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Ms Anna Collyer
Chair, Australian Energy Market Commission
Sydney South NSW 1235
Online submission: ERC0290

Dear Ms Collyer,

Transitional Services Update Paper – Improving security frameworks for the energy transition

AEMO appreciates the opportunity to provide comment on the update paper and broadly we support the development of transitional services. This letter and attachment constitute AEMO's submission to the Transitional Services update paper.

As the system transitions to higher levels of inverter-based resources (IBR), the behaviour of the power system will change significantly, with the assessment of operability becoming more complex and require increased resources to establish operational confidence. To manage this transition to 100% renewables in an orderly, secure manner, AEMO considers there will be an increasing need for operational transition arrangements to securely transition the power system. AEMO has commenced scoping and early work in this space and considers the proposed transitional services framework offers a useful mechanism that supports the operational transition of the power system.

A short summary of AEMO's position is:

- AEMO supports the transitional services framework as an additional mechanism to manage power system security through the energy transition.
- To maximise value and use of the framework, the design of transitional services would ideally be flexible to allow for multiple applications given we are in a period of innovation. Specifically:
    - The design of Type 2 contracts should be flexible to support the range of operational trials necessary to accelerate the transition to a low-carbon power system.
    - The sunset dates for contracts may not align with the practical use of contracts and the evolving nature of the power system transition.
    - AEMO recognises the need for greater transparency and collaboration with stakeholders as part of the secure transition of the power system and is committed to ensuring this occurs. AEMO does not consider a Rules obligation with stringent timeframes and Rules based consultation obligations is best suited to providing this transparency and opportunity for collaboration.

AEMO looks forward to continuing to work with the AEMC and industry in finalising these important regulatory reforms. If you have any questions regarding this submission please contact Kevin Ly, Group Manager – Reform Development & Insights on kevin.ly@aemo.com.au.

Yours sincerely,

Violette Mouchaileh
Executive General Manager – Reform Delivery

1. Transitional services framework

As discussed in AEMO's submission to the Directions Paper, AEMO is supportive of the proposed transitional services framework.[1] This is an important step in recognising that while current frameworks are designed to cover specific security needs, not all security needs can be currently defined and captured in long-term planning frameworks. Current processes of directing plant online for security needs have been widely acknowledged throughout this reform as not in line with the intention and design of the directions framework. Shifting away from the frequent application of directions has been a primary driver of this reform process. AEMO agrees that other mechanisms need to be in place to accommodate the transition and notes transitional services should not be compared to directions which, by design, were not intended to be used in this frequent and ongoing manner.

AEMO appreciates the extent to which the proposed transitional services framework seeks to ensure that its practical application creates appropriate incentives to progress and support the transition. AEMO considers the framework may provide an efficient and useful mechanism to support maintaining power system security through the energy transition and acknowledges the work the AEMC has done in designing this mechanism. This submission seeks to provide further context for the framework and how, from AEMO's perspective, it may be efficiently utilised to support the energy transition.

AEMO is supportive of the design of this framework as an option for AEMO to procure transitional services. The optional design of this framework is an important feature as it ensures neither AEMO nor service providers are forced into entering an agreement. This makes the framework more dynamic, robust and allows AEMO to factor costs into any decision as to whether to enter a contract or not.

AEMO would welcome the opportunity to continue to work with the AEMC, particularly regarding the drafting of Rule amendments to ensure the objectives of the framework align with the operational applications.

2. Contract types

This section sets out AEMO's specific feedback on the proposed design of transitional services contracts. AEMO supports separating the transitional services framework into two contract types with two distinct objectives. The type of contract affects the structure of the commercial agreement, terms, and requirements for the provision of services. Dividing the framework into two contract types acknowledges the existing and ongoing value in procuring for security services, as well as the role procurement frameworks will have in supporting the transition of the power system.

AEMO considers the role of each type of transitional service framework as follows:

Type 1 – Procurement of system security needs that are not covered by existing frameworks but required to maintain the defined secure operating envelope.

Type 2 – Framework for contracting for services required to undertake operational trials to support the transition to a low emissions power system.

[1] AEMO, Submission to Improving Security Frameworks Draft Determination, page 6 - https://www.aemc.gov.au/sites/default/files/2023-10/12%2020230928%20Submission%20Improving%20security%20frameworks%20for%20the%20energy%20transition.pdf

While AEMO considers the above generally aligns with Section 2.2.3 of the Update Paper, the following explains points of difference:

2.1 Operational trials required to support the power system are not limited to trialling new technologies or services not defined in other planning frameworks

Trialling new technologies to support security and power system operations should not be thought of as a simply trialling new technologies, but rather to trial the *application* of technologies or services for operating the power system in a new way.

Further, while AEMO is fully supportive that it should not use transitional services as a substitute for other frameworks, in the context of Type 2 contracts, AEMO can see value in being able to enter Type 2 contracts for services that are currently defined or could be provided by other frameworks. This would not be to facilitate enduring procurement of a service above the level implied by existing frameworks. Instead, AEMO considers the Type 2 framework may be used may be to procure services required to trial technology or operability under a specific scenario that is facilitated by additional procurement of existing services. A simple example of this may be to trial new technology for the provision of regional inertia in a high-IBR system (see below for further detail). Any Type 2 contracts would be limited and fixed in duration.

AEMO considers that the scope and value of trials is broad and AEMO cautions that any definitional limitations that narrow the scope of trials may reduce the practical effectiveness of the Type 2 transitional service contract framework. The framework should ideally be flexible enough to ensure Type 2 contracts can be efficiently utilised to support AEMO gaining the range of operational experience required to transition to a lower emissions power system. Rules drafting attached to the September Directions Paper defined the relevant objective as a service that is "*part of a trial for testing new ways to maintain power system security" (3.11.12 (a) (2) (ii)).* AEMO support this or similar drafting and considers that this drafting would likely be sufficiently flexible to support a range of trials. AEMO is keen to work with the AEMC to ensure updated NER drafting for Type 2 contracts is similarly flexible.

The following sets out examples of how AEMO thinks Type 2 contracts could be effectively utilised to progress operational transitions and defining security services in a low- or zero- emissions power system. It is important to note under no circumstances would AEMO use Type 2 contracts to supplant the TNSP primary obligation in planning frameworks.

- ***Supporting a trial of grid forming inverters to provide system strength.*** In this scenario, AEMO would contract for grid forming inverters to prove how AEMO can operate them for the provision of fault current and to support voltage waveform stability, including any headroom requirements. Such a trial could also demonstrate the technical performance of these devices and build understanding of the practical application of this technology to inform future technical specifications or other instruments. Whilst the provision of system strength is required of the relevant TNSPs (as a prescribed transmission service), under the amending rules associated with these proposals, it is AEMO's responsibility to schedule, or operate them with the broader power system, and not the TNSP. To maximise the available resources for the provision of system strength, and to understand how they can be operated, grid forming batteries may be contracted by AEMO to operate to trial their provision of system strength, or alternatively, AEMO could procure substitute services as it trials any TNSP contracted grid forming batteries. The point is, irrespective of the initial contracting party, transitional services could be used to test how new technology will be operated on the power system, to avoid the uncertainty of this inhibiting the entry of such technology. In this example AEMO would

consider the application of transitional services would meet the obligation to only be used where no other framework applies, despite system strength being a prescribed transmission service.

- ***Enabling a high IBR trial with contracts for increased regional inertia.*** In this scenario, Type 2 contracts may be utilised to accelerate the transition by facilitating a trial of operating the system at higher levels of IBR than is currently enabled. In some scenarios, high IBR penetration could lead to insufficient inertia being available in a given region. Type 2 contracts could be used to provide additional inertia (above minimum levels) that is required to test operations at high levels of IBR. AEMO considers this use of Type 2 contracts would accelerate the transition by informing inertia needs that could enable higher IBR dispatch and test the performance of the power system. Insights from a high IBR trial would give AEMO and industry increased understanding of security requirements for operating a high IBR power system. In this example AEMO would consider the application of transitional services would meet the obligation to only be used where no other framework applies, despite minimum inertia requirements applying to TNSPs. This is because the minimum inertia requirements are not targeted at completing operational transitions.

- ***Payments for market impacts of an operational trial of an island.*** In this scenario, AEMO could trial the operations of an electrical sub-network to test security requirements to operate at 100% IBR generation. Undertaking this trial would have specific market impacts on existing generators and service providers as normal market dispatch would be affected by operating a sub-region as an island. AEMO considers there may be an additional use for Type 2 contracts to provide appropriate payment and incentives to affected participants for participation in and the impacts on market outcomes, from the occurrence of this trial. Any Type 2 contracts would be short in duration and limited to participation in this trial. These types of trial, which are deliberately targeted at testing on a smaller scale what a system would be like after an operational transition (thus giving confidence to complete one), may not be directly trialling new technologies – AEMO request the AEMC consider whether such a transitional service would be allowable under the proposed amendment.

- ***Trial of new technologies to demonstrate service capabilities.*** AEMO considers that Type 2 contracts may be utilised in this scenario to enable a sandboxing-type arrangement for trialling the capabilities of new technologies. Type 2 contracts may be procured under a more open-ended process like the EirGrid and Soni Quantification Trial Process.2 Through this process EirGrid and Soni entered commercial arrangements with technologies to trial their system service capabilities and develop a deeper understanding of how best to integrate these technologies at scale.

2.2 Sunset dates for contracts may impact the use of contracts

AEMO considers the use of sunset dates for Type 1 contracts (5 years) and Type 2 contracts (10 years) may not align with the practical application of the frameworks. As power system operations and understanding evolves, AEMO considers that retaining Type 1 contracts for security services would minimise the risk of reverting to directions where gaps in defined procurement mechanisms exist.

A high-level description and example are included below:

	High- level	Example
1	AEMO procures Type 1 transitional services to secure the existing technical envelope while in parallel preparing for a new technical envelope which will be defined in conjunction with the relevant stakeholders e.g. TNSPs, DNSPs	Enter Type 1 contracts for two units to maintain minimum synchronous generation in SA.
2	AEMO procures Type 2 transitional services to progress trials of new technology or operating states that have not yet been secured. AEMO assesses trial results and power system performance. This may result in AEMO formalising the process for a new operating envelope.	Undertake a trial of operating the power system with a minimum of 1 unit in SA. Type 2 contracts may be used to contract for 1-unit operations during the trial, with provisions for fall-back measures to ensure secure operation. In this example, Type 2 contracts are being used to facilitate the trial of a new operating state.
3	Once a new operating envelope is defined, AEMO may again procure Type 1 transitional services to secure the new operating state. These Type 1 transitional service requirements would differ from those in step 1 and to the extent services are defined through trial processes in step 2, the Type 1 requirements would decrease.	If the trial demonstrates the new operating state, for example, at 1 unit minimum, Type 1 contracts may then be utilised to secure minimum synchronous levels.

In the absence of an enduring Type 1 transitional services framework, directions may be required to secure the newly defined operating state.

Type 1 contracts are designed to offer a way of managing the power system transition without reliance on market intervention. As the time duration over which the transition will occur is not defined, having a defined lifetime for Type 1 contracts is contradictory to their intended use. AEMO agrees that Type 1 contracts should be transitional and considers that instead of sunsetting the framework, the following design aspects will prevent over-use of the framework and prolonging the utilisation of incumbent generators:

- **Limitations on contract length** – AEMO considers the proposed 3-year duration is appropriate
- **Scope** – AEMO supports Type 1 contracts to provide for a specific and defined security need
- **Transparency and reporting** – Reporting obligations including the statement of security need, annual report and transition plan for system security require AEMO to provide transparency and accountability on all transitional services contracts and their context within the energy transition
- **Decarbonisation** – AEMO supports the consideration of decarbonisation objectives and reporting.

Given the evolving nature of the energy transition, it is not possible and counter-productive to associate a timeline with it.

AEMO considers that removing the suggested sunset date for the framework but retaining the limitations described above would better retain the benefits for the industry of AEMO moving away from manual directions as a primary means of delivering security.

Similarly, AEMO questions the need for a defined sunset for Type 2 contracts as there is likely to be considerable value in retaining a procurement mechanism to support trials as the power system and low emissions technology continue to evolve. This promotes innovation in the energy transition and enables the

range of trials required to progress operational transitions. This would not detract from the transitional nature of the frameworks as in practice, Type 2 contracts would be utilised for the purposes of trials which have defined milestones, objectives, and end points.

3. Transition Plan for System Security (new report described in AEMC Update Paper)

AEMO agrees cross industry collaboration is fundamental to securely transitioning the NEM to a decarbonised power system and AEMO is committed to delivering increased transparency. AEMO supports the intention of the proposed "transition plan for system security" to support increased transparency and industry engagement but considers that the reporting and engagement should reflect the evolving nature of the transition.

This section provides feedback on the proposed transitional plan for system security, including the alignment to existing and planned publications, as well as stakeholder engagement processes.

3.1 Reporting and stakeholder engagement should reflect the evolving nature of the energy transition

Increased awareness of current and evolving power system requirements is central to efficiently support operational transitions and the understanding of security service needs. While AEMO agrees with the need and is committed to delivering increased transparency, AEMO considers that a Rules obligation with stringent timeframes for reporting and consultation does not best deliver these outcomes.

Section 2.3 of the Update Paper states that the transition plan for system security would support industry understanding of:

- *How AEMO is planning to meet the security needs of the power system through the transition to a low- or zero-emission systems, and*
- *The current and technical understanding of system security and work to improve this understanding and specify services.*

AEMO considers that these are two different objectives which have implications as to how and what AEMO would publish under this requirement. The first objective would include setting out the activities and operational transitions required to progress the transition of the power system. The second objective would inform security services, future planning and operational frameworks that may apply.

Content of the report

Given the distinction between objectives, AEMO questions the need to define in detail in the NER what must be included in the proposed transition plan for system security. For example, Page 22 of the Update Paper sets out 6 items that the transition plan for system security should include. Some items are covered, or would typically be covered, in the Engineering Roadmap as they provide analysis and insight on power system needs. In contrast, other items are more closely linked to what AEMO may look to cover in the operational transition planning and trial outcomes.

AEMO agrees that the Rules should define the objective of this obligation, high-level requirements and requirement for stakeholder engagement. However, given the evolving and complex nature of the power system transition, AEMO considers the scope of this reporting obligation should be flexible enough for AEMO to provide insight, analysis, and engage with stakeholders on the most relevant issues and updates for stakeholder feedback. One example may be to report on and seek stakeholder feedback on specific trial

outcomes and resulting implications for security services. This reporting would align with the objectives for the proposed transitional plan for system security but acknowledge the evolving nature of the power system and the need to engage on different aspects and activities throughout the transition. In practice, AEMO considers a more flexible obligation setting out the objectives of the reporting would better align with and acknowledge the complexity and unknowns associated with the energy transition.

Cadence and stakeholder feedback

AEMO acknowledges the importance of stakeholder input and a range of views in supporting the understanding of how to operate a low- or zero-emissions power system. It is also fundamental to AEMO delivering the operational transitions required to securely operate the power system. Having said that, AEMO considers the Update Paper's proposed requirement to publish a draft (year 1) of the transition plan for system security, receive stakeholder feedback (including the Reliability Panel) and publish a final (year 2) may not be the most efficient way to drive stakeholder collaboration. For example, a two-year timeline for draft and final would create a lag in the information being published and consulted in year 1, with the most up to date information available in year 2. Similarly, stakeholder engagement on the defined scope of the report may limit the ability for industry to effectively support and inform AEMO on the objectives of the framework. Power system operations are constantly evolving and, therefore, the approach to working through operational challenges and reporting should also be allowed to continually evolve.

Alternative approach

As an alternative, AEMO proposes the transitional services framework could specify a more flexible requirement for AEMO to undertake periodic and two-way consultation with stakeholders (including the Reliability Panel) and for AEMO to report on the two objectives (above) of the of the transition plan for system security. This would allow for tailored and frequent consultation and reporting that details the operational transitions as well as ongoing and future activities to develop understanding of security services and accelerate the transition of the power system.

This alternative approach for a more flexible rules obligation aligns with the objectives of the transition plan for system security and would provide increased transparency to participants with routine publications for stakeholder engagement. AEMO welcomes further engagement with the AEMC to ensure rule drafting on the transition plan for system security and stakeholder engagement maximises the value of two-way engagement on evolving security services.

Finally, AEMO agrees that the benefits of implementing this reform justify the costs but rejects the characterisation in the Update Paper as "simple" and implementation costs as "minimal.[3] The costs and impact of the framework would depend on the specificity and level of detail in the Rules requirements. This is particularly relevant in the requirement for the transition plan for system security and the potential for this to be a significant additional undertaking to produce this report if it does not align with the operational transition work, activities and trials undertaken. AEMO considers the more flexible approach proposed above, would better balance the costs and benefits of increased transparency and coordinated stakeholder engagement.

[3] AEMC, Transitional Services Update Paper, page 13 - https://www.aemc.gov.au/sites/default/files/2023-12/ERC0290%20-%20Transitional%20services%20update%20paper_0.pdf