Hydro Tasmania
The power of natural thinking

18 March 2016

Network Planning Group
Australian Energy Market Operator (AEMO)
GPO Box 2008
Melbourne, VIC 3000

via email planning@aemo.com.au

Dear Sir/Madam

2016 National Transmission Network Development Plan (NTNDP) Consultation Stakeholder Feedback

Hydro Tasmania welcomes the opportunity to provide feedback to the Australian Energy Market Operator's (AEMO) 2016 NTNDP consultation paper. Please find our responses to the questions posed in the consultation paper below.

1. **What do you think are the material issues facing the electricity industry that the 2016 NTNDP should address?**

   a) Uncertainty about the electricity industry's contribution to emissions reduction targets

   Hydro Tasmania supports AEMO's continued engagement with government and industry stakeholders regarding pursuit of Conference of the Parties (COP) 21 Commitment targets to ensure that the impact of any environmental policies on the NEM are well understood by policy makers.

   b) Changing generation mix

   Hydro Tasmania believes there is a fundamental problem currently in the way synchronous generators' non-energy related services are valued as the generation mix is evolving in the NEM.

   The consideration of generation and transmission as separate requirements mean that the network support services (such as inertia, fault level provision and voltage support) provided by synchronous generators are treated as requirements for the transmission network. Small, distributed generation sources and large-scale inverter-connected renewable generation sources are generally not able to provide these network support services. This leads to inappropriate technical assumptions in the NTNDP, and may suggest that non-optimal market solutions could be proposed by network service providers.

   AEMO's comments from the consultation paper: 'More rapid and greater frequency deviations following disturbances, resulting from lower inertia levels as synchronous generators withdraw from service' and 'Larger fluctuations in voltage as synchronous

generators withdraw from service' recognises to some degree the problem we are highlighting, and whilst the network service providers can procure specific equipment to provide these services (such as capacitors or static VAr compensators), the cost of this approach is prohibitive when compared to sourcing these services from a synchronous generator. It is important for the modelling to recognise the least cost way of providing these services.

Deeper investigation through the Network Support and Control Ancillary Service (NSCAS) framework into these non-energy services would ensure that future requirements for network augmentations could be balanced against what synchronous generators can provide. Hydro Tasmania currently provides NSCAS-type services to the market which are essentially provided free in the absence of any formal arrangements. The provision of these services masks network impacts to voltage, fault level provision, frequency and inertia; as such NSCAS gaps are consequently not identified and reported.

c) Options to manage network challenges

Hydro Tasmania operates a number of synchronous generators which participate in tripping schemes arranged with the transmission network service providers to enable operation of transmission assets at higher capacities (due to increased post contingent non-firm ratings). These arrangements enable the transmission network service provider to avoid costly network augmentations, and these types of schemes are not currently accounted for. Hydro Tasmania welcomes consideration of non-network solutions being accounted for to some degree in the 2016 NTNDP development.

It is important to understand the differences between AC and DC interconnectors so as to understand how the concerns in South Australia differ from those in Tasmania. The primary difference is that AC interconnectors are able to transfer all non-energy services between regions. DC interconnectors artificially provide frequency and voltage control, but cannot transfer system inertia. This means that under all operating conditions, Tasmanian synchronous generators are required to supply inertia to Tasmania.

d) Changing consumer behaviour

Hydro Tasmania supports AEMO's planned program of work to investigate how changing consumer behaviour affects energy consumption and demand during 2016 and 2017. We would hope there is an opportunity to review outcomes of this work if it is able to inform the 2016 National Electricity Forecasting Report (NEFR) and be considered in the 2016 NTNDP.

Emerging technologies such as PV and battery storage pose a challenge and an opportunity in terms of providing an alternative for non-energy related services from synchronous generators. An example is the response of PV/battery storage to frequency deviations which are not straight forward in terms of modelling a response or in the benefits it can provide.

The impacts of embedded networks, the role of customer load aggregators and micro-grids (such as in high-rise buildings) and the behaviour of these consumers are not currently considered and it would be prudent for the NTNDP to consider these technologies and commercial arrangements to the extent the modelling permits.

2. **What scenarios/sensitivities would you like to see examined in the 2016 NTNDP?**

   The projected increased wind penetration impacts significantly on the relatively small Tasmanian transmission network, and is likely to require special consideration. Hydro Tasmania is pleased to see that publically-announced wind generation projects to be built within two years are now being included in AEMO's assumptions.

3. **Is the proposed approach to modelling the impact of the COP 21 Commitment reasonable?**

   The assumptions AEMO is making regarding the life of existing coal plants need to be totally transparent, the assumed 50 year operating cycle and decision to treat certain plants as unavailable post 2030 needs sufficient explanation.

4. **What do you think are the key challenges/opportunities for network development in the future, particularly highlighting any that were not identified in the 2015 NTNDP?**

   As mentioned in the response under 1b, the NSCAS framework could be utilised to identify existing provision of services and to develop (in conjunction with generators) a mechanism for generators to indicate to transmission service providers the level of support in each of the areas they are able to provide. Whilst NSCAS is a good mechanism for delivering a service, the determination of the level of service required is still relatively underdeveloped.

5. **Do you have any suggestions on how to improve the generation outlook or transmission outlook methodologies for the 2016 NTNDP?**

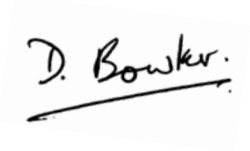
   As mentioned in the response under 1b, a mechanism to account for the non-energy services synchronous generators provide, and a linkage to the transmission requirements to enable the least cost solution should be developed. It is anticipated that these non-energy services will become an increasing part of the service provided by generators. It is important to have well defined products which can be provided by multiple technologies.

6. **Are the proposed 2016 NTNDP input assumptions appropriate, and would you recommend any additions/changes to these assumptions?**

   Hydro Tasmania has no specific changes to propose to the assumptions.

Please direct any queries or questions you may have on these responses to Prajit Parameswar, Manager Operational Contracts (Prajit.Parameswar@hydro.com.au).

Yours sincerely



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