

21 July 2023



EnergyAustralia

LIGHT THE WAY

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Meeting system strength requirements in Queensland from December 2025 – RIT-T Project Specification Consultation Report – 29 March 2023

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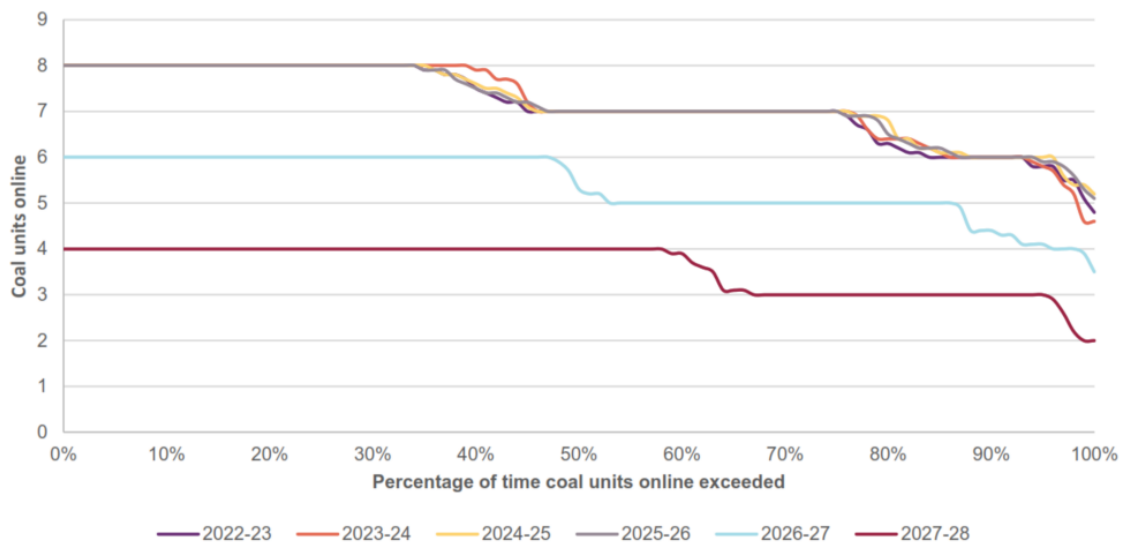
EnergyAustralia is one of Australia's largest energy companies with around 2.4 million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. EnergyAustralia owns, contracts, and operates a diversified energy generation portfolio that includes coal, gas, battery storage, demand response, solar, and wind assets. Combined, these assets comprise more than 5,000MW of generation capacity.

We appreciate the opportunity to provide feedback on Powerlink's Project Specification Consultation Report (PSCR). Powerlink alongside Transgrid and AEMO Victorian Planning (AVP) are now conducting Regulatory Investment Tests for Transmission (RIT-T) for system strength needs in their respective jurisdictions under the new rules framework. Powerlink should engage with these other System Strength Service Providers (SSSP), notably in terms of its analytical approach, and considering the high unit prices in Queensland compared with other jurisdictions. We genuinely appreciate SSSPs currently face challenges in navigating a new and evolving framework including AEMO's forecasting of 'efficient' system strength levels and its impact assessment guidelines, the setting of system strength unit pricing, and potential interactions with the Operational Security Mechanism (OSM). A common approach to dealing with system needs under changing market and regulatory frameworks should also give stakeholders confidence on the prudence and efficiency of the proposed solutions on a NEM-wide basis. Ideally there should be a high level of transparency on the potential for non-network solutions to meet system needs over the medium to long term, as this will provide the basis for market development and ultimately deliver services at least cost to consumers.

Powerlink’s PSCR generally takes a similar approach adopted by Transgrid. We encourage Powerlink to read our recent submission¹ to that process, and our feedback is broadly the same.

We highlight and support Powerlink’s interpretation of reasonable endeavours under Schedule 5.1.14(b) in addressing fault level shortfalls above a 1% per year threshold. This is a pragmatic approach and appears to depart from Transgrid and AVP’s intent to deterministically address any shortfall amount regardless of the duration or likelihood of the shortfall, which is likely to incur significant cost. This difference in approach is significant, especially in light of the annual duration curves of coal units online and the system strength at nodes as published in AEMO’s annual system strength reports,² reproduced below.

Figure 14 Number of coal units in projected online under Step Change scenario, southern Queensland



¹ https://www.energyaustralia.com.au/sites/default/files/2023-04/EnergyAustralia_Transgrid%20NSW%20System%20Strength%20Requirements%20-%20Project%20Specification%20Consultation%20Report_30%20March%202023.pdf

² AEMO, 2022 System Strength Report, December 2022.

Figure 15 Number of coal units in projected online under Step Change scenario, central Queensland

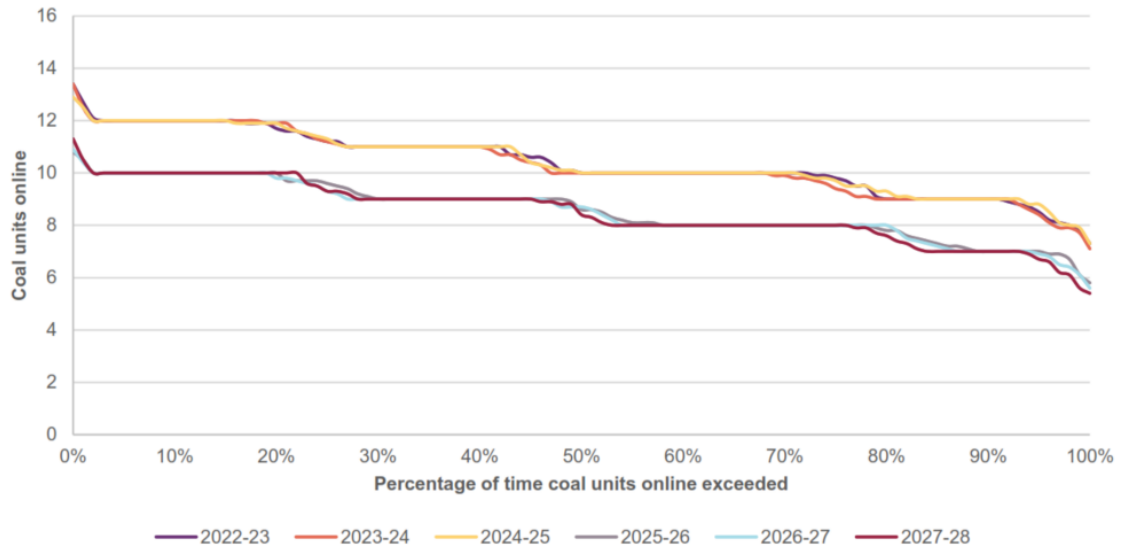


Figure 17 Gin Gin node fault level duration curve against the minimum fault level requirement

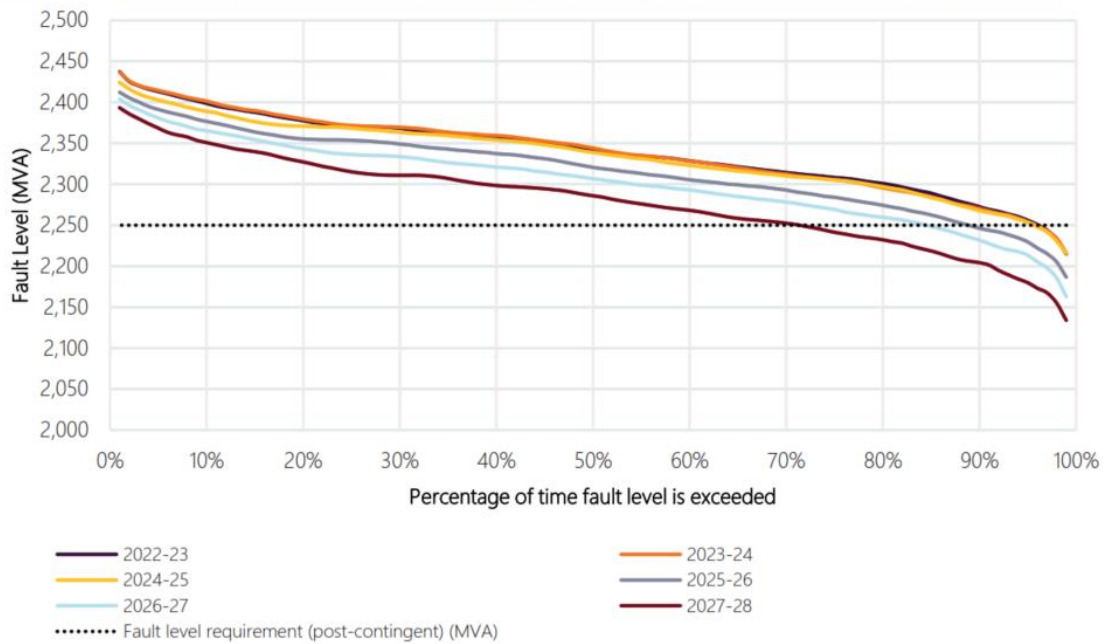
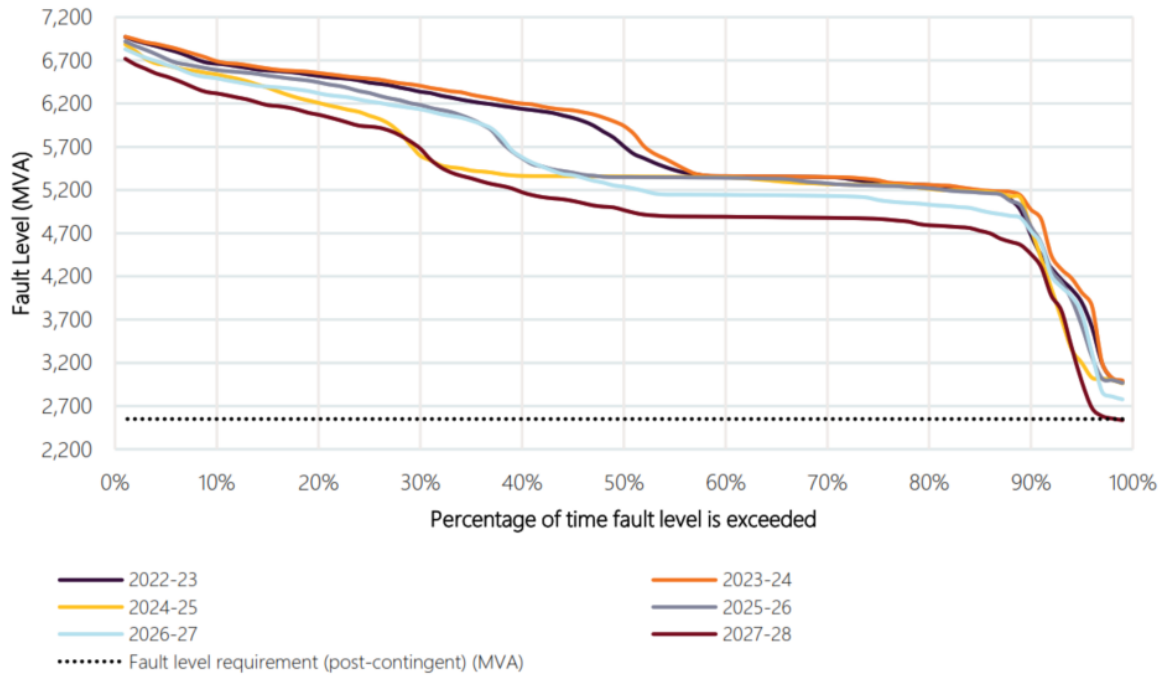


Figure 21 Western Downs node fault level duration curve against the minimum fault level requirement



The investment need relating to minimum system strength requirements should be specified in more detail. Generally it is not clear what is within the scope of the RIT-T. The stated minimum requirements appear to be met by ensuring operation of a minimum of 13 of the existing base load generators in the North, Central and Southern regions³, suggesting that Powerlink is potentially expecting to pay existing generators for their services, provided a certain pre-determined and acceptable combination of these units are online concurrently. The PCSR does not identify any costs associated with retaining or replacing these plant, and does not specify assumptions or approaches to market modelling and for base case dispatch patterns. We are rapidly transitioning to a market environment where base load plant will need to operate on a more flexible basis to accommodate cheaper variable renewable output, with an associated greater reliance on pumped hydro storage.

As illustrated above, AEMO’s 2022 System Strength assessment states that there is only a fault level shortfall at the Gin Gin node out to 2027-28, which has been previously identified. It is not clear how this affects Powerlink’s assessment of need nor what action Powerlink may already be taking to address this. The factors listed by Powerlink as affecting AEMO’s declared inertia shortfall⁴ seem likely to also influence system strength needs, especially the transition of existing coal generators under the Queensland Energy and Jobs Plan.

³ Powerlink, *Addressing system strength requirements in Queensland from December 2025 - Project Specification Consultation Report*, March 2023, p. 14.

⁴ Powerlink, p. 7.

More detail is also required on how network options for efficient system strength requirements have been determined, specifically the additional eight 200MVA synchronous machines or equivalent at an estimated capital cost of \$750m that will be required by around 2030, in view of AEMO's forecasts of inverter-based resources (IBR) and market network service facilities. Similar to our feedback for Transgrid, we expect Powerlink to provide more information on:

- the frequency duration of system strength needs as a time series, at each system strength node from the base case and alternative scenario market modelling exercise undertaken for the RIT-T analysis. This would provide important information to potential service providers under section 6 of the PSCR, in addition to justifying the scale and timing of the proposed network option
- how it has determined efficient levels in line with AEMO's four criteria around stable voltage waveforms
- how it intends to articulate forecast system strength requirements beyond AEMO's 10 year horizon, given the RIT-T analysis will extend 20 years
- how future editions of IBR forecasts in AEMO's annual system strength reports will form part of Powerlink's obligation to meet the "system strength standard specification" and "forecast system strength requirements" under S5.1.14 of the rules. This also extends to whether and how any new system strength nodes, for example at Calvale⁵, are declared under AEMO's reporting framework over the assessment period
- its consideration of the flexibility that AEMO has provided SSSPs in its IBR forecasts, including the potential to adjust near term forecasts as more information emerges on IBR and market network service facilities, and how to treat distribution-connected IBR.⁶

There is insufficient **detail on the approach to the modelling of net benefits,** particularly commercial arrangements governing the procurement of services in the face of evolving markets and the need to rely on directions. In our view there may be a **bias in using AEMO's modelling parameters** around thermal generation. AEMO's methods and input parameters presume existing plant would be run inflexibly and without fuel limits, thus overstating the level of system strength present and understating the need for additional services. AEMO's standard set of fuel cost and unit commitment assumptions may also affect the modelling of non-network services. Overall this could materially affect the ranking of network candidate options which will tend to have lower variable costs and Powerlink should explore these effects through input sensitivities. We expect there could be material option value in the procurement of flexible non-network solutions which are likely to be less capital-intensive and ready for immediate deployment. The cost trade-offs and risks of over

⁵ AEMO, p. 36.

⁶ AEMO, p. 40.

or under-procurement of different solutions will also depend on how system strength needs are projected over a 20-year horizon, relative to AEMO's 10 year forecasts of IBR.

Powerlink's proactive approach to engagement⁷ should extend to explaining the **integration of its service procurement to new system strength pricing arrangements and steps it can take to enable a market** for these services to evolve. Powerlink states that further information will be forthcoming in its next annual planning report however we see value in publishing:

- data on 'actual' system strength levels which is frequently updated, that would help participants understand what drives investment needs
- clarity on how AEMO's criteria for maintaining a stable voltage waveform has been translated to a fault level metric, while also having transparency on how different technologies affect these sub-criteria definitions
- assumptions or methods in dealing with uncertainties around OSM procurement and inertia markets.

Powerlink's modelling of net benefits should also encompass **credible sensitivities**. To the extent these are not reflected in AEMO's approaches for its Integrated System Plan, Powerlink should explore sensitivities around the stated objectives and options outlined in the Queensland Energy and Jobs Plan, and notably the options outlined in the associated SuperGrid Infrastructure Blueprint.⁸

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

Lawrence Irlam
Regulatory Affairs Lead

⁷ Powerlink, p. 10.

⁸ https://www.epw.qld.gov.au/_data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf<https://www.epw.qld.gov.au/energyandjobsplan/about>