S&C ELECTRIC COMPANY
Excellence Through Innovation

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Therese Grace
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Our Ref: JC 2017-032

18 August 2017

Dear Ms. Grace,

S&C Electric Company response to Coordination of Generation and Transmission Investment (EPR0052)

S&C Electric Company welcomes the opportunity to provide a response to the approach paper covering the Coordination of Generation and Transmission Investment.

S&C Electric Company has been supporting the operation of electricity utilities in Australia for over 60 years, while S&C Electric Company in the USA has been supporting the delivery of secure electricity systems for over 100 years. S&C Electric Company not only supports "wires and poles" activities but has delivered over 8 GW wind and over 1 GW of solar globally. S&C Electric Company has been actively engaged in deploying Battery Energy Storage Systems for over 10 years, supporting a full range of business models and using a range of battery technologies, at the kW and MW scale, and currently has 76 MW/189 MWh in operation. In Australia, S&C projects include the Ergon Grid Utility Support System in Queensland, which reduces peak loads and provides voltage support on rural Single Wire Earth Return lines and the 2 MW battery for PowerCor in Victoria.

S&C Electric are particularly interested in facilitating the development of markets and standards that deliver secure, low carbon and low cost networks and would be very happy to provide further support to the Australian Market Energy Commission on the treatment and potential of these technologies.

Yours Sincerely

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Response to Questions

Question 1 Transmission charging arrangements – issues

a) Do you agree with the issues identified with respect to transmission charging, and how this impacts on the coordination of transmission and generation investment?

Yes, both load and generation have operational consequences for the TNSPs and therefore all users of a transmission network should experience price signals that are reflective of the impact of that asset, load or generation, on the operation of that network. The Use of System charges should encompass a locational price signal and a time (of day) price signal. As the wider NEM changes, flexibility will be required in both load and generation (which is likely to be location specific) and so Use of System charging arrangements should send signals that will promote increase/decrease in load and/or increase/decrease in generation.

This is consistent with AEMO's stated desire to encourage wider participation of the demand side (load) in system support, but equally variable generation needs to better manage its output and this is consistent with the discussions of "dispatchability" in both the AEMC Reliability Framework Review and the Finkel Review, with the latter proposing a "Generator Reliability Obligation".

(b) Are there any other issues that should be examined as part of this Review?

No

Question 2 Transmission charging arrangements – options

(a) Are any of the above options worth of further consideration, or no further consideration? Why? Why not?

Generators should be exposed to price signals that would allow the transmission network to be operated efficiently and at lost cost. A generator requires a network to dispatch energy and so the network service provider is providing a service. Equally, the connection of variable generation to a network has technical consequences to the wider network, which results in TNSPs having to invest in measures to mitigate these issues, such as the new requirement for TNSPs to provide minimum inertia. Therefore, option merits further study.

Of the two options proposed for electricity storage, option two, a new registration category specifically for electricity storage would be the best way to address the fact that electricity storage is both a load and an exporter. The current AEMO approach of requiring an electricity storage facility to register, independently, as both a load and a generator, with no link in the dispatch system between the two entities is far from ideal and complicates the operation of electricity storage in the NEM.

Treating electricity storage as "special" generation, exempt from Use of System charges on export, but incurring charges on import would not necessarily reflect how the asset should be operated – that is, in times of "excess" generation, the electricity storage would import to balance the system, thus, providing a beneficial service to the network, but incurring a higher system charge.

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A specific "storage" registration category would support better dispatch management and allow for specific Use of System charging regimes for electricity storage, recognising the technical capabilities of the technology.

The general principle for Use of System charging should be that it reflects the cost of accessing the network at a given location and time. This will be the only way to facilitate the responsive approach needed from both load and generation in the future. Both load and generation need to play a role in balancing the system to deliver stability at lowest cost.

Ofgem, the UK Regulator, completed a Targeted Charging Review (5 May 2017), which covered the treatment of storage. The suggested options included removal of the current demand residual charge for electricity storage at both the transmission and distribution level and while we were supportive of this recognition of the difference of electricity storage from other connectees, but this option is a "quick and dirty" approach to a complex issue for both electricity storage and other connectees.

Ofgem also proposed modifications to the Balancing System Use of System (BSUoS) for electricity storage, stating that it should not be charged for both import and export BSUoS. However, the proposed solution was not ideal, electricity storage nominating either as a load or as export, and we advocated for a "net" treatment.

Subsequently to this Review, Ofgem launched a Significant Code Review (SCR) (https://www.ofgem.gov.uk/publications-and-updates/targeted-charging-review-significant-code-review-launch: see launch letter on this page) in August 2017, covering residual charging for transmission and distribution, for both generation and demand; and other embedded benefits. Code modifications have been proposed by Scottish Power for the treatment of electricity storage (specifically their pumped hydro assets) and so electricity storage is not part of the SCR, with Ofgem reserving the right to bring electricity storage back into scope, if required.

(b) Are there any additional options that should be considered through this Review?

No

Question 3 Transmission planning arrangement

(a) Do you agree with the issues identified with respect to transmission planning, and how this impacts on the coordination of transmission and generation investment?

Yes

(b) Are there any other issues that should be examined as part of this Review?

No

Question 4 Transmission planning arrangements – options

(a) Are any of the above options worth of further consideration, or no further consideration? Why? Why not?

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Renewable Energy Zones were also proposed in the Finkel Review and the Queensland Government have called for expressions of interest from generation developers to gauge where and if a new transmission line is required.

It is difficult to see how TNSPs can connect new generators in new high (wind and solar) resource areas, particularly those with a weak or no network. The investment assessment model, as in many other countries, requires the potential connectees to commit to a new site before investment can be made. Additionally, there may be multiple connectees trying to connect in the same area of the network, but it is not possible for each individual connectee to know about the other. The only way to facilitate efficient investment in new network assets or upgraded assets is for better planning coordination between the connectees and the TNSPs.

The example of Transgrid's assessment of their area potential high resource zones, is a good one, but renewable developers will still need to actually commit in some way to these zones, before investment is made, so a mechanism needs to be developed for this network-developer partnership to ensure that investment is efficient and needed, otherwise any new network will become stranded.

Option 3, based on the Texan example seems the most appropriate, but a balance needs to be struck between "build and they will come" and "wait until everyone is clamouring to connect and then build" approaches. The former needs more certainty that the renewable generation will come, which suggests that developers need to be involved in the selection of any zone.

As has been discussed, while there may be high resource, the developer will need to be able to find a purchaser for any generation, so care is needed to ensure that as well as resource, there is a market for the energy (Box 4.3).

(b) Are there any additional options that should be considered through this Review?

Rather than ask networks to bid to build infrastructure, developers could be asked to bid to deploy in a given zone, with bids contributing to the augmentation of the network.

Question 5 Transmission access arrangements

(a) Do you agree with the issues identified with respect to transmission access arrangements, and how this impacts on the coordination of transmission and generation investment?

Yes

(b) Are there any other issues that should be examined as part of this Review?

Presumably, Federal and State Government policy with regards to emissions and/or renewable generation targets will have an impact on dispatch or provision of renewable (and non-renewable) generation? If there is an increased (legislated) requirement to reduce the carbon emissions from electricity generation, then no carbon generation should be favoured over other generation types.

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Question 6 Transmission access arrangements – options

(a) Are any of the above options worth of further consideration, or no further consideration? Why? Why not?

The status quo approach will not necessarily deliver new investment in generation and/or networks, so new approaches need to be assessed.

Locational charging signals can only ever be an interim solution, until all networks are fully constrained. It also does not resolve the issue of accessing high resource in areas where currently there is no network to support connection.

Building out all congestion is not financially appropriate, placing a significant burden on end customers.

This leaves an option for firm access or a requirement, via a standard, to ensure that generation can be dispatched.

(b) Are there any additional options that should be considered through this Review?

The end customer is going to end up paying for network investment, whether that investment is funded by the TNSPs or the connecting generator, since all these costs will be passed on. So approaches that deliver low carbon electricity and lowest cost, securely need to be considered.

Considerable work has been undertaken by the GB networks on flexible connection approaches. While this work was led by Ofgem under its Quicker more Efficient Connections programme (https://www.ofgem.gov.uk/publications-and-updates/quicker-and-more-efficient-connections-update-industry-progress), and mainly applied to DNSPs, the TNSP was involved. The Energy Networks Association provide an overview to these types of connections: http://www.energynetworks.org/electricity/futures/flexible-connections.html. Many of the new approaches were trialed through Ofgem's Low Carbon Network Fund.