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

Dear Mr Pierce,

Regulatory sandbox arrangements to support proof of concept trials

The Australian Energy Regulator (AER) thanks you for the opportunity to comment on the AEMC's *Regulatory sandbox arrangements to support proof-of-concept trials* consultation paper of 20 December 2018.

We support the development of a well-defined sandbox mechanism. A sandbox mechanism would provide transparent arrangements for the AER to facilitate proof-of-concept trials or regulatory experiments in collaboration with other market bodies, ARENA, and other stakeholders. These trials could help market bodies address over the horizon reform issues, and create a better informed and more responsive process of regulatory change.

The Australian energy market and energy technologies are evolving rapidly. If managed effectively, innovation in energy markets benefits consumers by giving them more choice and access to greater competition. A sandbox mechanism would support a more flexible regulatory framework that is better equipped to respond to the rapid pace of change in the energy sector, and ensure those customer benefits are realised. We think that the ability to undertake regulatory experiments in a controlled-risk, sandboxed environment will support the long-term interests of customers in an environment of increasingly decentralised energy supply. A sandbox mechanism may also help reduce barriers to more efficient supply and delivery of electricity, including by new market entrants.

The design and operation of a sandbox mechanism will necessarily involve close collaboration between the AEMC, AER, AEMO, ARENA, peak bodies and consumer representatives such as Energy Consumers Australia, and other stakeholders. We note, for example, that ARENA already performs functions that are being contemplated for a sandbox

mechanism. The AER therefore recommends these core stakeholders collaborate to co-design the scope and structure of a sandbox mechanism.

We see merit in the AEMC establishing a broad power for the AER to waive parts of the Rules to support innovative trials, and develop a sandbox mechanism through a guideline. A 'sandbox guideline' would allow greater flexibility for the sandbox mechanism to evolve alongside our experience of running the mechanism and market developments, compared to defining details of the mechanism in the Rules. In developing a guideline, the AER could specify requirements around the process for accessing the sandbox mechanism, eligibility and assessment criteria, consumer safeguards, and knowledge sharing, among other things.

In our view, reliance on the AER's enforcement discretion is not the right approach to provide exemptions or waivers from the Rules to facilitate regulatory experiments. A structured waiver process, with eligibility and application criteria, assessment criteria, and public consultation would establish a transparent and fit-for-purpose mechanism for undertaking proof-of-concept trials.

In Attachment A we comment in further detail on different aspects of a regulatory sandbox mechanism, and we provide information on how we have approached some of the specific trials raised in the consultation paper.

We look forward to close collaboration with the AEMC on an appropriate regulatory framework to support proof-of-concept trials in the National Electricity Market.

Yours sincerely,

Mark Feather
GM – Policy and Performance

Attachment A

What are the most appropriate mechanisms to grant exemptions for proof-of-concept trials?

Addresses question 5 (trials under AER enforcement discretion), question 6 (the need for a formal regulatory sandbox), and question 7 (design of a formal regulatory sandbox arrangement, if required) of the AEMC's consultation paper

The AEMC's consultation paper considers mechanisms through which the AER could grant regulatory exemptions to facilitate proof-of-concept trials that would not otherwise go ahead under the existing rules or laws. We favour establishing a broad power for the AER to grant waivers or exemptions for the specific purpose of supporting regulatory sandbox proof-of-concept trials.

By establishing a sandbox-specific waiver power in the Rules, the AER would be in a better position to put in place a clear and transparent framework around the sandbox mechanism, for example in the form of a 'sandbox guideline'. In consulting on and developing a guideline, the AER could specify requirements around (for example) what benefits we expect a trial should deliver, the process for accessing the sandbox mechanism, what sorts of trials would be eligible for the mechanism, application assessment criteria, consumer safeguards, and knowledge sharing or reporting requirements (to the extent that the National Electricity Law (NEL) and the National Energy Retail Law (NERL) allow these matters to be addressed in a guideline).

We think that specifying the detail of the sandbox mechanism through a guideline is important for two reasons:

- The sandbox mechanism should be detailed in a regulatory instrument that can be readily updated when required, through a transparent and consultative process with the market bodies and other stakeholders.
- We want to have the ability to respond to the lessons we learn along the way in a timely and iterative manner, and to the changes taking place in a dynamic market. The Ofgem sandbox insights report demonstrates that the process of running the sandbox threw up unexpected outcomes, to the extent that Ofgem states that "there was some disconnect between the sandbox we were offering and the real needs of innovators."[1]

Reliance on the AER's enforcement discretion is not the most appropriate mechanism to support proof-of-concept trials or regulatory experiments. Creating an expectation that a 'no action' decision can be negotiated with the AER on an ad hoc basis as a way to avoid compliance altogether or to obtain a derogation from the Rules could also compromise our compliance and enforcement activities. A formal sandbox mechanism would provide a more predictable pathway for trial proponents to seek exemptions, and it would expose participants and the AER to considerably less risk. We consider that:

- The no action letters that have been issued by the AER should be seen in the context of the AER's enforcement discretion. They may be appropriate where a registered participant, a regulated business, or AEMO has breached or will likely breach specific provisions in the Rules, and where solutions other than an exercise of statutory

[1] Ofgem, *Insights from running the regulatory sandbox*, October 2018, p. 2.

enforcement powers (such as infringement notices or litigation) provide the best pathway to return to compliance. No action letters are only intended to provide comfort to parties that may be in breach of the Rules and only indicate the likely enforcement response from the AER. They do not alter or waive the application of the relevant rules, and do not prevent third party action.

- By contrast, a sandbox is intended to allow a limited experiment, which may never be repeated, and whose ultimate purpose is learning and regulatory reform. The focus of a sandbox is not on enforcing or restoring compliance with the Rules, but rather on deciding that a specific rule will not apply to a trial. Establishing a new mechanism in order to allow conduct outside of the current Law or Rules means that we would not need to rely on our compliance and enforcement discretion to allow a trial that will never be compliant (pending a rule change) to take place. A structured sandbox mechanism would mitigate the risk for both the AER and trial proponents that would otherwise accompany no action letters, through a transparent application and consultation process to define the terms of a sandbox waiver.

The Electricity Distribution Ring-fencing Guideline waiver process could form a better model for a potential 'sandbox waiver' mechanism. The Ring-fencing Guideline established a waiver process that:

- Includes a list of information that must be provided in waiver applications.
- Establishes criteria on which the AER assesses applications and make a decision as to whether to grant a waiver.
- Establishes a public consultation process around the decision to grant or not grant a waiver (but provides the AER with flexibility to go straight to a final decision for waiver applications that are not contentious).
- Allows us to define the scope of the waiver and to attach specific conditions to a waiver, including arrangements for when the waiver expires, or to protect consumers and competitive markets.
- Allows us to revoke a waiver if these conditions are breached.[2]

What parts of the Law/Rules should be covered by a sandbox mechanism?

Addresses question 7 (design of a formal regulatory sandbox arrangement, if required)

The AEMC's consultation paper appears to focus the potential scope of a sandbox mechanism on areas of the Rules where the AER has enforcement discretion. We think that a potential 'sandbox waiver' power could be applied more broadly across the NEL and the National Electricity Rules (NER), and NERL and the National Energy Retail Rules (NERR) (and possibly the Natural Gas Law, if gas regulation is incorporated into the mechanism). The AEMC could give consideration to whether the sandbox mechanism should also apply to parts of the Rules where the AER has administrative powers (particularly chapters 6 and 6A, which govern the economic regulation of distribution and transmission networks). For example, at present the AER cannot make determinations that allow a DNSP to recover revenue on non-distribution services (or on unclassified distribution services) and cannot make determinations that allow a TNSP to recover revenue on services other than prescribed transmission services.

[2] AER, *Ring-fencing Guideline Electricity Distribution – Version 2*, October 2018, cl. 5.

The AEMC may wish to consider whether there are particular trial proponents that would be more likely to benefit from a sandbox mechanism. Opportunities for innovation may be identified by a range of market participants. New market entrants or smaller players may require more assistance compared to (for example) regulated monopolies, noting that DNSPs already have financial incentives in place to encourage demand management-focused innovation.

Should the AER provide advice as part of a sandbox mechanism and what sort of advice should we provide?

Addresses question 4 (access to guidance on the regulatory framework) of the AEMC's consultation paper

The consultation paper raised the idea of the AER providing 'binding advice' to proponents of proof-of-concept trials that enter the sandbox mechanism. We do not support the idea that the AER should provide formal advice (whether legally binding or not) to proponents of regulatory experiments/proof-of-concept trials. We consider that:

- Formal advice about the existing rules would not necessarily best support the aims of the sandbox, which is to test the rules and scenarios in a flexible and adaptive environment, and use proof-of-concept trials to inform changes to the Rules.
- Formal advice would likely compromise our ability to provide 'fast, frank feedback' due to the additional risk that the AER would take on by, in effect, making formal determinations that might be seen as a precedent for other similar situations. This would inhibit our ability to test and learn from the proof-of-concept trials that go through the sandbox. Providing legal advice would also significantly change our role as a regulator.
- Formal advice would not be the best way to reduce project risk for trial proponents. Establishing a sandbox waiver power in the Rules with well-defined boundaries and a transparent, public application and consultation process would be a better approach to reduce risk for all parties.
- As with no action letters, formal advice would only cover the specific conduct for which it is sought, in the particular circumstances of that conduct. In granting a waiver we would have the flexibility set the scope of conditions under which the trial can take place.

The AER currently provides 'fast, frank feedback' to registered participants, new entrants, NSPs and other parties interacting with different parts of the regulatory framework, including those that wish to pursue innovative projects or business models. For example, we often engage informally with DNSPs on trials of new technologies and service delivery models in the context of ring-fencing. We have provided advice to DNSPs on potential approaches to designing trials that would comply with the Electricity Distribution Ring-fencing Guideline, and have engaged informally with DNSPs on early drafts of waiver applications. Similarly, we provide guidance to market entrants on retail authorisation and retail and network exemption processes and requirements. We provide comprehensive informal feedback to new entrants on draft retail authorisation and individual retail exemption applications.

We are aware that the complexity of the regulatory framework can pose barriers to new entrants seeking to trial innovative technologies and services. We expect that that new entrants are likely to play a vital role in a successful sandbox mechanism, by bringing

innovative ideas that benefit consumers to the fore. Providing this sort of informal advice to trial proponents as part of the sandbox could help in overcoming these informational barriers. We would be open to exploring whether the type of informal advice and feedback that we give in other areas (such as retail authorisations and exemptions) could be successfully adapted to a sandbox mechanism. We would also be open to the possibility that a more explicitly defined advice and feedback component of the sandbox (whether provided by the AER or another agency) might better serve these aims of the mechanism. We expect that submissions from smaller market players and new entrants will be informative in this respect.

We note Ofgem found that many innovators entered the sandbox seeking endorsement for their business model in order to gain external funding.[3] In dealing with proponents of different business models in the retail authorisation and exemption space, we have also found that applicants sometimes push us to provide free regulatory and legal advice that they could obtain from the market. These risks could be mitigated by requiring trial proponents to clearly articulate specific areas of the Rules that may require exemptions or waivers as a condition of entering the sandbox, and providing advice in that context.

What sort of protections should be in place in order to undertake a sandboxed proof-of-concept trial?

Addresses question 7 (design of a formal regulatory sandbox arrangement, if required)

Customer protections will be an important consideration in the design of regulatory experiments under a sandbox mechanism. Where a proof-of-concept trial involves interactions with customers, those customers should, in principle, retain the same rights as they have under the NEL/NER and NERL/NERR. If the proponent proposes to limit customer access to any of these rights for the duration of the trial, we would need to consider whether there is a need for the affected customer to provide explicit informed consent. We would also expect that the project proposal should demonstrate how the customer will have their NEL/NER and NERL/NERR rights returned to them at the conclusion of the trial, and, if this is not feasible, set out the other arrangements that will be put in place to protect the interests of any affected customers.

Proponents of proof-of-concept trials seeking to access the sandbox mechanism should demonstrate that their trial will not have a negative impact on the competitiveness of retail and wholesale markets, or on other market participants. We believe that this has been raised as part of a suite of eligibility criteria in the Singapore Energy Markets Authority's sandbox mechanism, and that this would be worth exploring further.[4]

What sort of trial implementation risks should be considered in the development of the sandbox mechanism?

Addresses question 7 (design of a formal regulatory sandbox arrangement, if required)

We see a number of trial-specific risks that would need to be considered in the design of the sandbox mechanism:

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3 Ofgem, *Insights from running the regulatory sandbox*, October 2018, p. 2-3.

4 Singapore Energy Market Authority, *Framework for a regulatory sandbox for the energy sector in Singapore – Consultation paper*, s. 5.7.

- Any sandbox application process would likely require an assessment of whether the trial proponent has capacity and capability to undertake the trial. Ensuring that a trial proponent has the resources it needs to undertake their proposed trial at the outset will help to ensure that any trials that enter the sandbox can be commenced in a timely way.
- A trial may involve substantial investment in physical infrastructure. Where infrastructure is set up in a way that would not normally comply with the Rules there is a risk that those assets might become stranded at the end of the trial. Our initial thinking is that this risk should be borne by the trial proponent.
- The sandbox mechanism should establish a clear expectation that there may be 'exit obligations' on trial proponents, particularly in cases where the trial involves arrangements with customers that would normally not comply with the Rules. Exit obligations, together with customer and market protections, would be designed to contain the consequences of trial failure.

How can we ensure that a sandbox mechanism is an effective input into the process of regulatory reform?

Addresses question 6 (the need for a formal regulatory sandbox), and question 8 (trialling innovative regulatory processes) of the AEMC's consultation paper

The AEMC may wish to consider how proof-of-concept trials are expected to contribute to the National Electricity Objective (NEO) and the National Energy Retail Objective (NERO) and how this would translate to the criteria we might use to determine which proof-of-concept trials will enter the sandbox. Since the results of innovation are hard to predict, there might be value in defining a set of principles to assess the cost and benefit of allowing a particular trial to proceed under the sandboxing mechanism. A more detailed 'sandbox guideline' could then put these principles into practice.

Coordination and collaboration between the market bodies, ARENA, industry peak bodies, consumer representatives, Energy Consumers Australia, government departments and other interested stakeholders will be vital to the success of a regulatory sandbox mechanism. We see significant potential benefits in a collaborative process to co-design aspects of the sandbox mechanism with some of these core stakeholders upfront. Coordination between these agencies will also be important in defining what an 'innovative trial' might look like, and extracting the knowledge and lessons learnt from a trial to inform regulatory reform. For example, ARENA's experience in running both competitive and collaborative processes to select innovative trials and projects, manage project execution risk, and extracting useful knowledge from their projects has many similarities with some of the likely features of a sandbox mechanism.

A well-defined and well-executed sandbox mechanism will involve working intensively to: (1) establish the detailed sandbox mechanism, for example through a guideline under the Rules; (2) consider whether there should be specific sandbox 'focus areas' or priorities for regulatory experiments in specific areas: (3) assess eligibility of potential trials for the sandbox and select successful trial proponents; (4) work with trial proponents to confirm how the Rules apply to their project and what waivers may be needed; (5) assess sandbox waiver applications and make a decision, and; (6) ensure that the trial feeds useful knowledge into regulatory reform. This will involve both a significant one-off project (to establishing the initial guideline), as well as ongoing activities. The degree to which the AER would require

additional resources to execute a sandbox mechanism would rely on the form of the mechanism and our role in it.

Case studies: Regulatory treatment of selected existing trials

Addresses question 2 (other relevant trials) of the AEMC's consultation paper.

In this section we discuss a number of case studies of projects and trials (some of which were highlighted in the AEMC's consultation paper) that required us to think in new ways about the application of the Rules.

As a general comment, while we have been able to accommodate some trials within the existing framework, our view is that the presence of a formal sandbox mechanism would improve both the scope of possible trials and the mechanisms for implementing them. To the extent that the existing framework allows some flexibility for regulatory experimentation, we consider a formal sandbox mechanism would add further structure and transparency to these trials. Where the framework constrains what might otherwise be a valuable and timely trial, a formal sandbox mechanism would mitigate this difficulty.

The Hornsdale wind farm frequency control ancillary services trial (Neoen)

This project tested the ability of a wind farm to provide frequency support and to bid into frequency control ancillary services (FCAS) markets.[5] We worked with AEMO on understanding the implications of this trial for relevant areas of the Rules.

The trial involved registering a semi-scheduled generator as an FCAS provider. While not prohibited by the Rules, semi-scheduled generators have not historically registered for FCAS provision.

We gained significant insights regarding the limitations within the NEM Dispatch Engine (NEMDE) algorithm associated with scheduling semi-scheduled intermittent generators for FCAS purposes. Where the wind farm produced more than the unconstrained intermittent generation forecast for a given 5 minute interval, NEMDE effectively trapped the generator at that higher level of generation through its automatic generation control (AGC) system, temporarily blocking the ability of the wind farm to provide FCAS. While this does not impact an area that we directly regulate, it did have impacts for our market monitoring function. By temporarily removing the capacity of the wind farm from FCAS markets, other higher priced generators were dispatched to meet the FCAS requirements, increasing FCAS prices and, on one day in South Australia, triggering the AER's $5,000/MW event reporting threshold.[6] This process of exploration prompted AEMO to insert an uncertainty band into NEMDE to address this issue.

AusNet Services NewReg trial (AusNet Services, ENA, ECA & AER)

The New Reg process was developed collaboratively with Energy Networks Australia, and Energy Consumers Australia. AusNet Services is trialling this process for its 2021-25 electricity distribution price review. The New Reg process promotes transparency, accountability and innovation by providing customers with a mechanism to help the business develop its plans through the creation of a Customer Forum. Rather than respond to plans developed solely by the business, the Customer Forum is required to negotiate the

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5 See: https://arena.gov.au/projects/hornsdale-wind-farm-stage-2/.

6 AER, *Reporting into market ancillary service prices above $5,000/MW – South Australia – 8 July 2018*, 22 November 2018.

development of the proposal drawing on evidence from their customer research and engagement. No changes have been made to the Rules to facilitate the trial. As a result, once the proposal is submitted the AER must follow its standard review process as required by the Rules. The currently AER is supporting the trial of the New Reg process as well as working with the ENA and ECA to monitor and evaluate the trial.

Virtual Power Plant demonstrations

We have collaborated with the AEMO, AEMC and members of the Distributed Energy Integration Program (DEIP) on exploring the implications of virtual power plants (VPPs) for the NEM.

In this trial, we worked cooperatively with AEMO and the AEMC on rules surrounding market operation, pricing and participant registration including potential new classifications. For the purpose of these trials, AEMO will treat VPPs in their systems as though they were registered participants. We agreed that, for the purposes of the trials, VPPs smaller than the typical minimum required for registration would be allowed to participate in NEM dispatch. This provides an opportunity to test the behaviour of these facilities in market dispatch without adversely affecting power system reliability, security, or having a material impact on other market participants. The trial will provide valuable information regarding the levels of visibility AEMO might need to have over the operation of VPPs and batteries while maintaining reliability and security of supply. By experimenting on the impact of VPPs on the system at a low level (i.e. 1MW rather than 30MW), we will draw valuable lessons to inform future treatment of batteries and VPPs.

Tasmania – primary frequency control and automatic generation control testing

We participated in tests undertaken by TasNetworks, Hydro Tasmania and AEMO in May 2018 to assess the effects of changes to generator governor control systems on frequency control in the Tasmanian power system.[7] These tests were undertaken while the Basslink HVDC interconnector was out of service and Tasmania was being operated as an islanded system. The trial aimed to test

- potential impact of AEMO's AGC system on recent degradations in the quality of frequency control, due to generators increasing frequency deadband to maintain compliance with their energy dispatch instructions; and
- the change in frequency performance that may be achievable by reintroducing primary governor control on all generators.

Under the NER, recovery of the cost of frequency variations is calculated on a causer pays basis. This means that the amount paid by AEMO to purchase FCAS services is recovered from market participants that cause the need for frequency raise or lower services. While Basslink was down, all costs of frequency regulation were recovered from Tasmanian customers and generators. In consultation with AEMO, we excluded the test periods from FCAS causer pays liability calculations as part of the trial. This means that Tasmanian customers and Hydro Tasmania were not exposed to potential risk associated with any changes in frequency as a result of the trial.

ESCRI battery project (ElectraNet & AGL)

[7] See: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Frequency-Control/Frequency-Control-Trials.

In this project, ElectraNet built a utility scale battery to provide both network and non-network services.[8] Under the Rules, a battery could be treated as both a generator (when it is discharging) and load (when it is charging). Under Chapters 5A and 6A of the NER, generators pay to connect to the transmission network but do not pay for ongoing use of the system. Load pays for the system through a transmission use of system (TUoS). In 2017 we provided ElectraNet with a no action letter so that TUoS would not need to be paid on the battery connection point at Dalrymple. This in effect allowed the battery to be treated as generation only. This issue has recently been explored in the AEMC's Coordination of Generation and Transmission Investment (COGATI) final report.

ElectraNet owns the battery and uses it to provide network services (e.g. fast frequency response and reductions in expected unserved energy). ElectraNet leases a proportion of the battery capacity to AGL to provide market services. This raised potential ring-fencing issues. However, under the Electricity Transmission Ring-fencing Guideline there is nothing to prevent a TNSP from owning a battery and leasing use of that battery to third party to provide market services. The TNSP can do this on the condition that costs are allocated according to the TNSP's cost allocation method (CAM) and there is no cross-subsidy of provision of market services from the TNSP's regulated accounts.

This project also raised cost allocation issues. There is no well accepted cost allocation approach across the sector for grid-connected batteries that provide both regulated and unregulated services. The existing suite of approved CAMs do not include specific cost allocation methodologies for grid scale storage. For the purposes of the project we accepted ElectraNet's proposal that costs should be allocated based on the funding contribution from each party to the capital cost of the battery. We noted that this does not set a precedent regarding how future battery projects will be treated for cost allocation purposes.

[8] See: https://www.escri-sa.com.au/