

15 February 2026

FOR PUBLICATION RESPONSE

Australian Energy Market Operator Limited
By email: futureenergy@aemo.com.au

Dear AEMO TPSS team,

2025 Transition Plan for System Security – Consultation

We appreciate this opportunity to respond to the 2025 Transition Plan for System Security (TPSS) questions. And we wanted to particularly acknowledge the depth of work and careful analysis inherent in your plan.

Context for our response

We have responded below to the specific questions in the TPSS (at Section 2.6) but in general the overriding theme is as follows:

As AEMO ‘de-couples’ system security services from thermal generation, it must not miss the opportunity to ‘re-couple’ system security design to both transmission and load planning.

The ISP and Victorian Transmission Plan (VTP) processes currently do not do that. They are designed to justify new-build 500kV HV AC transmission lines based on a static SummerHi load case and thermal limits. The system reliability and security implications of these plans are then treated as a ‘bolt-on’ investment and approval process.

This misses an opportunity to develop a ‘smarter’ lower cost energy system. For example, the TPSS does not consider approaches that would integrate system strength with the load flow tasks identified in the 2026 ISP, for example:

- (i) Grid forming HV DC converters as part of a transmission project that would act as a fire wall against cascading instability and provide system restart services at scale.
- (ii) BESS capability for both SIPS and to increase the capacity factor of transmission lines from REZ areas and to reduce the largest credible contingency MW size
- (iii) Data Centre power infrastructure that will grow to a scale by 2030 where it must not only buffer the grid from load swings, but if properly designed can also materially support system security.

We think these integrated solutions will provide a faster and lower cost pathway to a robust grid than AEMO's current split planning approach. In most cases the 'last time to act' for these types of integrated projects will be in 2027 for any project that could be delivered in the 5 to 10-year horizon.

We are also concerned that the existing network planning process favours incumbent monopoly TNSPs with an incentive to build-out the largest possible transmission RAB.

Particularly in the VTP, TPSS and ISP processes we are concerned that incumbent monopoly utilities drive the early definitive 'technical reference group' process, with more nimble and innovative stakeholders left to provide responses to consultation questions 'after the fact'.

About Syncline Energy Pty Ltd

Syncline Energy Pty Ltd was founded in 2005 and is a leading Australian developer of energy projects that are especially relevant to this TPSS:

1. **The Victorian AI Hub Power Facility** a planned 3 x 200MW OC GT facility which would act (via clutches) as synchrons when not fired. We will also add fly wheels (for inertia) and STACOMs. The project is part of a 500 Ha data centre precinct which is adjacent to the Melbourne Renewable Energy Hub (**MREH**) (see below).

The site has two 500kV switchyards and is at the juncture of five 500kV HV AC lines, Western Renewable Link (**WRL**) and the proposed 2GW Syncline Community Cable HV DC link (**SCC**) (see below).

APA's main Western Outer Ring Main (**WORM**) pipeline crosses the site at the location of the proposed power station. The on-site transmission, power, and water facilities would support up to eight DCs totalling 3.2 GW.

The primary aim of the site's OC GT is to buffer the network from AI induced load swings and to provide back-up power to DCs. However we could also provide inertia, system re-start and frequency support to the Melbourne Metro load centre at scale.

2. **Syncline Community Cable (SCC)**, a 265km long fully underground 525kV HV DC bipole cable with DMR. The project mobilizes additional energy from Victoria's North West REZ and Western REZ and materially improves interconnector flows between Victorian, NSW and SA.

SCC has a fully developed, micro-sited route that was agreed with farmers over the last 18-months following ecology and heritage studies. Syncline completed a tender in late 2024 for the civil works, converters and cable.

With Marinus Link, it represents a renaissance of HV DC technology in Australia that follows a global trend. We have a complete understanding of GF capability, current market costs, risk allocation and development schedules. Inherent in the design for SCC, are the converter stations at Melbourne and in northwest Victoria which will provide:

- System strength and voltage stability support
- Superior power flow control
- Improved resilience against bushfires and natural disasters

- Inertia and RoCoF contribution
- Fault ride through capability and superior fault discrimination
- Black Start capability for Western Victoria, Melbourne and Southern NSW
- Very material increase in transfer limits between Victoria and NSW

This is in addition to the 2GW+ energy transfer capability of the cable, which can be delivered with a very high-capacity factor using existing and planned BESS storage and which will mobilize low LCOE generation in North West Victoria and South West NSW.

The project is at an advanced stage of development with the route secured and ecology and cultural heritage mostly complete.

(Refer www.synclinecommunitycable.com.au)

- 3. 600 MW Melbourne Renewable Energy Hub (MREH)** a 1.6 GWh BESS at the metropolitan Load centre with grid forming capability at the 500kV network level. The project was commissioned in 2025.

MREH includes a 500kV HV AC underground connection that runs 1.8 km from MREH to Sydenham Terminal Station (**SYTS**). Stage 2 of the project can deliver a further 2.4 GWh of BESS storage.

MREH is now owned by Victoria's SEC and Equis.

- 4. Bannerton Solar Farm 88 MW_p** which was one of the 'Murray 5' solar farms that were curtailed due to AEMO concerns around cascading instability in a weak network.

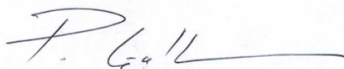
Bannerton is now owned by Foresight Group.

We are keen to provide further technical detail on our projects and to support AEMO's understanding of the costs and benefits of integrating system strength with transmission and load projects.

If we can provide further details on our response, please call at any time (**0413 640 120**) or email phil@synclineenergy.com.au.

Yours sincerely

Phil Galloway



Managing Director

Syncline Energy Pty Ltd

0413 640 120

AEMO Question 1: - What was most useful in this year's TPSS that would be useful in future?

The TPSS is an excellent and clear document that, going forward, Parts A, B and C should all be retained. We particularly like:

- AEMO's dedicated and holistic focus with the four previous AEMO reports combined into a single TPSS. This is greatly appreciated.
- The annual cycle for the TPSS is important to retain
- Identifying "transition points" and extending Horizon 2 to a 2-10 year window. (Though we disagree that Horizon 3 of 10+ years should be relegated to Engineering Road Map - Refer Question 4 below)
- The clarity for each region on what has been assessed and the work still to be done. (For example, in Victoria System Restoration and Transient Stability work is transparently acknowledged as "still to be assessed".)

We would like to see:

- Increasing references to the functional requirements of a system strength project, rather than prescriptive references to a specific technology type. Although we note that the TPSS is better in this regard than the 2026 ISP.
- AEMO's Engineering Road Map should be integrated into the TPSS.
- The TPSS could also identify the acceptance criteria for any technology that AEMO might consider in the future. This would help developers and procuring authorities establish design criteria, specification and acceptance testing frameworks with OEMs. This is critical long-lead work that needs engagement from global OEMs and local developers. (As a case study, the approach that TenneT took for HV DC switch gear in its NordLink and SuedLink HV DC projects. Or that the EU's InterOpera project that has developed a 'multi-vendor' procurement framework to ensure that a single vendor won't gain a monopoly position through a technical specification, firm wear IP or an operating protocol that others can't meet.

AEMO Question 2: - What additional information would help stakeholder decision-making on investments that support system security?

We would like to see a full consolidation of the TPSS conclusions as an input into the AEMO's ISP process as well as the State based network planning cycles (eg. VicGrid's 2027 VTP). This will highlight opportunities to co-optimize system security with energy transfer. That will help keep the cost of the energy transition as low as possible and accelerate the development of projects that meet both objectives. Figure 1 below shows the merits different technologies that integrate both energy transfer and system strength tasks.

This integration is required because the ISP (and VTP) are developed solely on 'dumb' grid technologies, with transmission projects justified almost entirely using thermal limits for a SummerHi load case. This risks an over-build of greenfield 500kV HV AC transmission lines with the TPSS investments then bolted on to the top.

The result is that 'smart' grid solutions to the energy transfer challenges are largely ignored in the ISP (and VTP) work. For example, the ISP includes no virtual transmission (using GF BESS) and the benefits of modern HV DC transmission technology are identified only for Marinus link.

These types of solutions would have benefits across the entire TPSS framework by providing new assets, activating more RERT contracts and providing the network operator with fast and material interventions. Yet these projects won't make the ISP short list because system strength benefits are not credited against the sometimes-higher upfront capital cost calculated for transmission in the ISP.

The planning fault arises from the ISP (and VTP) being too prescriptive on the technology fix required to address an emerging network need, which then results in a quite prescriptive RIT-T process. The confusion arises because a cost and rough design is needed for the ISP cost/benefit Plexus simulation work, and typically a greenfield 500kV HV AC overhead solution is seen as a safe base case. However, the ISP analysis should not be considered as the definitive engineering design or project selection because no real 'optioneering', system security or market testing has been completed at that ISP stage.

As a result, major transmission projects such as Hume Link, VNI West and WRL blow out in cost and delivery schedule while leaving many of the associated system security issues to be resolved later with a substantial investment in new synchrons.

And it is increasingly clear that greenfield 500kV overhead line capex in the ISP (and subsequent RIT-Ts) massively understates the 'externality' costs of overhead HV AC transmission - such as householder compensation, environmental off-sets and delay costs. Whereas these costs are almost non-existent for buried HV DC projects or for virtual transmission provided by GF BESS where system strength benefits are also delivered as part of the investment.

The lack of wholistic planning is particularly a concern with respect to the TPSS Horizon 3 projects which, incidentally, fall into the near term for the ISP framework.

AEMO Question 3: - Where is additional effort required to maintain system security while transitioning to higher contributions of renewables?

We would like to see the system security work as an input to the ISP (and VTP) to better integrate system security with energy transfer planning (Refer Question 2 above). There are two good examples in the TPSS of how better integrations of system security would result in a higher penetration of RE:

- In the TPSS (at page 98) AEMO proposes that new RE supply in Victoria could be concentrated in the Latrobe Valley to address reliability and thermal limit constraints. This puts the 'cart before the horse' because on-shore wind and solar resources in Gippsland, and those projects scalability and size, are sub-optimal compared to North West Victoria and Southern NSW which have a more diversified wind resource, lower costs and diurnal wind patterns. The result of this type of System Security approach would be to add materially to the LCOE of generation in Victoria while delivering a minor cost saving compared to the 'smart grid' solutions proposed by Syncline below (Figure 1).
- The TPSS, while acknowledging other technologies, appears to have settled on synchrons added to the HV AC transmission investment as the optimal solution. And the TPSS relegates Horizon 4 timeframe work to the Engineering Road Map. We would rather see a functional requirement developed in future TPSS and ISPs which then keeps open the technologies available to resolve a specific issue. And an acknowledgement that we are at the 'last time to act' for any major project to be delivered in the 2030s.

Figure 1 – Smart Grid opportunities where material system strength is delivered as an integral part of the energy transfer investment (compared to Synchrons)

System strength criteria as identified in the AEMO TPSS	HVDC Links	GF BESS	Data Centre – OC GT Power Facility	Synchron
Energy transfer and power flow control	✓	✓	✓	✗
System strength	✓	tbc	✓	✓
Frequency and inertia	✓	✓	? – with clutch	? – with fly wheel
Voltage control	✓	✓	✓	✓
Fire wall against transient and oscillatory stability	✓	✗	✗	some
Adds materially to AEMO’s operability hierarchy	✓	✓	✗	✗
System restoration	✓	✗	✗	✗
Can address new non-credible contingencies (Refer TPSS section 8.5.2) (i) Large volumes of new generation behind long double circuit overhead transmission, (ii) increases exposure to weather and bushfires from larger geographic footprint (iii) increased disturbance from DCs due to AI training load swings or sudden transfer to backup power	✓	✓	✓	✗

AEMO Question 4: - How best should the Engineering Roadmap content be merged and balanced with the system security information in the next TPSS?

The Engineering Road Map summary should be an Appendix to future TPSS.

The TPSS time Horizon 3 (of 10+ years) should also be explicitly developed in the TPSS and not relegated to the AEMO’s Engineering Road Map.

This is because most 10+ year projects will pass the commercial ‘last time to act’ threshold if not highlighted in the latest TPSS, VTP or ISP, even if the technology is identified and progressing in the Engineering Road Map.

The Engineering Road Map work is still vital, but it should focus on developing very specific functional requirements and acceptance criteria for emerging technologies and the post 2035 network.

The TPSS can then provide an annual market signal for different ‘smart grid’ solution that can be reflected in the ISP. That would reverse the current process where the ISP (and VTP) does not try to optimise system security, reliability and operability as part of the energy transfer modelling.

For the 5+ and 10 + year timeframes, the TPSS should identify the functional requirements and provide a locational signal that would then be an input to the ISP. This is needed due to the long and uncertain lead times of investments and projects that deliver system security solution that are integrated into the transmission project design rather than ‘bolted’ on to legacy HV AC technology.

AEMO Question 5: - Do you have any feedback on how AEMO can/should continue to engage on technical matters?

We think the existing AEMO process favours incumbent monopoly TNSPs with an incentive to build-out the largest possible RAB.

Particularly in the VTP, TPSS and ISP processes, we are concerned that incumbent monopoly utilities drive the process through 'technical reference groups', with more nimble and innovative stakeholders left to provide responses to consultation questions 'after the fact'.

Ideally key OEMs and experienced project developers such as Syncline could participate in a workshop that informs the VTP, TPSS and ISP processes at the start, as well as providing technical input along the way.