13 March 2020

VNIWestRITT@aemo.com.au

Dear AEMO

Re: Hydro Tasmania response to the VNI West Project Specification Consultation Report (PSCR)

Hydro Tasmania welcomes the opportunity to provide a submission to the PSCR. We strongly support robust and strategic system planning to ensure the security and reliability of Australia's electricity system. As highlighted through the Integrated System Plan, there is a pressing need to strengthen interconnection between NEM states, develop Australia's best renewable energy resources and capture the benefits of increased competition that further interconnection options provide. The PSCR provides an excellent discussion of the challenges facing the sector and on the need for targeted strategic investment.

VNI West is an important future development option that could strengthen the transmission backbone, facilitating the increased sharing of energy resources and energy storage up and down Australia's East Coast. **Interconnection is an important enabler of the efficient transition to a cleaner energy sector.** Australia will not be able to capture the benefits of energy resource diversity, including the geographic, weather pattern and technology diversity without increased interconnection. As the PSCR document notes:

> *"The system's reliance on the balancing benefits of interconnection between regions is also increasing. Well-targeted and timely investment in the transmission network is therefore required to keep pace with these changes. This will provide consumers with the most cost-effective energy outcomes while maintaining reliability and security."*

VNI West needs to be appropriately considered in conjunction with other planned strategic transmissions assets. Evidence indicates that the VNI West and Marinus Link interconnectors would be complementary, and that Tasmania is uniquely placed to support Australia's transition to cleaner sources of energy. This can be achieved through increased sharing of existing stranded hydropower capacity at times when the NEM needs it most, cost-effective opportunities for deep storage and high quality, diverse wind resources. The Australian Energy Market Operator's (AEMO) Draft 2020 ISP states that it would be beneficial for Marinus Link to be built as early as 2027-28 under the following scenarios:

- The NEM began to progress towards the Step Change scenario;

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- If VNI West were delayed[1], or,
- Dispatchable generation alternatives in Victoria were more expensive than currently assumed.

Given the potential consequence of delays, Hydro Tasmania considers it important to fully explore these risks and continue to progress a range of strategic options for the NEM – including both VNI West and Marinus Link (this is explored further in Attachment B). It is likely that a **better valuation of diversity** would increase the benefits of additional interconnection, making timely building of a transmission backbone from Tasmania, through Victoria to New South Wales a minimal regret strategy.

The VNI West and Marinus Link investments are complementary as both will: enhance the energy security of the Victorian region; increase competition; and support the development of wind and solar resources. Over reliance on a single solution will increase the future risks for consumers and would leave them vulnerable to delays in project delivery. Delays to VNI West, Marinus Link, or achievement of Victoria's renewable energy targets could all adversely affect customer outcomes in Victoria.

The remainder of our submission covers a number of specific considerations listed in attachment A, and specific comments on project costs and deliverability in attachment B.

We trust that these responses are valuable to AEMO. For further information or follow-up, please contact Cameron Potter (cameron.potter@hydro.com.au).

Yours sincerely

Andrew Catchpole
Chief Strategy Officer

[1] Hydro Tasmania considers that technical, social, environmental or commercial risks may cause such delays in any large-scale transmission development.

Attachment A – Specific Considerations

Resilience and low-regret costs

- Hydro Tasmania believes that the greatest benefits for consumers, consistent with the NEO, will come from system planning and regulation that provides resilience and low regret costs. System planning requires assessment of the value of investments under a variety of future market contexts. Flexible renewable energy generation and access to energy storage resources will be needed under a wide range of these potential energy futures. These are investments that should be supported and accelerated now to ensure that they are available when they are needed in the NEM.

Energy Storage

- Hydro Tasmania has some concern that the paper's Energy Storage section (2.2) is written from a "Victoria-centric" perspective. The paper states that access to Snowy2.0 may *"provide efficiency benefits through increased access to this hydro storage development as well as offsetting the need for investment in other balancing services within Victoria to provide firm dispatchable capacity for the growing levels of intermittent renewable generation."* Hydro Tasmania believes that this glosses over the reality that Snowy2.0's storage is also a key element of NSW's energy security strategy, and will also be utilised by SA, and to some extent Qld. The risk of coincident demand peaks in Victoria and other states could greatly diminish the availability of this capacity and storage to the Victorian region. This is a key reason why Hydro Tasmania believes that Victoria will need access to multiple flexible capacity and energy storage options. The risks of coincident demand peaks and capacity shortages across the NEM must be fully considered.

High Impact Low Probability events

- We support assessment of High Impact Low Probability events as part of AEMO's scenario modelling. As the paper notes, Australia's ageing coal fleet is expected to exit the market in coming decades. In some cases, this could occur earlier than currently forecast. As the paper notes, there is a risk that *"substantial plant failure, loss of significant revenue or force majeure event could cause an early or unexpected plant retirement."* As such, Hydro Tasmania considers it important that investments to minimise risks associated with these HILP events are progressed in a timely manner to mitigate adverse impacts for energy consumers.

Timeframes

- The timeframes in the PSCR document illustrate that strategic investment has long-lead times to design, procure and commission. Delayed or late delivery of critical transmission, energy storage and additional flexible capacity represents a significant risk for energy consumers. It is prudent to control that risk by assessing and progressing a wide range of options, ensuring that the market has access to the services it needs *before* shortfall occurs. Hydro Tasmania supports the timely application of the RIT-T guided by the ISP roadmap in clearing the pathway to advance critical infrastructure and transition the NEM to a cleaner fuel mix.

The identified need for investment

- As noted earlier in this submission, VNI West has a critical role in **maintaining supply reliability in Victoria** in the face of the closure of coal-fired generation. However, Hydro Tasmania believes that this risk needs to be broadened; VNI West must be evaluated and developed alongside Marinus Link and in-state supply options. This aligns with the options evaluation requirement for the RIT-T, prudent risk management planning and also recognises that Marinus Link has recently released a positive Project Assessment Draft Report and Business Case that indicates that Marinus Link is targeting 1500 MW of capacity by 2028.
- The **efficient development of high quality REZ** is stated as being an identified need in the VNI West PSCR. Where REZ investment supports development of least-cost resources, Hydro Tasmania offers conditional support. It is our view that AEMO must fully assess the optimal mix of energy resources and that this consideration should be made in the absence of Federal, State or Territory policies that constrain resource development to particular regions, in line with the National Electricity Objective. While we acknowledge that AEMO is the jurisdictional planner in Victoria we believe that the RIT-T must be carried out with regard to least-cost NEM planning and not simply least-cost Victorian planning.
- Hydro Tasmania strongly supports *"**more efficient sharing of resources between NEM regions**"*. It is clear that this is in the interests of consumers, both today and in a future, high-renewable electricity sector.

Credible Options

- As presently written, the identified needs may preclude alternative credible options. Based on the feedback above, the identified need could be framed as "maintaining supply reliability in Victoria at the least cost."
    - Efficient development of a REZ is not a standalone need in itself, although it is recognised that development of high quality REZ is likely to reduce cost to the customer.
    - Efficient sharing of resources between regions is also not a standalone need in itself, although it is recognised that sharing of resources between diverse regions is likely to reduce cost to the customers while also increasing reliability.
    - If the 'identified need' is recrafted to achieve least cost outcomes, alternative options such as Marinus Link and local supply could also be reasonably considered.
    - It is considered likely that the optimal outcome will be a mix of solutions and the complementary benefits of both VNI West and Marinus Link should be considered.

Potential Benefits

- Hydro Tasmania supports consideration of 'option value'. Noting the uncertainty facing the sector, it is appropriate to maintain and advance options until the future becomes clearer.

Inputs and Assumptions

- Hydro Tasmania notes the challenges of carrying out a RIT-T while several other RIT-Ts are as yet unresolved. The paper notes that *"The preferred option in the Marinus Link RIT-T has not been included as part of this PSCR's preliminary identification and assessment of credible options."* This highlights the difficulties, particularly since the Marinus Link PADR was found to be positive. It is critical to understand that the stated assumptions pertaining to Marinus Link are inaccurate. Marinus Link's objective is "*to enable additional renewable generation and storage to be exported from Tasmania to the mainland*" is a misunderstanding of the opportunities presented by the interconnection. Moreover, Marinus Link "*does not provide benefits in enabling greater resource sharing or efficient generation development and dispatch*" is also a misrepresentation of benefits[2].
    - Marinus Link's primary benefit is resource sharing and efficient generation development and dispatch.
    - Marinus Link will provide access to stranded capacity which has been proven to be available, yet without path to market, when most needed. This is a clear dispatch inefficiency.
    - Marinus Link will further connect Tasmania's winter-peaking load with the rest of the NEM's summer-peaking load. This is the most valuable load-sharing that could be achieved; even considering that Tasmania's demand is only 5% of the total NEM.
    - Marinus Link will provide efficient access to develop the NEM's least-cost wind resources that are also diverse with the wind resources in South Australia and Victoria – where most of the development has occurred to date.
    - Marinus Link will provide customers access to additional high quality solar in Victoria, allowing for efficient development of that resource. It is highly likely that NSW will also develop cost-effective solar resources and there will be limited opportunity to develop solar resources for the purpose of sharing between Victoria and New South Wales.
- The VNI West PSCR states that *"sensitivities will be included… to explore the potential impacts of the MarinusLink RIT-T."* We believe that limiting Marinus Link to being a sensitivity is insufficient given the relative progress of Marinus Link and the early stage of the VNI West assessment. Potential synergies between the two projects should not be missed or lost. As noted above, Marinus Link's benefits to Victoria are misrepresented and underestimate the opportunities and interactions that Marinus Link would have with the Victorian system.
    - Should AEMO wish to explore potential impacts of further Tasmanian interconnection on the Victorian region, Hydro Tasmania would welcome the opportunity to contribute our expertise.

[2] Note: the quote goes on to say "between Victoria and New South Wales" – yet there is no reason that benefits should be specifically addressed to interconnection between any two specific regions. Therefore, this limitation on benefit identification was not considered to be material.

Materiality of benefits

- Hydro Tasmania notes that 'Competition Benefits' are not expected to be material for this RIT-T as each of the options put forward would have similar impacts. Competition benefits are therefore unlikely to impact the ranking of options in this RIT-T. While this rationale is clear and understood, Hydro Tasmania believes that competition impacts are an important part of any RIT-T as it is an impact keenly felt by energy consumers. Noting that there is great complexity in modelling these benefits, Hydro Tasmania has consistently argued that it should be considered as part of RIT-Ts as least qualitatively. This will be particularly important when considering other options which may meet the customer requirements and also considering the relative impact of scenarios which include Marinus Link.

Comments on modelling approaches

There are several issues that may continue to be difficult to capture under existing modelling approaches. These difficulties include:

- The hour-by-hour benefits that stem from diversity when the expansion plan is being established using a very coarse long-term model. This underestimates the benefits of diversity from both demand and generation sources;

- The lack of perfect foresight in the real world which assumes that all energy resources, demand side participation and energy storage can be dispatched efficiently and optimally to meet system peaks. This can be shown to underestimate the amount of energy, demand side or storage resources needed;

- Uncertainties associated with construction risks (costs and timing) – particularly without perfect knowledge of the ideal timing of the investment;

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- Limits within Australia on the number and scale of projects that can be resourced, developed, constructed and commissioned within a set period of time – particularly for complex non-modular developments such as hydropower; and

- That modelling may select theoretical energy resources before credible development opportunities (which already have a proponent and expenditure). It is Hydro Tasmania's view that announced, 'real-world' projects should be given additional consideration over and above theoretical modelled proposals in the ISP and that, where relevant, AEMO should engage directly with project proponents to accurately represent development opportunities. In particular, there is a notable difference between a theoretical desktop study and site-based technical feasibility study for pumped hydro. See call out box below.

Project Readiness Check: "Credible Project" category

Hydro Tasmania recommends the use of a project readiness check to establish increased credibility of development options and costs. AEMO differentiates committed projects, but treats everything else as equal. This proposal would encourage a project readiness assessment to increase confidence in costs for projects that have invested money to reduce uncertainty thereby creating a new "credible project" category to differentiate from generic projects that may or may not be real.

While some asset classes have little uncertainty in their cost projections, others are much more variable. Pumped hydro is a good example. For pumped hydro, one of the main drivers of the construction cost uncertainty is the geological model. Entura's pumped hydro cost model assumes that the geological models of Australia are accurate and has identified and costed sites accordingly. Evidence in the market shows that the geological models are frequently in need of updating for specific sites and this can have substantial cost impacts. Entura have reviewed this uncertainty and have noted that project costs can increase by 50% or more between desktop and site-based assessments. This often results in the abandoning or delaying of an investment.

Projects that have completed technical site assessments have a higher degree of confidence in cost and can be viewed as a more credible project. Without this onsite information, it is reasonable to assume that the costs of the project will be substantially higher. Similarly, environmental assessments (including specific plan for access to water) should also be considered in determining whether a project is credible or remains high risk.

For example, Hydro Tasmania has extensive experience in Tasmanian geology near its existing power stations, and yet still identified a need to adjust the geological model for one of the three pumped hydro opportunities that have had onsite geotechnical investigations.

It is also worth noting that project uncertainty is not limited to pumped hydro. The ISP identifies renewable energy zones with very high capacity factors without any existing developments. The appetite for investment, support for development and even the resource is yet to be tested for these zones. If the opportunity was very strong, it is likely that they would already have seen development. Therefore a similar project readiness assessment could be undertaken for these uncertain opportunities.

Attachment B – Scrutiny of costs and construction risks

Given the importance of timely development of key strategic assets during the transformation of the NEM, it is critical that cost and construction risks are properly assessed in the RIT-T process. Substantial efforts are typically spent understanding and questioning likely benefits, yet the costs and construction risks are typically seen as being held by the proponent.

At a time of rapid change, inaccurate costs may result in over- or under-estimating the relative value (and potentially timing) of a particular development or set of developments. Misrepresentation of, or disregard for potential project risks may also result in planning that is not robust to potential, or even likely, challenges. This may result in delays which impact the affordability and reliability of supply to NEM consumers.

Consequently, Hydro Tasmania would encourage close and independent scrutiny of projects costs along with identification of potential roadblocks/delays to ensure that the system can develop robust plans for the future NEM.