

1 May 2023

ISP Team  
Australian Energy Market Operator (AEMO)

Submitted via email: [ISP@aemo.com.au](mailto:ISP@aemo.com.au)

Dear AEMO

### **AEMO's Update to the Integrated System Plan Methodology – Consultation Paper**

Hydro Tasmania welcomes the opportunity to provide a response to AEMO's *Update to the ISP Methodology* consultation paper.

AEMO's ISP is a critical tool to provide robust and transparent planning information to the market, and to underpin the effective transition of the National Electricity Market (NEM). We acknowledge AEMO's continued efforts to consult widely and transparently with stakeholders throughout the ISP development process. Iterative updates to core inputs and assumptions, and improvements to the ISP methodology are critical to maintaining and improving confidence in the ISP.

Flexible, dispatchable and long-duration hydropower will play a critical role in our future energy system. Hydropower assets have significant start/stop and ramping capabilities which make them a highly complementary resource to balance out the increasing shares of wind and solar in the NEM. Deep storages offered by hydropower are being increasingly recognised for their role in managing prolonged wind and solar 'droughts', and inter-seasonal variations in supply and demand. Opportunities for the development of additional deep storage across the NEM are challenging both technically and economically. Therefore, the value and contribution of Tasmania's water resource should be highly regarded when planning for our future energy system.

Hydro Tasmania's comments on the proposed amendments to the ISP Methodology are captured in **Attachment 1** to this submission. These comments relate to:

1. Delay factors for transmission 'expected in-service dates';
2. Dispatch behaviours of storages;
3. Value of carbon emissions in the ISP modelling process;
4. Impact of generator retirements on renewable energy zone (REZ) transmission limits; and
5. Impact of model settings - Blocks in each day

If you wish to discuss any aspect of this submission, please contact me ((03) 8612 6334 or [colin.wain@hydro.com.au](mailto:colin.wain@hydro.com.au)).

Yours sincerely,



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## **ATTACHMENT 1 – Hydro Tasmania’s comments on AEMO’s Draft ISP Methodology**

### **1. Delay factors for transmission ‘expected in-services’ dates (EISD)**

Hydro Tasmania notes AEMO’s concerns around increasing delays to the progression of transmission projects, and how these may best be reflected in the ISP. Supply chain pressures, workforce and skills shortages, and time to engage with impacted communities each pose a legitimate challenge to the timely delivery of major projects. As these are clear and emerging issues, we support these being carefully considered in the ISP to ensure the modelling outputs reflect our changing market dynamics as closely as possible.

Hydro Tasmania’s view is that these factors be set and applied where additional information indicates that this is necessary. However, we do not support a blanket delay to all EISD without careful consideration of the individual projects. This will be particularly important to avoid setting overly (and unnecessarily) conservative EISDs. If set too conservatively, this creates a material risk that the least-cost generation mix is skewed to less efficient options to manage near-term shortfalls in supply.

This could be best managed by AEMO retaining a degree of discretion in the application of delay factors. This will allow the model to recognise where a project has been well progressed, such as through substantial community engagement activities, pre-development works, or utilisation of pre-existing or non-controversial transmission corridors.

### **2. Dispatch behaviours of storages**

Hydro Tasmania has long advocated for the ISP modelling process to better address the issue of ‘perfect foresight’ for storage assets in the NEM. We are pleased to see AEMO exploring options to make iterative improvements in this space.

We have conducted analysis to understand the limitations of various storage types in accessing the optimal arbitrage opportunities/events in the NEM due to uncertain price forecasting (**see Figure 1**). Our analysis showed that shorter-duration storages ‘missed’ a substantial amount of these opportunities. In other words, the greater the storage duration available, the more likely a storage operator will be able to dispatch during the critical period and the less ‘missed value’ will occur.<sup>1</sup>

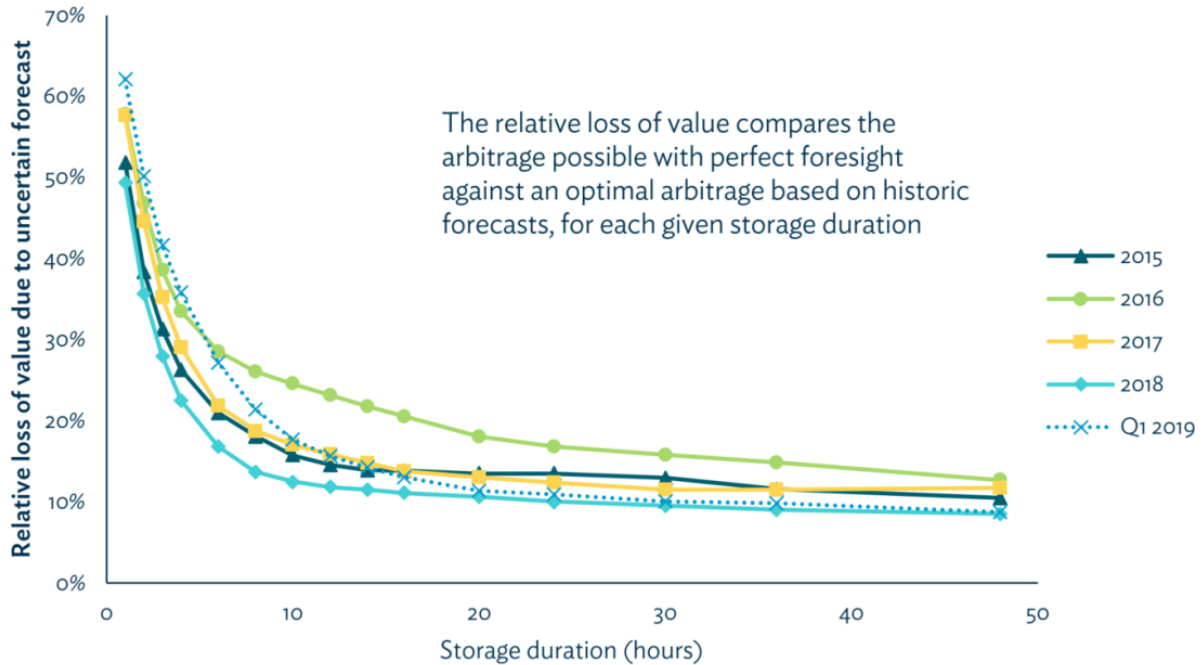
In our view, AEMO should also consider how best to reflect these observations in the ‘investment phase’ of modelling. This will ensure that the threat of ‘missed value’ is considered in the least-cost technology profile developed from the model.

While we recognise that any modelled approach will be imperfect, we do believe the change will better reflect the capability of various storage types to respond to system events, and the issue of perfect foresight more generally. On this basis, we are supportive of AEMO’s proposed change.

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<sup>1</sup> Hydro Tasmania, [\*Battery of the Nation – Operation of storages without perfect foresight, Sept 2019\*](#)

### Value lost due to imperfect foresight



**Figure 1.** Lost value due to imperfect foresight for various duration storages

### 3. Value of carbon emissions in the ISP modelling process

Hydro Tasmania supported the inclusion of an emissions reduction objective in the national energy objectives (NEO) in our 7 February submission to the National Energy Transformation Partnership:

*“Incorporating the objective of reducing emissions into the National Energy Objectives (NEO) can more directly and explicitly reflect legislated Federal and State policies in the decision-making of the energy market bodies.”*

We believe this is an important and valuable evolution of the NEM’s decision-making framework. We are supportive of the inclusion of emissions reductions in the cost-benefit assessments of major projects in the NEM and believe this will better align with federal and state government emissions abatement targets. Importantly, including the value of carbon emissions in ISP decisions can ensure that the full value of transmission investments can be reflected and communicated to stakeholders.

### 4. Impact of generator retirements on renewable energy zone (REZ) transmission limits

Hydro Tasmania is generally supportive of AEMO’s proposed approach to allow fossil-fuelled generators to be included as specific terms in the transmission limits for REZ. In our view, this will enhance the granularity of the modelled outputs, and can provide better information regarding the current and future state of the NEM’s transmission capacity moving forward.

Hydro Tasmania also notes that the ESB’s proposed Transmission Access Reforms are also seeking to enhance information provision regarding grid capacity. There is a logical crossover between this ISP

refinement and the work of the ESB. We recommend exploring how this proposed amendment to the ISP methodology can feed into the access reform discussions, and vice versa.

### **5. Impact of model settings - Blocks in each day**

Though not raised in the consultation paper, Hydro Tasmania notes that the current long-term model assumes eight 3-hour blocks per day to estimate the capability and availability of generators. This creates a risk of severely overestimating the contributions of some generation types. For instance, this approach may mean that solar PV availability extends significantly beyond sunset, which is not an accurate reflection of plant availability.

As a result, this approach may be:

1. Overestimating generator availability at times when the system is likely to be at greater risk of shortfalls (i.e. evening peaks);
2. Overbuilding additional solar generation to meet energy demand at periods it is unable to maintain outputs (i.e. evening peak demand); and
3. Under-building generation types which are fast responding and suitable for evening peaks such as gas and storage.

Hydro Tasmania sees this as a relatively major improvement opportunity. We recommend AEMO explore options to undertake modelling in twenty-four 1-hour blocks. This will improve forecast accuracy substantially, from both a reliability and planning perspective.