



ENERGY SECURITY BOARD

POST 2025 MARKET DESIGN PROGRAM BRIEFING

KEY THEMES

QUESTION AND ANSWER SUMMARY

Post2025 program material can be found at: <https://esb-post2025-market-design.aemc.gov.au/>

Workstream: resource adequacy and ageing thermal generation strategy

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| <p>What technologies are the Energy Security Board (ESB) thinking of when it talks about 'dispatchable capacity'? Given the demand side participation work stream seems to be focused on residential distributed energy resources (including rooftop solar and batteries), does the ESB see a role for commercial and industrial (C&I) demand flexibility in meeting resource adequacy objectives?</p> | <p>Dispatchable capacity is intended to refer to all technologies, from demand or supply based resources, that have capability to ramp up or down consistent with a set dispatch target. Where commercial and industrial customers can provide flexibility from their processes to deliver such capacity to the national electricity market (NEM), this could provide a valuable contribution to overall resource adequacy.</p> |
| <p>Are capacity markets, whether decentralised or centralised, still being considered as part of the post 2025 resource adequacy (RAMs) reforms?</p> | <p>Yes. The RAMs workstream is considering a range of options to enhance existing investment signals and support resource adequacy. Some options eg proposals to modify the retailer reliability obligation (RRO) to introduce a physical contract requirement would operate as a form of decentralised capacity market. This is intended to provide stronger incentives on retailers to have resources to meet their customers' demand.</p> |
| <p>Has not the indifference by market participants to pool price when pool price is below typical term contract prices for so many daylight hours overtaken the need for redesign of the NEM?</p> | <p>Where jurisdictional schemes are involved the ESB is recommending that these schemes contract in a way that participants are incentivised to make operational decisions based on wholesale price signals. In a broader sense, it is also visible that contracting is evolving such that there is less incentive for market participants to run when prices are less than zero.</p> |
| <p>Will smaller renewable dispatchable generation (<5MW to 10MW distribution network connected) be able to participate in future markets such as the operating reserve mechanism, physical dispatchable 'credits' and various distributed energy resources (DER) mechanisms?</p> | <p>These mechanisms are intended to be technology neutral and enable both supply and demand-based resources to participate in future markets where they have capabilities to do so. This may involve traders or aggregators participating on customers' behalf where they choose to enter into arrangements to do so. In other words, small scale generation may need to</p> |



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| | aggregate or club with others to participate in the wholesale market. |
| <p>Is the Grattan report on paths to "net zero emissions" is less relevant than detailed UK government policy and also the recent Princeton University deep study and report on paths to net zero in North America?</p> <p>These international reports are emphasizing that net zero needs zero-emission nuclear generation and carbon capture and storage (CCS) of fossil fuel as well as base-load hydro, none of which Australia has or plans to have, along with the fact that hydro pumped energy storage is not concluded to be a material contributor to base-loading of wind and solar in any comparable islanded interconnected system anywhere in the world.</p> | <p>The ESB is developing post 2025 market reform frameworks in a technology neutral manner. Where technologies are able to deliver the suite of defined physical capabilities required to meet the security and reliability needs of the grid, they should be able to compete to deliver those essential energy or system services requirements at the lowest cost possible. This requires reducing barriers to entry to make it easier for new technologies or innovative business models to offer their services (eg battery storage providers or aggregators). This also means making sure frameworks are flexible enough while making sure we have fit for purpose protections and safety standards in place. As a result new technologies that are yet to emerge can more readily begin to deliver services in future. In respect of nuclear, we note this is not a permitted option in Australia. If pumped hydro and other storage are not able to deliver benefits, then as these studies suggest gas and CCS coal generation will need to develop ways to reduce or offset their emissions to support net zero neutrality. This is something we are leaving the market to determine.</p> |
| <p>Is the ESB concerned at the "demonising" of essential dispatchable generation businesses which are supplying more than 60% of annual electricity demand in the NEM, and essential to continuing supply of dispatchable generation for decades into the future? The absence of bi-partisan and bureaucratic extolling of the importance of these businesses (including coal and gas) as essential to the immediate and near-term as well as longer term reliability and security of electricity supply in Australia, seems to be resulting in withdrawal of normal banking services and increasingly of withdrawal of insurance support for coal-fired businesses, which is a real threat to the continued operation of these businesses.</p> | <p>The pace of change, and the scale of plant retirements anticipated given the old age of our existing generation fleet, means we need to make sure there is sufficient resource adequacy to keep the grid secure and reliable for the transition, as well as ensure market and investment signals are in place to meet our future energy needs. During the transition, this will involve a mix of energy sources delivering these needs, leveraging the diversity of resources across the interconnected NEM including some gas and coal fired generation for a while. The arrangements we are putting in place will mean all kinds of technologies (whether these are supply or demand based) can participate in the market as ageing coal generation retires.</p> |
| <p>Is the proposed Snowy Hydro Federal Government gas plant in NSW beneficial in any way? Or is there already well and truly sufficient under-utilised gas</p> | <p>Individual investment decisions are a question for the relevant jurisdictional government and private investors. Low-capacity factors on an individual plant in an isolated year does not necessarily reflect that an asset is not needed to ensure the system is reliable.</p> |



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| <p>infrastructure in place (eg, Colongra power station capacity at about 1% utilisation)?</p> | <p>The market price settings in the NEM are designed to ensure that some reserve capacity sits idle to ensure the reliability standard is met and assets are rewarded for providing this service. Where such investments can efficiently deliver essential system capabilities, they can deliver benefits to the interconnected system and support resource adequacy.</p> |
| <p>Isn't the ESB's main responsibility maintaining secure and reliable and affordable electricity supply system to all consumers, rather than "managing the orderly closure of existing dispatchable generation?". Particularly when ESB has no visibility on any commercial commitment to replace energy dispatchability and provision of essential system support services which have delivered such a secure and reliable and affordable electricity supply system to date?</p> | <p>The ESB has been tasked by the nation's energy ministers with delivering a future NEM market design to meet the needs of the energy transition for 2025 and beyond. The ESB is working to develop these reforms at least cost to consumers. Differing implications of the transition leads to differing challenges including the need for timely entry and orderly exit of generation resources. ESB analysis has been informed by stakeholder feedback and briefings as well as information gathered by market bodies including AEMO (as independent system and market operator and national transmission planner).</p> |
| <p>To address reliability issues, it seems we are tinkering around the edges due to the lack of a federal policy on emissions. With states taking control of the transition, and as the ESB advised you are working with the states, has the ESB considered proposing a change to the National Electricity Objective (NEO) to ensure we are all working in the best interest of the consumers and potentially introducing an environmental impact statement (EIS) that is state based that could potentially be integrated into a national scheme?</p> | <p>The long-term interests of consumers is the objective of the NEO. Adding an emission reduction policy is a matter for ministers and parliaments as the nation's elected representatives. 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 current NEO.</p> |
| <p>Will the medium term projected assessment of system adequacy (MT PASA) reliability assessment be extended to three years to assist with timely information of the impact of potential seasonal shutdowns noting that the MT PASA is a critical reliability assessment and not just a generator outage planning tool.</p> | <p>Yes. The exit information proposals are seeking to provide more granular information via MT PASA to all stakeholders, including how existing participants availability may change if units are recalled. A range of recall times could be submitted, enabling greater transparency of scenarios such as where coal-fired generation units are in cold storage for a quarter, or are operating with a flexible profile in the shorter term.</p> |
| <p>Can you explain why we actually need a modified RRO?</p> | <p>The ESB is working through a range of options including maintaining the status quo to present to ministers in relation to resource adequacy. There is concern that the existing market is not sending efficient signals to support timely investment in both existing dispatchable capacity (maintenance capex)</p> |



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| | <p>and new dispatchable capacity. The market is currently challenged by uncertainties which pose future revenue risks for new investment. These include the flux in technology costs, timing of large generator exits, difficulties for parties in hedging demand, competing/distorting policies and lower average wholesale price expectations. Options being considered to improve the incentive to do maintenance capex and new investment in 'firm' capacity include modifications to the existing RRO. Demand and supply based resources are both possibilities to meet the gap in resource adequacy (eg with ramping capabilities), will be able to do so.</p> |
| <p>How do you plan to avoid paying generators multiple times for doing the same thing?</p> | <p>The ESB acknowledges there are interdependencies across a number of the proposals. This is a key consideration as part of our assessment of the merits of individual proposals as well as considering how particular proposals would work together to avoid the risk of 'over-solving' the problem. We welcome stakeholder feedback on these issues.</p> |
| <p>On the RRO physical certification option, what are the objective and perceived benefits? Is it seeking to incentivise existing dispatchable plant to be available - or is it new investment?</p> | <p>Both. The proposals are intended to enhance existing incentives on parties to invest in both new and existing dispatchable resources. For example, parties may choose to invest in grid scale batteries to 'firm up' renewable energy assets. Where parties may choose to invest to extend the life of existing dispatchable plant, this could also deliver reliability benefits. Such investments would be a commercial decision for those parties.</p> |
| <p>Don't retailers already have strong incentives to hedge their risk, which requires generation backing?</p> | <p>The ESB agrees that the market price settings and managing price risk provide a considerable incentive on participants to hedge. However, there is no guarantee that these risk management products are provided by participants who own physical resources. This means there is a potential that while retailers are adequately hedged the physical resources may not be available to meet demand. The ESB is considering the extent to which this is a challenge.</p> |



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| <p>Is ESB interested in stakeholder feedback on the issues that are introduced by the physical RRO and the overall change to the market? There seems to be overwhelming push back on this during your forums and in submissions. Can you advise how this feedback was considered in the options development? As the options papers seem to be absent on the response and feedback from stakeholders on this issue and other options proposed.</p> | <p>The ESB has received feedback on these designs, as they have been evolving, and recognises there is a wide range of views. This feedback has informed development of the proposals as set out in the options paper (April 2021) and will influence our final views. The ESB welcomes further feedback on the proposals set out in the options paper to inform final recommendations to ministers.</p> |
| <p>Whilst this might sound way too early to answer, it is a key question to the nature of a physical RRO: roughly how many hours of storage would the ESB consider makes storage firm?</p> | <p>Certificate creation could be a key design choice in any physical RRO. Certificates would need to reflect the MWs available from the generation, storage or demand response at a regional level. Any resources would be able to be certified including variable renewable energy, demand response and storage. The certification process will consider the ability for the capacity to be deployed during the periods 'at risk', in accordance with the methodology that AEMO develops. Compliance assessment measures are expected to vary depending on the form of technology that is the subject of the certificate.</p> |
| <p>If, after 10 years, you've indicated a majority of black coal-fired power stations will be gone, and certainly by 2040 almost all the coal-fired plants will be retired, what will replace them to provide synchronous power, given you've pointed out that the NEM can't be run with more than 75% renewables? Is it gas, or grid-scale batteries or something else?</p> | <p>With present technology, we can guess at an answer to this question, but bear in mind technology is always changing and new possibilities that no one has considered yet may well emerge. At present (with current technology) there is likely to be a range of supply and demand-based resources delivering energy and services to the NEM. This will also include hydro, gas (running sometimes although unlikely as base load except occasionally) and including hydrogen if developed in due course. We would also anticipate batteries delivering as part of this mix, but note their duration is at present limited to about four hours. With advances in technology, we would anticipate this duration to extend in future.</p> |
| <p>PV magazine (4 May 2021) reported Dr Schott saying in relation to the option of a physical RRO that "I know a lot of people hate this - but it's being proposed to leave open some management of exits so that we can actually keep the system going while its occurring." Has the demonisation of coal by certain groups in the community made it more difficult for the ESB to actually progress good policy positions that recognise</p> | <p>We hope the ESB work makes clear the importance of orderly transition and managed exits because of the critical services being provided by some units. One of the measures we are strongly supporting is provision of more information on what plant is critical and what plans those plants are making about seasonal shut-downs, mothballing, maintenance spend etc.</p> |



the important role of traditional synchronous generators in providing essential system services that are critical to manage the current transition of the NEM to include even higher levels of renewables. And, if this is the case, is there a need for the ESB and/or governments to come out publicly and affirm the important role of traditional synchronous generators. What is your view on banks and insurance companies refusing to do business with coal fired generators.

Company relationships with their banks and financiers are best kept between banks and customers but the ESB does note the importance of gas and coal fired generation as we transition to net zero.

Workstream: essential system services and scheduling and ahead markets

Can we have some idea around incentive arrangements for older non-synchronous generators to participate and taking a leap towards fast frequency response (FFR)?

On 22 April 2021, the AEMC published a draft determination and a draft rule to introduce two new market ancillary services to help control system frequency. The new markets for fast frequency response (FFR) would operate similarly to the existing market arrangements for frequency control ancillary services. Stakeholders are encouraged to consider the draft rule and determination and provide input to the AEMC's consultation processes.

Is the number of interventions going to drop off when the synchronous condensers in South Australia come online?

AEMO has had to carry out an increasing number of market interventions over the past five years. These interventions have been primarily to secure 'system strength', which has been challenging in certain regions, notably South Australia, with lower inertia and higher proportion of non-synchronous plant. The new synchronous condensers coming online in South Australia are intended to address these issues, and it is likely that such interventions for that region would reduce. The regulatory changes being considered in relation to systems strength will also help address intervention being made for this purpose.

It seems that [the] system is based on one frequency, ie the Nicola Tesla system. Is there any proposal to differentiate frequency REV from GRID?

This is not being considered as part of the post 2025 reforms.

Given the proposed reliance to some degree on battery storage what consideration has been given to black start events as to date inverters are 'grid following' not 'grid forming'.

System restoration services are an essential system service (see pages 38-39 of Essential System Services in the NEM, A report by FTI 14 August 2020 <https://esb-post2025-market-design.aemc.gov.au/32572/1599207219-fti-final->



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| | <p>report-essential-system-services-in-the-nem-4-september-2020.pdf).</p> <p>Analysis in this report and the work completed by the AEMC in addressing how restoration services are procured did not identify this as a future need for ESS. For further information see page 39 of that report – see post2025 website for details (see link above).</p> <p>On 2 April 2020, the AEMC made a final rule and final rule determination to enhance the frameworks for system restart and restoration, including expanding the definition of SRAS and black start capability, to allow AEMO to procure the services needed to effectively and promptly restore supply to consumers. The changes were necessary to make sure that the SRAS frameworks in the rules can adapt as needed as the power system continues to change.</p> |
| <p>Don't you agree generation information is there, it's only the next step for the reliability assessment to be extended to 3 years so we can fully understand the reliability impact of any potential seasonal shutdowns? Doesn't the existing system have the information, it just needs to be presented better?</p> | <p>The generator exit information proposals are seeking to provide more granular information via MT PASA to all stakeholders, including how existing participants availability may change if units are recalled. A range of recall times could be submitted, enabling greater transparency of scenarios such as where coal-fired generation units are in cold storage for a quarter, or are operating with a flexible profile in the shorter term.</p> |
| <p>It appears batteries may be able to provide 900 MWh in 2024. Assuming this is the capacity they can discharge and not the max basis of design - how long do your assumptions allow for these supporting the NEM, minutes, hours, days? Do you see batteries as more a supporting resource (frequency control ancillary services) for other more conventional power sources?</p> | <p>The ESB notes that technology in battery storage has made considerable advances in recent years, with falling prices leading to greater investments in uptake of storage capabilities. Grid scale batteries are currently delivering value in the market for frequency control ancillary services (FCAS) eg the Hornsdale battery in SA. They are likely to also deliver other essential services (eg operating reserve) as these service markets are introduced and technology (and duration) continues to advance.</p> |
| <p>Can we have some planning or idea around, the idle assets supporting system strength can be remotely used for other new generators for meeting system security concerns? Example: installed synchronous condensers can be used for nearby network's system security analysis and use. Are any such ideas encouraged and any independent such installations shall have any incentives received?</p> | <p>On 29 April 2021, the AEMC made a draft rule to evolve the system strength framework (efficient management of system strength on the power system). It includes a new obligation on transmission network businesses (TNSPs), working closely with AEMO, to provide system strength when and where it is needed. System strength will be provided as a prescribed transmission service, with the TNSP required to meet a system strength standard at certain</p> |



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| | <p>locations on its network. Further details can be found here: https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system</p> |
| <p>Can we have a sustainable operational model with 75-100% renewables with limitations due to weather constraints, and operational and system security aspects for developers to work towards, and AEMO to start new regulations to put forwards looking for very long-term solutions.</p> | <p>This is not being considered as part of the post 2025 reforms. AEMO has carried out a renewable integration study (RIS). The RIS 2020 is the first stage of a multi-year plan to maintain system security in a future NEM with a high share of renewable resources. The RIS and associated engineering framework can be found here: https://aemo.com.au/en/energy-systems/major-publications/renewable-integration-study-ris</p> |
| <p>Regarding recent AEMC new recommendations, Transgrid is planning to offer system strength as a service to participants. What's your view about this generally?</p> | <p>On 29 April 2021, the AEMC made a draft rule to evolve the system strength framework. It includes a new obligation on TNSPs, working closely with AEMO, to provide system strength when and where it is needed. System strength will be provided as a prescribed transmission service, with the TNSP required to meet a system strength standard at certain locations on its network. Further details can be found here: https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system</p> |
| <p>How have you progressed a longer-term revenue stream for system services that will support investment in those desired asset types? This is assuming that spot markets will not provide adequate revenue certainty for low-cost capital?</p> | <p>On 29 April 2021 the AEMC made a draft rule to evolve the system strength framework. It includes a new obligation on TNSPs, working closely with AEMO, to provide system strength when and where it is needed. System strength will be provided as a prescribed transmission service, with the TNSP required to meet a system strength standard at certain locations on its network. Further details can be found here: https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system</p> <p>The ESB's recent options paper (April 2021) also contains extensive analysis on the consideration of a system security mechanism. In practical terms, this option means that AEMO can access services from a broader range of service providers able to deliver these security capabilities increasing the pool of possible providers and maintaining competitive pressure for service delivery.</p> |



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| <p>In the ESS pathway, is the structured security mechanism part of the several rule change proposals already on foot, or will it be another new Rule change request?</p> | <p>Yes, this proposal is part of the system security rule changes being considered by the AEMC at present. For more details see: https://www.aemc.gov.au/rule-changes/synchronous-services-markets</p> |
| <p>Who will be required to pay the costs of procuring power system services and how will any new rules ensure that AEMO don't over procure and incur extra costs?</p> | <p>This will depend on the essential systems service in question and the regulatory mechanism relied on to deliver it. For example, the costs associated with the provision of regulation FCAS are recovered a "causer-pays" basis. This is intended to attribute these costs to those market participants who have contributed most to frequency deviations in the recent past. For other services, network service providers are best placed to develop solutions or coordinate investment decisions. Costs of these services are then subject to economic regulation by the AER.</p> |

Workstream: demand side participation

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| <p>There's a recommendation in the ESB data strategy focused on working with distribution networks to release data and maps of DER constraints. This was also recommended in the AER's Value of DER project. Such data sharing could be integral to promoting and facilitating DER participation in the wholesale market but isn't mentioned in the ESB options paper. Do you think there's a more explicit link to be drawn and connected between these two processes (data strategy and post 2025) and that recommendation and the DER integration workstream?</p> | <p>Yes, there is alignment between the two bodies of work. The DER integration reform pathway identified in the post 2025 program will be particularly enabled by outcomes proposed in the data strategy. Mid-year recommendations to ministers will seek to make these interactions more explicit.</p> |
| <p>Where is the cost benefit assessment (CBA) to substantiate the assumption that the extra 26-50GW of new generation would be most efficiently provided at the transmission level rather than via DER?</p> | <p>In its integrated system plan (ISP 2020), AEMO has presented optimal development paths to support projected uptake of renewable generation and distributed energy resources (DER) under a range of scenarios. The ISP is a least cost optimisation of the system. Uptake of these resources including rooftop solar, batteries, and smart appliances is continuing at a rapid pace and now tracking at or exceeding the projected ISP step-change scenario (of expected maximum change). Together with changes to market settings to better reward the value delivered from these assets, investment in networks (transmission and distribution) will be necessary so that energy and</p> |



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| | <p>services needs can be met by these resources across the interconnected grid.</p> |
| <p>AEMO says 50% VRE penetration is currently a limit, 75% requires a suite of reforms. 100% requires new technology. Given the forecasts, has the ESB looked at processes that will be needed if variable renewable energy (VRE) is committed well ahead of the NEM's ability to accommodate them or will AEMO continue to intervene?</p> | <p>The post 2025 reforms have identified proposals that seek to reduce the need for AEMO to intervene in the market. These include rule changes currently under consideration by AEMC as part of the essential system services workstream, as well as proposals being considered to address challenges associated with minimum operational demand. Regarding the latter, the ESB is also currently carrying out a pilot of the maturity plan, working with customers and industry stakeholders to identify where further steps can be taken to bring forward proposals to address minimum operational demand issues.</p> |
| <p>How can flexible demand be efficiently unlocked and rewarded. We have some established models at the large end of the spectrum, but it is less clear to me as we go down to the distributed end of the market. Is it largely linked to wholesale market price response?</p> | <p>The post 2025 reforms are working to make it easier for innovative new service providers to enter the market and offer products and services to customers who wish to take these up. This will see retailers and aggregators offering products that give value to customers for selling their excess household generation into the wholesale market. For example, some parties are already starting to offer services that reward customers with cheaper bills for being able to offer flexibility from their hot water loads, air conditioning units or pool pumps. So, where demand can be 'shifted' to times of the day when it can then be used to soak up abundant cheap solar energy on the grid, these products can be attractive to customers; and also help balance the grid.</p> |
| <p>What is the biggest challenge in integrating DER?</p> | <p>One of the biggest challenges of integrating DER is the rapid and accelerating pace of change we are currently seeing. Enormous benefits can be unlocked for customers and communities with effective integration of DER, in the form of cheaper bills, reduced emissions and resilience associated with a diverse and decentralised mix of resources meeting our energy needs. To unlock these benefits, we need a coordinated approach to setting technical equipment standards and information sharing, to ensure we don't build in inefficient costs or restrict customers from accessing choices and value in future.</p> |



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| <p>Is a comprehensive grid live information and monitoring system needed for the integration of DER and its participation in system strength?</p> | <p>Proposals to introduce 'scheduled lite' arrangements are intended to both increase participation in the wholesale market as well as provide greater visibility of resources on the grid to the system operator. This will support improved forecasting and reduce uncertainties and costs associated with system operation.</p> |
| <p>Should not the ESB be concentrating its efforts on delivering a secure, reliable and affordable electricity supply to businesses and employment enterprises?</p> | <p>The post 2025 reforms are intended to deliver an integrated framework for market design, focussed on four core design streams. As all parts of the energy ecosystem are integrated, it is important that we look at the market settings as a whole to deliver efficiencies to customers overall. These reforms are intended to deliver improved outcomes to all customers and enable the benefits of flexible demand and DER to be unlocked, reducing energy costs and emissions across the NEM.</p> |

Workstream: transmission and access

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| <p>Could a live, synchronised network wide information system assist with cost allocations?</p> | <p>Yes, this is effectively what happens in theory under the locational marginal pricing (LMP)/financial transmission rights (FTR) model. In light of extensive stakeholder concerns about this approach, The ESB has developed a medium-term access solution to address these concerns</p> |
| <p>The AEMC's rule change project on connection to dedicated connection assets rule change only applies to radial connections. Is there work being done to allow this to apply to non-radial connections given the transmission system is effectively a meshed network?</p> | <p>Yes. The ESB's medium term access options are designed to apply to meshed networks. Challenges associated with meshed network configurations are what drove the ESB to focus on one of system access solutions rather than renewable energy zone (REZ) specific access options.</p> |
| <p>Why isn't transmission interconnection to the market the responsibility of the generation developers when making an application for a connection agreement, as has always been the rules of the NEM for conventional synchronous generators?</p> | <p>Synchronous and non-synchronous generators are subject to the same access regime. Generators pay for their dedicated connection assets, but they do not pay for the ability to access the shared transmission network. The problems associated with the current access regime have recently become more visible due to the boom in renewables investment which has caused the transmission network to reach capacity and become heavily congested in some places.</p> |



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| <p>The revised / current National Electricity Rules generator connection requirements (including commissioning) are proving highly problematic for generators, particularly type 3 DFIG wind turbines. This is causing some original equipment manufacturers to exit the market reducing competition and to increased construction pricing/time.</p> <p>While it is appreciated that system reliability is paramount and there is no desire to repeat the South Australian experience, there is a view that some requirements (eg multiple fault ride through) are onerous and based on unrealistic scenarios. Is there any intention to revisit these requirements?</p> | <p>This question relates to generator technical standards, which are not being considered as part of the post 2025 review. We suggest directing this question to colleagues at AEMO to discuss further.</p> |
| <p>Can you please explain how locational marginal pricing (LMP) and financial transmission rights (FTRs) address transmission investments that are needed?</p> | <p>In light of extensive stakeholder feedback, the ESB is not progressing the LMP/FTR model and its April 2021 paper makes clear that further advice will be provided before any move to LMP/FTR. Instead, the ESB proposes to use the planning framework established via the actionable ISP reforms for renewable energy zones (REZ), as supplemented by the Stage 1 REZ rules (https://esb-post2025-market-design.aemc.gov.au/32572/1621423441-energy-security-board-rez-stage-1-planning-rules-media-release-thursday-20-may-2021.pdf) to deliver needed transmission investment.</p> <p>The ESB's medium term access models seek to ensure that, once built, new transmission investments are used efficiently. While this involves exposure to the LMP at the margins, generator risk is offset through the free allocation of rebates. Under the congestion management model (REZ) model, congestion risk currently faced by generators is mitigated. Incumbent generators and generators who locate in places where there is available capacity (ie in REZs) receive priority access to the regional reference price (RRP) while subsequent connecting generators whose location decisions act to exacerbate congestion are exposed to the LMP.</p> |
| <p>Noting that the traffic light assessment of the medium-term access reform options was helpful - has there been any consideration of how well each of the access options respectively perform as a stepping-stone or interim solution towards the long-term reform</p> | <p>Yes. Although we note that work is not continuing to develop LMP/FTR reforms as part of the post 2025 program. The congestion management model performs well as a stepping-stone towards long term reform. This is because the congestion charge/rebate</p> |



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| <p>(locational marginal pricing and financial transmission) option?</p> | <p>framework would enable eligible generators to become familiar with LMP outcomes, while receiving FTRs for free in the form of congestion rebates – hence their exposure is mitigated. It would be straightforward to gradually transition to LMPs/FTRs from this model. Connection fees and transmission use of system charges (G-TUOS) use an entirely different approach (administered by the AER or AEMO) to provide locational signals. In order to shift to LMPs/FTRs, they would need to be dismantled to avoid overlapping regimes.</p> |
| <p>What is the thinking on how to accelerate the required investment in transmission infrastructure? Is there any thought on relaxing the regulatory (RIT-T) processes?</p> | <p>Challenges are emerging in getting the new network built in a timely manner and at least cost. The ISP assesses the costs and benefits of actionable ISP projects across the system as a whole. The costs of an actionable ISP project are then further refined through the contingent project application (CPA) approval process. If there is a significant change to costs at CPA stage, then AEMO also undertakes a “feedback” loop through the ISP model to ensure the benefits of the project still exceed the costs. As the regulatory investment test for transmission is principally a net economic benefit test that relies on the inputs, assumptions and scenarios of the ISP and uses less developed costs than the CPA, it is unclear what additional benefits the RIT-T delivers for actionable ISP projects and it does significantly add to the time taken to get these projects approved. The AEMC intends to start a broader review, in cooperation with the other market bodies, to consider options to support the timely and efficient delivery of large transmission projects that are in the long-term interests of consumers, recognising that the nature of transmission investment is invariably changing. While the scope of the review is yet to be confirmed, it is likely that it will include matters such as financing, regulatory and governance issues.</p> |
| <p>How do renewable energy zone (REZ) planning stages and interact with the work being done on REZ's by New South Wales Victorian governments?</p> | <p>The processes being conducted by the New South Wales and Victorian governments are equivalent to the process envisaged in the ESB’s REZ planning rules. Under those rules, REZ design reports are required at AEMO’s discretion. AEMO has the ability to nominate a REZ as an actionable ISP project irrespective of whether a REZ design report has been completed. For</p> |



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| | <p>instance, AEMO could decide to skip the REZ design report in the case where a State government REZ scheme has already conducted the equivalent planning activities.</p> |
| <p>How integrated is the ESB's work on renewable energy zones (REZs) with those State govts developing REZ programs and what level of consultation/ collaboration is occurring between the ESB and state government agencies?</p> | <p>As individual jurisdictions progress the planning and development of REZs, there is value in establishing a set of principles so the outcomes of the REZ development processes are aligned with the efficient development of the broader power system. In preparing its Stage 2 REZ recommendations, the ESB has worked closely with state governments. The recommendations take the form of a set of principles that can be applied to a range of REZ delivery models. The interim framework will assist parties wishing to develop a REZ by providing guidance for resolving key market design issues that have presented a barrier to coordination in the past. It does not attempt to prescribe a particular model of REZ development.</p> |
| <p>Is the proposed REZ development framework just the existing scale efficient network extension (SENE) framework but with underutilisation and stranding risks transferred from connecting generators and transmission network service providers (TNSPs) back to consumers? Noting that the original SENE rule change final determination determined these risks were best managed by TNSP's and connecting generators.</p> | <p>The ESB's REZ recommendations do not transfer risk to customers. The recommendation that REZ tender proceeds should be returned to customers would mean that generators would bear a greater share of the cost of shared transmission than is currently the case. The rules have always permitted TNSPs to build new transmission for the purpose of connecting new generation. However, prior to the actionable ISP reforms, it was problematic for a TNSP to justify such investments due to the scale and complexity of the modelling exercise involved. The TNSP is required to demonstrate that the proposed investment maximises net market benefits, recognising that there are any number of alternative locations elsewhere in the NEM where the generation might locate.</p> <p>For this reason, under the previous RIT-T framework, TNSPs found it necessary to wait until the relevant generation projects became committed before they could be formally included in a RIT-T assessment. This gave rise to the "chicken and egg" problem, whereby generation could not become committed before the transmission was committed and vice versa. Under the actionable ISP framework, the scale of AEMO's modelling exercise has increased to an extent that the rules requirements can now be met before generation projects become committed.</p> |



Would it be simpler to understand and fix SENE framework issues? Could the rules prevent TNSPs from blocking the process?

The SENE framework has been almost unused to date because it relies on cooperation between commercial rivals, each of whom are trying to coordinate complex projects with many moving parts. The current rules framework also makes it simpler and more profitable for transmission networks to manage generator connections on a case-by-case basis rather than to seek a scale efficient solution. To address these conflicting incentives, the ESB's REZ Stage 2 recommendations establish a coordinator with responsibility for coordinating the connection of generators to a renewable zone.

General program-level questions

How can the post 2025 market support renewable energy markets as the Commonwealth's renewable energy target (RET) approaches its end in 2030? Can it help facilitate mechanisms to account for renewables, and support carbon reporting?

The ESB is developing post 2025 market reform frameworks in a technology neutral manner. This is against a backdrop of significant investment and uptake in renewable and distributed energy resources – both at grid scale and household level. We are working to develop arrangements that meet the needs of the grid (keeping it secure and reliable) over this energy transition and beyond, at least cost to consumers. Where technologies (including renewables) are able to deliver the suite of defined physical capabilities required to meet the security and reliability needs of the grid, they should be able to compete to deliver those essential energy or system services requirements eg renewable energy resources combined with batteries. This means reducing barriers to entry to make it easier for new technologies or innovative business models to offer their services eg battery storage providers or aggregators.

Why doesn't the ESB "trumpet to the world", and to the Australian media that Australia's uptake of solar is greater than any other comparable islanded interconnected system, and therefore counter the international bad-mouthing of Australia's emissions reduction efforts by climate activists?

The ESB has made clear the rapid pace of change in respect of solar PV uptake including published analysis highlight the distributed uptake of solar PV in Australia, including to demonstrate how this uptake is continuing to outstrip forecasts. Supporting analysis from AEMO and from the Clean Energy Regulator was referenced in the ESB options paper (April 2021) <https://esb-post2025-market-design.aemc.gov.au/options-paper>



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| <p>The lack of a national carbon price to supplant jurisdictional schemes and reduce/eliminate the risk premia in generation investment hasn't been addressed. Has the ESB considered anything that could deliver a shadow, if not explicit, carbon price?</p> | <p>The ESB terms of reference for the post 2025 program does not include consideration of carbon pricing. We note that risks associated with long term investment in dispatchable resources have been considered in detail as part of our RAMs workstream.</p> |
| <p>If the ESB is wrapping up in the middle of the year, who will be leading these reforms past this time?</p> | <p>Governance post-ESB is a matter for ministers. As at present, the reforms in train will continue to be carried out collectively by the market bodies (AEMC, AEMO, AER).</p> |
| <p>In presenting recommendations will the ESB draw to the attention of ministers the constraints imposed on your analysis such as not having remit to properly explore or consider impacts on workers and communities. There may be broader socioeconomic factors that should be considered in any reform and their impacts.</p> | <p>Yes, to some extent. The ESB will be delivering recommendations on the future post 2025 market designs to ministers, and will also highlight how stakeholder feedback and evaluation has informed those proposals.</p> |
| <p>Thanks for a great presentation. This is a plan for Australia's energy future. I'm interested to hear how customers can interact with and provide meaningful feedback to this plan.</p> | <p>Thank you. The ESB are inviting feedback on its Options paper at: https://esb-post2025-market-design.aemc.gov.au/ Submissions were due by 9 June 2021 and stakeholder responses are being incorporated in our thinking.</p> |
| <p>While the ESB stated intention is to reduce risk, the very approach ie total market revamp in 2025, creates risk. How does the ESB plan to manage the political risk and hence the deliverability risk of this plan?</p> | <p>The post 2025 market design reforms have been developed as a suite of reform pathways ie there will be no 'big bang' of reforms in 2025, with some reforms starting now recognising the urgency of particular system related issues. Providing clarity regarding the future directions across each of these work streams is intended to reduce risk related to uncertainty and support planning for future market and system needs.</p> |
| <p>Will the final report include recommendations on who should take carriage of the reforms going forward in the event the ESB is disbanded as planned?</p> | <p>Questions relating to governance post-ESB are a matter for ministers. ESB will not be including recommendations regarding governance in its final paper, but the Board will make suggestions to ministers about how the reforms can be implemented in the years ahead. The paper will include recommendations for reform and the proposed reform pathways for implementation.</p> |

Ends