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Dear Board Members

Improving Security Frameworks for the Energy Transition – Directions Paper (ERC0290)

EnergyAustralia (EA) is one of Australia's largest energy companies with around 2.4million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. We own, contract, and operate a diversified energy generation portfolio spanning coal, gas, battery storage, demand response, solar, and wind assets. Combined, these assets comprise over 5GW of generation capacity.

EA welcomes the opportunity to provide a submission to the Improving Security Frameworks for the Energy Transition rule change, specifically the Directions Paper. We recognise and are cognisant of the critical importance of maintaining and delivering power system security (PSS) in the NEM. This includes the challenges associated with understanding the criticality and the requirement of each of the essential system services (ESS) for the prevailing and dynamic NEM technical envelope, as the grid transitions to accommodate increasing volumes of Invertor Based Resources (IBR).

We are supportive of the AEMC's decision to move away from the proposed OSM on the basis that its function was not clearly articulated, would be costly, likely complex to develop and implement, and arguably not deliver on its intended outcomes. We therefore were pleased to see the AEMC dedicated significant resource to re-purposing this rule change process.

EA was initially heartened by the narrative in the Directions Paper (Paper) setting out its purpose and overarching outcome to develop an approach to address system security issues through the energy transition. However, we are disappointed at AEMO's declaration that ESS technical insights are insufficient to support the unbundling of ESS in the foreseeable future, and AEMC's seemingly distancing of its stance towards competitive markets. We acknowledge that some elements of the proposal will deliver short term reforms to support security, but not enough has been done to progress towards competitive ESS service markets.

One of the key enduring ESB legacies was its declaration of the importance of ESS in both the current and evolving NEM, and the need to address 'missing markets' for ESS by unbundling and valuing these services. We are very concerned that if steps are not

put in place via this rule change to progress towards realisation of the ESB's recommendation, the likelihood of unbundled ESS services and spot market creation is highly unlikely to occur into the future because of the difficulty associated with unwinding regulatory and operational processes embedded in the NER. While we recognise the AEMC has approached the concept of ESS markets as requiring a transitional pathway, it has also not recognised the significant body of work undertaken and/or published by AEMO which presents a contrary view to its own technical advice. In our view, the presence of this body of work demonstrates that the NEM is closer to the ESB's vision of ESS ancillary markets than acknowledged by its author.

In addition, EA is concerned with the AEMC's statement on page iii, *"….whether operational procurement of services that are difficult to define would provide clear and predictable long-term investment signals…"* when AEMO has been declaring forecast and actual shortfalls of ESS (including system strength, inertia, and NSCAS[1] for each NEM region as detailed on AEMO's System Security Planning webpage[2]. It is therefore challenging to reconcile and accept that forecast predictions of ESS shortfalls are being made on the basis of it being difficult to define and that this somehow undermines the provision of clear and predictable long-term investment signals. It also begs to ask the question of *"How and why are AEMO currently issuing Directions to Registered Participants for the provision of PSS services to restore or maintain power system security? How are these required services currently specified and quantified?* We encourage the AEMC to consider these key questions in its deliberations.

Similarly, EA is also very concerned with the proposed sunset period, without AEMC clearly articulating key deliverables and a pathway for delivery at the end of this period. In our view, the history of how sunset clauses have operated in the context of the proposed ten-year transitional timeframe creates an environment which significantly increases the risk of locking in structured procurement as an enduring arrangement. Although beneficial in the immediate term, a structured procurement approach does not truly value or incentivise ESS capability in the same way as markets will because access to contracting is limited. EA believes the proposed changes[3] therefore runs contrary to the long term objectives the Directions Paper is attempting to achieve[4], compromises the National Electricity Objective (NEO) and is prejudicial to consumers from a cost and markets efficiency perspective.

Noting the significant change in focus in this Directions Paper, EA considers it prudent that a second Draft Determination be published to this rule change. Adding this additional governance step in the AEMC's assessment process will allow industry stakeholders to develop a better understanding of the proposal and its rationale, propose alternative positions and consider operational elements with other regulatory reforms and the broader NER. However, more importantly it would also demonstrate what, how and where the AEMC has taken on-board stakeholder feedback on the Directions Paper proposal. Without an additional step, stakeholders have no further valuable feedback mechanism into this rule change.

[1] including voltage control and line switching

[2] AEMO | System Security Planning

[3] Without clarity on how the long term objective of standardised system needs and specifications, supported by competitive ancillary markets

[4] as highlighted at the beginning of this submission

In addition, to feed into the AEMC's considered position for the requested draft determination, EA proposes that AEMC convene a dedicated Technical Working Group (TWG), with an independent moderator to guide the discussion and to facilitate the provision of all available information[5] to sufficiently workshop what is technically feasible, what further information is necessary to describe technical standards, specifications and operational settings, and to steer the TWG and subsequently the AEMC and industry, on an efficient pathway to ESS markets.

Further, EA questions the rationale of postponing the Efficient Provision of Inertia rule change[6] to early 2024, when this rule change is also considering the future arrangements of the same service. We believe that delinking these two rule changes prejudices the outcome of the latter process for a markets-led approach, and therefore EA strongly encourages the AEMC to reconnect the rule changes and run their respective draft determinations together.

An evidence-based assessment is necessary

EA remains committed to working with the AEMC, AEMO and the industry to unbundle ESS and develop associated markets or appropriate mechanisms that enable AEMO to deliver PSS at all times, while providing appropriate market signals to ensure investment outcomes necessary for the maintenance and delivery of PSS.

We acknowledge AEMO's claim that further work on understanding ESS is required before proceeding to unbundling specific services. However, in the absence of full transparency and disclosure of the rationale behind the AEMO view, including a public awareness of all initiatives and trials in the NEM with a focus on ESS over recent years, it is difficult to understand and accept their view. We also note that it does not appear the AEMC has attempted to verify AEMO's stated view independently with credible industry experts.

EA recommends the AEMC undertake a further independent assessment to familiarise itself with the AEMO activities to better understand the breadth of knowledge and skills embedded within AEMO. This is acutely relevant to the question of ESS unbundling, but equally necessary for AEMO to perform a number of their fundamental market operator functions, such as constraint management or the publication of reports and other documents[7]. Absent any reporting or publications of learnings makes it difficult to verify the degree of AEMO's stated limitations and understand the timing necessary to upskill engineering knowledge and embed required technical system improvements.

For example, EA is aware of the following AEMO initiatives and trials;

- AEMO VAr (Volt-Ampere reactive power, and relates to voltage control in the power system) Dispatch System (VDS)[8] was implemented and declared operationally live on 31 August 2016. The process incorporates the management of Network Service Provider (NSP) reactive plant (including static reactive plant (capacitors and reactors) and dynamic reactive plant (Static VAr Compensators

[5] including the below mentioned trials, initiatives and requirements, and enabling AEMO to provide details of their challenges and understanding of the current and expected security capabilities in delivering ESS in the NEM, now and into the future.

[6] Efficient provision of inertia | AEMC

[7] Including annual System Strength and Inertia reports, the Generator Performance Standards process captured by the connections framework, and the self-initiated Engineering Report etc.

[8] AEMO | VAr dispatch

and synchronous condensers) and the reactive power capability of generation plant as specified in their individual Generator Performance Standards (GPS).

EA notes the documentation on AEMO's website does not include current documentation on the AEMO VDS and may create a barrier for new participants in meeting their NER obligations. As voltage control is one of the ESS, EA is disappointed that AEMO has not conducted public reviews and shared any learnings on the efficacy of the AEMO VDS that utilises minimisation of an objective function in providing effective and efficient voltage control.

- The Victorian Inertia Measurement Trial[9] occurred over the period late April to mid-August 2023. The trial involved the injection of power modulation signals into the NEM using a Battery Energy Storage System (BESS) in Victoria to trial their inertia measurement technology.

  Key deliverables included the development of an inertia requirements methodology and the accurate determination of inertia requirements for each region.

  EA notes that at the end of the trial, the effectiveness of the measurement technique was to be assessed by an independent expert. While we understand AEMO had committed to provide advice on the results of the assessment, we have not yet seen anything to this effect. This assessment should be viewed as critical input to the direction proposed by this Paper and the Provision of Inertia rule change.

- EA is aware of a trial in the Tasmania region in recent years that apparently tested the feasibility of using constraints in the NEM Dispatch Engine (NEMDE) in the dispatch and pre-dispatch timeframes to deliver PSS regarding inertia, system strength and fault level, all of which are ESS. We understand this trial underpinned the initial Hydro Tasmania rule change proposal which preceded this Paper. However, the trial has not been mentioned or discussed in the public domain resulting in a lost opportunity for the industry to engage with AEMO on its valuable learnings. As above, this trial should be viewed as a critical input by the AEMC regarding its deliberations on this Paper.

In addition, in mid-August 2023, AEMO published their industry update on SA minimum synchronous generator requirements[10]. This is an important recent publication as it clearly sets out that AEMO intends to assess the amount and criticality of each ESS relevant to the delivery of PSS for the prevailing technical envelope in both the operational (dispatch and pre-dispatch) and operational planning (STPASA) timeframes. In particular, slide 3 highlights a number of specifically identified ESS necessary to operate the system in a secure state, including inertia, system strength, frequency control (rate of change of frequency (RoCoF)), grid reference, protection, voltage control and ramping services. This slide also demonstrates that ESS can be individualised outside of 'unit combination services' and that AEMO is able to undertake this assessment. Although not covered, EA assumes that this visibility of the specific requirements for each of the ESS would extend to the longer timeframe including

[9] AEMO | Victorian Inertia Measurement Trial
[10] SA minimum synchronous generator requirements (aemo.com.au)

MTPASA and further out to enable the forecasting of ESS shortfalls. We encourage the AEMC to investigate this industry update further.

Development of ESS standards will assist in unbundling

EA remains concerned with the lack of direction towards the development of technical standards for each of the ESS. We note that currently there is no PSS standard listed on the AEMC website under the responsibility of the Reliability Panel. Furthermore, on the AEMO website there is only one power system operating standard, the Manual Load Shedding Standard[11].

EA views the development of ESS standards[12] as an essential requirement to progress towards unbundling and market ancillary service creation. A natural extension to the development of the ESS standards will include the development of associated specifications (such as synthetic inertia), clear definitions in the NER, and incorporation of these technical elements into the Low Reserve Declarations (LRDG) framework[13].

While EA accepts that AEMO will continue to increase its understanding of security capabilities of the new generation mix on an ongoing basis to maintain PSS, we have not seen any clear justification for delaying the development of ESS frameworks.

EA acknowledges it will be an ongoing journey in establishing a greater understanding of the ESS engineering and technical capabilities of the power system before introducing complex market changes. However, to best support the pathway to ESS unbundling and ancillary markets, EA calls on the AEMC to clearly articulate a prescriptive transitional pathway in the NER. This pathway must articulate a transparent, targeted set of obligations on AEMO to develop a set of technical standards which can be used to define the level of ESS required to maintain PSS. Additionally, and as a way of informing the market on AEMO's progress toward this key output, AEMO should be required to publicly report at least twice a year on changing system needs and the specific system services that are required to meet those needs over the long term. This report should go beyond the high level requirements proposed by the AEMC in the Directions paper. To ensure it doesn't become too onerous on AEMO, we suggest that this information could be captured within AEMO's Engineering Framework[14] or another relevant existing publication.

Proposal to align the existing inertia and system strength frameworks

In the absence of the necessary work outlined above to create a supporting environment which enables ESS, including inertia, to be unbundled and independently valued via competitive markets, EA tentatively supports the alignment of the existing inertia and system strength frameworks. We believe this transitionary step provides efficacy to the optimisation of both services and also removes any potential anomalies or inconsistencies in their delivery. But it should not be seen as the final fix – AEMC should

[11] https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/manual-load-shedding-standard.pdf?la=en

[12] And

[14] AEMO | Engineering Roadmap to 100% Renewables

thoroughly investigate the development of an inertia market via the Provision of Efficient Inertia rule change.

EA has provided further details in response to the AEMC's questions at the end of this submission.

Amendments to the NSCAS framework and creation of a new NMAS framework

EA in-principle supports the removal of the exclusion of inertia and system strength network services from the NSCAS framework and inclusion under the Non Market Ancillary Service (NMAS) framework as transitionary steps towards the creation of ESS markets.

As above, we consider this outcome appropriate to recognise the efficacy provided by the inclusion of inertia services and system strength in the NSCAS framework. While the NSCAS framework captures the current suite of ESS, we reiterate our view that this outcome should not be prejudicial to developing an inertia market by expediting the Efficient Provision of Inertia rule change.

In addition, we strongly encourage the AEMC to recognise the urgent priority to reconcile terminology such as minimum levels and efficient levels of ESS with satisfactory and secure operating states, as defined in the NER. It is important to ensure there is no inadvertent conflation between PSS and reliability. For the avoidance of any doubt, EA also considers it will be important to define the meaning and delivery of efficient requirements over and above the minimum and transitional security requirements, to enable the hosting increased or projected IBR online.

As we outlined above, the development of ESS standards, including associated specifications and the creation of low ESS reserve declarations for interconnected operation, potential separation events and electrical island operation, are also imperative milestone developments which AEMO should be delivering as part of its efforts towards unbundling ESS.

EA has provided further details to the questions raised in the Paper on this subject in the submission.

A new transitional NMAS framework for AEMO to procure security services necessary for the energy transition

EA is very concerned with the proposed ten year duration of the new transitional framework with a sunset clause. As outlined above, industry confidence regarding sunset clauses has been eroded over the years arising from ongoing extensions of sunset clauses or its replacement with enduring provisions. Examples include the Reliability Emergency Reserve Trader (RERT), Mandatory Narrow Band Primary Frequency Response (MNBPFR) and the Interim Reliability Mechanism (IRM).

While EA acknowledges the proposed AEMC's 'pulse check' review after 7 years, without clear obligations on AEMO to progress ESS development towards unbundling and ancillary market creation, we believe it is highly unlikely that the sunset would be allowed to cease because it would be too difficult and costly to unpack 'existing processes' to accommodate ESS markets. Instead of a defined sunset clause, EA

encourages the AEMC to tie the uplift of AEMO's engineering knowledge and skills to a specific AEMO transitional pathway obligation in the NER. The pathway would set out a prescriptive set of requirements on AEMO to develop technical standards and specifications necessary to support ESS unbundling and ancillary market development, starting with inertia. Similarly, AEMC should be reviewing AEMO's efforts towards the development of ESS markets on a much more frequent basis. If however, the AEMC wishes to prescribe a sunset clause, in our view, given the existing body of work already undertaken by AEMO, efforts to commence unbundling of ESS (such as inertia) via spot market should take no more than 3 years. In this instance, the AEMC should undertake its review at the end of each year.

With respect to the duration of long-term planning contracts, we believe further detailed discussion is required to understand the market value and how any ESS transitional steps (i.e. change in law) would be accommodated and reflected in contractual terms.

EA supports AEMO as the enabler or scheduler of the contracts for system security. However, as proposed, AEMO would only enable contracts where there is a gap between the security outcomes of projected dispatch and the required levels for each security need. We believe this again highlights the ongoing contradiction that AEMO is unable to specify individual services in the operational timeframes but under the proposed transitional NMAS, could enable contracts where there is a gap between the security outcomes of projected dispatch. We encourage the AEMC to consider this contradiction further.

EA has provided further details to the questions raised at the end of our submission.

Improved Directions Framework transparency and compensation

EA agrees with the AEMC and recognises the utility provided by the use of Directions as a last resort mechanism. However, this does not align with the patterned approach particularly evident over the last six (6) years to maintain PSS. We therefore appreciate the AEMC's instigation to reform this mechanism.

An area of concern to participants has been the lack of detailed information in the AEMO Market Notices on the requirement and specific justification for Directions use, to maintain or restore PSS. We acknowledge that this issue has been explicitly raised in the Directions Paper, although reaffirm that AEMO arguably has not fulfilled its obligations to provide clear and justified reasoning. In our view, stating that a Direction is required to "maintain PSS power in a region(s) for a specified period of time" does not provide a full account of all relevant and meaningful details as specified in NER Rule 4.8.3. The absence of this level of detailed information on the need to trigger a Direction is further exacerbated by the lack of information of the service required to restore or maintain PSS. Arguably this represents a lost opportunity on the generation of market signals to address the need for the Direction, particularly if the same issue occurs on a regular basis.

Further, EA has identified another anomaly arising from the application of Rule 3.15.7 (a2) (4), where a Direction has been issued. Under this scenario, where a service is provided by the Directed Participant, where energy or market ancillary services are provided incidental to the provision of that service without compensation. These could include but without limitation – inertia, voltage control, system strength (as examples of

ESS). In our view, where this is occurring, AEMO should be obligated to compensate the Directed Participant for the primary service in addition to any incidental secondary energy or market ancillary service, pursuant to that Direction. Without correcting this oversight, EA considers this outcome will continue to suppress market signals for ESS.

EA strongly supports the proposal to codify AEMO reporting obligations to improve transparency on the use, nature and type of Direction being utilised. However, the proposed quarterly report content needs to be substantially more than statistical reporting and include, as proposed by the AEMC, trends observed in directions in each quarter and a view on whether directions may be required in future reporting periods. A breakdown of compensation costs payable must be reconciled against the ESS, specifically the service, quantum, duration and location required under the Direction(s). In order to deliver full transparency, we also encourage the AEMC to address the above discrepancy associated with the application of Rule 3.15.7 (a2) (4).

EA has concerns with the utilisation of a benchmark short run marginal cost (SRMC) for the relevant technology type to calculate compensation payable to a Directed Participant. While appearing to be 'text book appropriate', it appears consideration has not be given to BESS or other energy storage systems operating under limited energy conditions and/or fuel conservation. We are also concerned with the lack of recognition on the materiality of 'opportunity cost' on all scheduled plant under Direction by AEMO. We note that AEMC is currently seeking feedback on its Draft Opportunity Cost Methodologies consultation paper. While this consultation paper is specific to compensation claims associated with an administered price period, we consider there is merit in extending it to the Directions Framework.

EA supports the principle that a Direction should be cost reflective, not prejudicial to the Directed Participant and not be a mechanism providing any windfall gains. We also support the AEMC objective to review the Directions compensation framework on an holistic basis including all Direction compensation mechanisms, while at the same time advocating understanding and quantifying the possible consequences of the proposal detailed in the Paper including the concept of the 15% premium component.

It should be noted that in the event an inertia market (or other ESS markets) is developed and implemented in the NEM, the Directions compensation framework would require amendment to the Market Ancillary Services (MAS) category, as it currently only includes FCAS.

EA has provided further details to the questions raised in the Paper on this subject in the submission.

Conclusions

EA is extremely concerned that this second Directions Paper proposes a significant re-direction to the originally proposed OSM and does not provide a second stage (via a draft determination) for further consultation. Submissions received to this process are likely to provide substantial feedback, including alternative approaches and a proper feedback loop is necessary to provide industry confidence in the AEMC's final determination.

EA strongly encourage the AEMC to extend out its final determination to provide this additional consultation step as a means of allowing industry stakeholders to properly

engage in this rule change process. In addition, preceding the recommended additional draft determination paper, EA also proposes that AEMC set up a time-limited TWG, facilitated by an independent moderator. The TWG would navigate all available ESS-related information and determine what is technically feasible in the context of AEMO's understanding of current and expected security capability, with the aim of advising AEMC on an efficient pathway to ESS markets.

Further, EA strongly recommends that the AEMC recommences and links its assessment of the Efficient Provision of Inertia rule change with this rule change process. Doing so will ensure that a consistent and considered draft determination under each rule change is produced.

While we tentatively support some of the proposed measures in the Directions Paper, the AEMC must clearly set out how the long term objective of ESS markets will be realised. EA calls on the AEMC to clearly articulate a prescriptive transitional pathway in the NER. This pathway must articulate a transparent, targeted set of obligations on AEMO to develop a set of technical standards which can be used to define the level of ESS required to maintain PSS. AEMO's progress toward this key output should be captured in a public report at least twice a year on changing system needs and the specific system services that are required to meet those needs over the long term.

If you would like to discuss this submission, please contact me on 0422 399 181 or Dan.Mascarenhas@energyaustralia.com.au.

Regards

Dan Mascarenhas

Regulatory Affairs Lead

EnergyAustralia's Response to AEMC's Questions

Question 1: INTRODUCING AN INERTIA FLOOR FOR THE MAINLAND NEM FOR INTERCONNECTED OPERATION

EA supports the principle of introducing an inertia floor as proposed by the AEMC in the Paper with consideration given to following questions arising from the proposal.

As noted in the Paper, the development of an inertia standard and associated specification is an imperative to ensure confidence in maintaining and delivering power system security. The development of the inertia standard and specifications will provide market and investment signals following publication of inertia supply/demand outcomes.

Developing the standards can be directly supported by the AEMO 2018 Inertia Requirements Methodology[15] that presents the methodology AEMO utilises to define inertia sub-networks in the NEM, and the calculation methods used to determine the satisfactory and secure inertia levels required in these sub-networks. Figure 1 Interrelationship of inertia framework components with other power system security requirements[16] refers to System Standards. However, there is no further reference to System Standards in the document highlighting the urgent need to develop the ESS System Standards.

The importance of developing the inertia standard and specification is further reinforced with the decrease in synchronous inertia expected in the NEM due to the change in the generation mix. The inertia standard and specification will enable the inclusion of increasing amounts synthetic inertia and inertia support activities in the provision of required inertia to meet the standard and deliver power system security.

EA supports the proposal that AEMO would be required to consult on and publish a detailed specification of the required capabilities of synchronous and synthetic inertia providers.

It is noted that AEMO declares inertia sub-networks, taking into account whether the sub-network is at risk of islanding. The current inertia sub-networks align with NEM regional boundaries. It is strongly recommended inertia sub-networks that cross regional boundaries be considered by AEMO including the following examples;

Planned and/or unplanned network outages on QNI in northern NSW can result in a potential separation event or an actual electrical islanding event that includes Queensland and a section of northern-NSW potentially extending down to Muswellbrook in the Hunter Valley.

A power system event occurred on 31 January 2020 in the Victoria region which involved the non-credible loss of both the Moorabool – Mortlake and the Moorabool – Haunted Gully – Tarrone 500 kV transmission lines resulting in the separation of the Victoria and South Australia regions for an extended period as detailed in the reviewable operating

[15] https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/system-security-market-frameworks-review/2018/inertia_requirements_methodology_published.pdf?la=en

[16] Ibid, page 9

incident report17. The sub-network consisted of the South Australia region and west Victoria (west of Moorabool).

Following the development of an inertia standard and specification that in time will include synthetic inertia, is this deemed to be an appropriate time to include inertia support activities (e.g. FFR) and synthetic inertia in the provision of Minimum threshold of inertia as detailed in Figure 3.2 in the Paper? This outcome should be a high priority recognising the advised generating unit expected closure year notifications.

EA is supportive of AEMO not being required to consider costs when setting the inertia floor as power security is a non-negotiable in the NEM. However, cost discovery would provide valuable insights and provision of market and investment signals.

In the event of AEMO declaring cross regional inertia sub-networks, will TNSPs remain better placed to assess the most efficient allocation of resources to meet the combined inertia and system strength needs or is this a trigger for AEMO to assume the responsibility to assess most efficient allocation of resources to meet the combined inertia and system strength needs?

The Reliability Panel (RP) should consider an oversight role for the inertia sub-networks declared by AEMO similar to what occurs in the System Restart Ancillary Service (SRAS) process where the System Restart Standard (SRS) incorporates AEMO's determination of electrical sub-network boundaries under NER clause 3.11.8.

Question 2: ALIGNMENT OF THE INERTIA AND SYSTEM STRENGTH PROCUREMENT TIMEFRAMES

EA tentatively support the AEMC's proposal to require AEMO to project inertia needs for all sub-networks every 10 years.

EA support requiring TNSPs to ensure that sufficient (assume sufficient represents secure operating levels of inertia and in time will include synchronous and non-synchronous inertia) inertia is continuously available to meet the projection three years into the future, to align with the system strength framework.

Question 3: WIDENING THE ELIGIBILITY OF UNITS CAPABLE OF PROVIDING INERTIA

As previously stated, EA supports the proposal that AEMO would be required to conduct a NER consultation on and publish a detailed specification of, the required capabilities of synchronous and synthetic inertia providers.

Following completion of the detailed specification of the required capabilities of synchronous and synthetic inertia providers, EA supports the AEMC's proposal for TNSPs to be able to procure synthetic inertia to meet the minimum threshold level.

[17] final-report-victoria-and-south-australia-separation-event.pdf (aemo.com.au)

The completed specification would provide market and investments signals and also inform original equipment manufacturers (OEM) and market participants of the required technical capabilities of their equipment to obtain AEMO's approval for the provision of inertia in its different forms.

Question 4: REMOVING THE EXCLUSION ON INERTIA AND SYSTEM STRENGTH IN THE NSCAS FRAMEWORK

EA agrees agree with the AEMC's proposed approach to remove the current exclusion on inertia and system strength in the NSCAS framework conditional that the NSCAS framework would only be used as a backstop mechanism where more flexible procurement is required to meet a gap that was not originally forecast. However, doing so should not predujice consideration of the Provision of Efficient Inertia rule change and must be in keeping with the transitional pathway towards ESS markets.

The definition of NSCAS enables the inclusion of these services as proposed. The proposal places NSCAS, where feasible, prior to directions.

Question 5: RIT-T EXEMPTION

EA agrees that a RIT-T exemption should apply to inertia and system strength services where a shortfall arises within 18 months. As stated in the Paper, NSCAS procurement of inertia and system strength services where a shortfall arises within 18 months is not expected to occur frequently and is likely to arise from unexpected circumstances. The proposed NSCAS procurement is considered a backup or last resort mechanism. The 18 month parameter is arguably too short a period to conduct a RIT-T and it is expected the TNSP will submit the NSCAS cost as a 'pass through cost' that will require AER approval.

Question 6: COMMENCEMENT ARRANGEMENTS FOR CHANGES TO THE INERTIA FRAMEWORK

In the absence of the preferred option for inertia being the implementation of the Provision of Efficient Inertia rule change within the next three (3) to four (4) years that would still require AEMO to forecast inertia requirements over a 10 year period, EA accepts the proposed commencement arrangements. It is arguable that the risks of dual frameworks are relatively low as it not unreasonable frameworks are sequential and the NSCAS framework acts as last resort/backup.

The key factor for consideration by the AEMC is expediting the Provision of Efficient Inertia rule change and not deferring it to later date as proposed in the Paper.

Question 7: DESIGN OF THE TRANSITIONAL SERVICES FRAMEWORK

EA understands and agrees on the need for a transitional services framework. However, the following comments reflect our concerns and raise further questions that should be considered prior to finalising the framework.

EA empathises with the power system security challenges being faced by AEMO,

The statement in the Paper on page 50, 'AEMO currently uses unit configurations and directions to meet security gaps that arise operationally which cannot be met through other tools. The transitional services framework would enable contracts to be used instead of directions where AEMO has identified a security need that is not specifically an inertia, system strength, or NSCAS gap'; this raises the question as to 'what is the security need'? Notwithstanding an answer to the preceding question and noting the statements in the Paper on the new NMAS framework for transitional services, EA is remains concerned that there is high risk of perpetuating unit configurations longer than necessary and will lead to delays in unbundling of ESS and potentially resulting in an extension to the ten (10) year sunset clause. Furthermore the concerns expressed are likely to suppress market and investment signals delaying an effective transformation of the power system.

A comment in BOX 8 on page 53, *'As AEMO's understanding of the power system evolves, it will have a greater understanding of how to manage system security without synchronous assets, instead obtaining security services from synchronous condensers and grid-forming inverters*', ignores the likelihood of synchronous assets powered by hydrogen.

In addition, grid-forming inverters are likely to be able to provide many security services in the future. The increasing abundance of these technologies over time is likely to reduce the need for the operational coordination which is currently needed to achieve system configurations. Furthermore, the marginal cost of these technologies providing security services operationally is likely to be low' ignores the cost of actual making provision to provide or be capable of providing the required system service and associated 'opportunity cost'. For emerging and new technology, as stated in the Directions Paper, the ESS will not be by-products of producing energy as is currently the case for synchronous generation.

On page 55 of the Directions Paper, it states *'The transitional services framework would allow AEMO to trial new technologies with the purpose of understanding how it can manage security without relying on synchronous units. AEMO would be able to procure transitional services from a broad range of technologies (known as 'transitional services providers') such as inverter-based resources and undertake trials to test the capabilities of these resources'*. EA is not clear on how this reconciles with the recent Victoria Inertia Measurement Trial[18] that occurred during the period 27 April to mid-August 2023 as detailed earlier in the submission. Is a transitional services framework required to achieve this objective?

[18] AEMO | Victorian Inertia Measurement Trial

Further concerns are raised by the statement on page 60 in the Paper, *'Because the transitional services framework would allow procurement of more general security services rather than individually defined services, AEMO would not technically specify the services that it is providing, but rather it would describe the security need and its reasons for procuring the services for the particular unit configuration'* further perpetuates and delays the unbundling of the ESS.

EA encourages the AEMC to consider the above comments prior finalising the design of the transitional framework.

Question 8: SUNSET CLAUSE

Please note that EA's preference remains that instead of a defined sunset clause, AEMC should tie the uplift of AEMO's engineering knowledge and skills to a specific AEMO transitional pathway obligation in the NER. The pathway would set out a prescriptive set of requirements on AEMO to develop technical standards and specifications necessary to support ESS unbundling and ancillary market development, starting with inertia. Similarly, AEMC should be reviewing AEMO's efforts towards the development of ESS markets on a much more frequent basis.

If however, the AEMC wishes to prescribe a sunset clause, in our view, given the existing body of work already undertaken by AEMO, efforts to commence unbundling of ESS (such as inertia) via spot market should take no more than 3 years. In this instance, the AEMC should undertake a review to assess AEMO's performance against the transitional pathway at the end of each year.

In summary, there must be no dilution of the overarching objective to unbundle the ESS.

Question 9: PLACING ENABLEMENT RESPONSIBILITY ON AEMO

EA supports the AEMC's proposal to place the responsibility of enabling inertia, system strength and any other required system security services contracts on AEMO.

Question 10: ENABLEMENT LEVELS TO SUPPORT SYSTEM SECURITY

EA supports the AEMC's proposed levels for enablement, including the enablement of system strength contracts to levels above the minimum requirement only if it would result in an overall increase in dispatched IBR. While the principle appears straightforward, it will be challenging for AEMO to manage all of the inputs and associated processing to determine to deliver on the following criteria detailed on page 82 of the Paper.

To ensure IBR is not simply displaced by system strength bringing different IBR resources online, AEMO should enable contracts only if:

- enablement of system strength contracts results in an overall increase in dispatched IBR and,

- total increase in dispatched IBR is greater than the total energy provided by additional system strength contracts.

Question 11: ENABLEMENT PRINCIPLES

EA considers the proposed enablement principles to be appropriate and adequate. However, an observation in the example on pages 84 – 86 identifies specific security requirements. If this is the case, then how challenging would it be to incorporate the specific security requirements into constraint equations and incorporate into NEMDE covering dispatch and pre-dispatch timeframes?

Question 12: REPORTING REQUIREMENTS FOR ENABLING SYSTEM SECURITY CONTRACTS

EA supports the AEMC's proposal for AEMO to:

- consult and publish an enablement guideline

- provide daily information about the type, frequency and cost of enabled contracts

- publish an annual enablement report

EA expects the information will contribute to transparency and assist the process of unbundling the ESS.

Question 13: AMENDING THE BASIS OF DIRECTIONS COMPENSATION TO A BENCHMARK-BASED FRAMEWORK

EA has reviewed the AEMC's proposal to adopt the market suspension compensation framework and apply it to directions compensation. While noting the principles of the revised approach, it raises a number of questions that need to be considered and incorporated into the proposal.

Prior to formalising the benchmarks for compensation using the ISP data inputs, it is an imperative that market participants provide validation for the benchmarks as applicable for their portfolio. The benchmarks will vary depending on the prevailing market and power system conditions during the periods requiring directions that include but are not limited to;

- Lack of consideration of opportunity costs for scheduled plant, particularly for BESS and other energy-limited storage,

- Operating under fuel conservation conditions or other limited energy constraints,

- Provision for start-up/shutdown costs, and,
- Provision of underlying assumptions for the 15% premium and to the extent it captures the points articulated above.

EA would encourage the AEMC to conduct a comprehensive review of all the direction compensation mechanisms that exist under the current direction frameworks to address the issues raised above and any identified anomalies between the compensation mechanisms.

We note the AEMC acknowledges on page 100 of the Paper identified challenges with the proposal*, 'As the short-run marginal costs of generators can be relatively dynamic, applying the same benchmark value over a two-year period may risk inaccurate benchmarks being frequently applied for directions compensation'*.

Question 14: FREQUENCY OF BENCHMARK VALUE CALCULATION

EA reinforces the points raised in Question 13. EA would encourage the AEMC to conduct a comprehensive review of all the direction compensation mechanisms that exist under the current frameworks to address the issues raised in the submissions and any identified anomalies between the compensation mechanisms before offering a specific response to the proposal to include annual updates to the schedule of benchmark values for the proposed new directions compensation framework, noting this would also apply to the market suspension framework.

Question 15: DIRECTIONS COMPENSATION FOR ENERGY STORAGE SYSTEMS

EA considers that an estimate of the value of storage should form part of the automatic compensation payable to directed hydro plants and batteries requires additional detailed consideration as the subject involves a high level of complexity and this is reflected in the challenges the AEMC has noted in the Paper. The key issue requiring further examination is 'opportunity cost' and how if applies to energy storage systems.

EA has insufficient information to categorically respond to the proposal to use a proxy value, such as a relevant gas benchmark value based on the capacity factor of the storage system. An alternative approach to estimating the value of storage should be adopted for batteries but again further information is required to make an informed response.

Question 16: IMPROVING MARKET NOTICES AND DIRECTIONS REPORTING

EA strongly supports the AEMC's proposal to require AEMO to publish market notices when issuing directions that provide information about the direction, why it is needed and what service is being provided under direction.

If AEMO publishes the proposed level of information in the market notices when issuing directions, then EA supports the AEMC's proposal to replace the existing directions reporting requirements with a quarterly reporting requirement. The information that would be included in quarterly direction reports would be useful to stakeholders resulting in the provision of potential market signals for security services. This should be reinforced in the Rules or AEMO develops the reporting guidelines under a Rules consultation process. EA supports the AEMC proposal that repeated use of directions would trigger a reporting requirement to promote transparency and consideration of long-term procurement options.