



19 October 2020

Energy Security Board

Via email: [info@esb.org.au](mailto:info@esb.org.au)

## Response to P2025 Market Design Consultation Paper

Thank you for the opportunity to comment on the ongoing NEM2025 market reform initiative and related processes.

Quinbrook Infrastructure Partners ([www.quinbrook.com](http://www.quinbrook.com)) is a private equity business that invests in clean energy in the UK, the US and Australia. Our portfolio companies include:

- a NEM connected baseload renewable energy generator, Cape Byron Power ([www.capebyronpower.com](http://www.capebyronpower.com));
- an electricity retailer that prides itself on not gouging customers and who just won the 2020 Finder Award for green energy retailer of the year in Australia, Energy Locals ([www.energylocals.com.au](http://www.energylocals.com.au));
- an embedded network business that prides itself on helping customers save costs by taking control of their energy needs, Energy Trade ([www.energytrade.com.au](http://www.energytrade.com.au)); and
- Lockyer Energy Management Pty Ltd which is developing a hybrid 120 MW peaking and utility battery project in Queensland.

Our multiples channels of involvement in the NEM, across different levels of the industry, allows us to provide balanced “whole of industry” opinion and set of potential refinements to the NEM2025 design. Additionally, our portfolio companies in UK and US markets (which include utility wind, solar and batteries, distributed peaking generation and Flexitricity ([www.flexitricity.com](http://www.flexitricity.com)) a demand response and flexibility platform) give us an operating knowledge of alternative market designs.

Our response is structured as a short statement and supported with answers to specific questions posed in the ESB’s stakeholder consultation paper in Annex 1.

### NATURE OF THE PROBLEM

To date the NEM has been one of the most successful liberalised power markets in the world in terms of both attracting investment and delivering reliability.

Over the NEM’s ~23 year history (1998-2020), 206 utility-scale new entrant plant comprising 28,147 MW of coal, gas and renewables reached Financial Close with an aggregate investment value of AU \$52.6 billion.<sup>1</sup> 43% of this generation investment occurred over the 2018-2020 period in response to high market prices for

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<sup>1</sup> Paul Simshauser and Joel Gilmore, *Is the NEM broken? Policy discontinuity and the 2017-2020 investment megacycle*, May 2020, p2.

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spot energy, wholesale contracts and LGCs. A similar cluster of generation investment occurred over 2008-2009 in response to high market prices driven by severe drought. NEM investment repeatedly responds in an efficient and timely manner to price signals.

In terms of reliability, over the 2008-09 to 2018-19 period, there have been only three instances across the four main regions of the NEM (NSW, Victoria, Queensland, SA) where unserved energy has exceeded the 0.002% annual reliability standard. This represents a 'miss rate' of 6.25% across years and regions. Misses occurred in 2008-09, 2018-19 – in both cases occurring at times where market prices have led to a surge in generation investment. In terms of power outages experienced by end users, over 2008-09 to 2018-19 network outages resulted in 95.6% of supply interruptions (the vast majority on distribution networks) with unserved energy in the wholesale market representing only 4.4% of total interruptions, 4.1% due to system security events and 0.3% due to reliability events.<sup>2</sup> The wholesale market has generally been reliable with the vast majority of outages experienced by customers occurring on distribution networks. Where wholesale market power outages occur, these are overwhelming security issues, not reliability issues.

The NEM has been a success despite many market commentators publicising failures of the NEM that in their opinion have led to less than optimal outcomes such as:

- The 'gold plating' of networks over 2009-2014 was a direct and intended consequence of NSW and Queensland state governments significantly increasing network reliability standards and the AEMC deciding to adopt the 'lock in and roll forward' approach to network CAPEX investment giving network business almost complete certainty that CAPEX would stay in the regulated asset base even if later demonstrated to be inefficient. This immediately led to a step change in investment, a lagging rise in network tariffs and a strong demand response from customers,
- The 'carbon wars' which have led to more than a decade of uncertainty,
- Public investment crowding out market investment. For example Snowy 2.0, a long-lead time, monolithic project in a strategic network location owned and operated by a market participant with increasing generation market share which is stalling investments in more timely mid-merit, flexible and storage assets that the market could utilise in the short and medium term,
- Operational interventions by AEMO such as RERT calls which appear in some instances to suppress price volatility and may ultimately mute pricing signals that would otherwise result in needed investment in flexible resources.

That the NEM has operated efficiently despite these many roadblocks is a testament to the parsimony of the underlying market design and, critically, the deep and liquid wholesale contracting market that is a critical element of risk management for participants. Australia's exchange and OTC contract markets have collectively traded at churn levels many multiples above underlying physical demand throughout the majority of the NEM's history. This stands in contrast to comparable markets in New Zealand and Singapore which have both

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<sup>2</sup> Reliability Panel AEMC, *Information Paper The Reliability Standard: Current Considerations*, March 2020, p5.

imposed forms of regulated market making arrangements but still fail to see a 'critical mass' of trade and liquidity (both of which are nodally priced markets).

Looking forward, the NEM is at the forefront of the global energy transition in terms of variable renewable energy (VRE) penetration at both the utility scale and via distributed energy resources (DER). In many cases, renewable and/or renewable + storage solutions are at grid parity at the wholesale level and incentivised at the retail level relative to high retail tariffs. We expect adoption of all forms of VRE and DER to continue and accelerate creating a need to ensure:

- The volume of new transmission connections is managed and co-ordinated between participants to a greater degree to avoid congestion issues (e.g. Victoria's Rhombus of Regret),
- Ancillary markets are refined and extended to ensure system security is maintained via market pricing signals and complementary measures as VRE penetration increases,
- Reform is taken to facilitate demand-side access to the wholesale market to support distributed energy resources and related new business models.
- The NEM embraces digitisation to capture related efficiency and productivity gains.

The NEM2025 project is ambitious in its scope. However, our characterisation of the problems facing the NEM suggests that a set of surgically targeted solutions is required, not an amputation. It is critical to ensure that the effective price signals and risk management provided by existing spot and wholesale contract markets are not disrupted in a manner that reduces their efficacy in providing effective price signals. Price signals that investors can, and have consistently, acted upon. Importantly, the NEM2025 process provides an opportunity to draw a line under the last decade of *ad hoc* market interventions and, hopefully, usher in a new decade of well-functioning markets, stable investment, competitive outcomes and increasing access for customers and a successful decarbonisation of the grid.

The several areas we see as most important in the design process are:

- Ensuring investability (market design initiatives A, B, C and D).
- Refocusing COGATI to favour a more targeted solution with less downside risk of market degradation (market design initiative G).
- Supporting two-side markets, DER and the future evolution of the NEM (market design initiatives E and F)

In all these areas it is critical that the objective of reform is to design and implement effective market-based mechanisms that ensure risk is allocated to parties best able to manage it. Participants have demonstrated remarkable ingenuity as part of delivering investment in an uncertain environment to date. The ability for markets to efficiently allocate risk to investors will only become more important as the energy transition accelerates in future.

We discuss each key area in more detail below.

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## ENSURING INVESTABILITY

The continued investability of the NEM is critically supported by:

- effective pricing signals for required resources;
- effective, deep and liquid contractual markets to underwrite investment and manage risk; and
- reduced ad hoc intervention in the NEM.

The existing regional spot markets for energy underpins Australia's critically important wholesale contract markets. The proposed reforms put these at risk. The introduction of nodal pricing and/or firm transmission rights will undermine the utility of a common regional pool price and related standardised financial contracts which can be freely traded without changing participant price basis risk. The failure to launch of wholesale contract markets in the nodally priced markets of New Zealand and Singapore (despite significant financial and regulatory support) demonstrate the risk entailed in nodal pricing.

Given the market has delivered investment to date and the majority of reliability issues have been related to security issues, we suggest the first focus should be on ancillary markets. The introduction of a fast frequency response (FFR) market would provide a greater toolkit to manage VRE and incentivise entry of highly flexible assets like batteries and industrial demand response by providing new revenue streams. Similarly, real-time markets for Rate of Change of Frequency (RoCoF) and inertia should be developed and deployed once the system need has been established.

An issue for consideration is the extent to which ancillary markets (existing FCAS and FFR/RoCoF/inertia extensions) incentivise the full range of technologies. Specifically, it is difficult to attract institutional capital to purely merchant projects, which could limit private investment in batteries and especially synchronous condensers to existing players and balance sheet financing. Additionally, synchronous condensers, which only provide inertia, cannot revenue stack like a merchant battery, making them incrementally harder to finance. Regardless of the specific technology, the business and investment case for new forms of flexibility would be enhanced to the extent there existed a deep and liquid market for financial wholesale ancillary contracts settled against FCAS and other ancillary market real-time prices. This would allow project revenues to be fixed (to some degree) and risks to be managed as is the case for existing spot energy markets. Possible reforms include:

- Efforts to standardise wholesale ancillary contracts that would reduce transaction costs and allow participants greater confidence they could trade out of a position in the case of unforeseen events. This could build on similar initiatives by ARENA and others to foster standardised wholesale energy contracts reflecting solar shape profiles.<sup>3</sup>
- Incentives for participants to provide liquidity to emerging ancillary contract markets. This could take the form of incentive payments to participants to be market makers (light handed) through to

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<sup>3</sup> See: <https://www.renewableenergyhub.com.au/>

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obligations on participants to provide some level of contract market liquidity (heavy handed and not recommended).

- Expanding the Retailer Reliability Obligation (RRO) to include ancillary services contracts, creating demand for wholesale ancillary contracts.

Markets for inertia would enable a business case for private investment in synchronous condensers, which may prove a valuable technology in the low inertia grids of the future. Quinbrook has commenced construction of the first new Synchronous Condenser to be built in the U.K. under National Grid's Pathfinder program.<sup>4</sup> The condenser, to be located in Wales, is expected to provide critical support services to stabilise the grid as older baseload coal, gas and nuclear plants are retired and intermittent renewables capacity increases. The ESB should consider such direct contracting models as a potential transitional approach to ensuring system security and strength prior to the introduction of any spot market for inertia, particularly if the implementation of inertia markets is likely to be in the longer-term.

Turning to reliability, we do not think there is a clear case for ahead markets. The NEM already enjoys a deep and liquid wholesale contract market and there appears to be little value in ahead markets which comprise a major change to the NEM's operations and would likely disrupt existing well-functioning contract markets.

Similar, we do not consider that a strong case has been made for capacity markets, be they for short-term operating reserves or multi-year ahead capacity auctions to foster new capacity build.

We do however note the increasing frequency of AEMO market interventions, particularly via the RERT. We share the concerns of many participants that the RERT is distorting market outcomes and imposing large costs of consumers.<sup>5</sup> A formal short-term operating reserve market which is co-optimised with energy, such as that proposed by Infigen<sup>6</sup> would be preferable to AEMO's continued use of the existing RERT arrangements with the added benefit of incentivising usage of demand side resources and otherwise inefficient supply side assets, enhancing the overall efficiency of the market. The spot market price cap should be adjusted (upwards) to the extent any operating reserve market is pursued to ensure investment signals are maintained.

We view long-term capacity auctions with a degree of caution. When working well, capacity markets can provide a critical firm revenue stream that allows for project financing by institutional capital. However, capacity markets reallocate risks from investors to consumers, who we believe are not best placed to manage such risks. Capacity markets are also, at heart, administered markets that reflect central

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<sup>4</sup> See: <https://www.current-news.co.uk/news/work-begins-on-welsh-power-inertia-site-under-national-grid-eso-contract>

<sup>5</sup> A summary of participant views compiled by the Australian Energy Council can be found here: <https://www.energycouncil.com.au/analysis/rert-locker-ii-the-sequel/>

<sup>6</sup> As proposed by Infigen, *Operating Reserves and Fast Frequency Response Rule Change*, March 2020.

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planning decisions and objectives via a vast array of scheme parameters (assumed demand curves, eligibility and availability regimes, contract duration and other terms, etc). They provide a wide channel for both unintended consequences and regulatory intervention when the market doesn't deliver the 'right' outcome. This has been seen in PJM and related markets (the oldest capacity markets in the world) which have seen increasing complexity across auctions. In the PJM case this has led to a schism and delays in the 2020 auctions.<sup>7</sup> The UK capacity market could represent a well-functioning design that could be repurposed for Australia.

Pursuing highly targeted reform of wholesale markets as described above would prepare the NEM for its continued transition. Reform to networks is also needed, however COGATI in its current form is not the answer.

## REFOCUSING COGATI

### Previous submission

We reiterate the comments made in our submission on COGATI<sup>8</sup> that the reform is unnecessary, likely to decrease the efficiency of the market and fails to improve incentives to invest in the NEM.

The Locational Marginal Pricing (LMP) and Financial Transmission Rights (FTR), we believe, will give market participants yet another mechanism to financially game the market and is unlikely to fix acute transmission constraints. As a long-term investor, the ability to purchase only a fraction of FTRs up to four years is too short of a duration for a 25+ year investment. In addition to this, the FTR market will be limited to market participants only, which we acknowledge will limit market 'players', but may lock out developers and limit the scope and therefore liquidity in the market. We would typically like to see contracts for 10+ years as this matches the tenor of debt and offtake arrangements prevalent here in Australia.

The FTR process, including determining price, continuous or time of use markets, combinations of local to regional node markets, and dynamic MLFs, is complex and likely to increase the cost and bureaucracy of AEMO and will not provide firm transmission access to participants. The grandfathering of FTRs does not fix the problem as there are already capacity constraints, so not every participant can receive an FTR. Furthermore, FTR will likely just provide another financial (and not physical) method to game the market and potentially influence price formation in non-transparent ways. LMP will likely increase the basis risk as seen currently in the ERCOT market in the US. Basis risk is fast becoming a major hurdle to new investment and requires complicated PPA and funding structures to mitigate. Also, we believe that LMP will likely increase the market power of certain generators rather than decrease that power, hence reducing competitiveness and

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<sup>7</sup> See: <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/010820-pjm-capacity-market-auction-could-be-delayed-another-year-uncertainty-persists>

<sup>8</sup> Quinbrook Infrastructure Partners, *Submission on Coordination of Generation and Transmission Infrastructure Proposed Access Model*, November 2019.

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liquidity at a local level. In an Australian context, a move to LMP pricing and FTRs would likely collapse existing wholesale contract markets to the detriment of the efficiency of the NEM.

As a long-term energy infrastructure investor, we prioritise revenue certainty in our investment decision making. Due to the complexity of the reforms proposed, in particular the FTRs, we are unable to see how any reasonable investor could forecast firm generation and resulting revenues.

We believe that the proposed reforms will be unlikely to reduce this risk premium applied (due to their complexity leading to the inability to forecast capacity constraints, LMP and FTRs) and will not help long-term investment in the new capacity so desperately needed in the NEM.

#### A targeted alternative

Instead of introducing vast complexity, price basis risk and entrenching incumbents we would suggest the AEMC focus reform on the key issue at hand – commit more fully to the ISP and manage the connection process more formally and openly.

The ISP, for better or worse, provides guidance to investors as to where new generation project will likely be supported with significant transmission investment. This allows investors to trade off between:

- Pursuing sites with the highest wind/solar yield, which in most cases fall outside of existing transmission footprints and may be outside REZ zones in some cases.
- Pursuing sites with high yield in REZ zones on timelines consistent with ISP announced transmission investment.
- Locating on existing transmission infrastructure at what may be lower yield sites.

If investors wish to prioritise yield over interconnection, they should be free to do so and exposed to the cost of securely connecting to the grid in cases where transmission infrastructure is weak or non-existent. Additionally, new projects should be able to coordinate via a public connection queue and fund supporting infrastructure on a joint basis.

In practice, this would involve committing to deliver the ISP and also establishing new arrangements around the connection queue and connection capital contributions.

An open and transparent connection queue is critical and should comprise:

1. An application to connect placing a project in an open queue with named project proponents.
2. 'First in best dressed' prioritisation.
3. Use It Or Lose It rights to the queue position.
4. Parties being given an option to work unilaterally or collectively to achieve interconnection.
5. A mechanism to support collective capital contributions to securely connect to the grid. For example, if the TNSP/AEMO determines synchronous condensers or voltage support equipment is needed to facilitate individual or collective connection then this cost could be shared between a collective of connecting parties. Subsequent connecting parties should also be required to share the costs of any equipment that supports their connection to avoid free riding.

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We believe a simple queueing process as described would avoid the worst of multiple parties connecting simultaneously at locations which are weakly supported by existing transmission infrastructure. This would avoid ongoing stress on the grid, project curtailment constraints or unexpected *ex post* requirements to invest in expensive grid support equipment, i.e. this would avoid the Victorian Rhombus of Regret occurring again.

Such a targeted solution, as opposed to a fundamental change to price setting, basis risk, access and transmission rights would enhance the NEM rather than upending it. These targeted reforms, combined with the changes to wholesale markets already discussed, would support the future evolution of the NEM as a truly two-sided and more distributed market.

### SUPPORTING TWO-SIDE MARKETS, DER AND THE FUTURE EVOLUTION OF THE NEM

We are strong supporters of moves to engage the demand side of the market, more fully utilise DER and ensure the NEM evolves through increases digitisation to improve market efficiency and outcomes for customers.

#### Supporting customers

Our portfolio company Energy Locals in partnership with Tesla is supporting the SA VPP, which we understand to potentially be the biggest residential battery VPP in the world.<sup>9</sup> Our Energy Trade company is one of the largest and fastest growing embedded network operators in the NEM and has deployed millions of dollars of investment in DER. The common theme of both these businesses is that end customers are provided with competitive electricity rates and other clearly defined benefits but do not have to directly interface with the complexities of the wholesale market. In the case of Energy Trade, there is no ability for an individual apartment occupant to enjoy the benefits of solar and battery technology. Energy Trade solves this problem by aggregating the site into an embedded network and building, owning and operating the DER assets on behalf of customers without any need to upfront capital payments.

The most important part supporting two-sided markets is a willingness to support new business models – be they innovative retailers, embedded network operators, demand aggregators, or energy management providers – that solve the complexity and constraints that would otherwise face customers when trying to interface with markets. This needs to occur whilst ensuring customers are protected and realising competitive outcomes.

#### Increasing access

We support existing steps to lowering barriers to demand side and DER participation in the wholesale market.<sup>10</sup> We are an active participant in the VPP demonstrator program via the Energy Locals SAVPP, and

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<sup>9</sup> See: [https://www.energymining.sa.gov.au/clean\\_energy\\_transition/virtual\\_power\\_plant?src=registration](https://www.energymining.sa.gov.au/clean_energy_transition/virtual_power_plant?src=registration)

<sup>10</sup> ESB, *Post 2025 Market Design Consultation Paper*, September 2020, p91-92.

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strongly support AEMO efforts to evolve the operational and regulatory framework for VPPs. We also support the short-, medium- and long-term initiatives outlined by the ESB to enhance participation.

As metering costs fall, internet enabled devices proliferate and digitisation of the grid progresses this philosophy may need to change to an asset/device approach. Fundamentally, specific loads down to the asset, device, appliance level should be able to be separately metered where there is a customer benefit. This would allow these specific loads to:

- Be aggregated into a traditional retail contract (i.e. the status quo can be maintained).
- Be assigned to a VPP or demand response platform (with residual site or household load under a traditional retail contract or other arrangement).
- Be bundle with OEM or appliance sales (e.g. fridge comes with 2 years' energy cost include on Amazon).

Most importantly, moving to an asset/device metering basis would allow for business models not yet invented and a far smarter grid and energy system.

Pursuing such an approach could be done incrementally, consistent with the incremental approach already being taken by the ESB. Namely, asset level metering could be allowed at industrial sites first, with smaller assets being included as arrangements are developed and proven. An example of this approach is a current UK rule change proposal raised by our portfolio company Flexitricity ([www.flexitricity.com](http://www.flexitricity.com)). Proposal 375<sup>11</sup> seeks to allow demand response providers to install metering equipment associated with demand response assets behind-the-meter and use these meters for pool settlement. In an Australian context, controlled load at the residential level represents an existing limited use case of asset level metering within a site. Although we do not believe the current rules and processes support cases where a household splits controlled load and residual usage across different parties in the market (e.g. under two separate retailer contracts).

### Network pricing

As part of fostering two-sided markets and DER, it is important that network charging is cost reflective and technology neutral consistent with the DNSP pricing reforms of 2014<sup>12</sup> and their ongoing implementation. The value of demand response and DER will be maximised to the extent that accurate pricing signals for both wholesale energy and network usage are received by participants and customers. Specifically:

- Easing access to gaining wholesale price exposure through initiatives like the VPP reforms and wholesale demand response mechanism. This will provide strong incentives to respond to peak wholesale pricing events and arbitrage energy from low price periods to high priced periods.
- Ensuring the bulk of network costs, which are fixed, are recovered on a causer pays basis via peak demand or capacity-based charging. This will create incentives for the demand-side to manage peak

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<sup>11</sup> See: <https://www.elexon.co.uk/mod-proposal/p375/>

<sup>12</sup> See: <https://www.aemc.gov.au/rule-changes/distribution-network-pricing-arrangements>

consumption more effectively *or* allow consumers to pay a premium to consume more at peak times if that is their preference.

- Ensuring that customers are only paying for the network services they actually use. As DER penetration and demand response become more widespread, a decreasing share of power consumed will flow through the transmission level of the grid. Consumers and DER participants should not be charged for a layer of the grid they are no longer using. Rather, end users should only pay for the power that flows along with reliability and security services provided by the transmission network to the distribution network.

The NEM 2025 process is the right time to pursue reforms to unlock the potential of the demand side and digitisation of the NEM.

#### THE NEED TO GET THIS RIGHT

Whilst the NEM has faced challenges in recent years, Australia's world leading renewable resources are finally coming to the fore and opening a path to a bright future for the NEM. Getting the NEM2025 right has the potential to return Australia to a position of comparative advantage based on an efficient, decarbonised and leading-edge power sector. We look forward to supporting the ESB, wider industry and our customers and investor to realise this future.

Yours Sincerely,

A handwritten signature in grey ink, appearing to read "B. Restall".

Brian Restall  
Senior Director  
Quinbrook Infrastructure Partners

## ANNEX 1 – SUMMARY OF RESPONSES TO RELEVANT STAKEHOLDER QUESTIONS

Our summary responses to specific stakeholder questions are included below.

Section	Question	Response
Section 1	<i>Consultation and Submissions</i>	
1	The potential solutions and how well the characteristics of these solutions address the challenges identified with the current market design. Where alternative solutions can be identified for discussion, these would also be welcome.	<p>We have expressed strong concerns about the pursuit of the current COGATI reforms, particularly nodal pricing and FTRs. We do not see a need for ahead markets for energy or capacity, maintaining existing wholesale contract markets should be prioritised.</p> <p>We have suggested the ESB progress:</p> <ul style="list-style-type: none"> <li>• (RAM) Markets for FFR, RoCoF, inertia and to consider long-term contracts for security support services as a transitional measure. We also see a formal short-term operating reserve market as preferable to the RERT.</li> <li>• (COGATI) Confirming the ISP and adding an open connection queue process that seeks to avoid multiple connections in weakly connected areas of the grid.</li> <li>• (2-side &amp; DER) Pursuit of stated reforms. Moves to metering on a device/asset basis (c/f current site/household basis) to support DER. A focus on cost reflective network pricing.</li> </ul>
2	The proposed timing of the implementation of the changes to the market design and reasons for any alternative timing you may wish to propose.	n/a

3	Our proposed approach to classifying the broad range of consumer needs, and what may be alternative or complementary incentives or regulatory measures (including consumer protections) to consider in support of these needs.	n/a
4	The proposed approach and criteria to evaluate the range of potential solutions identified within each workstream, as well as for assessing market design option(s) to be developed later this year.	n/a
<i>Section 4</i>	<i>Resource Adequacy Mechanisms – Market Design Initiative A</i>	
1	Do you have views on whether the current resource adequacy mechanisms within the NEM are sufficient to drive investment in the quantity and mix of resources required through the transition?	<p>We believe the NEM has successfully delivered reliability via effective pricing signals to date and have confidence reliability will continue to be provided as long as these pricing signals are not disrupted in future.</p> <p>In the wholesale market, the issue in our view is ensuring security. To this end the ESB should pursue markets for FFR, RoCoF, inertia and to consider long-term contracts for security support services as a transitional measure.</p> <p>We see a formal short-term operating reserve market as preferable to the RERT.</p>

2	Do you have views on whether the short-term signals provided by an operating reserve mechanism or market would provide adequate incentives to deliver the amount and type of investment needed for a Post-2025 NEM in a timely manner? What impact could an operating reserve have on financial markets? What are the benefits of this approach? What are the costs and risks?	<p>We see a formal short-term operating reserve market as preferable to the RERT. Our concern is the price distortion created by the RERT as currently implemented.</p> <p>A formal STOR market would be easier to factor into investment decisions and we believe the market would optimise around this expectation effectively once in place as opposed to the RERT which entails greater uncertainty. In the event an operating reserve market is pursued, the market price cap should be increased in order to maintain investment signals.</p>
3	Do you have views on whether the signals provided by an expanded RRO based on financial contracts or a decentralised capacity market would provide the type of incentives participants need to deliver the amount and type of investment needed for a post-2025 NEM in a timely manner. What are the benefits of this approach? What are the costs and risks?	<p>We see a decentralised capacity market (such as an expanded RRO) obligation as preferable to a centralised capacity auction based on experience in other jurisdictions which have tended to chase an ideal investment outcome via increasing auction complexity and revision.</p> <p>We suggest the ESB should consider reforms to standardise contracts for ancillary services (CfDs settled against ancillary prices) and to support liquidity in related markets. Potentially, this could include an obligation to hold an ancillary contract market position as part of the RRO.</p>
4	Do you have views on how an operating reserve mechanism and/or expanded RRO would impact the need for and use of RERT and the interim reliability reserve if they were introduced into the NEM? What adjustments to the RERT and/or interim reliability reserve may need to be made so that they are complementary and not contradictory or duplicative?	<p>Ideally, we would prefer that any formal short-term operating reserve market replaces the RERT and related uncertainty in terms of volume, timing and enablement.</p> <p>As highlighted by Infigen in its proposal, ERCOT's STOR provides a model whereby the market is procured every year and held as a backstop against potential unserved energy.</p>

5	Do you have views on how RAMs (current or future) can better be integrated into broader jurisdictional policy priorities and programs? Should jurisdictions reflect broader policy priorities through the nature of obligations placed on retailers in an enhanced RRO or decentralised capacity market, or through the qualifying requirements for participation in an operating reserve?	n/a
Section 5	<i>Ageing Thermal Generation Strategy – Market Design Initiative B</i>	
1	Have we correctly identified the cost, reliability and security risks to consumers from the transition away from thermal generation?	<p>We believe the NEM has been effective at both signalling a need for investment and facilitating exit of uneconomic capacity to date. Perceived issues have primarily related to <i>ad hoc</i> policy and regulatory interventions.</p> <p>The important structural issue to manage is the transition to a system with less synchronous generation and the related security issues to poses. We support markets for FFR, RoCoF and inertia to manage this issue.</p>
2	Are these risks likely to be material, particularly those relating to consumer costs?	We believe the security issue of decreasing synchronous generation is already material in South Australia and will be material in Victoria with the next brown coal exit with other regions of the NEM to follow.
3	Are there additional or alternate market design approaches that will ensure the transition away from thermal generation is least cost to consumers?	Yes, we support markets for FFR, RoCoF and inertia to manage this issue.
4	Should the ESB consider and develop any of the options outlined in this section further?	Yes, we support markets for FFR, RoCoF and inertia to manage this issue.

Section 6	<i>Essential System Services – Market Design Initiative C</i>	
1	What feedback do you have on the proposed provision of an operating reserve procurement for resource adequacy? Will such a mechanism assist manage greater system uncertainty more efficiently than current arrangements? What additional mechanisms might be needed to foster investment needed for a Post-2025 NEM? What are the benefits of this approach? What are the costs and risks?	<p>We believe the NEM has successfully delivered reliability via effective pricing signals to date and have confidence reliability will continue to be provided as long as these pricing signals are not disrupted in future.</p> <p>We view a formal short-term operating reserve market as preferable to the RERT.</p>
2	What are your views about developing Fast Frequency Response with FCAS and developing a demand curve for Frequency Response? Will such a mechanism assist manage greater system uncertainty more efficiently than current arrangements. What additional mechanisms might be needed to foster investment for a Post-2025 NEM. What are the benefits of this approach? What are the costs and risks?	<p>We support markets for FFR, RoCoF and inertia as a priority to address security issues. The ESB should consider reforms to standardise contracts for ancillary services (CfDs settled against ancillary prices) and to support liquidity in related markets. Potentially, this could include an obligation to hold an ancillary contract market position as part of the RRO.</p>
3	What are your views on the proposed structured procurement for inertia and system strength by way of NSP provision, bilateral contracts and generator access standards, or through a PSSAS mechanism? Which approach is preferable, what are the relative benefits, risks and costs? Should the ESB instead prioritise the development of spot market for or structured procurement of inertia? What are the relative benefits, risks and costs of such an approach?	<p>We support a spot market for inertia to ensure the service is priced transparently, and to attract the largest pool of investors to provide the service and to ensure strong incentives for its delivery. A market-based will maximise economic efficiency.</p> <p>Structured procurement of inertia could be considered as a transitional mechanism (such as the UK’s Pathfinder program).</p>

4	Given future uncertainties and the potential pace of change, what level of regulatory flexibility should AEMO and TNSPs operate under? What are the benefits, risks, and costs of providing greater flexibility? What level of oversight is necessary for relevant spending? Are there specific areas where more flexibility should be provided or specific pre-agreed triggers?	n/a
<i>Section 7</i>	<i>Scheduling and Ahead Mechanisms – Market Design Initiative D</i>	
1	The ESB is interested in stakeholder feedback on the options for the ahead mechanisms we have outlined. Are there additional options? Are the options for a UCS and UCS + ahead markets fit for purpose?	<p>We do not see a need for ahead markets for energy or capacity, maintaining existing wholesale contract markets should be prioritised.</p> <p>The UCS framework appears we support efforts to improve the intervention and directions framework with a more automated and standardised approach.</p>
2	The ESB proposes to develop the UCS tool for implementation. Do you support the UCS concept? What factors and design features should be considered for detailed development?	Yes. The most important factors are high level of transparency and the objective of the market response as the preferred outcome with AEMO intervention as a backstop.
3	The difference between actual and forecast residual demand leading up to real time dispatch has been far more stable in the last decade than the difference between actual and forecast prices (\$MWh) leading up to real time dispatch. What do you consider the drivers of this may be?	n/a
<i>Section 8</i>	<i>Two-Sided Markets – Market Design Initiative E</i>	

1	<p>What do you consider are the risks and opportunities of moving to a market with a significantly more active demand side over time? How can these risks be best managed?</p>	<p>We believe the move to more active demand side is happening and should be embraced to enhance the economic efficiency of the NEM. The risks primarily relate to:</p> <ul style="list-style-type: none"> <li>• a lack of access and participation;</li> <li>• the potential to foreclose on new business models via onerous regulation and process; and</li> <li>• a lack of efficient pricing signals leading to malinvestment and suboptimal outcomes.</li> </ul>
2	<p>What are the barriers preventing more active demand response and participation in a two-sided market? What are the barriers to participating in the wholesale central dispatch processes?</p>	<p>There are barriers to gaining wholesale price exposure although we support initiatives like the VPP reforms and wholesale demand response mechanism to improve this. This will provide strong incentives to respond to peak wholesale pricing events and arbitrage energy from low price periods to high priced periods.</p> <p>It is important to ensure that fixed network costs are recovered on a causer pays basis via peak demand or capacity-based charging. This will create incentives for the demand-side to manage peak consumption more effectively or allow consumers to pay a premium to consume more at peak times if that is their preference.</p>
3	<p>Do you think any other near-term arrangements or changes to the market design can be explored in this workstream?</p>	<p>The ESB workplan is well considered. The NEM should transition to metering on a device/asset basis (c/f current site/household basis) to support DER. There should also be a focus on cost reflective network pricing.</p>
4	<p>What measures should be deployed to drive consumer participation and engagement in two-sided market offerings, and what consumer protection frameworks should complement the design?</p>	<p>Consumer protections should build on the NECF and supported with information initiatives to ensure customers face low information barriers to participation. Fundamentally, the NEM is complex and getting more complex. We expect most demand-side participation to be intermediated by 3<sup>rd</sup> parties with new business models that solve this complexity problem on behalf of customers. Reforms should be</p>

		structured to ensure new business models can be attempted and scaled up when successful.
5	What might principles or assessment criteria contain to help assess whether it is timely and appropriate to progress through to more sophisticated levels of the arrangements?	<p>Successful deployment at one level of the market should drive further deployment downstream (e.g. industrial demand-response success then leads to commercial demand response reforms).</p> <p>The reforms should also be customer led. Sandboxes can play a useful role in determining if a proposed reform (e.g. household device metering) is worth pursuing and/or accelerating. Real world data on uptake by customers, especially in the mass market, is critical to ensure reforms do not become expensive academic exercises with no appeal to customers.</p>
6	The ESB is considering combining the DER integration (below) and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?	In principle, we support combining these workstreams.
Section 9	<i>Valuing Demand flexibility and Integrating DER – Market Design Initiative F</i>	
1	Are there any key considerations for the incorporation of DER into the market design that have not been covered here? For DER to participate in markets, it needs to be responsive. How should the Post-2025 project be thinking about enabling responsive DER?	We have a preference for market-based approaches, such as the VPP demonstrator initiatives. This allows DER resources to be actively bid/offered to wholesale markets by parties able to bear associated risks, thereby creating value that can be shared with customers.

2	In the next phase of the project the ESB proposes to focus on development of a detailed DER market integration proposal. What are the most important priorities for DER market integration? The ESB is considering combining the DER integration and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?	The focus should be on: <ul style="list-style-type: none"> <li>• reducing barriers to access and participation;</li> <li>• ensuring new business models are given a chance to evolve and succeed; and</li> <li>• sending efficient pricing signals to the demand-side for wholesale energy, ancillary and network services.</li> </ul>
3	How can we ensure that owners of DER can optimise the benefits of their DER assets over time as technology and markets evolve? How do we time reforms to manage the costs and benefits for DER owners?	These risks cannot be fully managed or optimised given the rapid change of technology and the grid. Transparency wherever possible is a critical mitigant. It is also important to ensure new business models can manage these complexities on behalf of customers.
<i>Section 10</i>	<i>Transmission Access and the Coordination of Generation and Transmission – Market Design Initiative G</i>	
1	The Integrated System Plan is now in its second year. Do you have any comments on how its implementation can be made more efficient and timely?	n/a
2	The cost of major transmission investment projects is of concern. Do you have any suggestions on how these projects can be built for less than currently expected? Why have costs increased so markedly? Given the rising costs, are there alternative approaches to transmission project development, design and implementation which could lower the cost?	Our key suggestion is to improve the connection process via an open and transparent connection queue. This would ensure multiple connecting parties can co-ordinate and (where relevant) make collective capital contributions to support connection to areas with weak transmission infrastructure.

3	<p>The development of Renewable Energy Zones is important for the transition underway in the NEM. Do you have any suggestions on how large-scale priority REZs can be more efficiently developed and connect into the network?</p>	<p>Our key suggestion is to improve the connection process via an open and transparent connection queue. This would ensure multiple connecting parties can co-ordinate and (where relevant) make collective capital contributions to support connection to areas with weak transmission infrastructure.</p>
4	<p>NERA Economic Consulting's modelling of the benefits of introducing transmission access reform in the NEM has been published. What do you think about the modelling and assumptions used? What does this suggest about how fit for purpose the current access regime is? If you are unsure of the merits of locational marginal pricing and FTRs what other suggestions would you make about how risks of congestion might be managed by generators?</p>	<p>We believe the NEM has successfully delivered reliability via effective pricing signals to date and have confidence reliability will continue to be provided as long as these pricing signals are not disrupted in future.</p> <p>We have expressed strong concerns about the pursuit of the current COGATI reforms, particularly nodal pricing and FTRs. We believe the introduction of nodal pricing will impose significant price basis risk on participants and undermine existing wholesale contract market liquidity to the detriment of the entire NEM. We see FTRs as a barrier to investment that is poorly aligned with our investment timescales. We believe FTRs will primarily benefit large incumbent players, not new entrants or customers.</p> <p>We believe nodal pricing and FTRs will reduce our ability to manage risk and invest in the NEM.</p>
5	<p>The AEMC has released an updated technical specification paper on the transmission access reform model, alongside this report. The updated proposal provides additional information on the options regarding the design of the instruments, pricing, and trading. How well do you think the proposal would address the identified challenges?</p>	<p>We believe the NEM has successfully delivered reliability via effective pricing signals to date and have confidence reliability will continue to be provided as long as these pricing signals are not disrupted in future.</p> <p>We have expressed strong concerns about the pursuit of the current COGATI reforms, particularly nodal pricing and FTRs. We believe the introduction of nodal pricing will impose significant price basis risk on participants and undermine existing wholesale contract</p>

		<p>market liquidity to the detriment of the entire NEM. We see FTRs as a barrier to investment that is poorly aligned with our investment timescales. We believe FTRs will primarily benefit large incumbent players, not new entrants or customers.</p> <p>We believe nodal pricing and FTRs will reduce our ability to manage risk and invest in the NEM.</p>
6	<p>What are stakeholder views on the current suite of locational investment signals? The ESB welcomes stakeholder views on alternative solutions to address the need for improved locational signalling for generators.</p>	<p>We believe existing measures and markets, although not perfect, provide significant locational pricing signals. Generation siting will always involve a trade-off between resource, grid and load proximity. The transparency in the NEM in terms of pricing outcomes, other market data, guidance on transmission upgrades and procedural elements like the MLF process already provide world leading information to enable investor to make this trade-off. Recent issues regarding connection congestion were, in our view, foreseeable and do not justify fundamental change to the market design.</p>