Post-2025 Market Design Program – Stakeholder Webinar – Q&A Feedback

https://esb-post2025-market-design.aemc.gov.au/

Questions	Response to Feedback
RESOURCE ADEQUACY MECHANISMS	
There is a slide showing coal retirement which means 61% coal retired by 2040. Where is the equivalent slide for rooftop solar? The largest tranche of household rooftop solar in Queensland was installed in 2013... how will households find the funds to replace or maintain rooftop solar going forward?	The decision to focus on coal-fired power station retirements is because these anticipated exits relate to ageing plant, and the 'lumpy' nature of their exit will cause loss of large amounts of generation at one time. The ESB would be interested in hearing views of how the degradation of performance of solar panels and their replacement should receive similar attention.
Would a Decentralised Capacity Market not achieve the same thing as the Co-optimised Operational Reserve in terms of discovering and pricing sufficient firm capacity to the system?	The ESB acknowledges that there are some significant overlaps in both of these concepts. However, they will differ in practice according to the design details of each option. These considerations are part of the work program for this work stream.
What has been the reliability comparison between coal, gas and renewable plants, especially under high temperature events.	AEMO's ESOO models these differences to arrive at an estimate of the reliability they provide.
Can you please explain how a decentralised capacity market would operate? Is it envisaged that this would involve market based pricing for reliability or other?	The details of the decentralised capacity market are being considered in the Resource Adequacy Mechanism workstream. It involves obligations to require retailers to hold firm forward contracts to meet a measure of peak demand.
Given the challenges of the capacity market in the STEM (increasing system cost for consumers and creating inefficiency), why would we want one in the NEM?	The September consultation paper outlines some potential benefits of a decentralised capacity market. The ESB welcomes stakeholder input on the consultation questions raised on this matter.

Thank you for the presentation today. We are interested in understanding if there will be RRO amendments that impact POLR? POLR is currently designed to limit retailer competition by significantly increasing costs for small retailer on a number of fronts.	As set out in the Post-2025 consultation paper, the nature of an enhanced RRO will be the subject of further consideration in the Resource Adequacy Mechanisms work stream.
Are you seeing the operating reserve as a dynamic requirement reflecting e.g. contingency sizes, forecast uncertainty?	The nature of an operating reserve is being considered in both the Resource Adequacy Mechanisms and the Essential Security Services work streams. It will likely include dynamic requirements such as the ones identified.
Are you looking at / accounting for possible alternative technical approaches that could require less system strength?	Yes. All the ongoing work being done by the AEMC to boost power system security is complementary and linked with the ESB ESS work. The urgent system strength work started in 2016 to address the accelerating transformation of the NEM has been expanded to include future-focused work to evolve a whole new approach, supported by ongoing rule changes. The Post-2025 program offers all the market bodies an opportunity to engage deeply with stakeholders on this leading-edge work.
AGEING THERMAL GENERATION STRATEGY	
Large thermal generators are critical to system security - system strength, inertia, frequency control. They also deliver the lowest cost electricity. Why should they close early? AEMO may well need to extend the life of some thermal generators to keep the power system secure as replacement dispatchable plant may not arrive.	This issue is being considered in the Ageing Thermal Generation strategy workstream. However, the ESB is proposing changes that would establish the value of each of these services separately (as part of the Essential System Services work). Where these services are valued by the market, this could provide additional revenue streams to such providers, and reduce the chance these stations close before other resources come online to cover their exit.
How important do you see the role of gas to support the drop in thermal generation as a transition fuel? This has been a political football and hot topic which swings wildly to being	The ESB is largely agnostic as to the value of gas-fired or other resources (e.g. pumped hydro or batteries) to help balance differences between renewable generation and demand. In this work we are seeking to identify the characteristics needed to support a secure and reliable system, defining a range of essential system services that can then be procured from a

vital to being dead. Interested in your thoughts.	broad range of service providers (from both supply and demand based resources). In the Post-2025 program, we are considering the need for incentives to address the need for resources that can deliver dispatchability and flexibility as thermal generation exits, rather than defining what technology should address that issue.
If there is a situation where a large capacity commercially viable coal generator requires maintenance - which makes the asset non-commercially viable - will the decision be to retire the asset early or continue with the maintenance and retire as planned? If the asset is retired early, which one of these initiatives will be applied to make up the demand?	Planned maintenance expenditure is well known in advance so this information is expected to be included in the expected closure year submitted by the generator to AEMO. The expectations around unplanned outages are issues being considered by the ESB. Issues regarding exit of Ageing Thermal Generation are being considered as part of the Post-2025 program.
ESSENTIAL SYSTEM SERVICES	
Why [are] black start services not included in essential system services?	System restoration services were identified as an essential system service (see pages 38-39 of Essential System Services in the NEM, A report by FTI 14 August 2020). Analysis in this report and the work been completed by the AEMC in addressing how restoration services are procured did not identify as a future need for ESS. For further info see page 39 of that report – see Post-2025 website for details (link above).
If a generator has a bilateral contract with AEMO, how to ensure that it has the 'right' incentives to bid its energy into the market?	The incentives and circumstance that would lead to the activation of a contract for security services are being examined. More detail on the options can be found in the FTI Consulting report on Essential System Services, which available on the post 2025 website. We would welcome stakeholder views.
With cyber security getting daily coverage then black start needs to be taken more seriously.	While cyber security issues are outside the scope of this program, the ESB and especially AEMO, do hold and acknowledge concerns about the effectiveness of cyber security and implications for system restart services. Issues relating to cyber security is an area of focus for AEMO including as part of the Australian Energy Sector Cyber Security Framework.

How do you see a spot market for inertia operating, given that traditional inertia is an on/off provision, not linear?	The binary nature of the provision of inertia will be an important consideration in the design and development of a future potential spot market. One of the key features of a future spot market will be the design of the demand curve which identifies the willingness to pay for different levels of inertia. The shape of the inertia demand curve is important given that the supply of inertia is 'lumpy'. It is likely that the demand curve will need to be sufficiently graduated to ensure that the inclusion of a small amount of additional resource does not make the price collapse.
I think for ESS, the inertia and FFR cannot be dealt with independently and any approach (whether directions, structured procurement or spot-market-based) should be using a co-optimised mechanism. Has this aspect been considered?	In the September consultation, the ESB set out its thinking on a framework for future development of markets to support the procurement of a range of essential system services. We have identified the relationship between inertia and FFR and other FCAS. While optimisation across a range of services could deliver benefits in future, in the interim co-optimisation would likely be fairly crude unless or until a spot market for both is established and the relationship between them is accurately calculated.
How do the ESS provisions arrangements interact with the AEMC current system strength review?	The AEMC's investigation into system strength review is complementing work being carried out through the ESS process. The system strength review is building off the work set out in this report. Its recommendations would improve investment certainty for new connecting generators and set a clear direction for how transmission networks, AEMO and generators should work together to keep system voltage stable.
Lots of talk about an affordable, reliable and secure system but not one mention of resilience.	Considerations of resilience have not been a specific focus for the Post-2025 program. However, we note that resilience is a term embodied in the concept of demand curves for Essential System Services, which are put forward by FTI in their report for the ESB. There may be resilience value in procuring more than the minimum quantity of an essential system service. Having clearly defined services and products within market arrangements will provide solid foundations to meet the future needs of the NEM, and together, the combination of reforms highlighted are intended to support a resilient interconnected grid. However, it will be important to consider these issues and proposals holistically to ensure we are not layering multiple solutions on top of each other, but rather are providing mechanisms that will deliver the right investments and balancing this at least cost to consumers.

SCHEDULING AND AHEAD MARKETS	
I am interested in comments on the desirability of overall synchronised (via GPS satellite) monitoring and to see this integrated with the NEMDE engine. Monitoring would be second-by-second power and reactive power monitoring and control. It seems to me that such a system would be essential and would have to be in place to allow maximum flexibility in trading platforms while maintaining reliability and system strength.	As the potential combinations of resources available for each dispatch period continues to grow, together with the potential for co-optimisation of energy and a range of services, the complexity of these dispatch calculations will grow considerably. This will become harder to manage in real time operational timescales. Greater visibility of resources on the system (both supply and demand), and greater certainty of resources committed for dispatch ahead of time will support more effective system operation, and reduce associated costs to consumers. These issues are being considered as part of the Scheduling and Ahead Markets workstream.
TWO SIDED MARKETS	
Is there an estimate to the expected capacity of the flexibility contribution to come from the demand side?	This work is underway. The AEMC has engaged a consultant to carry out work on the existing demand side participation capability and its characteristics as well as what the emerging trends in demand side participation might be.
One identifiable issue that is arising from the work around the Wholesale Demand Response (WDR) mechanism is the 5 minute trading interval and the amount and response times that large industrial users could offer. How reliant is the P2025 on the WDR mechanism and what is the contingency should the uptake of the WDR fall short of expectations?	In its final determination for the WDRM, the AEMC noted that the move to a two-sided market and the increase in customers being able to participate would mean the market would outgrow the mechanism. It is therefore not intended for the WDRM to be a permanent feature of the two-sided market. The ESB is working closely with customer groups on the design of future two sided markets, and welcomes submissions from parties with feedback to contribute in this area.
What can be achieved by a two-sided market that cannot be achieved by a one-sided market with demand reduction bids? Micro-prudential regulation will be difficult with a two-sided market.	Greater digitisation provides opportunities for flexible demand to be engaged in the market, and to receive value for that flexibility. Where demand can be better forecast, this can reduce the costs associated with system operation, with reduced uncertainty associated with short term operations. Customers would see the benefits of these reduced system operation costs and from engaging flexible demand. The ESB notes it is not essential for all the demand to be scheduled to make a two-sided market, just enough that it

	produces a reasonably competitive and efficient outcomes for consumers.
DER INTEGRATION	
Where is DNSP tariff reform in this roadmap? ... DNSP volumetric tariffs are no longer fit for purpose (DER sites not paying their way and are significantly cross subsidised) and current TOU are juxtaposed to energy wholesale costs.	Network tariff reform is a foundational element for any future market design. It is also an established and ongoing process that the AER has been progressing as part of DNSPs revenue and pricing proposal process. The AEMC is also considering rule change requests on how DER access and pricing to the distribution network is treated under the regulatory framework. These programs of work will complement the work the DER Integration and Two-Sided Market workstreams on how to send the right price signals for demand to participate in the market. The ESB and market bodies are working closely to align work on related review and reform processes to ensure development of a coherent market design.
Is a DNSP model based on capacity charges a better option - this would enable "free" TWO WAY flows of energy and services?	There are many cost-reflective options DNSPs can consider, including capacity-based charges. Network tariff reform will eventually need to incorporate some element of location signals as issues on the network are often localised. As noted, these issues are being considered under parallel AER and AEMC processes, and the ESB is working closely with the market bodies to align on work programs.
DNSPs will not be able to integrate more and more DER without comprehensive synchronised monitoring systems that are integrated with transmission network monitoring--comments please.	DNSPs are aware that they need to improve visibility and monitoring of their networks, and many are taking active steps to do so. The DER Integration workstream is actively considering issues around distribution-transmission interface.
Do we have the right resources to assess the option for DER to autonomously provide FFR and inertia? How do we test if writing this into standards is a least cost option compared to the market options?	The details of FFR services and how DER might provide FFR and inertia are still under consideration. The ESB welcomes stakeholder input on this issue.
The shutting off of inverters in South Australia to maintain system security is forcing "consumers" with solar systems to participate.	These issues are being considered within the DER Integration workstream and the ESB welcomes stakeholder feedback in this area. At times, the retail value of electricity generated in SA by consumers with solar PV is higher than the value of this

	generation to the power system. Until these signals are aligned, the networks may be forced to curtail generation to maintain power system security.
ACCESS AND TRANSMISSION	
With regard to Topology, is there work being done to review the benefits of one system vs multiple interconnected systems that are 'buffered' from each other.	No. The NEM's transmission planning cost-benefit framework is already supported by economic modelling which is necessary to show that the total market benefits of an interconnector project exceed its cost. It does not matter where those benefits fall – it could be customers anywhere, or even generators who benefit from the interconnector.
Can you explain how CoGaTi can progress without consideration of how the two-sided market may operate? CoGaTi's current proposal is nodal prices only for generators and large loads, but if all loads will be participating in some way in a two-sided market then their location is also important.	Nodal pricing, where both the demand-side and generation-side face local prices, provides a more accurate indication of the value of electricity in a participant's location, which encourages more efficient operation, hedging, and investment decisions. As the NEM moves toward a two-sided market and demand side resources become more responsive to wholesale market prices, the advantages of allowing non-scheduled market participants to face a locational marginal price will increase. The proposed approach in COGATI allows scheduled load to face the nodal price. The two-sided market work is reviewing how the market can incentivise more participants to be scheduled (while also looking at the requirements for what it means to be scheduled). As more load is scheduled we will see an increase in load facing nodal prices. Further, the approach in COGATI provides flexibility to move to locational marginal pricing for non-scheduled participants over time, if this was found to be in the long-term interest of consumers.
How is LMP or nodal pricing supposed to incentivise TNSPs (and their Boards and investors) to invest into deep transmission? What is the link?	The ESB has recently implemented work to 'Action the ISP'. This will improve the previous transmission planning and investment arrangements so that we get the right amount of transmission in the right place at the right time, balancing the cost of congestion with the cost of transmission infrastructure to alleviate it. The implementation of locational marginal pricing and financial transmission rights, will provide signals and better information and incentives to improve siting decisions of generators within the transmission network so it is better utilised, and also give generators the ability to manage the risks relating to transmission congestion.
COGATI is suggesting including FTR which settle ex-ante in	There are a range of models internationally for determining how FTRs are settled. For example, FTRs settle on day ahead

international markets (which are inherently less volatile) and not against volatile spot. The AEMC modelling has not adequately considered this. Will further modelling be conducted? As international markets are not reflective of spot NEM.	market prices in US markets but on wholesale spot market prices in New Zealand. AEMC has published modelling alongside the Post-2025 consultation paper. We welcome stakeholder feedback on these aspects of the proposals.
OTHER KEY ISSUES	
I'm curious about how a number of these proposals would work or be applied in Queensland, where you have majority government ownership of generation.	The ToR for this work requires the ESB to develop long term arrangements that are fit for purpose for the whole of the NEM. Consideration of the different needs across the NEM will form part of the evaluation process.
Why are we continuing to call it "Post 2025" when, as you say, actions are already happening?	The ESB is developing market designs to support the needs of the transition and should be considered fit for purpose for a future beyond 2025. Our intention is not to deliver a 'big bang' of reforms, but rather to ensure priority issues are dealt with early so that immediate needs are managed, and a plan for progressive implementation of future changes is laid out. When future changes are implemented is being carefully considered depending on the solution, interdependencies between solutions and what a package of incremental reforms will be.
Has any consideration been given to updating the NEO?	This is not within the scope of this program. The Terms of Reference for the Post-2025 Program requires the ESB to give advice on a long term fit for purpose market design that meets the NEO in its current form.
Thank you for the presentation - can you please summarize your thoughts on grandfathering of existing arrangements generally?	Grandfathering will be considered on a case by case basis.
There are a lot of complicated changes proposed here in this pack. If there is no appetite by the participants/customers to make these changes, will the ESB still go forward with these proposals?	The ESB welcomes customer and stakeholder feedback on these proposals, and in particular where there may be areas of concern. The changes the ESB finally recommends will be designed to promote achievement of the NEO, in the long term interest of customers.

Is there any further thought around related gas market reforms. Key considerations include moving from a National Electricity Market to a National Energy Market (electricity and gas). In the current environment with the observed increases in intermittent generation flexible reserve capacity is becoming more important to maintain system security and reliability. Gas fired generation represents a valuable source of flexible reserve capacity, however this capability is hampered by the design of the gas market. The electricity market design is based on a compulsory gross pool market whereas the gas market is essentially based on a physical bilateral contract model. This gas market design negatively impacts on the ability of gas fired generation to provide reliable, dispatchable, responsive reserve capability to the market as a result of inflexible gas contracts. In other words gas supply is not secured through the pool. How can the gas market design be changed to minimise this issue?	The design of the gas market is excluded under the terms of reference provided to the ESB for this work.
In AEMO Hydrogen Workshop many participants thought hydrogen production would not be via "regulated" networks i.e. a continuation of the falling utilisation levels networks which translates to higher consumer costs.	Noted. The ESB welcomes stakeholder submissions on such issues that may not have been outlined in current proposals.

AEMO and therefore ESB have been too slow to model the potential impact of hydrogen on generation and transport industries	Noted. The ESB would welcome any stakeholder submissions that could highlight where aspects may be missing from current proposals.
Are you reviewing the role of Green hydrogen, I think it quite likely we will get to A$2/kg by 2030 (as electrolyser capital costs plummet and VRE costs drop to near zero when one takes into account increasing amounts of zero cost spilled VRE at times of excess), which then means if gas peakers are hydrogen enabled, they can become a key low cost zero emissions source of peaking power. New peakers need to consider this now for conversion in say 10-15 years' time as H2 gets competitive. This could be a source of system strength and ancillary services, and could change everything once Australia commits to decarbonisation aligned with Paris.	The Post-2025 Market Design program aims to ensure the market provides the price signals that support new investment of most value to the power system and energy consumers. System services will be able to be delivered by a range of both supply and demand based resources. The ESB are agnostic as to where that comes from or what form it takes.
It's not the cost of rooftop solar but the quality and maintenance is not monitored enough i.e. only one percent audited by Clean Energy Regulator. Do ESB support more audits by CER?	The ESB would welcome your submission on the effectiveness of the existing system and the cost effectiveness of making changes to it.
Can the ESB Chair elaborate on the economic rent tax arrangement on coal fired plants raised in the Residual Risks section of the consultation paper.	The ESB will be reflecting on this issue further in response to stakeholder submissions.
How can the market design incentivise community batteries and share the benefits between networks and consumers?	The ESB welcomes feedback from stakeholders on the use of community batteries, particularly in respect of where these may have been deployed successfully in other markets. As part of the DER Integration and Two-Sided Markets MDIs, consideration is being given to development of frameworks and

	price signals that indicate efficient opportunities and options for network service providers and traders (including aggregators) on behalf of consumers to lower costs. This may include connecting and operating community batteries.