Australian Energy Markets Commission

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AEC Submission to AEMC Clarifying registration for non-generating units providing system security services Consultation Paper

The Australian Energy Council (AEC) welcomes the opportunity to make a submission in response to the AEMC Clarifying registration for non-generating units providing system security services Consultation Paper.

The Australian Energy Council is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. AEC members generate and sell energy to over 10 million homes and businesses and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 per cent emissions reduction target by 2035 and is committed to delivering the energy transition for the benefit of consumers.

The AEC supports the rule change request submitted by CS Energy, and believes the rule should be made as submitted. The AEC is not convinced the more preferable rule options explored by the AEMC in its Consultation Paper better address the underlying need for the rule change.

The broader context for the rule change is that as the energy transition progresses, and thermal plant exit the market, the provision of essential system security (ESS) services can be performed by a range of technology. While TNSP owned synchronous condensers will play a major role, non-network alternatives can also play a role, and should do so where they offer a cost effective alternative.

ESS issues are currently being considered by both the AEMC and by the Expert Panel. The organising principle driving AEC advocacy is that ESS need to be unbundled, and market mechanisms offer the best way to ensure that ESS are provided at least cost to consumers. A secondary principle we think has merit, is that policy makers should have regard to the efficient use of existing infrastructure to support a least cost energy transition – that is, if existing infrastructure can be repurposed to provide services required as the energy transition continues, and this is a lower cost option when compared with a new build alternative, it should be able to participate in the relevant market.

CS Energy's proposed rule change contributes to the National Electricity Objective (NEO) in two primary ways:

- by improving power system security outcomes through more efficient utilisation of existing resources to lower costs for consumers; and
- by reducing greenhouse gas emissions.

Improving System Security and Lowering Costs for Consumers

The rule change proposes a new registration category called "non-generating system service provider" for non-generating units like stand-alone synchronous condensers. This removes existing ambiguities and uncertainties in the National Electricity Rules (NER) that currently preclude their ability to provide the full

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range of system services. By creating a clear registration pathway, the change is expected to incentivise market participants to provide more non-network system services, particularly by encouraging the conversion of existing synchronous generators into stand-alone synchronous condensers after they retire. This repurposing of existing generators is viable and potentially more efficient solution for delivering the required system services compared to procuring new synchronous condensers. It allows for the reuse of existing assets, including voltage and reactive power control systems, cooling and lubrication systems, and the crucial existing point of connection infrastructure. [1] This approach is expected to result in lower costs for energy consumers.

The indicative conversion costs for thermal generators are likely to be significantly lower than procuring a new synchronous condenser, potentially around at least 60% less, with even greater savings for higher capacity generators. Transgrid's analysis supports this, suggesting that a mix of technologies, including repurposed units, will better meet system security needs at a lower cost than a new fleet of synchronous condensers. [2] Repurposed synchronous condensers typically offer larger scale capacity, often upwards of 750 MVA, which is several times larger than a new standard synchronous condenser (around 125 MVA). This means one converted unit could potentially substitute for five or more new synchronous condensers.

Furthermore, repurposing existing generators can lead to faster implementation timelines, potentially achieved in 12 to 24 months at some sites, compared to over 30 months for procuring new synchronous condensers, especially given tightening international markets. The increased availability of system security services from repurposed units allows the Australian Energy Market Operator (AEMO) to adopt fewer conservative constraints, thereby enhancing reliability by allowing a higher level of inverter-based renewable generation to connect without compromising system security. This efficient utilisation of existing resources to provide system services directly contributes to the NEO's objective of ensuring reliable and secure electricity supply.

Reducing Greenhouse Gas Emissions

The conversion of existing generators into stand-alone synchronous condensers facilitates the provision of system security services from lower emission sources. Synchronous condensers are less emission-intensive in their operation as they draw only small volumes of electricity from the grid, which is increasingly powered by renewables. By increasing the overall availability of system security services from these lower-emission sources, the rule change helps to facilitate a higher level of emission-free renewable generators to be connected to the grid without compromising system security or strength. This is particularly important as existing thermal generators retire and are replaced by inverter-based renewable generators.

A higher level of renewable generation in the grid, enabled by sufficient system security services, directly contributes to reducing Australia's greenhouse gas emissions and supports the transition to a system with a lower carbon footprint, aligning with the emissions component of the NEO.

Could the AEMC use the Integrated Resource Provider registration category?

In its Consultation Paper, the AEMC seeks feedback on an alternative approach to addressing the issues raised in the CS Energy rule change request. The AEMC would like to utilise the existing Integrated Resource Provider (IRP) registration category, either with no rule made and clarification in the final determination (Option 2a) or via amending the IRP category to clarify that a standalone synchronous condenser can be viewed as an IRP (Option 2b).

The AEC is pleased that the substantive issue of clarifying that existing generators should be able to be repurposed as standalone synchronous condenser and participate in the ESS market seems to be accepted

[1] https://www.energycouncil.com.au/analysis/rebirthing-coal-power-stations-into-synchronous-condensers/
[2] https://www.transgrid.com.au/about-us/network/network-planning/system-security-roadmap

as contributing to the NEO in the Consultation Paper. However, the AEC believes that the clearest way to achieve that is the proposal put forward by CS Energy, and has concerns with utilising the IRP registration category for a number of reasons:

- Option 2a relies on the AEMC's notion that a standalone synchronous condenser can be considered a "bidirectional unit" on the basis that it "consumes electricity to charge the kinetic energy stored in its rotating mass that is released via its inertial response to a power system disturbance" (p. 11 of the AEMC's consultation paper);

- This notion contradicts the current definition of bidirectional units in the NER as Chapter 10 defines:

    - A bidirectional unit as a "production unit that also consumes electricity…"; and

    - A production unit as a "plant used in the production of electricity…".

A new registration category is more effective than the use of IRP to enable the provision of ESS services by non-generating units as:

- Establishing a new distinct registration category is administratively simpler and more likely to provide legal clarity with a well-defined registration pathway;

- Unlike the IRP approach, this approach will not impact other existing registration categories; and

- The proposed registration category is both broad and adequately technological-neutral as it captures all non-generating technologies that can provide ESS services, which allows more flexibility for future innovation and participation in market mechanisms under development.

While amendments to the IRP category could make it workable, such an approach is likely to be administratively and legally more complex than a new category due to need to review all IRP references in the NER and relevant AEMO's guidelines to ensure consistency and address unintended consequences. This would likely make the IRP approach more costly to implement relative to a new registration category.

The purpose of the rule change is to provide clarity, and support investment in repurposing generation plant, so the simplest path forward is as proposed in the rule change request.

Any questions about this submission should be addressed to David.feeney@energycouncil.com.au.

Yours sincerely,

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