-fencing may potentially be warranted, any regime should be structured carefully so as to ensure it is a proportionate response to a clearly-defined "problem".

Energex does not consider distribution businesses have any significant influence on the development of the energy storage systems market and would question that a market power "problem" exists in the provision of energy storage services. Moreover, Energex highlights that the potential costs of imposing unnecessarily onerous ring-fencing measures on network businesses could be substantial, with increased transaction costs from a loss of economies of scale.

Given the rapid change in the emerging technology sector and lack of distribution businesses' ability to influence the market, Energex advocates a flexible and minimalist ring-fencing model would therefore be sufficient to facilitate competition and support efficient deployment of energy storage currently. There are a number of existing mechanisms already in place, such as cost allocation, service classification and the shared asset guideline, which could alleviate the AEMC's concerns without the need to impose additional costs on network businesses.

Finally, Energex supports the ENA's recommendation that a joint AEMC/AER approach to developing the national ring-fencing guideline is required to ensure consistency with policy objectives.