

13 August 2020

Mr John Pierce
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Mr Pierce

RE System Services rule changes

TasNetworks welcomes the opportunity to respond to the Australian Energy Market Commission's consultation on rule change requests for system services.

TasNetworks is the Transmission Network Service Provider (**TNSP**), Distribution Network Service Provider and Jurisdictional Planner in Tasmania. TasNetworks is also the proponent for Marinus Link, a new interconnector between Tasmania and Victoria. The focus in all of these roles is to deliver safe, secure and reliable electricity network services to Tasmanian and National Electricity Market (**NEM**) customers at the lowest sustainable prices. TasNetworks is therefore supportive of any efforts to improve the system strength framework in the NEM.

TasNetworks has contributed to and supports Energy Networks Australia's (**ENA**) submission.

TasNetworks' acknowledges the challenges faced in ensuring the reliability and stability of the network as the generation mix changes. The task facing the NEM policy makers is how to design and operate a reliable and secure power system that delivers the needs of both generators and consumers. For many years, electricity networks were centrally planned and operated and the provision of system strength services came as by-products of the generation of energy. As the provision of these services was not valued in a financial sense there was a lack of attention on how these services would be provided into the future.

TasNetworks believes that to meet the objectives of the National Energy Objectives the following three questions about the provision of system strength need answering:

- What and where? - Using very specific and technical information to understand the requirements of the network now and in the future.
- When? – Determine this sufficiently ahead of time so it can be sourced and available just as it is needed.
- How will it be paid for? – ensure the costs are attributed in an appropriate manner to those causing the issue or benefitting from the solution.

What, where and when?

While market mechanisms may lead to the provision of levels of system strength services required to increase the hosting capacity of the network, with the benefits that entail from

the dispatch of further low cost generation, TasNetworks is of the view that there are risks of perverse outcomes from this approach that need to be managed.

System strength is critical to ensuring the lights stay on. Thus, there will need to be obligations to ensure minimum levels of system strength are maintained. To ensure this there will need to be restrictions placed on the market with obligations placed on specific entities rather than the 'market'. These restrictions are likely to reduce the number of participants in the market and in those parts of the NEM with already limited competition this could lead to poor customer outcomes.

Given there is no agreed definition of system strength, the challenge is trying to ensure that by commoditising specific elements of all that goes together to provide 'strength' to the network, markets do not motivate unexpected outcomes. If a plant is being used to meet a minimum regulated requirement for one service and as a consequence is also providing other services that are provided through a market; where does a regulated entity stand? How would ring-fencing obligations be treated? How could the most effective provision of both services be obtained if the provision of one is regulated and one un-regulated? There is a risk that by only commoditising some aspects of system strength, they will be the focus for investors, and in some locations this will not be sufficient or actually counterproductive to the provision of a strong system. TasNetworks' view is that TNSPs have the best overall perspective of where the network is developing and are best placed to manage the 'needs' of the power system going forward.

How will it be paid for?

TasNetworks believes that the causer should pay in the context of system services, noting that in some situations, like large interconnect augmentations, beneficiary pays would be appropriate (users cause the need from which they benefit). In either case, a generator that seeks to connect to a weak part of the network should contribute more to the provision of system strength than a generator that connects to a strong part of the network.

This is a critical issue that remains to be answered as part of the Transgrid rule change. While TasNetworks supports the general principles of the proposal, a key issue is how to prevent customers in a particular region bearing the costs of providing the system strength services to connect new generation, when they see little or no market benefit. As constraints between regions are removed by increasing interconnection, there will be more frequent situations where strengthening of a network in one region is being primarily driven by the need for services (most frequently, but not limited to, energy) in other regions. If the rules require cost recovery to be limited to the host region then this will disadvantage customers in that region who gain little to no benefit from the additional costs. TasNetworks would like to see any framework for enhancing system strength to ensure cost allocation is to the causer of the increased requirement.

Risk of market mechanisms not securing system security

We would like to make several comments with a particular focus on the Tasmanian context. Tasmania cannot access system wide inertia in the NEM and consequently faces unique system security issues as a 'synchronous-island' region. To secure the minimum levels of

system strength as required under the National Electricity Rules in Tasmania, the following arrangements are relied on:

- TasNetworks has contracted for inertia and fault level services following receipt of a notice from the Australian Energy Market Operator (**AEMO**);
- non-firm supply to large customers under system protection schemes; and
- minimum fault level constraint equations/rate of change of frequency constraints.

These arrangements have been successful and show the benefit of flexibility and local knowledge, only found in a TNSP, in managing system security.

It is challenging to see how market arrangements would produce a more efficient delivery of system strength in Tasmania. Tasmania is a small market with a very limited number of suppliers of system strength services. There is one large portfolio of synchronous machines with a single owner. Existing commitments through the provision of inertia and fault level services further reduce flexibility. Similarly, in terms of frequency services, industrial customers are already committed to providing load shedding capability through the under frequency load shedding schemes and participate in system protection schemes. These factors greatly reduces the level of competition in the provision of services.

Conclusion

TasNetworks' view is that TNSPs have the best overall perspective of how the network is developing and are therefore most appropriately placed to manage the 'needs' of the power system going forward.

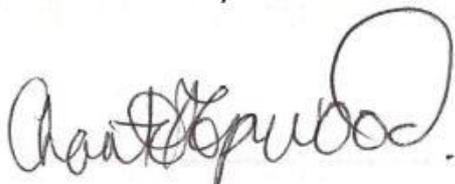
TasNetworks would like to see any framework for enhancing system strength to ensure customers are not paying for fixing issues caused by generators, especially when the locational and technological choices of the generator increase those costs.

Consistent with the ENA submission, we consider that where it is not technically or economically feasible to create new markets to deliver system services, efficient arrangements must be put in place to plan, procure, value and fund the delivery of system security services above minimum levels provided through TNSPs. This is particularly the case in Tasmania due to the isolated nature of the system which limits the scope for competition.

More detailed comments on the rule changes are attached.

Should you have any questions, please contact Tim Astley, NEM Strategy and Compliance Team Leader, via email (tim.astley@tasnetworks.com.au) or by phone on (03) 6271 6151.

Yours sincerely



Chantal Hopwood
Leader, Regulation

QUESTION 7: Infigen’s rule change request, Fast Frequency Response (FFR) Market Ancillary Service — issues and proposed solution.

1 We support the general intent of the rule change. In our experience frequency control is becoming even more challenging as inertia levels reduce and the response characteristics of inverter based resources continue to increase in significance.

7 We support cost allocation based on causer pays, as is the current arrangement for FCAS, with generators responsible for raise and loads responsible for lower.

10 In considering the introduction of an FFR, the objectives of the service need to be clearly defined and linked to the issue requiring resolution. While there are no Rate of Change of Frequency limits defined in the NEM as part of the system standards, it is unclear as to when and how much FFR would need to be acquired. There also need to be a clear understanding of the relationship with six second raise (**R6**) services. There would be an optimisation challenge in determining an optimal amount of FFR and R6 so that the overall cost is minimised.

QUESTION 8: Infigen's rule change request, Operating Reserve Market, issues and proposed solution

8 We have some concerns these rule changes will introduce new binding constraints with negative Transmission Service Target Performance Incentive Scheme (Market Impact Component) impacts. We recommend a modelling exercise be undertaken to fully explore this issue and provide stakeholders with adequate clarity and understanding of potential impacts.

QUESTION 10: Delta's rule change request, Capacity Commitment Mechanism for System Security and Reliability Service, issues and proposed solution

8 refer to answer to question 8.

QUESTION 11: Hydro Tasmania’s rule change request, Synchronous Services Markets, issues and proposed solution.

3 We have concerns around reliance on the market to deliver mandatory (non-negotiable) levels of services required to operate a secure and reliable power system. Noting the variability of markets and the reality of market failure. The present arrangements defined under the NER in 5.20B and 5.20C require each TNSP to ensure that minimum levels of inertia and system strength are available at all times. In practice, this is being achieved across the NEM through a combination of new network assets being installed and periodic network support agreements with existing generators having appropriate capabilities (for example, Tasmania’s recently signed System Strength and Inertia Service Agreement). TasNetworks is concerned that relying on market arrangements to provide these mandatory levels of service exposes network service providers (**NSPs**) to being at fault when the market fails to deliver.

7 A limitation in the rule change centres on the ability to write constraints that do not deliver perverse outcomes in the energy market. TasNetworks’ experience is that constraints designed to manage frequency control, which are based around dispatched inertia are credible and can be made work, however the development of constraint equations for management of system strength are significantly more challenging and unlikely to be practical. This is because the network limitations associated with system strength tend to be

more binary and not a function of MW output from any particular piece of equipment. That is, by constraining a wind or solar farm by 20 or 30 per cent does not necessarily 'fix' the problem. It may be that the wind or solar farm needs to be either completely 'on' or 'off' depending on system strength levels. This cannot be easily described in constraint equations.

8 A pretence of the proposal is that AEMO has sufficient confidence in forecasts of future generation to be able to define system strength requirements far enough in advance (i.e. within planning timeframes) to allow TNSPs to determine cost effective solutions. Potential solutions could include the construction of synchronous condensers, new transmission lines or other new technologies which will most likely require a regulatory investment test for transmission (**RIT-T**) process to assess different options and identify the most appropriate solution. As the Integrated System Plan only provides a forecast of required developments and cannot predict the eventual reality, especially in regards to location and timing of individual developments in a specific area of the network, there is a risk that identified needs do not eventuate and there is over investment. TasNetworks questions whether the focus of regulatory reform should be the identification of mechanisms that deliver system strength while not being so reliant on the ability to accurately predict future needs.

QUESTION 12: Transgrid's rule change request, Efficient Management of System Strength on the Power System, issues and proposed solution.

1 TasNetworks appreciates the issues highlighted by Transgrid in relation to the risk that individual developers will implement their own solution to a local system strength issue independent of what may be occurring around them. The potential outcome from this is over investment in bespoke solutions, but also increased complexity for NSP when operating the power system into the future.

There is merit in examining changes that better facilitate centrally coordinated solutions which enable scale efficiencies to be realised. For example, rather than generation developers installing multiple small synchronous condensers, the NSP could install several larger units which provide the necessary support for multiple generators located in a particular area of the network.

Another potentially more efficient way to maximise the provision of system strength services is to get the most out of existing plant. If there was the ability to re-negotiate the tuning of control systems installed on existing plant this could be a very cost effective way of accessing services. It is unrealistic to expect competing generators to be able to negotiate this arrangement due to concerns about revealing the technical capabilities of their plants to competitors. However, an NSP should not be restricted in this way and while there may be some difficulties in the coordination and implementation, the potential efficiency gains should be able to be investigated.

6 TSNPs taking on existing assets is likely to be very problematic and will depend on the clarity of asset boundaries, whether installed equipment complies with any internal standards that might exist, whether warranties could be transferred, risks associated with spare parts, risks associated with asset management knowledge (NSP's capability to bring a new asset types into its business) etc. While bringing existing assets under the umbrella of the TNSP may allow better operational coordination and control, there are a number of

practical issues that would need to be resolved before this could occur. At the very least, a TNSP would need to have the ability to not take on a particular asset.

7 What should happen if a new connecting generator causes an existing network user to no longer comply with their Generator Performance Standard? Should the TNSP simply make available whatever system strength support is necessary to make the situation work? At what point does the TNSP have the ability to prevent the new connection because it is not economically viable to provide the level of system strength support that it needed? Clearly defining how the cost benefit analysis process will work in practice will be critical to this proposal. A TNSP should not be liable to provide systems strength services 'at any cost'.

In addition, there is currently no effective mechanism to reward the system strength benefits offered by higher quality equipment, compared to lower quality equipment that would use up more system strength headroom. TasNetworks has previously proposed that mandatory minimum short circuit ratio (**SCR**) requirements (acceptable performance at SCR ≈ 2.0) would best utilise the existing hosting capacity of the network. Most modern asynchronous generators come equipped with capabilities to make this possible. Enforcing this requirement would reduce the size of potential system strength mitigation measures and would thus reduce the burden placed on TNSPs under the proposed Transgrid model. This type of approach must be underpinned by clear penalties in case of refusal by any Network User to abide by the NER requirements.