

4 October 2017

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Mr Pierce

RE: ERC0208 Inertia Ancillary Service Market

Tasmanian Networks Pty Ltd (TasNetworks) is pleased to provide our response to the *Consultation Paper – National Electricity Amendment (Inertia Ancillary Service Market) Rule 2017* which was published by the AEMC on 5 September 2017.

As the Transmission Network Service Provider (TNSP) and Distribution Network Service Provider (DNSP) in Tasmania, TasNetworks is focused on delivering safe and reliable electricity network services while achieving the lowest sustainable electricity prices for Tasmanian customers. We are committed to ensuring the secure operation of the Tasmanian power system.

TasNetworks is proud of our collaborative and innovative approaches used to manage the introduction of non-synchronous (asynchronous) generation into the Tasmanian power system. The present mix of asynchronous energy sources, including a comparatively large high voltage direct current (HVDC) interconnector, three wind farms and ongoing growth of embedded domestic photovoltaic (PV) systems, has required TasNetworks to proactively manage a number of challenging power system security issues including the effects of reduced system inertia.

In this context, TasNetworks is supportive of the recent AEMC reviews into power system reliability and security. We are keen to work with the AEMC to ensure that any proposed Rule changes enhance our current arrangements, recognising that there are Tasmanian specific circumstances that require consideration.

Our responses to the specific questions raised in the Consultation paper are provided below.

Yours sincerely



Tim Astley
(Acting) Leader Regulation

1. General comments

TasNetworks is concerned that the AEMC's Consultation Paper has focused on options for an Inertia Ancillary Services Market that would be incompatible with some regions of the National Electricity Market (NEM).

In the specific case of Tasmania, the use of inter-regional settlement residues (IRSR) is problematic given that at the present time, the high voltage direct current (HVDC) interconnector between Tasmania and Victoria is operated as a Market Network Service Provider (MNSP). Accumulated IRSR is therefore unavailable for redistribution through any of the mechanisms discussed in the paper.

In TasNetworks' view, the NEM wide objective should be to develop a package of transparent commercial instruments that encourage network users having appropriate plant, to make available inertia or equivalent services at a price that facilitates the greatest use of lowest cost generation such that consumers are better-off overall.

It is worthy to note that:

- a) 'Commercial instruments' do not have to be 'real time' markets as is the case for frequency control ancillary services (FCAS). TasNetworks is of the view that fixed term contracts may also have a role to play, similar to the mechanisms used to procure reactive power capability through the Network Support and Control Ancillary Service (NSCAS) framework.
- b) TasNetworks is supportive of Network Service Providers (NSP) having the ability to provide 'inertia' or 'inertia equivalent' services. The relevance of the latter category depends on the physical phenomenon that needs to be controlled within the power system. The delivery of technically appropriate services at least overall cost should be the focus, with commercial mechanisms developed to cater for different ownership models.
- c) The pricing of inertia via analysis of the marginal cost of binding constraints (which involve inertia) is a potential model which TasNetworks believes should be explored in more detail. While the AEMC has commented in relation to market outcome based schemes that *"it is far from clear that TNSPs would be qualified to undertake this task or that having them do so would be desirable"*, it would seem too early in the process to be discounting options that do not appear to have been fully considered nor discussed with stakeholders.
- d) The objective of utilising lowest cost generation to its fullest extent applies equally to an islanded region as to the situation when interconnectors are in service. Intra-regional constraints are a relevant and important consideration in Tasmania, where the rate of change of frequency (ROCOF) limitations apply irrespective of the status of the HVDC interconnector.
- e) A priority must be to ensure customers are only exposed to 'reasonable costs' (as a result of any new system security measures) given the energy cost pressures which already exist.

TasNetworks already has constraint based mechanisms in place which we believe address the recent *Managing the Rate of Change of Power System Frequency* Rule change. We are now in favour of a workable permanent solution that will address the markets benefits component of inertia dispatch and would like to reiterate our willingness to participate in discussions to progress an outcome which further enhances the existing arrangements in Tasmania.

We do not believe that the current concepts which involve the use of IRSR are relevant for Tasmania (recognising that this may/may not be a workable interim solution for South Australia) and would thus suggest that solutions based on this are not applied across the broader NEM.

2. The Tasmanian context

Tasmania currently has 308 MW of wind generation in service with approximately 109 MW of embedded solar photovoltaics (as at September 2017). The Basslink HVDC interconnector is capable of importing up to 480 MW from Victoria to Tasmania. Current connection applications would see the amount of wind generation residing in Tasmania more than double. Connection enquires total in excess of 1000 MW in addition to that. The vast majority of future wind and solar projects are expected to be developed by the private sector.

It is conceivable that in the foreseeable future, Tasmania could be supplied from predominantly asynchronous generation for significant periods of time, supported only by minimum levels of synchronous machine support to manage various power system security issues. Given the low marginal cost associated with wind generation, it is expected that wind will generally 'displace' hydro generation unless water storages are close to (or are) spilling or other hydrological limitations exist.

As the owner of the only significant portfolio of synchronous generators in Tasmania, including more than a dozen individual units capable of operating in synchronous condenser mode, Hydro Tasmania is strategically placed to support the operation of future asynchronous generation in the state.

It is important therefore that appropriate mechanisms are available to incentivise the use of existing infrastructure for the benefit of Tasmanian customers and the NEM more broadly. This will almost certainly be the most cost effective solution for the provision of inertia and some other system security services (including 'system strength').

It can be noted that in the future, TasNetworks expects various frequency control products to come from emerging network based technologies and the provision of new functionalities on wind (and potentially solar) plant.

3. Response to specific AEMC questions

Question 1

Recognising that the market sourcing approach based on IRSR is not applicable for Tasmania, TasNetworks recommends further consideration of a model whereby inertia services can be contracted over a fixed period and dispatched in merit (cost) order depending on the marginal value of binding constraints.

- The contracting model would be designed to dispatch supplementary capability necessary to make-up any inertia shortfall coming from the energy dispatch process which results in binding constraints (and most likely affect generators that do not provide inertia and/or inter-regional power flows).
- In concept, where the cost of dispatching a dedicated inertia source is less than the market benefit delivered, the inertia source is utilised.
- Relevant constraints would need to be clearly identified and appropriately formulated.
- The number and type of contracted inertia services could be reviewed annually (in a similar fashion to reactive power reserves) and be based on the expected market benefits delivered over the forward analysis period.
- Whether there is need for an associated TNSP incentive scheme is a matter for further consideration.
- The treatment of synchronous generators dispatched in the energy market also requires further consideration. Is a separate payment justified given that there are no additional costs associated with delivering inertia once the unit is committed for the supply of energy?

Clearly there is a great deal of detail that needs to be developed to properly assess the viability of such an approach however in concept, TasNetworks believes that such a model could be made practical and deliver market benefits for generators and customers alike.

Question 2

Considering the IRSR funding approach will not work in Tasmania, TasNetworks recommends that the concept of additional charges be further examined. It should be recognised that the introduction of more renewable energy sources delivers strategic benefits at a national level (in the form of carbon emission reductions) suggesting that cost recovery mechanisms should be equally broad in scope.

In addition to the discussions provided in the Consultation Paper, specific charges levied at generators *not* providing inertia (when compared to some typical minimum or average inertia value provided from an equivalently sized synchronous generating system) could also be considered. There is already precedence in the NEM whereby 'causers pay'. Consideration is suggested as to whether this is another relevant example and what (if any) practical barrier to entry this may represent for new entrant generators.

Question 3

No comment.

Question 4

TasNetworks has the view that while inter-regional constraints are the most onerous at the present time, it is foreseeable that intra-regional constraints will grow in importance as more asynchronous generation is introduced to the NEM. As a result, the Inertia Ancillary Service Market framework should be designed to be robust for both circumstances.

Question 5

TasNetworks is happy to discuss with the AEMC issues related to the provision of network based services outside of the current focus on IRSR and impacts on Settlement Residue Auctions (SRA).

Question 6

Whilst from a theoretical viewpoint there will be advantages if inertia is co-optimised with energy and FCAS, the practicalities associated with implementing such a process will require significant analysis.

As a simple example, the required FCAS in the Tasmanian region is already calculated as a function of system inertia, e.g. the lower the inertia, the more FCAS that is sourced, particularly for the fast (6-second) services. If the cost of committing additional inertia (most likely in the form of synchronous condensers) could be 'traded off' against the cost of sourcing the additional FCAS, then a more efficient economic outcome would be achieved.

Question 7

The current IRSR based proposal does not provide a solution for Tasmania while the Basslink interconnector is operated as an MNSP. We encourage ongoing dialogue to progress a workable permanent solution that can be applied consistently across all NEM regions.