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Elizabeth Bowron
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Submitted at (EPR0052): <https://www.aemc.gov.au/contact-us/lodge-submission>

Dear AEMC,

Coordination of Generation and Transmission Investment

Thank you for the opportunity to comment on the Coordination of Generation and Transmission Investment paper (COGATI). The options paper is timely and provides insight into the range of issues and options available. Hydro Tasmania supports the Finkel recommendation that to assist with securing an “orderly transition” of the sector AEMO should develop an Integrated System Plan (ISP) including consideration of Renewable Energy Zones (REZ).

The ISP, published in July 2018, offers insight into the likely future development of the National Electricity Market (NEM). In particular, it demonstrates that there can be benefits from using a system-wide planning approach when facing a significant transformation of the sector. The ISP rightly identifies the retirement of existing generation, increase in variable renewable technologies and growth of utility scale storage as key factors that require strategic planning. Without a level of coordination between AEMO, TNSPs and developers, Australia risks exposing energy customers to a less certain, less reliable and more costly energy future.

From a customer perspective, there are likely to be benefits in strategically managing the closure of existing plant. The level of uncertainty regarding the timing of station closures, the long lead times associated with the implementation of large scale transmission investments and the potentially higher cost of short term solutions provide challenges that the market may not easily or efficiently solve. This could be addressed through timely and proactive risk-based investments rather than reactive responses – even if this leads to short periods of excess

capacity. Proactive risk management will allow for development of lower cost, but longer lead-time, projects. The long-term benefits of this approach should be explored noting the obvious challenges of commercialising or underwriting additional capacity before it is needed.

As an important part of our energy mix, it is essential that Australia optimise the use of existing hydropower assets. Hydropower represents the largest current source of flexible and controllable renewable energy generation in the NEM as well as offering TWhs of energy storage. The criteria used to assess future Renewable Energy Zones and transmission investments should reflect the opportunities to modernise or repurpose existing energy assets, particularly those with strong potential to meet future market needs at low cost. Tasmania's generation fleet is nearly all flexible, but is not fully integrated with the rest of the NEM and as a result flexible generation is used to provide baseload services. This represents a clear opportunity to better utilise existing energy assets.

In considering how to make the ISP an actionable strategic plan, Hydro Tasmania believes the key issues are: the **coordination of planning and investment between AEMO and TNSPs** including the ability to fully understand new generation opportunities; the **definition of "strategic, national investments"**; **utility-scale storage**; the **application of the Regulatory Investment Test for Transmission (RIT-T)**; and the **treatment and registration framework for storage facilities**. This submission covers these key issues in the Attachment below.

Hydro Tasmania is Australia's largest producer of renewable energy, and is internationally recognised for its expertise in renewable energy operation, development and integration. We are currently examining options to enhance Tasmania's contribution to the NEM through our *Battery of the Nation* project. This work closely aligns with the aims of the ISP and Hydro Tasmania is engaging further with AEMO to share information as this work progresses.

Please contact Colin Wain (03 8612 6443, colin.wain@hydro.com.au) to discuss any aspects of this submission.

Yours sincerely



Steve Davy
CEO

Attachment – Key Issues in COGATI Paper

Making the ISP an actionable strategic plan

Of the options, presented in Table 4.2 of the paper, Hydro Tasmania believes that an approach based around option 3 could provide an appropriate and balanced way forward. Any change to the current approach must be underpinned by strong collaboration between AEMO, TNSPs, generators and energy users as well as the involvement of any other key stakeholders. This can help ensure that AEMO has appropriate information and is sufficiently resourced to undertake the work. This approach would also require strong engagement with AER who should continue to be responsible for assessing consumer benefits of proposed investments identified in the ISP.

The ISP's primary focus should be on strategic, national investments. It is a 20 year, NEM strategic document and therefore differs from the focus and planning approaches of TNSPs. Given the challenges facing the Australian energy sector as well as the rate of change, the 20 year whole of system view should be the primary focus at this time.

While the NTNDP functioned as an information document, Hydro Tasmania does not believe this is the intention or best use of the ISP. On this issue Hydro Tasmania's position is different to some other market participants who prefer a continuation of current arrangements.

- Group 1 and 2 projects should be supported and advanced. Further interconnection between Tasmania and Victoria (MarinusLink) is an important part of this work and will have considerable system-wide benefits.
- Significant work and stakeholder engagement went into the first ISP. AEMO has recognised that there is an opportunity for broader engagement in further iterations. Where there is scope for improvement AEMO is working proactively on these issues.

To make the ISP "actionable", its findings and outputs should be used to support and accelerate TNSP run RIT-Ts (through collaboration between AEMO and TNSPs).

- Using ISP findings as inputs could speed-up RIT-T processes.
- ISP scenarios and assumptions and should inform scenario modelling for TNSPs.
- TNSPs must be involved in future ISPs to narrow potential investment options and provide information on plausible options.

The paper includes the suggestion that the COAG Energy Council provide formal advice to AEMO on which government policies or scenarios should be modelled in the ISP. Hydro

Tasmania is generally supportive of this suggestion but would need to further understand the nature of this advice (for example, would it be only through unanimous agreement of COAG?). The ISP should accurately reflect expected State, Territory and Federal policy development, however, in receiving formal advice from COAG on the scope and priorities of the ISP, we believe AEMO should retain the final decision on modelled scenarios.

As mentioned above, subject to the further development of the options, we believe that Option 3 in Table 4.2 of the paper could provide a workable approach. The benefits of an increased AEMO role in system planning stem from their independence, longer-term focus, access to cross-jurisdictional information and opportunity to provide transparency of process:

- Taking a NEM-wide perspective, steps 1-3 in the table (identifying and assessing options) should be conducted by AEMO in conjunction with appropriate consultation with TNSPs. AEMO are best placed to determine strategic, national transmission projects and planning from a whole of system perspective. As the paper recognises, the AER may need to have oversight of these stages if the output of the work replaces parts of the current RIT-T.

This approach would allow AEMO to identify the needs of the system as well as a recommended a “best” option (Step 4).

- TNSPs have the appropriate expertise on specific jurisdictional issues and local constraints. Step 4 in the table is vital and could not happen without strong and open collaboration with the local TNSP.
- One solution could be for TNSPs to have responsibility for determining the “best” option where this still provided the NEM benefits AEMO has specified in the ISP. This could allow TNSPs to innovatively explore other options including non-network solutions. This also follows a preference that TNSPs not be directed to make an investment, but rather are invited to respond to the system need identified through the ISP and put forward regionally appropriate solutions.

“Strategic, national investments”

Hydro Tasmania believes that it is appropriate for the ISP to focus primarily on strategic, national investments. Jurisdictional planners can continue to address local needs through their own planning processes. Criteria for eligibility might include the following:

- Investments that clearly provide **NEM-wide benefits** should meet this definition.
- **Projects with long-lead times require a more strategic** approach than quick-build projects which could be implemented as a clear market opportunities arises.
- Projects that will be **of value if power station retirement occurs earlier** than forecast.

- **Energy storage can provide resilience to the system** in the event of sporadic policy shifts and to rapid changes in the technology mix.
- **Storage and the interconnection of resource-diverse regions** is important. These are long-lived strategic, national investments that can increase the efficiency of the NEM and provide benefits that project owners do not necessarily capture (decreased volatility, shock absorption, system resilience).
- Renewable Energy Zones and transmission investments that **connect or facilitate complementary energy sources** should be encouraged. A clear example of this is where variable renewable generation can be co-optimised with flexible generation and/or energy storage. Assessment methodologies that can accommodate this additional value will be critical.
- **Projects that are robust to a range of future scenarios** and policy outcomes should be considered favourably.
- Projects that **provide optionality and can be developed sequentially** in response to market needs and conditions can represent least-regret investments.

Strategic, national investments should be considered under a cost-benefit analysis that reflects their significance and potential role in efficient future NEM development.

Tasmania is uniquely placed to offer reliable, dispatchable, flexible renewable energy into the NEM and has a strong track-record of renewables integration (utility and off-grid).

- Tasmanian peak demand occurs in winter while Victorian peak is in summer. This represents a key opportunity to increase the efficiency of the NEM through the geographic and seasonal diversity of resources and optimisation of energy and capacity across regions.

The Tasmanian system has the potential to make a far greater contribution to the NEM. The flexibility of the system and opportunities for increased capacity and flexibility that would arise with stronger interconnection were not fully captured in the 2018 ISP. Hydro Tasmania has welcomed the further engagement with AEMO and hopes to address this issue and ensure that benefits and opportunities are appropriately captured.

- This issue also highlights one challenge in the current framework – how to identify a ‘committed project’. This definition has wide reaching importance both in terms of committed projects and committed Government policies. For example, in the case of Tasmania, there are investments that would be expected to proceed with a commitment to further interconnection (and vice-versa, drive a requirement for further interconnection), however this dependency is challenging for modellers and cost-benefit assessments. The market bodies should consider if it is possible to move away from a rigid committed/uncommitted basis towards a progressive assessment mechanism that reflects and recognises option development.

Utility-scale storage

The 2018 ISP forecasts 17GW of utility scale storage will be needed in the NEM by 2040. If this is to be realised (which the ISP indicates is a least-cost solution) then this build-out will need an element of coordination. The ESB and market bodies should consider the market frameworks that would be necessary to support this level of energy storage.

Utility-storage including pumped-hydro must be available before it is needed if we are to avoid shocks to the market. Nonetheless, it has long lead times and may be difficult to finance if it is delivered before it is required by the market (e.g. before a critical station retirement or change in generation mix).

- The benefits of delivering projects before or as the market needs are difficult to capture through modelling that typically assumes perfect foresight.
- While the 3-year notice of closure rule change may go some way to improving this issue, the construction time for pumped hydro and other large-generation assets as well as the lead times for network investments are well in excess of 3 years. It remains important that the ISP and subsequent RIT-T modelling can capture the benefits of delivering projects in a timely manner.

Application of the Regulatory Investment Test for Transmission (RIT-T)

As noted in the paper, the objectives of the RIT-T are centred on avoiding inefficient regulated investment with a largely regional focus. In contrast, AEMO's ISP is targeted at a least cost NEM-wide solution over the period to 2040. The two processes are not currently aligned.

Interconnection of regions is an overdue opportunity to achieve a more integrated and efficient NEM, however, this future-looking opportunity is difficult to frame in terms of a current "need", particularly with uncertainty over future energy developments and policy.

- As has been noted by several stakeholders, the RIT-T is a lengthy process and is too cumbersome for a rapidly developing energy sector. Should the planning framework change so that AEMO has a more active role in transmission investment decisions (Table 4.2) then the market bodies should look for opportunities to streamline or shorten the RIT-T processes and timeframes.
- One example of a step that could be removed is the Project Specification Consultation Report (PSCR). If AEMO, through the ISP is carrying out an assessment of system needs then it would be expected that this stage could be shortened or eliminated. Duplication of processes must be avoided.
- For projects considered to be strategic, national investments within the ISP, the AEMC should consider whether an alternative cost-benefit assessment should be applied.

Hydro Tasmania encourages the adoption of a framework that can fully capture the strategic and insurance value of assets. Short-run marginal cost modelling and NPV analysis may not easily capture the competition, option value and efficiency benefits of some interconnection projects.

Historical approaches to allocation of interconnector transmission costs to customers (beyond the customers of the directly connected regions) are likely to also require rethinking. The benefits of further interconnection and a more interconnected NEM will spread across all regions and all customers. The current approach is likely to be inequitable and important interconnector investment decisions may be delayed without an appropriate and equitable cost-allocation framework.

- In considering this further, it could be appropriate for a strategic funding model for strategic, national investments.

Treatment of, and registration framework for, storage facilities

Hydro Tasmania welcomes the AEMC's thorough discussion on the treatment of electricity storage contained in the options paper. We recognise that the existing transmission pricing arrangements reflect the need to signal transmission costs in a way that is efficient and promotes least cost investment, and that allocating shared network costs to end use customers rather than generators has been a long held principle since the commencement of the NEM.

The delineation between generators and end use customers in the context of charging for transmission services is however being tested as the energy market transforms and storage technologies enter the sector. There are likely to be various ways that storage will be utilised across the NEM. These could include, for example, storage being connected to the grid in combination with industrial load, with other generation sources to form a hybrid generator and large scale grid connected pumped storage facilities that purchase energy for the primary purpose of re-injection into the grid.

In cases where transmission connected energy storage is used for energy arbitrage and grid support, Hydro Tasmania submits that such energy storage should be treated only as a generator under the existing transmission charging regime. This approach acknowledges that the primary purpose of these storage devices is to produce rather than consume electricity. For example, in relation to pumped hydropower the consumption of energy to pump water is to enable the water to be used for the future supply of electricity. This also includes the supply of energy services such as inertia and system strength. Consequently, such energy storage should not pay transmission use of service (TUOS) charges. Hydro Tasmania agrees with the

AEMC that doing this would require a re-definition of which customers bear TUOS charges in a technology neutral way, and proposes that the AEMC explores an appropriate definition that supports this.

The AEMC comments that there may be value in reviewing if a new registration category should be established to help clarify obligations and cost structures for storage facilities. Hydro Tasmania believes that a new registration category would require careful consideration as registration obligations have a wide range of implications for market participants. If further analysis is undertaken, it would be important to ensure that all storage facilities, including pumped-hydro, are appropriately valued and the role that these facilities can play in supporting the transformation of the energy market is not adversely affected by a new registration category. For example, the ISP determines that the lowest cost outcome for Australia has many GWs of storage required which would need to be recognised in the AEMC's consideration of these issues