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Mr Ben Blake  
Manager Congestion & Grid Modelling  
Australian Energy Market Operator  
GPO Box 2008  
MELBOURNE VIC 3001

Submitted electronically: [ben.blake@aemo.com.au](mailto:ben.blake@aemo.com.au)

### **Congestion Information Resource Guidelines — Expedited Draft report — 2 December 2024**

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.

We appreciate the opportunity to provide feedback on AEMO's Congestion Information Resource (CIR) and associated guidelines.

Congestion is a cost, and in the National Electricity Market it is an issue of growing importance. We would like to see this reflected in some proactive initiatives proposed by AEMO, supported by this consultation process, to help raise awareness and understanding of the impacts of congestion, which is inherently a productivity issue and also drives the efficiency of network augmentation.

The transition of the electricity system will see the replacement of very large and mostly centralised coal-fired generation with smaller variable renewable sources that are geographically dispersed. While the associated changes in power flows will be facilitated by targeted transmission investment, AEMO's projections in its Integrated System Plan still highlight material and growing amounts of 'efficient' congestion, with approximately 20% of renewable generation output to be spilled or curtailed by 2050.<sup>1</sup> To achieve AEMO's optimal level of curtailment, developers would need to make locational decisions that reflect enhanced assessments of congestion risk. The transition will also involve careful operation of the transmission system, as more outages will be required to connect new transmission, generation, customer and storage assets, as well as maintain ageing infrastructure.

The CIR is critical in this context. It is the avenue by which stakeholders should be able to gain insights into AEMO's congestion work program, and form expectations on the congestion outlook over the next 12 months, to the extent AEMO's actions are a key variable. As we see it a lot of the CIR is backward-looking — that is helpful and can be improved, but we look to AEMO for better insights into the future as well.



**EnergyAustralia**  
LIGHT THE WAY

EnergyAustralia Pty Ltd  
ABN 99 086 014 968

Level 19  
Two Melbourne Quarter  
697 Collins Street  
Docklands Victoria 3008

Phone +61 3 8628 1000  
Facsimile +61 3 8628 1050

enq@energyaustralia.com.au  
energyaustralia.com.au

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<sup>1</sup> AEMO, 2024 *Integrated System Plan*, Appendix 3 — Renewable Energy Zones, June 2024, section A3.2.1.

Given the extent of AEMO data reporting and stakeholder interactions on congestion, we expected it to initiate this CIR consultation with more topical questions and suggested improvements to its data reporting. Instead, AEMO has elected for an expedited consultation process, with only two proposed and minor amendments to the CIR. The questions posed by AEMO in its draft decision paper are also generic.

### Recommendations on CIR content

Our specific recommendations for AEMO's CIR are listed below. Ideally these should be consulted on with affected stakeholders (see our separate recommendations on AEMO's process) to determine their relative importance to the market and detailed implementation:

- **Annual update of transmission line diagrams** — Regularly updating the transmission line diagram ensures that all stakeholders have access to the most current network topology, reflecting design of new constraint equations, as well as new physical installations, decommissioning, and upgrades. This annual update should include both physical and operational changes, with additional revisions following major system changes or events.
- **Real-time publishing of line ratings including dynamic line ratings** — Real-time line ratings, particularly dynamic line ratings, provide more accurate capacity estimates by accounting for environmental conditions (e.g. temperature, wind). This enhances system reliability and optimizes asset utilization, aiding market participants in making more informed decisions, as well as highlighting the value of application of such ratings.
- **Advance publication of planned outage lead times by Transmission Network Service Providers (TNSPs)** — Ensuring transparency by publishing the lead time for planned outages well in advance allows market participants to prepare for potential impacts. This also serves to evaluate TNSPs' compliance with regulatory requirements, ensuring they adhere to rules regarding outage planning and notification.
- **Introduction of high impact outage (HIO) flag for planned outages** — Introducing a HIO flag provides an immediate visual cue on the significance of planned outages. This flag can help prioritize resource allocation and stakeholder attention towards managing these outages effectively.
- **Measurable criteria for HIO assessment** — Establishing measurable criteria for HIO assessment ensures consistency and transparency. Criteria might include metrics such as expected reduction in transfer capacity, number of affected customers, or potential market impact, enabling a clear understanding of the outage's potential consequences. As an example - at present the materiality threshold applicable to the market impact component of the AER's performance incentive scheme for TNSPs is a marginal value (MV) >\$10/MWh. AEMO should consider how a set of MV thresholds can be used in defining a HIO, or any statistical reporting framework.
- **Enhanced constraint naming for better categorization** — A standardized and informative constraint naming convention improves clarity and allows for easier identification and categorization of constraints based on system condition (normal/outage), type (<=, >=), limit (thermal, voltage stability etc), and scope (Dispatch, pre-dispatch, STPASA, MTPASA). This aids in understanding system

conditions and the nature of constraints, thereby facilitating better analysis and response from market participants. EnergyAustralia implores AEMO to adopt a more consistent approach to its constraint naming practices as well as the standing data (descriptions, reasons, impacts, etc) associated with constraints and constraint sets.

- **Improvement of constraint forecast accuracy and formulation** — Accurate constraint forecasting is critical for maintaining market stability and ensuring efficient resource allocation. This improvement aims to refine the precision of constraint forecasts, ensuring they more closely align with actual system conditions. Such advancements will not only support better operational decision-making but also indirectly enhance local price forecasting accuracy, leading to a more transparent and reliable market environment. So EnergyAustralia supports a review and consultation on the (currently mean absolute percentage error) style method of testing PD/ST/MT PASA forecast methodologies against dispatch observations. Is the method for reviewing the accuracy of forecast models used in market systems the best it could be, and thereby the process for refining and improving constraint formulations?
- **Provision of a 13-month rolling forecast of known and significant constraint set and library changes** — This would allow AEMO to provide (non-firm) insights into changes it expects to make to the constraint library, thereby giving participants a better tool to manage year ahead changes and therefore risks.
- **Clearer links between the current day and the ESOO constraint library** — again, this initiative would be focused on enabling participants a much more transparent view of how AEMO transition its view of today's constraints into its forecast methodologies – notably to predict unserved energy and materiality of congestion across the ESOO outlook. This would extend to better reporting of congestion from the ESOO studies so whether this sits within the remit of the CIR or the ESOO processes is an open question, but EnergyAustralia would support this being implicit in the charter of the CIR.
- **Development of a comprehensive "super table" for constraints** — A comprehensive "super table" consolidating key information on constraints, regional prices, and LHS terms offers a one-stop resource for in-depth analysis. This integration aids in understanding the interplay between constraints and market outcomes, supporting consistent and better strategic decisions. Moreover, having AEMO create this resource would reflect a prudent use of AEMO's fees, as it would save considerable duplicated effort and costs across market participants. The intent here is to clearly improve the historical analysis and reporting of congestion and underlying trends – which can arguably lead to faster and better insights, and actions to manage congestion going forward. EnergyAustralia does see a gap in awareness, knowledge and explanation of trends in the MT PASA outlook timeframe — a fantastic opportunity to proactively improve quarterly energy dynamic reports and how participants view congestion risks and changes.
- **Direct publication of underlying constraints in dispatch local price table** — Directly linking underlying constraints to the dispatch local price table enhances transparency around pricing anomalies. This allows market participants to trace price deviations to their root causes, fostering trust and enabling more precise market strategies.

## Monitoring how constraints affect interconnectors and regional price separation

A further specific issue on constraint formulation, and where AEMO can provide market guidance or further explanation of its approach, relates to how it limits left-hand side coefficients to a value of 0.07.<sup>2</sup>

As we have raised with AEMO staff, we have concerns about how this applies to interconnectors and affects inter-regional power flows. Notably, we see instances where interconnectors are being assigned coefficients with very low values. This can result in material instances of regional price separation as constraints bind, and interconnectors are effectively deprioritised in dispatch because of a combination of participants defensively bidding in the face of congestion (which interconnectors cannot), and the low coefficients being assigned to interconnectors. The stability of the system is also materially impacted where binding constraints force very large changes in power flows over interconnectors within very short periods of time, as they effectively do not face ramp rate limits. We understand this threshold value was reduced from 0.2 by NEMMCo but cannot find any published information that considers this issue, particularly in terms of regional price separation and customer impacts we now see.

We encourage AEMO to release this information and assess whether its approach should be revisited, particularly in the face of a changing mix of generation types and anticipated transmission investment that may alleviate the constraints in question. There does not appear to be any avenue by which stakeholders can request reviews of AEMO's Constraint Formulation Guidelines, however the reporting and analysis of material constraints and their market impacts, including how they stem from AEMO's approach to formulation, is within the scope of the CIR.

## Process and consultation recommendations

As AEMO would be aware, the AER is currently consulting on its Service Target Performance Incentive Scheme (STPIS) for transmission and has suggested ongoing monitoring, in addition to seeking views on better or alternative measures in relation to its market impact component. The Clean Energy Council has suggested a measure relating to transmission outage notifications. Our suggestions to the AER have involved filtering outages along the lines of HIO with respect to price impacts. Other suggestions are likely to arise in response to the AER's draft decision that have a direct bearing on the CIR. It may therefore be prudent for AEMO to slightly delay revisions to the CIR to accommodate any data needs that might arise under the revised STPIS.

We also do not support AEMO's draft amendment to remove CIR development as a standing agenda item for the Electricity Wholesale Consultative Forum. AEMO has not explained this amendment and it runs counter to congestion being an issue of increasing importance.

Rather than reducing its commitment to stakeholder consultation, AEMO should consider development of a forum to engage more often and in a structured way with industry participants regarding the CIR. We have no doubt this would be a constructive use of time to foster quicker and better engagement to focus on observed congestion trends. This would undoubtedly elevate congestion discussions across the industry, thereby helping managing risks.

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<sup>2</sup> [Constraint Formulation Guidelines](#) – see section 2.6.1.

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

Regards

**Lawrence Irlam**  
Regulatory Affairs Leader