Wednesday, 17 September 2025

Attention: Assoc Prof Tim Nelson, Ms Paula Conboy, Ms Ava Hancock, Mr Phil Hirschhorn
Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Sent via email to: NEMreview@dcceew.gov.au

Re: CEC submission on National Electricity Market wholesale market settings draft report

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia, representing nearly 1,000 of the leading businesses operating in renewable energy, energy storage, and renewable hydrogen. The CEC is committed to accelerating the decarbonisation of Australia's energy system as rapidly as possible while maintaining a secure and reliable supply of electricity for customers.

The CEC welcomes the opportunity to provide this submission on the National Electricity Market wholesale market settings draft report (the Draft Report) and to provide feedback in relation to the recommendations put forward by the Nelson Panel (the Panel).

The CEC welcomes and supports the Panel's commitment to fostering continued investment in critical energy services that are fundamental to Australia's transition toward a reliable, low-emissions renewable energy system which operates in the long-term interests of consumers. We acknowledge that the Draft Report's recommendations are currently high-level, with further detailed work planned in the second half of 2025. While many of the draft recommendations have clear merit, these details will be vital to ensuring the reforms are well-designed and effective. We look forward to contributing to this process to help shape the NEM in a way that is better aligned with industry and consumers' needs

Our key points are

Spot and derivatives markets arrangements

- We support retaining the energy-only market design and the intent to leverage the derivatives contracts market to support investment.
- We are unconvinced that an ACCC review of algorithmic bidding tools is warranted at this stage, but consider it important that AER has the sufficient capability and infrastructure to better assess any potential issues arising from rebidding behaviour.
- We support the introduction of an always-on Market Maker Obligation (MMO) but we encourage the Panel to explore options as to the types of participants that may be best placed to provide the service. For example, we support exploring commercial arrangements to be put in place, with incentivises provided for entities capable of, and willing to, manage risks.

Incentives framework

- We support the ESEM's goal to bridge the investment tenor gap and promote long-term, sustainable investment.

Phone: +61 3 9929 4100
Fax: +61 3 9929 4101
info@cleanenergycouncil.org.au

Level 20, 180 Lonsdale Street, Melbourne, VIC 3000, Australia

cleanenergycouncil.org.au

ABN: 84 127 102 443

- We support embedding the ESEM in the NEL to make the arrangement enduring and provide greater certainty to investors and market participants.

- We support flexibility to be allowed for the ESEM to facilitate investment in technologies facing deployment barriers beyond the tenor gap, such as offshore wind and pumped hydro.

- We believe it is essential for the ESEM to uphold competitive neutrality between existing and new generators. Support mechanisms for new entrants should not disadvantage those already operating in the market.

- There is a considerable amount of design work needed to understand and assess impacts on competition, consumer retail bills, market liquidity and investment risk. This will also include the method by which residual costs or rebates are returned to energy consumers.

- We look forward to working with the Panel on these issues.

Essential System Services

- We consider that the proposal to add an Essential System Services (ESS) procurement layer on the top of existing arrangements lacks vision and ambition. It has the risk of cementing in current fragmented approaches to ESS procurement.

- Supporting investment in much needed ESS through market development and clear price signals should be a high priority to be addressed in the Nelson Review.

- We also recommend that system security be more holistically co-optimised with the wholesale electricity spot market in the operational timeframe, to deliver overall market efficiencies in the best interests of consumers.

- We propose that the Panel establishes a separate ESS procurement work program with an ESS technical working group providing inputs and advice. We look forward to working with the Panel on improving the ESS procurement proposal.

Consumer Energy Resources

- We support improving visibility of hidden participants.

- We support increased visibility of virtual power plant (VPP) assets and orchestrated consumer energy resources (CER). It is essential any reforms strike an appropriate balance between improved visibility of distributed energy resources and additional obligations (designed for utility-scale technologies) that may limit the efficient operation and growth of aggregated resources, such as VPPs.

- We propose further analysis be undertaken to understand specific market conditions and regulatory frameworks that may not allow distribution-level resources to participate effectively in the proposed reforms.

- We consider an extension of the voluntary IPPR framework until 2032 will allow appropriate time for industry to provide feedback and Government bodies to action improvements and integrate outcomes with other relevant National CER Roadmap workstreams. Prior to this the Panel should undertake a review of the IPRR framework to determine whether participation in active mode should be mandated for certain resources.

- We propose Government incentives for investment in CER should also be supported through Federal, State and Territory targets for CER uptake and orchestration.

Long lead time asset development

- Regarding pumped hydro, we are looking forward to the Panel to consider further how the amended ESEM may facilitate their procurement**.**

- Regarding offshore wind, the CEC does not see the ESEM as a suitable tool to enable the offshore wind industry as a new technology in Australia. Offshore wind will require a bespoke and stable revenue mechanism with a strong counterparty to enable industry in early years, and see costs come down as industry matures.

- We recommend consideration for design of a bespoke offshore wind mechanism co-designed with state jurisdictions to support enablement of this new industry.

Consultation process

- CEC has provided their comments based on the high-level details provided in the Draft Report. CEC reserves the right to supplement their comments after the detail of reforms have been worked through.

- Given the magnitude of the reforms, CEC recommends that the Nelson review consultation period be extended by a further 3-6 months. This will provide the opportunity for the Panel to engage further with industry and to have another round of public consultation on the full suite of reforms. The merits of the reforms depend on the details being fleshed out by working groups.

- CEC also recommends that the Panel keep industry updated on matters being considered by each of the various working groups it has established and their outputs.

Ongoing governance post Nelson Review

- The CEC considers that the oversight and governance structure put in place during the detailed design and implementation of the Review's recommendation is crucial for its success.

- We propose that the working groups that have already been set up, and potentially further technical working groups, endure beyond the end of this year and the final recommendations.

- These groups should provide targeted advice over the next year, supporting the development of complex recommendations through to the stage of detailed Rule Changes. Unless the detailed design work is done with industry and consumer representatives' inputs, there is a risk that it may be rejected.

We look forward to continuing to work with the Panel, the various working groups, and the broader DCCEEW team, as the recommendations progress, and more detail is developed regarding the recommendations. Further queries can be directed to Dr Veronika Nemes on vnemes@cleanenergycouncil.org.au.

Kind regards,

Veronika Nemes

General Manager – Market, Operations and Grid

Our detailed submission

Spot market (short term)

Adjusting the form of market price settings

The Panel recommends that the Reliability Panel should consider whether to adjust the form of the market price settings and provide a longer-term outlook (up to 15 years) on their intended form to support long-term contracting.

Whilst we agree with the intent, we consider that the market price settings outlook provided by the Reliability Panel should be a guidance only and should not be binding in the market. Fifteen-year forecasts could be highly inaccurate and should not be used to 'fix' market price settings. Due to the uncertainties in market price forecast, they are also unlikely to provide any useful information to support the bankability of projects. The CEC considers that it is important to enable the Reliability Panel to change the market price settings as circumstances change.

Excessive rebidding

The Nelson Review recommends that market bodies and the ACCC should address risks created by excessive rebidding and algorithmic bidding.

The Panel notes that re-bidding and algorithmic bidding have increased in recent times, raising concerns about market manipulation. CEC considers that re-bidding is a feature of the market design. Over time, the number and types of market participants have increased. Also, the number of services have increased (eg. FFR and FCAS) and the number of dispatch intervals have increased. In addition, computer processing time and capabilities have changed.

Importantly, there should not be any prohibition made pre-emptively without supporting evidence. The Panel has not articulated any specific problems with the NEM's status quo rules and arrangements for bidding and dispatch, nor does it provide evidence that the use of bidding systems has led to anti-competitive behaviour in the NEM. In this context, proposing regulatory changes is premature and risks addressing a problem that has not been demonstrated to exist. Any regulatory intervention should be based on clear, evidence-based findings of actual harm to market efficiency or competition.

We understand that ACCC/AER monitoring function may face challenges when, for example, assessing whether bidders acted in good faith. We consider that regulatory capability must meet the challenges. We consider that the AER's compliance monitoring capabilities must be increased to determine whether there are any genuine issues arising from rebidding behaviour. If the AER considers that 'good faith' is no longer a suitable benchmark in assessing market behaviour, then they must address that by developing suitable assessment criteria and a capability to assess bidding behaviour in line with the criteria.

An examination of the role bidding systems play in the NEM is welcome, and the CEC is eager to contribute to the discourse, however, we seek that the Panel consider the following points in developing its final report:

- Bidding systems, including the use of algorithms and automation in the bidding process, play a critical role in promoting effective competition, ensuring efficient market outcomes and secure management of the power system. The benefits provided by bidding systems should be carefully weighed in any consideration of potential regulatory changes, to ensure that reforms do not unintentionally undermine efficiency, innovation, or competition.

- While academic research is valuable in understanding potential market behaviours and issues, they sometimes lack practical understanding of how bidding systems are designed and operated in practice. To form a balanced view of potential risks, the Panel should engage directly with industry practitioners who develop, operate, and oversee bidding systems before recommending

any regulatory changes. This engagement will provide a more accurate assessment of both benefits and risks.

On this basis, we consider that the Panel should not pursue further work in this area until market bodies can clarify the specific problem statement that it would seek to have the ACCC explore.

Battery state of energy information provision

CEC believes that, given the *Enhancing Reserve Information* Rule Change only came into effect on 1 July 2025, it is important to allow sufficient time for its impacts to be observed. The data released in the coming months should serve as the foundation for assessing the value of the additional information provided by AEMO, as well as identifying any remaining gaps.

It remains uncertain whether publishing the state of energy (SOE) in real time will lead to improved market outcomes. Given that real-time SOE data may offer insights into how participants value energy at specific moments, it could have unintended consequences for market outcomes.

CEC considers that reliability objectives may be more effectively achieved through other recommendations outlined in the Review, rather than through real-time SOE publication.

Congestion management

The CEC understands the Panel's decision not to revisit locational marginal pricing (LMP). CEC considers that strategically located storage — particularly stand-alone utility-scale assets — can play a valuable role in alleviating congestion in regions with high levels of variable renewable energy (VRE). While the Panel highlights that VRE generators can manage congestion risks through behind-the-meter storage, it is equally important to establish appropriate pricing signals that create the right incentives.

Shaping and firming assets should ideally be located where they offer the greatest benefit to the energy system. However, there is currently a disconnect between the incentives and the actual value of placing utility-scale storage in regions with high levels of VRE. While these areas—such as Renewable Energy Zones—offer clear advantages like reduced network congestion, virtual transmission support, and improved system security, they often have lower marginal loss factors. This can discourage investment, despite the significant co-benefits.

Minimising the impacts of transmission network outages on the spot market

CEC agrees that TNSP outages can create network constraints, which have the potential to both increase wholesale energy prices (and, therefore, consumers' bills) and negatively impact generator revenue (due to curtailment). CEC further agrees that TNSPs should have regard to customer and market impacts when planning outages.

However, we note that outage planning is becoming more complex and will continue to increase in complexity over the coming years as coal generators retire or change their operating patterns and as the energy system becomes more weather dependent. It is also unavoidable that the development of major new transmission infrastructure and the connection of many new renewable generators will involve transmission outages. TNSPs are already observing that planned outages are being cancelled more frequently for power system security reasons, and there are fewer periods during the year when it is predictably low impact to plan outages.

As the Review acknowledges, the current Service Target Performance Incentive Scheme (STPIS) primarily targets network reliability. The AER has recently submitted a rule change proposal to the AEMC to amend the application of the current Market Impact Component (MIC). CEC looks forward to contributing to the development of appropriate arrangements to govern and incentivise TNSP outage planning and regional wholesale price impacts

Financial derivatives market (medium terms)

Tenor gap and other issues

While we understand that the tenor gap may have been raised by investors as a key barrier for investment decisions, we consider that this may not be the only concern. The intra-day low prices create price gaps (i.e. the difference between LCOE and market price) and these are occurring more frequently. The CEC considers that this is a significant issue and one that is not sufficiently considered in the solutions put forward by the Panel.

Derivatives support

CEC understands that in proposing the fungible derivative contracts, the Panel has been concerned with jurisdictional revenue underwriting schemes' potentially creating a misalignment between participants' interests and that of the operational needs of the NEM. However, generator-independent, fungible contracts do not *automatically* align generators' bidding behaviour with that of the operational needs of the NEM, nor do they necessarily align with the interests of consumers.

In appendix C the Panel presents its preliminary thinking on the potential fungible contracts to be used. The CEC considers that any contract, such as the wind-shape or wind-index that links a generator's payout to other generators' output is fraught with issues and potential unintended outcomes.

While contracts may be awarded based on wind-shape profiles, this approach may oversimplify the diversity and unpredictability of actual wind patterns across projects and regions.

To be fungible, the contracts would need to be independent of specific generators, and indeed, any specific generator. The contract payment would need to be in relation to a deemed generation profile, regardless of actual output. When the contract takes the form of a contract-for-difference (CfD), then it is settled against a profiled volume rather than actual generation. Plain vanilla CfD would be simple, scalable, provide price signals, and would preserve market operational incentives.

Renewable Electricity Guarantee of Origin

We welcome the inclusion of potential financial contracts for Renewable Electricity Guarantee of Origin (REGOs) as a tool to add price certainty and enhance investor confidence. However, we note that this is unlikely to be sufficient and thus should not be viewed as a substitute for bulk, firming, and shaping contracts. REGOs are expected to be traded in 1MW blocks. This may give rise to volume risk if the standardised contracts are proposed to be traded in 100kW size.

We are looking forward to working with the Panel on the details.

Standardised contracts and contract innovation

Standardised contracts would be reviewed and, potentially re-designed (through the co-design process) periodically. Given that ESEM would enter into agreements in relation to these contracts for 15+ years into the future, the standardised contracts would need to be 'future proofed' and withstand technology innovation and significant market design changes. Several questions will need to be answered.

What information will contract designers have to inform their decisions and design choices? How would the co-design process ensure that standardised contracts enable (rather than impede) innovation?

Similarly, how does the Panel propose to address the tension between higher volumes of 'plain vanilla' contracts versus lower volumes of innovative contacts that could unlock further contracts in the private sector?

Whilst we understand that "bulk, shaping and firming" contracts may be a reasonable characterisation of the types of contracts required in the market today, what governance or review process will be put

in place to ensure that these types of contracts remain applicable in the NEM in the future? Further questions include whether hybrids could concurrently contact for bulk energy and shaping?

Most of the liquidity, particularly on the exchange, at the moment is driven by options trading rather than swaps. How will the choices between options versus swaps be considered and made through the co-design process? The Panel notes that whilst they have benefits, the 'resale' of options contracts may be more complex as the contract buyer needs to develop a view as to the likelihood of the option being exercised.

Would there be an opportunity for asset owners to 'buy back' the contracts from ESEM? For example, if there is a change of market condition or if they consider that their asset's revenue is not maximised through the contract with the ESEM?

We also have concerns whether the same electricity derivative contract could be used as a tool "to kill two birds with a stone". We understand that the purpose of the MMO is to provide contract liquidity and thus support retail competition. The purpose of the ESEM is to support investment by overcoming the tenor gap. Could the same set of derivative contracts (in different volume, price and tenor) be successfully used to address both liquidity and investment issues? We are looking forward to working with the Panel to consider the optimal design of the contracts further to achieve these dual objectives.

Always-on MMO for a small number of derivative contracts

The CEC understands that the Panel recommends an always-on market making obligation in the NEM. The CEC considers that if market making is to be made 'always-on' and mandatory, then this service is best allocated to those that have the sophistication and appetite to take on the risks associated with a market making service.

CEC has concerns with the proposal to impose mandatory market making requirement on certain electricity market participants. Obligations on unwilling participants are likely to result in higher costs as the obligated participants will need to manage the increased markets risk arising from meeting the requirements.

Instead, the framework should be sufficiently flexible so as not to result in market makers having to take sub-optimal risk positions and potentially impede their ability to efficiently manage their own customer demand. To this end, the CEC considers that a more efficient and effective outcome may be achieved through commercial arrangements. The selection of wiling participants can be done through a competitive tender process, similar to how it was proposed by ENGIE previously.[1]

Given that there is likely to be multiple contracts (across bulk, firming and shaping) and the contract designs are likely to change over time, it could be challenging to identify the participant(s) that will continue to be best positioned to provide MMO in relation to changing sets of contracts.

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[1] In 2018, ENGIE proposed a voluntary market making obligation (*Market making arrangements in the NEM rule change)* in the NEM that would have required the AER to design a competitive tender for commercial provision of voluntary market making services. In a nutshell, ENGIE proposed periodic tenders to identify suitable 'always-on' voluntary market makers in each of the NEM regions. Market making services would have been open to financial and physical providers alike and they would have been able to sub-contract with other physical and financial market participants in order to provide the market making service. The proposal offered flexibility in relation to both ASX and OTC products and the costs of the tender was proposed to be recovered from customers.

In its *Market making arrangements in the NEM consultation paper*, the AEMC explored several international arrangements. The Singapore market making model in AEMC's Consultation paper provides a further example of how a competitive tender process may be conducted to identify suitable and well-incentivised commercial market makers to provide the service. A short summary of the Singapore model is provided in the Appendix of this submission for convenience. For further details see: AEMC, Market making arrangements in the NEM, Consultation paper, 20 December 2018

Furthermore, generation/storage asset portfolios are expected to become more complex than in the past. The Panel proposes to list bulk, shaping and firming contracts. How the "size of the MMO participant" could be determined in relation to these contract types in the context of increasing complexity in the future needs to be considered.

Furthermore, the CEC recommends that any MMO obligation expire at least 12 months before the current month/quarter. For example, on 1 January 2027, there would be no mandatory MMO for 2027 calendar year period. If a mandatory MMO applies to the current month/quarter, this would in effect provide a free hedging opportunity to non-MMO participants and remove the incentives for forward contracting. This is because non-MMO participants could always adjust a loss-making position, at the expense of MMO participants. Such an outcome would make it very difficult for the MMO participants to manage risk.

Importantly, the CEC considers that when the new MMO arrangements are introduced, the MLO of the RRO should terminate.

The interaction between MMO and RRO

The key point of the RRO obligation is to address reliability through financial derivative contracts. The proposed MMO is a stronger incentive to address reliability through new generation and storge assets. Once the MMO has been established, the CEC sees very limited additional value from the RRO while the regulatory and commercial complexity is significant.

CEC's view is to terminate the RRO when the ESEM and the MMO is implemented. This would reduce the complexity of managing compliance, contractual risks and also the risk or regulatory uncertainty associated with changes to any of the above schemes.

The interaction between standardised contracts, MMO and ESEM

The CEC is looking forward to the Panel providing further clarity and details in relation to how the standardised contracts, the MMO and the ESEM may operate jointly.

For example, would developers be restricted to only hold 'ESEM contracts' at the later years of the asset's lifetime? Could developers that compete for ESEM contracts 'layer' products? CEC's preference is to enable developers to contract freely (including bilaterally negotiated PPAs, tolling arrangements, etc) and for their chances of securing a contract with ESEM to be independent of their commercial contracts and negotiated arrangements, both before and during the period when ESEM contracts may be 'active'.

ESEM as a seller of contracts

CEC understands that in year eight, the ESEM would begin selling electricity derivative contracts, effectively entering the market as a competitor to new projects seeking buyers for the first seven years of their operations. CEC believes it is crucial to ensure a level playing field for new developments, as there is a risk that ESEM involvement could undercut private developers.

MT PASA

As highlighted in the draft report, the MT PASA relies on data from market participants regarding the availability of their assets. This data is primarily based on maintenance schedules, which become increasingly uncertain the further into the future generators are asked to forecast. The report notes that data quality is typically very high for the first year but declines in subsequent years. CEC considers that the current three-year outlook already represents the best quality data the market can reasonably provide. Extending the MT PASA beyond this timeframe is unlikely to add value, as the reliability of the data would diminish further.

Currently, whilst participants submit availability for 3 years, AEMO's reliability assessment only covers the first 2 of these 3 years. The Panel recommends extending the participant availability submission to 5 years, but it doesn't include requirements for AEMO to extend the reliability assessment period to

match this. The requirements placed on participants and AEMO should be harmonized such that AEMO's MT PASA reliability assessment period matches the time period to be covered by participant's availability submission in the MT PASA.

We note that three years aligns with the longest timeframe typically traded in financial markets, which limits the value of extending the MT PASA to five years. Our members believe that the increased uncertainty beyond the current three-year horizon diminishes the usefulness of the data. They are concerned that relying on such uncertain projections would be inappropriate for policy makers or market bodies when assessing future market outcomes.

Reliability settings

In relation to reliability settings, the Panel is proposing to have different time of day settings values, with lower values in some periods and higher in others. We are concerned that this will be counterproductive as it could lead to withholding of otherwise available capacity during the lower value periods. This may then result in resources reliant on storing energy for later use being unable to source sufficient energy for storage for later use. This has the potential to increase the frequency of AEMO market intervention and is simply a cross subsidy between resources. CEC strongly recommends that the current framework for the value of the reliability settings be retained so there is one price across all time periods.

Investment incentives (long term)

Co-design of the contract

We consider that the ESEM manager may be best positioned to co-design the contracts with industry and consumer representatives. We consider that AER's views should be considered in the design process. However, the ESEM manager may have more in-depth understanding of the supply and demand for contracts. It may also be the case that incentives for contract design and prudent management of contracts are better aligned if the same body is responsible for driving both outcomes, acting under strict principles and on behalf of consumers.

ESEM frequency

The CEC encourages the Panel consider the optimal frequency of the ESEM tenders. We consider that the ESEM should be run frequently, perhaps every month. This would ensure that there is closer timing alignment between an ESEM being awarded and a project landing a commercial contract and/or reaching financial close.

Tenure for ESEM contracts

The Draft Report mentions specific timeframes such as 7-15 years where projects lack necessary offtakes to reach final investment decision (FID). We encourage the Panel to consider flexibility in the tenure of ESEM contracts. We consider that the detailed design of the ESEM must be flexible in the tenure of contracts to ensure that it does not become an aspect of the market that is required for any project to enter the market.

Non-delivery risk

The CEC considers that the pre-qualification (hurdle) criteria should explicitly include development and delivery risks to ensure only projects with a credible pathway to completion are eligible.

Instances of some developers failing to deliver VRET2/CIS/LTESA projects highlights the need to consider non-delivery risks in the ESEM design. We note that, due to issues with the CIS, the Commonwealth has flagged establishing a discretionary reserve list of 'next best' bids—backups for viable projects that do not win on price alone.

The auction design of the ESEM should also consider strategic bidding incentives to facilitate credible bids that assist with overcoming missing money challenge for VRE providers.

We understand that Japan's Long Term Decarbonisation Auctions (LTDA) requires that if proponents do not deliver projects within the agreed timeframe that they must pay an exit fee for not delivering the contract. A similar approach could be applied for the ESEM.

Quantities and trajectory of procurement

CEC considers that the quantities of contracts and the trajectory of contracting by the ESEM requires a carefully considered governance framework. Suggestion by CEC members include, for example, a Customer Trustee that would operate according to strict customer-focussed principles. The Customer Trustee would determine the required contract procurement based on its guiding principles. It would consider information provided by AEMO and state jurisdictions but otherwise it would act independently. We understand that the Panel considers it necessary to identify overall national targets quantities with AEMC State Targets being also considered. The governance structure should be robust and be flexible to operate effectively even under divergent state interests.

The CEC considers there is a need to recognise the NEM-wide benefits of investments supported by the ESEM where they matter. The CEC also considers that there is a need for procurement of reserves to be done on a competitive and NEM-wide basis.

Procurement of strategic reserve

The CEC understands that the Panel proposed that strategic reserve may be procured by ESEM (following request by state governments). We would like to further understand the rationale for the strategic reserves. These types of markets are typically used internationally to support plant exit, rather than investment in new plant. They are also likely to be high costs, given plant cannot earn revenue from the market.

The CEC considers that several key requirements must be put in place in order to ensure that such reserves do not undermine investments in generation and storage assets (the core objective of the Review). For example:

- The CEC considers that such strategic reserve should become the "new RERT" and should remain out-of-market. There should be clear parameters for when the out-of-market reserve can and cannot be used. For example, this could include requiring the reserve mechanism to only be used in periods of forecast Lack of Reserve level 2 (LOR2) in a similar manner to the current RERT mechanism.

- Identify clear reporting frameworks to facilitate public scrutiny for the size, magnitude and use of the out-of-market reserve. Similar to the RERT mechanism, any out-of-market reserve that uses consumer funds should have transparent reporting frameworks that identify when the service is used and how much it costs consumers. If strategic reserves are used to achieve a level of reliability above the NEM-wide standard, then this should require public community consultation and clear support from consumers.

- The costs of such reserves should be recovered from relevant state governments and should not be part of the cost recovery mechanism of the general ESEM contracts.

Long lead time investments

Pumped Hydro Energy Storage

Pumped Hydro Energy Storage (PHES) requires multi-decade support, and whilst LTESA's 40-year horizon provides this, the ESEM's proposed 15–20 year support may not. We are looking forward to hearing from the Panel as to how long-duration firming, such as PHES, may be supported through ESEM.

Offshore wind

The CEC appreciates the high-level considerations by the Panel for how offshore wind could be supported in the long term, though recognise that the review focused predominately on existing technologies, and does not explore in detail how new technologies such as offshore wind will be considered. Based on this, we do not see it as sufficient guidance on how the proposed long-term initiatives could support the industry and do not see suitability for the ESEM to enable the offshore wind industry as a new technology in Australia.

We see the ESEM as better suited for mature technologies with ability to get finance based on current settings. As a new technology to Australia, offshore wind will need support to close revenue gap and ensure investability.

As seen in mature offshore wind markets, offshore wind has seen been enabled by suitable government mechanisms to provide revenue certainty and drive learning rates, and ultimately see costs reduce. This was demonstrated in the Clean Energy Council's Winds of Opportunity report which found strike prices in awarded government led offshore wind auctions have reduced between 10 to 50 percent between the first and most recent auction rounds. This highlights the trajectory we can expect in Australia for offshore wind projects.

Critical to success in these jurisdictions has been well communicated timelines for support mechanisms, as this has allowed projects to plan and optimise timing, and for the sustainable industry development and deliverability through regular auctions.

The CEC would recommend the Panel consider introduction of a bespoke and stable offshore wind financial mechanism outside of the scope of the ESEM. This should be based on a 20 to 25-year contract for different to align with financing timelines and include a clearly communicated pipeline for execution of auctions or relevant processes. This mechanism would also need to be delivered in conjunction and co-designed with state mechanisms and policy initiates. We would encourage further targeted engagement with offshore wind industry to determine unique requirements for industry in early years.

The CEC is looking forward to the Panel providing further clarity and details on their considerations of supporting this new critical industry to deliver gigawatt scale capacity into grids when and where we need them.

Provision of Essential System Services

The CEC welcomes the recommendations on Essential System Security Services (ESS) and supports improved outcomes for ESS procurement. However, we believe the recommendations should go further by promoting a market-based, least-cost approach to ESS procurement.

New technologies that can provide ESS are no longer simply "on the horizon" but they are already in our backyard.[2] Supporting investment in much needed ESS through market development and clear price signals should be a high priority in the Nelson Review.

CEC considers that the Nelson Review has the opportunity to be more visionary and ambitious in setting the future investment arrangements for ESS. Unfortunately, the Panel's recommendation continues to treat ESS as a 'byproduct' of energy rather than a service that is essential for the provision of energy.

We agree with the Panel's observation that the ESS procurement currently does not produce any meaningful price signals, and the procurement processes are overlapping and fragmented. We do not consider, however, that the locational nature of some of the ESS create insurmountable challenges to market developments. We strongly disagree with the underlying assumption that the current framework is working and with the proposal to add an 'ESS procurement layer' on top of current arrangements.

To drive more efficient outcomes, ESS requirements and associated costs should be made more transparent, procurement processes accelerated, and longer-term ESS contracts offered. Publishing comprehensive ESS needs—including system strength, inertia, network control, and system restart services—as part of each ESEM tender could support this goal.

ESS contract durations should align with ESEM contracts to support investment in services that are no longer incidental to generation, such as system restart, inertia, and system strength. The ESEM must ensure replacement resources are secured and operational before large generators retire, requiring a period of overlap to maintain system reliability and security.

ESS work program

The CEC considers that the provision of ESS should be considered as a separate workstream to address issues with current processes for ESS requirements, standards, procurement and long-term investment signals. This issue must be addressed to facilitate the timely closure of thermal assets without significant overinvestment in single-solution technologies like synchronous condensers.

Issues with current arrangements

We note that the current arrangements are being challenged by government bodies (e.g. EnergyCo) and REZ operators alike. Jurisdictions are considering their own approaches and the option to derogate from the NER. These further fragment the arrangements and the ESEM would need to consider this.

The current approach of derogating responsibility for procuring inertia and system strength down to TNSPs has created several issues including:

[2] We encourage the Panel to engage with, for example, Tesla Energy: the Role of Grid-Forming Inverters in Providing Inertia - White Paper.

- Lack of national consistency. The current approach of derogating responsibility for procurement down to individual TNSPs has resulted in jurisdictional specifications or guidelines.

- Lack of consistency in the recognition of services such as the system integrity protection scheme (SIPS) and network support agreement (NSA) services. SIPS and NSAs are critical system security services that are currently procured by jurisdictions on an ad-hoc basis. SIPS, in particular, provides a critical service that supports rapid decarbonisation and energy build out by boosting transmission operating capability.

- Inflexibility of the RIT-T process. There is currently no consistent approach to valuing services, and the RIT-T process results in non-transparent, opaque pricing. Furthermore, the lengthy and multi-stepped RIT-T process naturally lends itself to preferencing network solutions at the expense of non-network solutions.

- RIT-T cycles. Consideration of the timing of the RIT-T regulatory cycles and the timing of the need for or provision of ESS.

Besides establishing an ESS Working Group to inform the design of the ESEM, the CEC recommends the following next steps for the Panel:

- Establish an ESS governance framework that would include entities like AEMO and the Reliability Panel to establish the right standards, specifications and markets with centralised accountability.

- Consider what further clarity can be provided in the NER to give AEMO clear responsibility to set service specifications, including the proposed process for reviewing and updating such standards.

- Introduce the SIPS framework into the NER to provide NEM-wide consistency and transparency for a service that is critical to facilitate rapid decarbonisation and delay or negate the need for transmission build out.

Consumer Energy Resources

Australia is a world-leader in rooftop solar, with over 4.2 million households and small businesses generating renewable power from their roofs. The CEC's recent Rooftop Solar and Storage Report showed 12.8 per cent of Australia's total energy generation was coming from rooftop solar in the first half of 2025[3] and the installation of over 50,000 batteries in the first ten weeks of the Federal Government's Cheaper Home Batteries program[4] highlights the importance of continued market design with CER as an integral part of Australia's energy system.

We welcome the NEM Review's recommendations around transparency, visibility, predictability and incentives for investment in CER. However, it is encouraged that further analysis be undertaken to understand specific market conditions and regulatory frameworks that may not allow distribution-level resources to participate effectively in the proposed reforms. For example, CER assets do not have the same asset life as large scale renewable assets and therefore asset owners (eg consumers) would seek pay back periods over a shorter period of time.

[3] cec_rooftop-solar-and-storage-report_jan_june2025.pdf

[4] Joint media release: 50,000 cheaper batteries now powering Australian homes, businesses and community groups | Ministers

We also support any visibility framework incentives participation rather than setting regulations to force compliance of participation. Further, the framework should balance the need for visibility against regulatory burdens that may limit the efficient operation and growth of VPP participation in the market.

It is the CEC's recommendation that the IPRR framework is kept voluntary for minimum 5 years, with reviews at 1,3 and 5 years of the scheme's implementation. This will allow appropriate time for industry to provide feedback, action improvements and integration with other relevant National CER Roadmap workstreams. Any future reforms to the framework must then strike an appropriate balance between improving visibility of resources and avoiding burdensome obligations (designed for conventional generators) that could limit efficient operation (and growth) of VPPs.

As seen with the evolution of the Renewable Energy Target (RET), the initial implementation of the scheme applied to all new renewable energy, central and distributed. However, due to specific characteristics of different technologies, such as the different cost and implementation timelines for rooftop solar, the RET price was supressed, creating uncertainty for investors in large-scale renewable energy projects[5]. The establishment of the Large-scale RET and Small-scale Renewable Energy Scheme (SRES) ensured both central and distributed energy technologies were supported. Hence, we encourage the Nelson Review to consider the same framework with different sets of criteria and gateways may be the best method to efficiently dispatch and achieve orchestration targets.

Facilitating distribution-level resource participation

The CEC is supportive of recommendation 1D outlining that integrating CER within the existing market is preferable to creating new distribution-level wholesale markets. This change would require an extended and detailed consultation with market, industry and consumer stakeholders to best determine the costs and benefits of implementation and should be viewed as a long-term option rather than outcome of this Review. It is recommended some consideration be given within the report for long-term goals for market reform at the distribution level. This should seek to reduce complexity for consumers, with simple, actionable and clear products and services. A strong vision for the medium to long-term state is needed to provide direction for market participation and CER revenue streams, however this needs to be balanced with an understanding of the potential for increased resourcing and costs for industry.

The CEC understands that the NEM Review recommends that the market needs to encourage and reward participation in dispatch. To this aim, the Review aims to transition 'hidden' resources towards predictive and participative categories.

Current regulations provide differentiated treatment to unscheduled resources (such as CER) over scheduled and semi-scheduled resources in terms of priority of dispatch. Specifically, unscheduled resources are first used to meet underlying demand prior to dispatching other resources.

Given the significant projected uptake[6] of CER, CEC considers that incentives should be established to encourage CER's participation in dispatch mode and more broadly the scheduling of resources. The rules should aim to enable utility-scale and CER technologies to compete on an equal footing to provide services (subject to technical considerations). This in turn will help AEMO to balance supply and demand in real-time and will yield system-wide benefits. It will also create downward pressure on spot prices when prices are high.

We also raise for consideration that many customers are unlikely to want their device dispatched for market purposes. As seen in the recent uptake of the Cheaper Home Batteries Scheme, consumers

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[5] Regulation Impact Statement: Australian Government Response to recommendations from the Climate Change Authority Review of the Renewable Energy Target scheme

[6] AEMO's projection is that by around 10% of storage capacity in the NEM will be from CERs by 2026 before reaching 67% by 2049. For further details see AEMO, 2024 Integrated System Plan, June 2024.

opting for larger system sizes, averaging over 18kWh, indicates a trend towards self-consumption and increased resilience for individual households[7]. Hence there should be clarification from the Panel that not all customers are going to be price-responsive, and these recommendations still prioritise customer choice and value for services provided.

The CEC believes that the long-term success of the Integrating Price-responsive Resources Rule Change will rely on two things:

- Incentive structures; and
- Operational features (or keeping the "scheduled-lite" functionality as "lite" as possible whilst maintaining system operational integrity)

A major factor in determining the initial success and learnings of the rule change will be the incentive structures attached. AEMO and the AEMC need to find the right balance in providing a strong enough incentive to drive participation and visibility, while also managing the costs.

The CEC is very supportive of additional work being done on establishing an incentive program that works within the proposed ESEM framework to support equitable and fair access participation by CER/DER price responsive assets. For example, how can we leverage the tender process, eligibility criteria or gateway aspect of the proposed framework to establish the right incentives for participation.

The Panel outlines voluntary VSR participation will be available from 2027, with the recommended mandatory participation to come into effect by 2030. While it is described this would allow time for the dispatch framework to be embedded in the market and allow participants to build the necessary capabilities, it may restrict the ability to evolve and optimise the existing framework prior to mandatory participation. The first three years of the voluntary scheme will spur innovation in the market for energy service providers, aggregators and retailers, however more time should be provided for the maturity and long-term success of the rule change to be demonstrated in market prior to mandatory participation.

Harmonisation with the National CER Roadmap

It is encouraged that the outcomes of the NEM Review relating to distribution-level market design inform the development of the National CER Roadmap's *redefining roles and responsibilities of the market and power system operator* (M3/P5) workstream to reduce duplication of work at the national level. In 2024, CEC modelling estimated the cost of not meeting CER forecasts under the Step Change scenario by replacing shortfalls in CER with large-scale renewable energy generation and storage and building out the distribution network to manage large amounts of rooftop solar[8]. Not meeting CER forecasts risks losing over $22b in savings for Australian taxpayers and over 18,200 jobs in selling, designing and installing CER. Harmonisation of the long-term outlooks of the NEM Review and National CER Roadmap provide the opportunity to reframe the goal and highlight the true value of the distribution system to meet Australia's net zero targets.

Government Incentives for Investment in CER

The CEC is supportive of the NEM Review's recommendation that Government incentives for investment in CER should support resources that are enabled to participate in the market through aggregation or dynamic network connections.

Incentives for orchestration will need to be designed differently from those that have been used in the past to encourage the take-up of energy efficiency technologies and rooftop solar. Those incentives needed only to encourage the initial purchase and installation of those devices, as their impact on the

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[7] Strong solar battery uptake in first month | Clean Energy Regulator

[8] Powering-Homes-Empowering-People-CER-Roadmap.pdf

energy consumption (and production) did not require active operation. As a result, the incentive can be developed based on the present value of the lifetime impact of the device. This increases the amount of the incentive, which increases its power to offset the first cost of the technology.

Additional incentives for orchestration can dramatically reduce the payback period for customers on their investments, as seen with the introduction the New South Wales (NSW) Peak Demand Reduction Scheme's $1,500 incentive to connect to a VPP[9]. Recent AEMC analysis on 1,000 NSW households highlighted that while the average payback period is 7.3 years with federal rebates, it can become as low as 4 years for NSW households participating in VPPs[10].

Government incentives should also be supported through Federal, State and Territory targets for CER uptake and orchestration. We note both the New South Wales and Western Australian Governments have introduced such targets and commend their leadership in this space.

The Federal Government and each of the state and territory governments have already set targets regarding decarbonisation. Some have also established incentives for the installation of CER technologies as a means of helping to reach their decarbonisation targets. Recommendation 3B should consider an expansion of scope to include targets considering the orchestration of CER in addition to incentives encouraging its installation, as a means for assisting in reaching decarbonisation targets in as orderly and economical way as possible.

The orchestration targets themselves should be set in reference to the ISP. As in the case of any target, progress made against it should be reported regularly which will also be valuable for measuring efficacy.

As outlined, the ESEM would procure new electricity services to meet the targets outlined in the AEMC Targets Statement. We encourage the extension of the AEMC Targets Statement[11] to include state and jurisdictional targets around orchestration and virtual power plants (VPP), such as the NSW 3,400 MW of VPP participation by 2035[12] and the WA Residential Battery Scheme's 100,000 battery installations with VPP participation[13].

Planning and forecasting

Future rationalisation of NEM planning and forecasting documents

CEC is supportive of the recommendation for Energy Ministers to consider opportunities to rationalise NEM planning and forecasting documents, once the ESEM is operational.

CEC supports the intent of this recommendation, as there is value in periodically examining whether planning and forecasting resources and delivering maximum value to all stakeholders. However, CEC notes that there will continue to be a need and important role for key planning documents, such as the ISP. Future ISPs will need to have regard to the ESEM, as well as jurisdictional policies, to ensure consistency and maintain investor confidence.

[9] Connect your battery to a Virtual Power Plant (VPP) | NSW Climate and Energy Action

[10] Battery boom highlights need for market adaptation, AEMC analysis finds | AEMC

[11] Targets statement for greenhouse gas emissions | AEMC

[12] NSW Consumer Energy Strategy | Powering our people and communities

[13] WA Residential Battery Scheme

Appendix. Singapore MMO

The Energy Market Authority (EMA) is the body responsible for electricity policy in the Singapore electricity market. In partnership with the Singapore Exchange (SGX), the EMA launched the electricity futures market in April 2015, starting with quarterly base load futures contracts and adding monthly base load electricity futures contracts in April 2017.

The EMA adopted an incentive-based approach for securing market making services.

The EMA tenders for market making services for the quarterly and monthly base load electricity futures contracts via a uniform price auction where the awarded price will be based on the highest marginal bid among the selected tenderers.

The EMA determines the number of tenderers selected based on the bids made by the respective tenderers (indicating it could choose any number between four and seven). Each awarded tenderer provides market making services for a duration of three years.

Tenderers are not required to be holders of electricity licences issued by the EMA. This enables participation by a more diverse range of market makers, which the EMA notes may be useful in improving liquidity, as well as increasing competition for market making services, potentially reducing the cost. The SGX provides incentives which are based on transaction volumes for other products to encourage more trading from the market makers and non-market makers. The EMA is of the view that a performance incentive scheme based on transaction volumes could complement the proposed market making scheme (including tighter spreads). Overall, it can improve the liquidity of the electricity futures by encouraging users (both market makers and non-market makers) to trade in the electricity futures.

The EMA provides an example of a performance incentive scheme called the “price-pool” concept. Firstly, a minimum overall market volume must be met before a bonus pool of money will be activated. Subsequently, all participants will be rewarded from the bonus incentive pool based on their transaction volume contribution.

Any payment for the market making services will be based on fulfilment of the market making obligations for each monthly period. Failure to fulfil any of the associated market making obligations within the period will result in non-payment for that period. EMA reserves the right to terminate the contract after two months of non-performance by the awarded tenderer in a six-month rolling period. The termination of the contract at any point in time would result in a penalty fee of 100% of the annualised awarded price.