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**Submitted online at:** www.aemc.gov.au

Dear Ms Panayiotakis

## Submission: Improving Security Frameworks for the Energy Transition

CS Energy welcomes the opportunity to provide a submission to the Australian Energy Market Commission's (**AEMC's**) *Directions Paper – Improving Security Frameworks for the Energy Transition* (**Directions Paper**).

### About CS Energy

CS Energy is a proudly Queensland-owned and based energy company that provides power to some of our state's biggest industries and employers. We employ almost 500 people who live and work in the Queensland communities where we operate. CS Energy owns and operates the Kogan Creek and Callide B coal-fired power stations and has a 50% share in the Callide C station (which it also operates). CS Energy sells electricity into the National Electricity Market (**NEM**) from these power stations, as well as electricity generated by Gladstone Power Station for which CS Energy holds the trading rights.

CS Energy also provides retail electricity services to large commercial and industrial customers throughout Queensland and has a retail joint venture with Alinta Energy to support household and small business customers in South-East Queensland.

CS Energy is creating a more diverse portfolio of energy sources as we transition to a new energy future and is committed to supporting regional Queensland through the development of clean energy hubs at our existing power system sites as part of the Queensland Energy and Jobs Plan (**QEJP**).

### Key recommendations

The NEM is changing and will continue to do so as it transitions to a market with more variable renewable energy (**VRE**) and an overall lower carbon footprint. It has long been acknowledged that as the NEM undergoes this transition, frameworks that appropriately

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value all Essential System Services (**ESS**) will be paramount. CS Energy has been supportive of adaptive market and regulatory frameworks that appropriately price ESS. These will provide valuable information to the market about both the operational need in the near-term as well as establishing vital forward signals that will drive investment in the capability that is required in future as the existing ESS providers, coal generation, exit the market.

The approach proposed in the Directions Paper appears misaligned from the need for such frameworks with the focus almost entirely on a short-term solution for operational certainty. In CS Energy's opinion, the mechanism presented does not properly value ESS, does not deliver efficient operational signals nor establish clear and effective long-term investment signals. In this context, while the AEMC acknowledged stakeholder concerns with the previous Operational Security Mechanism (**OSM**), the Directions Paper retains most of its features that presented issues and provides insufficient means by which to address these.

As reflected in its title, the Directions Paper presents a new approach to ESS frameworks and this consultation represents the first opportunity for stakeholders to comment. This new direction represents a departure from the intent of the original rule change requests and has raised concerns which need adequate consideration. Given this, CS Energy considers it to be imprudent for the AEMC to proceed directly from this consultation to a final rule determination.

The issues that need to be addressed as a matter of priority include:

- Re-establishing an explicit objective to unbundle and value ESS in the long-term via markets where possible and thereby establish an actual transitionary pathway;
- The development of operational standards and metrics for ESS governed by the Reliability Panel;
- Appropriately valuing the entirety of ESS, not just that that is marginal to the energy market outcomes;
- While supportive of the mainland inertia floor, CS Energy considers the need to have a more explicit and dynamic standard for inertia that reflects the operational timeframe of the Rate of Change of Frequency (**RoCoF**) standard. The activation of long-term inertia contracts in operational timeframes suggests the viability of an inertia market which the AEMC should progress immediately;
- Establishing clear obligations in the National Electricity Rules (**NER**) for the integration of ESS in operational and planning processes including:
    - A statement of system security needs in the General Power System Risk Review (**GPSRR**);
    - Explicit information in the Electricity Statement of Opportunities (**ESOO**) regarding what capability is required to replace the transitional services;
    - Information regarding ESS and any potential security gap in the Short-Term Projected Assessment of System Adequacy (**ST PASA**) and pre-dispatch (**PD**);
- Establishing a clear definition of synthetic inertia in the NER to provide certainty and consistency to the market;

- Establishing clear targets for the trialling of new technologies with preference for a systematic and transparent market trial rather than trials being ad hoc and opaque;

- Reducing the opacity of transitional services as much as possible, including:

    - Clarifying that these services must only support system security and not be for reliability outcomes;

    - Establishing an explicit operability metric that has oversight from the Reliability Panel, and which must be reported on in operational timeframe processes;

    - Developing a clear metric system based on which transitional services can only be activated;

- Consider a transition timeframe of no greater than three-and-a-half years and make this timeframe explicit in the NER to enable the Australian Energy Market Operator (**AEMO**) to prioritise resources;

- Ensure the enablement of ESS contracts by AEMO does not preclude participants from also providing network services;

- Greater transparency and governance of AEMO's reporting processes;

- A directions compensation framework based on opportunity costs; and

- The provision of the Rule drafting based on the version of the NER that will be in place at the proposed commencement of the Rule. That is, rules that include changes such as the Integrating Energy Storage Systems that will be in effect prior to December 2025.

**General comments**

By definition ESS are critical components of the power system, responsible for the safety, stability and security of its operation, and there is little argument on the need for frameworks that appropriately value, procure and schedule ESS as the NEM transitions. Presently, aside from frequency control services, AEMO largely relies on directions to ensure the required capability is online.

CS Energy welcomes the intent of the Directions Paper to move away from a reliance on directions but considers the proposed framework falls short in the criticality of valuing ESS and incentivising investment in future capability. The proposed transitional services framework in effect, formalises the directions process in the short-term, and more broadly prioritises operational certainty over the valuing of ESS.

This sentiment is echoed in the AEMC's justification of the proposed framework, with the given rationale implying that once the market has transitioned, there will be no need for mechanisms to value ESS, particularly market-based mechanisms. CS Energy is disappointed and concerned that the objectives of the rule change are so misaligned with its original intent including:

- The absence of any long-term objective to appropriately value ESS including the development of operational standards and metrics;

- A lack of demonstrable commitment or operational incentive to develop and implement ESS markets such as the proposed inertia spot market; and

- The intransigence to treat ESS as essential. Incentives for the provision of ESS will only be established if ESS are valued as a service in their own right rather than secondary to energy. This must be respected across all aspects of the mechanism design with long-term investment signals complemented by operational incentives. Importantly, the entire volume of ESS must be valued as opposed to that that is marginal to the energy market.

The lack of true valuation of ESS is also demonstrated in the approach to directions whereby if a unit is directed on for the provision of ESS, it is deemed to be a direction for energy as per NER clause 3.15.7(a2)(4).

The Directions Paper fails to provide any long-term direction in regard to what the market is transitioning to via this framework. There are no long-term objectives, just a rather generous 10-year transitionary period proposed which facilitates AEMO to maintain a bundled approach to ESS with no incentive or targets by which to change. The AEMC states that directions aren't the right way to manage ESS, yet this framework establishes a formalised mechanism by which to do so. Overall, the framework nullifies the operational value of ESS and in CS Energy's opinion, it does not satisfy the System Service Objective.

It is also concerning that the Directions Paper considers this proposed framework in isolation of other work currently underway. CS Energy considers it essential to consider these reforms holistically and ensure that all potential outcomes can integrate with each other to ensure efficient and effective outcomes in the long-term for the market and consumers. For example, how does this proposal facilitate the development of inertia spot markets or how will it interact with the proposed priority access and congestion relief market reforms underway? Given a core objective of the Directions Paper is to reduce the reliance on directions, it would be important to ensure that these other frameworks wouldn't inadvertently increase the volume of directions in the absence of clear real-time market signals for ESS.

**Comments specific to aspects of the framework**

Given CS Energy has provided its preferred approach to ESS frameworks at length in various submissions and fora, further comments are specific to the Directions Paper.

<u>Improvements to security frameworks</u>

CS Energy is supportive of the three broad objectives in the proposed improvements to security frameworks. The long-term procurement of inertia via an inertia floor tied to the RoCoF is an efficient long-term approach, as is alignment with the existing system strength frameworks. CS Energy, however, notes that the RoCoF is an operational standard and so would expect a level of transparency from AEMO to the market in the level of inertia required in operational timeframes to meet this standard.

CS Energy supports the removal of inertia and system strength from the Network Support and Control Ancillary Services (**NSCAS**) definitions and has previously identified this as an issue. The AEMC should also take this opportunity to assess whether the NER have any other inadvertent consequences related to the provision of ESS. CS Energy, for example, has identified a potential gap whereby synchronous condensers do not have a market registration category. This has not been an issue to date given non-network synchronous

condensers have been part of a larger generating system, however, under the QEJP synchronous generating units are expected to be converted to stand-alone synchronous condensers but currently would be unable to register as such in the market, potentially precluding their ability to provide ESS.

The forecast inertia need should be incorporated in AEMO's GPSRR as should the other ESS needs, including transitional services, to establish an effective and transparent operational planning and reporting process that is consistent with AEMO's existing processes.

CS Energy supports the inclusion of synthetic inertia in the procurement frameworks but suggests the framework be strengthened to provide adequate consistency and certainty for investors. A clear definition for synthetic inertia should be established within the NER as should a clear process by which AEMO needs to justify any instances in which it does not approve the procurement of synthetic inertia by Transmission Network Service Providers (**TNSPs**) to meet the inertia floor.

CS Energy is also concerned that removing the restriction to procure synthetic inertia subject to AEMO approval will not provide sufficient investment signals, particularly in the absence of an operational value.

Transitional Services Framework

CS Energy is not supportive of the transitional services framework as presented as it formalises the direction process of ESS, does not provide incentives to AEMO to appropriately value and procure individual ESS nor is the appropriate transparency in place. This is confirmed by the description of the benefits of the framework in the Directions Paper which focus entirely on AEMO with no stated benefits to the market.[1]

As the power system evolves, maintaining power system security will become more difficult and CS Energy appreciates that AEMO is developing its knowledge and experience of the new operating paradigm. However, greater clarity and granularity is required over the establishment of transitional services. On the one hand it is claimed that ESS cannot be unbundled in operational timeframes, yet these are already defined via constraints[2] and under this framework AEMO would be activating contracts for inertia, system strength, utilising the Voltage Dispatch System (**VDS**) and NSCAS to meet real-time needs.

It is unclear what exactly is intended to be procured under these transitional services. Reliability services such as reserving headroom or ramping capability are currently provided by the existing markets, and irrespective, do not constitute security services. Similarly, it is important to acknowledge that technical parameters such as transient or oscillatory stability are not security services per se but rather technical limits which are managed by ESS. It thus can be implied that transitional services would be utilised for either grid forming services or an opaque "operability" requirement.

Regardless, it is imperative that the Directions Paper establish an *explicit operability parameter* and strengthen the objective of transitional services framework.[3] CS Energy would be supportive of a "transitional operability mechanism" provided that:

[1] AEMC, *Improving Security Frameworks Directions Paper*, p.51
[2] This made the Hydro Tasmania rule change request attractive as its implementation leveraged existing operational processes.
[3] For further detail, please refer to CS Energy's submission to the AEMC's *Operational Security Mechanism Draft Determination*, November 2022.

- There is as much honesty and transparency as possible in a mechanism designed to procure a level of operability. This needs to be treated like any other market parameter, with the economic trade-offs of the level of operational certainty considered and independently scrutinised;

- Operability must be treated like any other market element with set parameters representing efficient levels. Without standards or specific operability targets, the trajectory via which to reduce the dependence on these system configurations is undefined and uncertain.

  CS Energy again references the experience of EirGrid in which the system operator established a dedicated workstream to develop Operational Security Standards (**OSS**) on which to base procurement mechanisms[4]. Some services were explicitly quantified while, after extensive analysis, EirGrid determined that a system non-synchronous penetration limit represented the most efficient and effective transitional approach to system security. Importantly, these OSS provide the necessary transparency which is '*key to evolve and segue to competitive procurement mechanisms as ESS markets mature*'[5].

  Establishing clear metrics not only helped EirGrid develop its understanding of its power system, but they also provided the market with valuable information and investment signals;

- Achieving operability via unit configurations needs to be accompanied by a transparency framework that clearly specifies to the market what is precisely being procured through the bundled provision of security services represented by the system configurations and how these will be procured given the absence of standards. In particular, this framework would need to have both operational and planning components and are discussed further below in the broader context of transparency;

- Transitional services can only be enabled if a declared security gap reflects a specific level that has been communicated to the market via the existing pre-dispatch and ST PASA processes. For example, a process that mirrors the activation of the Reliability and Emergency Reserve Trader (**RERT**) could be implemented. This key information that needs to be made available to the market would be defined in the development of an operability metric; and

- Have a transitional period of no more than three-and-a-half years. This timeframe has been selected as it aligns with the notice of closure obligations on generators. While originally intended to manage reliability, these obligations also provide a valuable signal to AEMO on when synchronous generators that provide ESS and are likely to form part of a unit configuration will no longer be available to the market. This timeframe provides a much stronger incentive on both AEMO and the market to develop capability to address the changing needs. Furthermore, it would facilitate the dedication of near-term resources on these challenges. Given the volume of change underway, and AEMO's competing priorities, a three-and-a-half-year transitional period would allow it to allocate appropriate resources and would give the market greater certainty of the transitionary process and investment opportunities in new capabilities.

[4] EirGrid has established Operating Security Standards and Transmission System Security and Planning Standards which set the explicit requirements from a year ahead to real time for assessing adequacy and operational security. Explicit limits are defined for voltage control, inertia and target damping ratios for example.
[5] *EirGrid response to SEM Committee Consultation on DS3 System Services Procurement Design*, p.6

The Directions Paper also states that the transitional services framework would provide an opportunity for AEMO to trial the provision of ESS from new technologies. CS Energy disagrees with this premise. This transitional framework has been proposed as an operational safety-net for which AEMO is able to enact contracts (that most likely represent unit configurations) to meet an identified gap in operational timeframes. By this very definition the trialling of new technologies would be precluded, with AEMO understandably not wanting to compromise system security in these critical times.

This framework will not provide any incentive for the trialling of new technologies and also would not deliver market learnings given the current opaqueness of this framework. The AEMC should consider a more explicit approach such as that employed by EirGrid in its Low Carbon Inertia Service. An explicit trial would also provide the market with greater confidence that the technical learnings and insight will be visible, with the market still having no information regarding the activation of ESS trials conducted in Tasmania in recent years, outcomes which formed the basis of Hydro Tasmania's rule change request.

Enablement of planning timeframe contracts

CS Energy is supportive of AEMO being the responsible party to enable contracts procured by TNSPs as they will be best placed to do so. However, CS Energy would like to see more granularity imposed on the development of the enablement guidelines by AEMO which also facilitates the ability to appropriately assess their consistent and efficient application.

The enablement clauses proposed in the NER would need to ensure that while only AEMO can enable a contract for ESS, the contracted participant would not necessarily be excluded from the provision of network services activated locally as contracted by the TNSP.

Transparency

While intending to improve reporting, the proposed frameworks set up a potential information asymmetry between AEMO and the market. While the AEMC intends to increase the level of reporting by AEMO, allowing AEMO to drive the level of detail and scope will not resolve the information asymmetry. CS Energy's comments on transparency and framework governance in its submission to the OSM Directions Paper remain relevant here.[6]

Overall, reporting requirements cannot be ad hoc and need to integrate effectively with operational and planning timeframe reporting processes. The NER should set out high-level obligations on the reporting requirements for ESS. In addition to daily and annual reporting, quarterly market performance reports must identify key learnings and observations that will enable the unbundling of ESS sooner rather than later or provide legitimate reasoning as to why this not feasible.

The GPSRR should identify the key ESS risks that are expected to emerge, and the nature of the services required to manage them. This should reflect a statement of security needs. The NER should also require the integration of ESS in documents like the Annual Planning report (**APR**) and ESOO ensuring their roles in providing the market with clear investment signals. The ESOO should provide clarity to participants on what capability is required to replace the units contracted under transitional services, constituting vital investment information on whether their assets have the ability to form a system configuration or potentially replace the need for the configuration.

[6] See Appendix B

Daily and quarterly reports need to clearly articulate information such as which system service requirement was marginal, the level of each ESS provided by the unit combination and outline the level of operability achieved. In terms of the contracts enabled, it is insufficient to state the aggregated costs. Given the freedom for AEMO to enable contracts to increase the level of Inverter Based Resources (**IBR**), the reporting also needs to clearly articulate the benefits in doing so, and the principles of decision making so as to enable the market to adapt its ability to predict market outcomes.

In operational timeframes, the NER should state a requirement for AEMO to quantify the system security levels and any projected gap in the current market processes. This could be integrated into the enhanced ST PASA currently underway. It is CS Energy's view that AEMO should only be able to enable transitional service contracts based on a security gap that has been published to the market ahead of time akin to reliability frameworks.

Directions

The Directions Paper also outlines an approach to amend the directions compensation framework with the AEMC citing the risk of under- or over- compensating participants under the current arrangements.

CS Energy disagrees with the proposed changes. Benchmarking costs to Short-run Marginal Costs (**SRMC**) as determined by AEMO in its Integrated System Plan (**ISP**) does not adequately reflect the true costs of participants. These include the increase in maintenance costs depending on how a plant is directed to run, scarcity costs and fuel costs for energy limited plant. This approach to compensation will leave all generators under-compensated.

This is compounded by the AEMC's refusal to consider opportunity costs in this framework. Opportunity costs would provide a means to align compensation to the market-clearing marginal price and would better value the service provided. This aligns more closely with the business model of many fuel-limited plant.

## Concluding comments

The AEMC needs to explicitly reinstate the valuing of ESS and the evolution of a services-based market into its consideration of security frameworks. Without this, the "Improving Security Frameworks" as proposed, will reflect a stop-gap measure that will be detrimental to the development of long-term effective and efficient outcomes for consumers.

While establishing the long-term procurement of inertia based on an inertia floor is welcomed, the proposed transitional services framework provides an effective endorsement for AEMO to instruct units on for system security without providing any incentive to develop system knowledge or provide critical market signals.

CS Energy appreciates the complexity and uniqueness of the NEM and seeks to understand and work with AEMO to understand the gaps. Transparency will be key to this process. If operability is the key driver for transitional services, this needs to be explicit in the design process and measures enforced to ensure it does not undermine the overarching strategic objective and stymie the necessary investment.

Any transitional period should be no longer than three-and-a-half years and should have much stringent transparency requirements on AEMO than proposed in the Directions Paper. Key information and accountability requirements need to be integrated into operational and planning frameworks, and greater governance on AEMO's progress towards less reliance

on transitional services needs to be established. If not, this proposed framework will compromise the integrity of future system security in the NEM.

If you would like to discuss this submission, please contact myself on either 0407 548 627 or ademaria@csenergy.com.au.

Yours sincerely

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