

9/06/2021

Dr Kerry Schott AO  
Chair, Energy Security Board

Lodged by email: [info@esb.org.au](mailto:info@esb.org.au)

Dear Dr Schott,

### **Submission to the Energy Security Board's post 2025 market design options paper**

We welcome the opportunity to respond to the Energy Security Board's (**ESB**) post 2025 market design options paper.

Australia is in the midst of an energy transition and the energy system is evolving at a rapid pace. TransGrid's responsibility during this transition and beyond is to invest in, operate and manage our transmission network safely, securely and efficiently in the long-term interests of consumers.

To this end, our Board has very recently made a Final Investment Decision to proceed with the construction of Project EnergyConnect (**PEC**), a high voltage interconnector between New South Wales and South Australia.

We strongly support the work of the ESB to ensure that the National Electricity Market (**NEM**) design is fit for purpose and provides for a reliable and affordable supply of electricity to consumers.

Our view is that it is essential that the post 2025 market design provides consumers with reliable and secure power at lower cost through:

- Ensuring that a centralised transmission network continues to be the backbone of the energy system - to enable efficiently located, large scale storage and renewable generation in the NEM. The connection of large scale renewable energy zones (**REZs**) to the grid as well as greater interconnection between the NEM regions will deliver this.
- Implementation of rational and rigorous transmission investment tests that take a long term view of energy supply and demand, minimise asset stranding risk, facilitate private sector investment and which do not create unnecessary delays to efficient investment.
- Complex and necessary system strength services (including inertia) that are required to maintain reliability and security of energy across the NEM be planned and delivered on a whole of system basis, in order to provide the most cost efficient outcome for consumers. In our view, any shortfall of these services can be most effectively and efficiently be provided by transmission network service providers (**TNSP**), who already have accountability and liability for the operation of the system.

Our submission sets out our views on each of the four reform pathways identified by the ESB in its options paper. It focuses on those issues which are most relevant to our role and experience as a TNSP.

We appreciate the opportunity to comment on the ESB's options paper. If you would like to discuss this submission, please contact me.

Yours sincerely

Eva Hanly  
**Executive Manager, Strategy Innovation and Technology**

## TransGrid's response to the Energy Security Board's (ESB) post 2025 market design options paper.

### **Resource adequacy and ageing generator retirement**

**ESB view:** The ESB puts forward a medium term modification to the retailer reliability obligation which could mean that existing coal fired generators get paid to stay in the market to provide dispatchable energy until such time as they are not required.

**TransGrid view:** We support an orderly transition to renewables, which would involve consumers receiving an appropriate level of reliability as traditional coal fired generators retire and new technologies develop. However, the assumption that paying ageing coal fired generators to stay in the market will benefit consumers needs to be costed on an economy-wide basis and objectively assessed. The assessment of how long existing coal fired generators may need to remain in the market should be undertaken by an independent body to ensure all alternative options are assessed against their respective costs and benefits.

### **Essential system services, scheduling and ahead mechanism**

#### *System strength*

**ESB View:** The ESB is keen for system strength to be procured in a timely manner. The ESB also supports exploring the need for a system security mechanism and a new operating reserve or ramping service.

**TransGrid view:** Power system quality (including system strength services) is the most critical element in enabling large scale renewable energy to be integrated safely into the energy system and urgent reform is required. The management of system strength issues in a well-coordinated and clear manner will improve the ability of generators to connect to the power system more quickly and at lower cost, significantly reducing the commercial risks they are exposed to.

TransGrid's view is that the most efficient outcome for consumers will be achieved by having the planning, procurement and operation of system strength being undertaken by the primary TNSP in the region, as part of their broader existing network planning function.

This enables a long-term and whole of network approach by parties who have existing accountability and liability for the reliability and security of the transmission system. The alternative may result in system strength being planned and delivered in an ad hoc way and focused on specific physical components of the system by parties who are not incentivised to ensure, above all else, that the system as a whole is secure.

As the generation mix changes, TNSPs are best placed to undertake the planning, procurement and operation of system strength services because they:

- Already have the capability, processes and systems in place for forecasting and monitoring power quality and the resilience of the system.
- Have detailed information on generator connection enquiries within their own networks, as well as those forecast in other network service providers' networks through joint planning with DNSPs and other TNSPs. This enables system strength solutions to be coordinated and optimised across regions.
- Can rigorously test the appropriateness of network and non-network options to procure efficient and appropriate system strength services.
- Are well positioned to determine the appropriate scale, location and timing of any capital system strength solution so that the least cost investment for the whole network can be delivered.
- Can operate any assets that provide system strength services on behalf of the network, as opposed to third parties that are driven by commercial imperatives and are unconstrained by network reliability standards.

- Can consider the co-ordination of system strength services requirements with other network services (such as inertia, voltage control and thermal capacity) which are increasingly able to be provided by a single asset solution as technology evolves.
- Have expenditure that is regulated by the Australian Energy Regulator (**AER**) to ensure it is prudent and efficient for consumers.

TransGrid has submitted a rule change to the Australian Energy Market Commission (**AEMC**) to seek this change to the current framework which has received extensive support from the energy sector.

#### *Spot market for inertia*

**ESB View:** The ESB has identified a spot market approach for valuing and procuring inertia, while in the first instance relying on the current arrangements for TNSPs to procure minimum levels of inertia. They also identify the potential to use a system security mechanism to procure additional inertia when required.

**TransGrid view:** We are not convinced that a spot market for inertia is practical or reliable. We also do not think it would contribute to the efficient provision of inertia and is therefore not required – to the contrary it could increase the risk of power system failure. The reasons for this include:

1. **System security and reliability:** Inertia is a fundamental aspect of power quality and without the required amount available in real time (which can vary dramatically), there is risk of power system failure. In a market solution, the scope and willingness of the providers of inertia to be responsible for the liability of system failure (with adequate recourse) is likely to be an issue.

Therefore, it is TransGrid's view that for the same reasons as given above for system strength, the planning and delivery of long term inertia requirements are best provided by the primary TNSP in the region who already has accountability and liability for the reliability and security of the transmission system.

2. **Untested technology:** The development of synthetic inertia is a relatively new area of technology and is untested on a large scale. There are multiple emerging technology solutions being developed for inertia short falls by different market players. A market solution would make the rigorous testing and assessment process of whether the solution would meet performance standards difficult.

Similar to other network augmentation projects, once a system need for inertia is identified by the TNSP, an economic and rigorous assessment process can be provided on a whole of life and independent basis, to identify the least cost outcome for consumers.

3. **Cost efficiency:** The most cost effective technology solutions being developed for inertia are emerging to be those that are also providing other network services needed to operate the energy system. With system strength services provided by the primary TNSP, the planning and delivery for synthetic inertia can be provided together with other system strength services on a whole of network basis, which is the most efficient outcome for consumers.
4. **Market dynamics:** If the value of inertia is left entirely to the market, there is a risk of unintended consequences to electricity prices. By way of example, the amount of inertia required in the power system is directly correlated to the amount of available generation and storage. Therefore, there is a risk that the market participants in a spot market may have competing commercial agendas, resulting in a real or perceived ability to impact prices.

An alternative way to ensure that the required amount of inertia is available for the integrity of the power system (but without these issues outlined above) is to provide a mechanism for the TNSP in the region to have a streamlined RIT-T process for providing these system critical services. This streamlined process would need to facilitate a shorter timeframe between identification of any inertia shortfall and delivery of the solution and would have the benefit of ensuring that the costs are prudent and efficient.

### *Battery storage*

**ESB View:** The ESB has proposed simplifying and removing the barriers to registering storage systems in the NEM.

**TransGrid View:** We support an approach for simplifying and removing the barriers to registering storage systems in the NEM as outlined by the ESB. Battery technology is an essential feature of the transitioning energy system. Like any equipment connecting to the network, battery storage systems should be required to comply with strict and clear performance standards and there must be accountability and liability for providers for doing so. However, these standards should be flexible enough to allow for innovative solutions and evolutions in technology.

### **Integration of distributed energy resources and flexible demand**

**ESB View:** The ESB supports consumers being rewarded for their flexible demand and increasing value to the system from flexible resources. This flexibility is to be offered (through a retailer or aggregator) to the wholesale market.

**TransGrid view:** We support a focus on achieving the best possible outcomes for consumers and distributed energy resources provide a means for consumers to generate and own their own energy. This is something that some consumers appear to value and the framework should enable them to participate in the energy market to the extent they want to and that it is practical and efficient. It is also important that the regulatory framework does not distort incentives between small and large scale generation. Large-scale, renewable energy supplied via the centralised transmission system will be the lowest cost electricity supply source into the future for the vast majority of consumers.

The framework considered by the ESB should also be flexible enough to enable peer to peer trading as well as trading without a retailer or aggregator intermediary, as the available technology evolves. This will provide consumers with more control and choice over their energy and lower energy prices.

### **Transmission and access**

#### *Transmission investment and the Integrated System Plan*

**ESB View:** The ESB recognises the development of access to, and operation of, an enhanced national transmission system is key to a successful transition. It supports the delivery of the Integrated System Plan (**ISP**) projects. The ESB suggests that contestability may need to be considered to deliver ISP projects at least-cost noting the AEMC review of transmission planning and investment frameworks which is to commence in July 2021.

**TransGrid view:** We strongly welcome the ESB's support for an enhanced transmission system and the delivery of the ISP projects. We understand the importance of ensuring that the ISP projects proceed for the benefit of consumers and we are committed to making the required investment in the energy system, subject to an appropriate revenue allowance from the AER and the projects being financeable.<sup>1</sup>

It is essential that all market bodies, regulators, governments and policy makers ensure an environment exists that allows transmission investment to proceed where it provides lower total system costs and better outcomes for consumers. Our recent decision to proceed with PEC was only possible with the financial support provided by the Clean Energy Finance Corporation (**CEFC**), support we understand is unlikely to be available for similar projects in the future.

To drive the lowest cost outcomes for consumers under the current framework:

- TransGrid undertakes leading market competitive tender processes for all professional services, construction, equipment and materials provision for these ISP projects. For

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<sup>1</sup> On 8 April 2021, the AEMC made a final determination on financeability of ISP projects rule change request. The AEMC determined to not make a rule in response to our request. See: AEMC rule determination, *Participant derogation – Financeability of ISP projects (TransGrid)*.

example on PEC, approximately 80% of the total cost of the project has been procured under a competitive market process. The remainder of the costs are made up of property, environmental and TransGrid internal costs. In the current regulatory framework, the regulator assesses whether the total costs submitted by TransGrid for the project are prudent and efficient.

- The AER sets the return to TransGrid for delivering the ISP projects to ensure the lowest cost to consumers.

The current framework therefore provides for a rigorous assessment of costs, both within the competitive market and by the AER.

Our current approach to procurement fully exploits available competition in the construction market. Consideration of introducing additional contestability must conclusively demonstrate that, not only lower project delivery costs can be achieved, but also that lower whole of life project costs can be achieved.

In addition, any approach to increasing contestability must ensure that:

- There is a 'level playing field', that is, proponents are subject to the same rigorous obligations and performance standards expected for such critical infrastructure and that are in place for TransGrid.
- There is clear identification and allocation of risk and liability and appropriate remuneration is given for the parties that are taking those risks.
- There is sufficient recourse to the successful proponent over the entire life of the project should performance criteria not be met.
- Comprehensive cyber security requirements are in place due to the critical nature of the infrastructure.
- There are appropriate requirements for experience, demonstrated capability and long term sustainability of proponents, given the importance of the energy system to the Australian economy.
- Accountability and liability for the safe, reliable and efficient operation of the system within the NEM is clearly allocated.

#### *The actionable ISP rules process*

**ESB View:** The ESB comments that as the regulatory investment test for transmission (**RIT-T**) is principally a net economic benefit test that relies on the inputs, assumptions and scenarios of the ISP and uses less developed costs than the contingent project application (**CPA**), it is unclear what additional benefits it delivers in the actionable ISP project rules process. In addition, its view is that the RIT-T significantly adds to the time taken to get the ISP projects approved through this process.

**TransGrid View:** We do not support the complete removal of a costs and benefits test undertaken by a TNSP as part of the actionable ISP process. Under the current actionable ISP project process, the RIT-T plays an important role in refining the ISP projects to assess the costs and benefits for consumers. However, we understand that the RIT-T process is not meeting stakeholder expectations and we are keen to explore further how it could be streamlined and improved to reduce the time and cost burden.

#### *Broadening of the current regulatory investment test for transmission investment*

**ESB View:** The ESB's view is that wider economic benefits, such as increased employment, should be considered in assessing ISP projects. This would allow broader benefits of the ISP projects to be explicitly captured in the process and, as outlined by the ESB, could inform contributions from tax payers for the ISP projects.

**TransGrid View:** We agree with the ESB's proposition that the existing RIT-T benefits test does not allow for the full benefits of the ISP projects to be identified and included as part of the assessment.

By way of example, FTI identified the following additional benefits from PEC that could not be identified in the RIT-T due to its strict criteria:

- Additional gross benefits of \$0.8 billion to \$1.0 billion by taking into account the benefits expected to accrue from the project beyond the 2040 horizon of the current RIT-T assessment period.
- An increase in gross benefits to \$2.1 billion for the 2020-2040 period, where a lower societal discount rate of 3.5 per cent is adopted for the net present value (**NPV**) analysis.
- Net consumer benefits of \$7.1 billion to \$11.9 billion, arising from the material reduction in wholesale prices in all NEM regions driven by improved access to cheaper sources of generation from neighboring regions and increased generator competition, and
- Additional 'non-monetised' benefits reflecting the strategic importance of the project to future NEM development.

In addition, the value that the wider economy and community places on reducing carbon are not able to be considered under the current framework. This means that ISP projects such as PEC (which is facilitating large amounts of renewable generation into the system) and HumeLink (in terms of both Snowy 2 as renewable power source as well as providing a pathway to market for other renewable energy from Snowy and other generation in the area) is not able to be included.

The inclusion of wider economic benefits to assess the costs and benefits of the ISP projects should be done with consideration to ensuring there can be an agreed methodology. As set out by the Productivity Commission in 2014, there are practical issues with including wider economic benefits as there is no agreed method for estimating these benefits.<sup>2</sup>

Given our recent experiences with PEC, we would fully support the regulatory assessment test being broadened to include other relevant quantifiable economic and environmental benefits.

#### *Fair allocation of costs of ISP projects*

**ESB View:** The ESB supports a fairer allocation of the costs of ISP projects in the NEM noting the involvement of the Commonwealth Government in this reform.

**TransGrid's view:** The current cost allocation method of transmission costs means that the beneficiaries of the ISP projects are not correlated with those consumers who ultimately pay for the costs. This includes consumers who benefit as well as private sector participants, such as generators. By way of example, the costs of PEC will be borne by NSW and South Australian consumers, however there is significant benefit that Victorian consumers will receive, due to the complex nature of a meshed energy system. In addition, there will likely be a number of generators who will benefit from this project as it enables them to bring their renewable generation to market.

In a truly national energy market, the costs and benefits from large scale transmission would ideally be shared more equally, recognising the nature of the ISP projects as benefitting the system as a whole, not just the NEM regions where a specific project is located.

We support moving away from the current method of allocating transmission costs. There are multiple models that have been developed globally for allocation of transmission charges that have different merits. We would welcome the opportunity to be involved in the further assessment and development of cost allocation models.

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<sup>2</sup> Productivity Commission, 2014, *Public Infrastructure, Inquiry Report No. 71*, p. 103.

### *Coordination / development of REZs*

**ESB View:** The ESB supports the coordinated development of REZs as an immediate reform and will develop principles for access schemes for REZs that can be adopted by State Governments. In the medium term, the ESB supports whole of system access solutions to provide for coordinated generation and storage investment. As a much longer-term solution, the ESB continues to support locational marginal pricing and firm transmission access rights at the NEM-wide level.

**TransGrid View:** We strongly support the development of REZs and have been partnering with the NSW Government from mid-2020 to develop a model to deliver these. The delivery of REZs will help ensure that the retirement of coal-fired power can happen in an orderly manner.

Broader access reform may be a useful complement to the actioning of the ISP and developing REZs in the longer term. With any access reform, it will be important to ensure that the reliable operation of the energy system as a whole is paramount and the rights and obligations of TNSPs to act in the best interest of the NEM must be maintained.