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Reliability Panel
c/- Australian Energy Market Commission
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EnergyAustralia

LIGHT THE WAY

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Review of the Form of the Reliability Standard and Administered Price Cap – Directions paper – 30 November 2023

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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 5,000MW of generation capacity.

The Panel's directions paper presents modelling of the nature of future reliability risks, in an energy system with higher amounts of variable renewable energy (VRE) resources. The Panel intends for its insights to inform the AER's upcoming review of the Value of Customer Reliability (VCR), particularly in exploring different outage events and whether the Reliability Standard should reflect risk aversion by customers. The Panel has also shortlisted options relating to the form of the Administered Price Cap (APC).

The findings from the Panel's latest modelling, noting its various caveats, accord with what we would expect in a system with high amounts of VRE. The Panel states it is already working closely with the AER in preparation for its VCR review and there may be some scope to refine or expand the AER's estimates. For example, the AER could seek to estimate values for outages longer than 12 hours, clustered events, situations where customers may be forewarned, and others, but only to the extent they are sufficiently likely in a future energy system.

The AER's approach to aggregating VCR values in part reflects the likelihood of underlying outage events. VCR is only estimated for events that are typical or standard, almost all of which emanate from issues in the distribution and transmission network. The AER explored estimation for widespread and long duration outages (WALDO) its last VCR review, which may approximate some of the system risks the Panel appears to have in mind. Various methodological challenges and limited stakeholder support led the AER to abandon WALDO estimation. The Panel and AER should only revisit these issues if there is new and compelling evidence of the importance of these types of events in the future energy system.

The Panel is careful to note that its latest modelling is not intended to forecast the probability of different events. On this basis we do not yet see sufficient justification to go beyond the existing set of outage events in the AER's VCR methodology or amend the form of the Standard.

The frequency and duration of outages arising from VRE droughts is a key issue now being assessed by multiple agencies and we support the Panel's intention to contribute to this work. The Panel's latest work identified two drought events from Griffith University's 82 year dataset, suggesting their likelihood is very low. The Panel should explore how different ways of defining VRE droughts might affect how they are captured in reliability modelling. The 2023 Infrastructure Investment Objectives report by AEMO Services Limited (ASL) tested development paths against VRE 'lull' events of pre-defined durations, where regional VRE availability was its lowest over a data set of 43 years¹, including one-in-43 and one-in-ten year event severities. Previously ASL had identified lulls where average wind speed and solar irradiance fell below the 5th percentile. ASL's modelling showed there would be no unserved energy (USE) in NSW when considering lull events, based on system configurations (including provision for imports) out to 2043. AEMO's draft 2024 Integrated System Plan (ISP) similarly finds its development paths are resilient to VRE droughts, namely a 3 day event (being the most severe in its 12 weather reference years) and a simulated event of 8 days duration.² These ISP assessments reflect the state of the NEM in 2040 under the Step Change scenario i.e. with VRE penetration of above 95%. On a minor note, we recommend the Panel express VRE penetration in a manner consistent with policy targets and the ISP i.e. in terms of total energy generated, rather than non-hydro installed capacity.

The Panel notes that the assumed mix of technologies is critical in examining the nature and likelihood of different USE events, and we support further work that tests these assumptions. The Panel's latest modelling was done for informative purposes only, using projected VRE capacities from the 2022 ISP. To the extent the Panel is looking to forecast outage probabilities, it should be cautious in using the outputs of ISP or other scenarios that have been developed for policy or planning purposes. For example, AEMO's ISP is constrained to achieve near-term policy targets, which may not be met once certain supply constraints are factored in.³ AEMO also states that the ISP's large volumes of orchestrated consumer energy resources (likely critical in sustaining reliability) will not be possible without significant policy changes and increased social licence.⁴ Modelling of the likelihood of outage events should also focus primarily on the period commencing 2028 and out to roughly 10 years, reflecting the point at which any new Standard would apply and the forecasting horizon of the Electricity Statement of Opportunities (ESOO). This outlook period may still be characterised by some thermal generation that has less energy limitations and able to backup VRE, compared to longer periods where the technology mix, geographic diversity, degree of interconnection, demand characteristics and climate trends are all more difficult to predict.

The degree of risk neutrality, which the Panel wants to test, appears to be a function of how customers explicitly or implicitly value different outage events. As highlighted in recent submissions to the Panel's review, the current set of VCR values and international studies suggests customers have declining marginal cost of USE for longer outages, however there could be scope to systematically test this in the upcoming AER review. If this does identify risk aversion, however, it is still not clear that this justifies changes to the form of the Standard and additional 'tail risk' metrics. The Panel should articulate decision-making criteria on which it might recommend a change the form of the Standard. The introduction of new risk metrics would seem to rest on an explicit

¹ https://aemoservices.com.au/-/media/services/files/publications/iio-report/2023/2023-iio-report-december_final.pdf?la=en

² AEMO, *Draft 2024 Integrated System Plan*, section A4.5, December 2023.

³ AEMO, section A6.7.5.

⁴ AEMO, section A8.3.1.

customer preference to separate out specific risks for planning purposes, based on their cause or some other categorisation, rather than simply the duration, severity or other dimensions of USE.

The introduction of new reliability measures in recent times reflects the risk preferences of policy-makers, rather than of energy consumers. The AEMC (in part) put weight on the energy ministers' decision to extend the interim reliability reserve when it decided to retain the Interim Reliability Measure.⁵ The NSW Government also legislated additional reliability metrics under the NSW Electricity Infrastructure Investment Act, namely resilience testing for VRE lulls as noted above, and the summer N-2 reserve margin in the NSW Energy Security Target (EST). The Panel could engage with governments and seek their further input on these categories of risks, in addition to a 'risk neutral' measure of expected USE, and how this might be accommodated in the form of the Standard.

In approaching governments, the Panel could also attempt to ascertain whether different reliability criteria may arise under jurisdictional Renewable Energy Transformation Agreements, upon which funding allocations for the Capacity Investment Scheme will be contingent.⁶ New reliability criteria seem likely to arise in risk assessments around thermal generation exits, with 'tail risks' mentioned in the NSW Government's recent consultation paper.⁷ The Panel's collaboration with the AER could inform these further policy developments by better defining 'tail risk' and seeking customer valuations of their associated USE. These values could then be compared to how governments value the same risks, and so the extent to which taxpayers are expected to pay above the associated VCR. The NSW EST was examined in the recent 'NSW Electricity Supply and Reliability Check Up' review, which suggested the EST be brought into line with national settings, pending the current review of the Reliability Standard.⁸ This seems to provide scope for the Panel and the AEMC to assess the value of the EST (and potentially other metrics) alongside the existing Reliability Standard.

While the Reliability Standard is still likely to be the primary metric used in future risk assessments, other measures could still be introduced on an informative basis to gauge risk as the energy system transitions. AEMO's latest draft ISP briefly discusses reserve levels during VRE droughts and the degree of resilience to coincident major contingency events.⁹ Modelling of other specific risk modes such as fuel limitations form part of AEMO's Energy Adequacy Assessment Projections, now published with the ESOO, which we expect to be expanded over time, particularly if gas generation is increasingly critical in maintaining reliability, but fuel supply is limited. The assessment and forecasting of other energy limits could be facilitated through reporting of batteries' 'state of charge', daily energy constraints and maximum storage capacities.¹⁰

With respect to the shortlisted options for the form of the APC, we prefer to retain the current approach of a fixed, unindexed value. Indexation would involve some degree of administrative burden. Periodic reviews appear to provide sufficient opportunity to consider necessary adjustments in line with costs. While the mix and cost of technologies

⁵ [Review of the Interim reliability measure | AEMC](#)

⁶ [Information for proponents - DCCEEW](#)

⁷ [Orderly Exit Management Framework Consultation Paper – December 2023 | energy.gov.au](#)

⁸ [NSW Electricity Supply and Reliability Check Up - Marsden Jacob Associates Report](#)

⁹ AEMO, section A4.5.

¹⁰ [Enhancing reserve information \(formerly Operating reserves\) | AEMC](#)

will change over time, the marginal costs of thermal generation that currently drive the APC have not tended to escalate with CPI, noting that unprecedented global and market events led to the recent increase to \$600/MWh. By contrast, indexation of the market price cap and cumulative price threshold mirrors how the VCR is set and values are maintained in real terms from the customer's perspective.

If you would like to discuss this submission, please contact me on 03 9060 0612 or Lawrence.irlam@energyaustralia.com.au.

Regards

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