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Reliability Panel
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Dear Panel Members

**Reliability Panel — 2022 Reliability Standard and Settings review- Issues paper — 27 January 2022**

EnergyAustralia is one of Australia's largest energy companies with around 2.4 million electricity and gas accounts across eastern Australia. We also own, operate and contract a diversified energy generation portfolio across Australia, including coal, gas, battery storage, demand response, wind and solar assets, with control of over 4,500MW of generation capacity.

The Reliability Panel plays a critical, independent role in the public discussion of customers' needs and expectations around reliability outcomes.

The Panel's 2022 review is happening during the height of market reform discussions. There now appears to be a proper realisation of the risks associated with the uncertain exit of coal plant and of the new 'drivers' of reliability events beyond temperature-driven summer demands which have characterised the NEM since its inception. Price, reliability and emission reduction continue to be heavily politicised. While long-term emissions targets are clear, the policies to guide the actions of market participants toward this objective are fragmented. The role of markets, and associated price signals, in being a primary driver to deliver new investment and reliability outcomes for customers is under question.

Against this backdrop, our key messages for the Panel are:

- The Panel's modelling exercises will provide an important guide however the interactions between market settings and participant behaviours in the face of real world uncertainties are difficult to properly capture. The Panel is also conducting its modelling under significantly compressed timeframes, with known data limitations and heightened stakeholder expectations. We therefore recognise the need for the Panel to apply discretion in interpreting modelling results, and encourage it to provide **full transparency of its evidence base and its use of judgement**. This includes how it conducts its materiality assessment of any recommended changes, guidance on Standards and Settings that may apply beyond 2028, and how it has had regard to the **preferences explicitly expressed by governments and customer representatives**.

- We are encouraged that the Panel has grasped the importance of how price settings affect investment decisions via contract markets. This is a complex causal chain. The eventual exit of dispatchable plant and price volatility

associated with increasing volumes of zero marginal cost generation will have important **effects on contract markets, making it more difficult and costly for participants to manage price risk**.

- The Panel makes some references to participant decisions to defer, refurbish or retire existing generation. However much of its discussion of price settings, also reflected in the views of many stakeholders, is that reliability outcomes will be dependent on encouraging the entry of new plant. It is worth emphasising that market prices affect the **recovery of costs of existing generation** and other infrastructure that underpins firm generation capacity, which will be critical in delivering reliability. 'Stay in business' capital expenditures tend to be lumpy and hidden from public view, and require investment certainty to be sustained. Overall, the recovery of **fixed costs for new and existing assets will be compressed** in a market characterised by extended periods of low and negative pricing.

- The Panel needs to articulate a **realistic expectation of policy trends and levels of price volatility in order to engage in a holistic discussion of likely political and regulatory responses**. Our expectation is that the duration and severity of high price events, sufficient to justify additional spending in necessarily capital-intensive plant, would invoke the threat of or actual wholesale market interventions, particularly to protect C&I customers, with related repercussions in retail market regulation. The Panel also needs to address how policy incentives and uncertainty can also interfere with the effectiveness of any market price settings it recommends.

- We encourage the Panel to develop a full set of scenarios and sensitivities that explore 'at risk' periods. At this stage, and noting it is time and resource constrained, we do not consider it is prudent to amend the form of the Standard to reflect the **different drivers of unserved energy.** The Panel's datasets will likely be **critical in further work by the ESB, AEMO and others** in ongoing discussions around the need for resource adequacy mechanisms or related measures that would deliver reliability outcomes for customers.

These messages are expanded in the attached. If you would like to discuss this submission, please contact me on 03 9060 0612 or Lawrence.irlam@energyaustralia.com.au.

Regards

**Lawrence Irlam**
Regulatory Affairs Lead

## The Panel's modelling and use of judgement must be transparent

The last time the Panel conducted a 'full' review of both the Standard and Settings was in 2014. This took approximately 18 months to complete, and with relatively few issues arising from technology changes and discussions on broad-based market redesign. The Panel will complete its current review in approximately 9 months while grappling with these additional complexities, as well as other market changes such as 5-minute settlement. During this timeframe, AEMO will update its Electricity Statement of Opportunities (ESOO) to reflect the announced closure of Eraring as well as publish its final 2022 Integrated System Plan (ISP). While AEMO's assessments are for different purposes they will provide important analyses that cut across the Panel's review topic.

AEMO's modelling exercises are subject to various limitations, and are used in different ways in terms of risk and options assessments, so need to be carefully explained. In the same way, the Panel's projections of unserved energy and other metrics need to be appropriately explained in terms of key assumptions, as well as how they inform the Panel's recommendations. The Panel will be judicious in selecting scenarios and sensitivities to explore the uncertainty and risks customers will face. However, this modelling will be subject to known and unknown limitations in assessing reliability risks and in how market settings influence this. While there will be a tendency to focus on and devote resources towards getting the modelling 'correct', the clear articulation of the Panel's use of judgement, on behalf of consumers, will be equally as critical. Section 2 of the ISP Consumer Panel's submission[1] to the draft ISP contains a useful discussion on approaches to decision-making under uncertainty and gauging the risk appetite of customers. This will be pertinent to specific concepts to be handled by the Panel like the value of customer reliability (VCR), but also more broadly when considering how ex ante Standards and Settings affect real market and customer outcomes over the medium to long term.

On a related point, we question whether the Panel's modelling and assessment approach will primarily relate to achieving reliability outcomes out to 30 June 2028. Our view is that a longer time horizon should be considered.

Changes in the technology mix out to 2028 are still likely to be significant however may not adequately capture broader trends in terms of coal exits, contract markets, government policy or new drivers of unserved energy. As per the Panel's assessment guidelines, price settings are intended to achieve the standard over the long run, and one of its aims is to achieve stable and predictable outcomes to support efficient investment.[2] The Panel's use of a materiality threshold when considering evidence for any changes embeds a degree of inertia in the standards and settings which we consider is important. Our belief is that there may be sufficient evidence to justify changes to the settings now, particularly where the Panel is being asked to make recommendations in the absence of reforms for resource adequacy, which we consider are necessary. If price settings in the energy-only market are the primary driver for efficient new investment, they need to be set in a credible way as part of this review to affect market outcomes beyond 2028. In any case, it will be important for investors and consumers to understand the Panel's qualitative or quantitative approach to determining materiality and in filtering evidence from a range of sources.

To the extent longer term trends are evident within this evidence base, the Panel could make smaller 'directional' changes for the 2024-28 period, otherwise it could provide

[1] https://aemo.com.au/-/media/files/major-publications/isp/2022/submissions/isp-consumer-panel-report-draft-2022-isp.pdf?la=en
[2] Reliability Panel, *Review of the reliability standard and settings guidelines — Final guidelines*, 1 July 2021, p. 2.

guidance for its 2028 reviews and its ongoing monitoring functions. Having decision makers articulate such 'signposts' or thresholds for changes to regulatory settings are useful in a rapidly changing National Electricity Market (NEM) and can help reduce investment uncertainty.

## Specific comments on the Panel's modelling task

The Panel's issues paper, and comments made by its secretariat in recent stakeholder meetings, indicate it has a solid grasp of its modelling task, particularly in designing scenarios and sensitivities to explore reliability drivers.

Our feedback largely mirrors observations on AEMO's draft ISP and its 'operability' testing of development pathways:

- We support running more aggressive coal retirement sensitivities in addition to relying on endogenous economic retirements, for example as per AEMO's approach to less aggressive decarbonisation scenarios.

- Related to our further point below around intermittency of fuel supply and recovery of fixed costs, assumptions around the flexibility of fuel supplies should be tested. The modelling we have seen tends to assume supply sources are unconstrained, and prices also unaffected, in the face of large projected variations in coal and gas generation output, which is unrealistic.

- As the Panel notes the reliability risk profile of the NEM will increasingly reflect constraints on energy rather than capacity. A heavy reliance on storage in modelled outputs (as per AEMO's analysis) brings into question assumptions around perfect foresight. We understand the Panel will explore the effect of this through use of sensitivities and would appreciate the opportunity to share our own modelling experiences directly with the Panel and its consultants. Aside from scenario design or imperfect foresight approaches, some proportion of storage capacity for non-system uses should also be reserved, particularly for distributed batteries, as owners will be incentivised towards multiple revenue streams and not just system optimisation.

- The Panel's questions around the likely uptake of distributed energy resources and other demand side drivers reflect the need to treat this as a sensitivity. The Panel should consider state government subsidies which could bring on a 'tipping point' in terms of cost and uptake trajectories. Note this relates to possible changes in the VCR as well as demand and storage forecasts. Changes to system load profiles associated with electrification and other technology uptake may not be as pronounced for a 2028 horizon as in longer-term ISP projections, but the Panel should publish and justify its assumptions.

- We note challenges in relying on AEMO reference year data, which in theory would capture 1-in-10 year weather events. We understand the Panel may complement this with synthetic data, which should be released alongside all modelling inputs, along with the Panel's views on how it has treated any shortcomings in relying on these data.

- Again reflecting on limitations of existing datasets, the desire to model resolution at 5 minute intervals will be challenging and affect the ability to realistically capture ramping events and price volatility in general. Optimisation modelling

inherently understates degrees of price volatility and transparency on how this affects interpretation of results will be important.

- The Panel should be clear on the plausibility and representativeness of extreme events that form part of its scenario and sensitivity design. For example, AEMO's recent Draft ISP presented several case studies drawn from its historical data to test development pathways against 'worst' or very challenging system conditions. Understanding the probabilities of such events is critical, including how they have been derived from any synthetic data, reflect climate trends and other assumptions. There will be important political and customer ramifications of where boundaries are drawn around which events or likelihoods are relevant to planning purposes.

- We understand the Panel will produce a 'best estimate' of reliability outcomes in addition to modelling extreme events and sensitivities. As with AEMO's ISP projections, stakeholders will tend to take such a central estimate as a shorthand outcome of the Panel's review, or as a forecast, without appropriate regard to its context. As with scenarios and sensitivities it will be important to communicate the likelihood and critical assumptions of any such central estimate, and also explain where this diverges from concurrent ESOO updates and the final 2022 ISP.

- Many of AEMO's projections assume market and technological solutions will be implemented to ensure things like system strength and even reliability parameters are maintained. We trust the Panel will give appropriate consideration to these assumptions as well as 'implementation risks' that AEMO identifies as barriers to various development pathways.[3]

## Contract markets will become less liquid and expose participants to higher risk

A critical trend associated with the energy transition is that large amounts of firm or dispatchable forms of supply will be replaced with variable or non-firm sources, which will change how participants contract and manage their risk exposures. As it relates to the Panel's task, tracing any changes to ex ante market settings into participants' operational and investment decisions via contract markets will become more complex. Changes in settings could also inadvertently increase price risk, with limited intended market impacts. Irrespective of reliability settings, any trend increase in risk exposure and in hedging costs will likely invite political intervention as discussed further below.

As firm capacity exits, we expect to see less standardised contracts being issued, with the associated reduction in liquidity and competitive tension potentially leaving retailers and large customers exposed to more price and credit risk, as well as paying higher contract premia. Recent experience in the United Kingdom also demonstrates that competitive pressure, as well as rigidities associated with price regulation, may leave retailers additionally exposed when such risks materialise.

For energy producers, levels of price exposure and contracting behaviours will change along with new reliability drivers. Parts of the system will move into winter peaking demand, and new weather events will drive price outcomes associated with energy scarcity, rather than shorter duration events with scarcity of capacity. This has upstream

[3] AEMO, Draft 2022 Integrated System Plan, December 2021, section 7.2.

implications for fuel supply contracting and associated infrastructure utilisation, particularly gas generation which is expected to provide a crucial role[4], but also storage providers who will need to manage their states of discharge to accommodate longer duration events. Critically, these events do not have the same characteristics of temperature driven maximum demands, and so the formation of forward price expectations will fundamentally change. This will be reflected in the willingness and ability to offer different types of contracts as well as reliance on different commercial models including vertical integration, long-term offtakes and portfolio decisions. Financial markets will otherwise evolve around products and technologies that move away from the current combination of swaps (dealing with energy scarcity, typically sold by baseload) and caps (covering capacity scarcity, typically sold by peaking plant). Throughout this transition there is likely to be an increased reliance on speculative contract selling on the back of increasingly unpredictable market prices, with higher risk premia.

### Price signals are important for existing assets, not just new entrants

Much of the discussion in the Panel's issues paper, as well as its conceptual approach to setting the efficient reliability standard, regards encouraging new entrants as the means to achieve reliability outcomes. The broader context of the Panel's review includes a debate around the primacy of market signals versus government policy to deliver new investment, and there may be a presumption that price settings should be lowered if policy is the main investment driver. In response to this, it is worth emphasising that market prices affect the recovery of fixed costs of existing generation and related supply infrastructure. In addition, the recovery of any fixed costs will be compressed and less certain in a future market characterised by extended periods of low and negative pricing.

Many stakeholders appear to believe that the fixed costs of existing infrastructure are sunk and that capex is only incurred at the time of asset commissioning. Thermal generators incur material fixed operating costs as well as lumpy capex for maintenance and refurbishment on an ongoing basis. This spending would increase if plant are required to change operating regimes and would still be separate to any works required to extend plant life (if required). Our understanding is that this 'business as usual' spending is not accurately captured in existing modelling assumptions, which tend to spread these costs over many years. We recommend these assumptions be made transparent and their implications for maintaining reliability be appropriately explored in the Panel's analysis.

Other parts of the energy supply chain, including fuel sources and some network infrastructure, will similarly face cost recovery challenges. This is likely to result in a shift towards fixed rather than variable pricing structures, as asset utilisation declines and accommodates the variability, and larger volumes, of cleaner and cheaper renewable electricity. This will add to the proportion of fixed costs that need to be incurred by some wholesale market participants in a market characterised by less frequent and less predictable high price events. To the extent the Panel's modelling presumes foresight of these events it may therefore overstate the propensity of some generation types to enter or remain in the system.

In exploring optimal cost and reliability outcomes, the Panel may wish to verify any instances where it would be prudent to defer the closure of thermal plant rather than fund the marginal new entrant. This could include a study of whether certain reliability

[4] ibid., Appendix 4, section A4.2.8.

events may be better served by retaining 'mothballed' coal units. If these units are retained only as backup and with very low levels of utilisation this may allay concerns around their emissions contributions.

## The role of policy and markets in delivering customer outcomes

The Panel states "[t]he core objective of the existing reliability framework in the NEM is to deliver efficient reliability outcomes through market mechanisms to the largest extent possible."[5]

The Panel considers that, overall, the experience of reliability in the NEM has shown that the current reliability standard has to-date been an appropriate reliability target.[6] The Panel also lists several pages of government interventions and policies that have influenced, and will influence, reliability outcomes.[7]

We encourage the Panel to explore the reasons for government intervention in the name of reliability outcomes and reflect on what this means for the standard and associated price settings. This will be important for two main reasons:

*Taking policy as a 'given' in terms of methods and input assumptions*

Many energy policies have been directly targeted at reducing risk and uncertainty for some new investments, however some gaps remain, notably whether and how coal plant retirements should be managed and the integration of NEM-wide frameworks. Where policy frameworks are not comprehensive or subject to change, their application can impact on decision making for new investment as well as for the operation of existing infrastructure. The Panel should therefore consider the extent to which policy may dull or dilute market settings and price signals.

The Panel has also been directed to ignore the prospects of any market reforms in the form of a capacity mechanism or similar. The absence of any capacity mechanism may result in higher reliance on continued government interventions to ensure 'sufficient' capacity investment. This will again have important implications on how market settings provide incentives alongside other non-market drivers.

*In 'upwards managing' jurisdictional governments on their policy settings*

The Panel's review provides an ideal opportunity to engage with governments on their preferences regarding reliability outcomes. Ideally, the Panel should provide transparency to all stakeholders on jurisdictional preferences around price and reliability, and provide feedback on how these compare to customer preferences. In doing so the Panel could explore and potentially influence:

- whether some jurisdictions desire a higher reliability standard than customers. For example, the NSW Energy Security Target has a deterministic N-2 standard under summer demand conditions, and the interim reliability measure also operates alongside the Panel's recommended standard.

- whether jurisdictions have different perspectives on the ability of the market to deliver any particular reliability standard. The volume of investment in the energy sector that needs to take place in the coming decades is unprecedented and there

[5] Reliability Panel, *2022 Reliability Standard and Settings Review — Issues paper*, 27 January 2022 p. ii.
[6] bid., p. 52.
[7] ibid., pp. 43-45, 99-100, 102-104.

are likely few instances in history where such a transformation was left to 'the market'.

- the extent to which jurisdictions have a detailed understanding of the cost implications of different reliability settings (assuming these have been clearly articulated).

- whether jurisdictions have an accurate appreciation of the level and shape of wholesale prices that would be associated with delivering sufficient investment, and the bill impacts this will have for different customer segments, including when accounting for contracting practices.

- whether jurisdictions (and regulators) have sufficient foresight generally on wholesale price trends, price volatility and the risk exposure of retailers who are subject to price cap regulation. This also extends to oversight and potential enforcement action of how changes in wholesale costs are passed through to customers.

## We support the Panel's detailed exploration of reliability drivers

The Panel should consider the use of additional outage metrics (duration, frequency etc) however there is likely insufficient time to evaluate if and how they could be accommodated in changes to the form of the Standard. We also note that prior reviews have favoured retaining the current form and the reasons for this are unlikely to have changed.

Publishing forward-looking projections as well as presenting consistent historical datasets for different measures would be useful as part of the Panel's ongoing monitoring of reliability outcomes. The Panel's projections across different reliability measures would also feed into the Energy Security Board's (ESB) work in exploring whether changing risks in a future NEM justify any additional investment mechanisms, and the design of such a mechanism e.g. in defining 'at risk' events.

Our expectation is that price durations across all regions will significantly change in a future NEM and we support the Panel conducting a thorough investigation of this through scenario and sensitivity testing. We expect the Panel will provide its own insights on this with much richer and published datasets, for example:

- the extent to which revenue sufficiency is dependent on 'big' events or extreme weather patterns, with implications for investment and political risk

- the pace at which the system becomes more characterised by energy scarcity as a driver of price outcomes

- continuation of trends in price cap and floor events as outlined in the Panel's issues paper[8], as well as the frequency of trading intervals across the full range of price bands.

[8] ibid., pp. 39-41.

## The Panel's work and the ESB's 'counterfactual'

The Panel's datasets and analyses will have important value beyond the completion of its review and be carried forward by a range of stakeholders.

We understand the Panel's work will also form the basis of a 'counterfactual' that the ESB will use in assessing the merits of any reforms around resource adequacy mechanisms. In establishing an appropriate 'base case' or counterfactual, the Panel will need to make judgements on how the absence of any capacity mechanism will affect jurisdictional preferences around investment and reliability outcomes. The ESB has stated that governments have a lower risk appetite for supply interruptions than commercial participants, given they are politically responsible.[9] This degree of risk aversion can create a reinforcing dynamic of investment uncertainty and policy changes.

Prior modelling prepared by NERA for the ESB attempted to explore the possible impact of introducing a capacity mechanism by imposing an arbitrarily low market price cap in a situation of 'no reform'.[10] In this counterfactual scenario, participants were assumed to discount high price events given expectations of preventative political actions as well as lack of bankability in infrequent earnings. Constructing such analysis in a robust way is difficult and will be open to criticism. However, if there is no attempt to quantify these effects, we believe that they will be overlooked. The Panel's own analysis of price durations may inform 'bankability' issues. It will need to separately explore imperfections arising from contract markets (see above), while the effects of policy uncertainty are credibly cited by investors.[11] A further side note to NERA's analysis is that it modelled the 'true' value of lost load separately to the market price cap, and we expect the Panel to address this in having regard to VCR values.

[9] ESB, *Capacity mechanism Project initiation paper*, December 2021, p. 5.
[10] NERA, *Valuing Load Flexibility and Resource Adequacy Mechanisms in the NEM*, 26 July 2021.
[11] For example, AGL hits pause on NSW gas power after energy road map (afr.com); AFR Energy Summit: The rules keep changing: Origin's Calabria