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1. General	Won't problems with network congestion be fixed by government schemes?	<p>There are a number of government schemes which aim to drive more timely and efficient development of the network or to provide areas with the power system capability and social licence to support renewable and storage investment. These schemes are welcome, but they will not eliminate congestion, nor are they intended to.</p> <p>The high capacity of renewables which need to be connected and the overall system design will see increased network congestion even with transmission augmentation. This is shown in AEMO's 2022 ISP which forecasts that congestion will continue to increase even after the actionable ISP projects are built. Even with an efficiently designed system, the volume of unused VRE in the NEM is projected to increase 16-fold between 2025 and 2050, from 5 to 80 terawatt hours (during this time forecast utility-scale VRE capacity also increases from 24 gigawatts to 140 gigawatts).¹</p> <p>Some government schemes could be subsequently undermined by poorly located generation investment. The proposed hybrid model (including priority access and the congestion relief market) aims to support and dovetail with these REZ initiatives. The current NEM design puts REZ schemes at risk because there is no way to protect REZ generators from being curtailed due to developments outside the REZ.</p>
2. General	Will the introduction of these reforms slow renewable investment while transmission investment is made to provide the hosting capacity for generation investment?	<p>These reforms do not change the process around transmission planning and investment. The AEMC is currently considering ways to make sure we have timely build of transmission infrastructure, while still having the appropriate checks and balances for consumers.</p> <p>Instead, transmission access reform supports efficient investment in renewables in line with government policy objectives and the Integrated System Plan.</p> <p>The forward program for network augmentation would be:</p> <ul style="list-style-type: none"> • considered by participants assessing their investment under the queue model option; or • factored into planning processes to determine the hosting capacity under the centrally determined tiers option.

¹ Unused VRE refers to the aggregate volumes of generation curtailment and spill.

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		<p>The arrangements aim to incentivise parties to connect in more efficient locations which will better use the network, and provide more certainty to investors about the level of congestion risk that they will face.</p>
<p>3. General</p>	<p>With the lessons learned to date and better information why can't the market deliver efficient outcomes without access reform?</p>	<p>The ESB supports improvements in the information provided to intending market participants. The ESB is working to develop a rule change to improve enhanced information in the NEM, consistent with the direction from Ministers to implement this immediately.</p> <p>However, we know that the current arrangements can make it profitable for an investor to connect in poor locations cannibalising the access of others and reducing the efficiency of the use of the network. Investors cannot protect themselves from these types of events no matter how perfect the information they receive.</p> <p>From the long-term efficiency perspective, it could increase the cost of future network investment by triggering network investment in response to poorly located generation investments and consequently increasing the costs to customers.</p>
<p>4. General</p>	<p>How will this lower prices for customers over the current arrangements?</p>	<p>The two aspects of the hybrid model aim to deliver efficiencies which, in a competitive market context, should lead to lower costs for customers while achieving emission reduction targets. Our cost benefit analysis estimates that there will be net benefits of \$2.1-5.9 billion, driven by efficiency savings from more efficient congestion management as well as reduced capex and fuel costs. These savings will flow through to consumers.</p> <p>The CRM improves dispatch efficiency and can reduce the need for interconnector clamping. Efficient use of the network is key to long term costs given the cost and importance of transmission investment. More efficient locational decisions by generation and storage investors will again improve the efficiency of the overall power system and the prioritisation of access should lower the risk and hence cost of investing in generation and storage. Opportunities created by the hybrid model should encourage efficient investment in storage and other measures to lower network congestion, and ultimately lower customer costs.</p>
<p>5. Emissions</p>	<p>In August 2022 Ministers agreed to change the NEO to include emission reductions as an</p>	<p>The step change scenario in the ISP, determined to be the most likely scenario, reflects government policies on emissions reductions. Transmission access reform aims to leverage the ISP and support its timely implementation.</p>



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	objective. Won't that help?	The ESB's cost benefit analysis shows that implementing the reforms will achieve a reduction in emissions by 23 million tonnes over 20 years – the equivalent to closing a large coal-fired generation like Liddell 4 years earlier.
6. Emissions	Is transmission access reform driving or supporting decarbonisation?	<p>The reforms are designed to achieve a better job of decarbonising, in a way that benefits consumers, by enabling us to:</p> <ul style="list-style-type: none"> • avoid wasting solar and wind investments • ensure that renewable energy zones (REZs) are not undermined by generators locating outside the zone free-riding on investments intended for REZ participants • create market opportunities for batteries and flexible demand (e.g. hydrogen) by rewarding behaviour that benefit customers • maximise the value of investment in interconnectors • avoid overspend in building the transmission network that customers (or taxpayers) pay for • achieve emissions savings by making greater use of existing renewables resources. <p>These reforms complement other reforms (such as REZ schemes) rather than driving decarbonisation in themselves.</p>
7. Hybrid model	Can priority access be implemented without the congestion relief market (CRM)?	<p>No, priority access cannot be implemented economically efficiently without the CRM (or similar market).</p> <p>The hybrid model addresses two sets of objectives:</p> <ul style="list-style-type: none"> • Investment timeframes: The level of congestion in the system is consistent with the efficient level. • Operational timeframes: When congestion occurs, we dispatch the least cost combination of resources that securely meets demand. <p>Priority access addresses the transmission access reform objectives in the investment timeframes.</p> <p>But our current market design does not currently have the price signals in operational timeframes to:</p> <ul style="list-style-type: none"> • Encourage cost reflective bidding in the face of congestion so that the dispatch engine can solve for the lowest cost solution • Reward storage and flexible load for relieving congestion. <p>The CRM is designed to address the transmission access reform objectives in the operational timeframes.</p>

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		<p>Adding priority levels into dispatch on its own would likely increase inefficiency in the energy market dispatch. Without the CRM there is no way for participants to trade away this inefficiency, and so consumers would not benefit. The hybrid approach is reliant on trading in the CRM to deliver an efficient overall dispatch. Therefore, we do not consider that implementing priority access alone would be a beneficial outcome.</p>
<p>8. Hybrid model</p>	<p>Or vice versa, can the CRM operate without priority access?</p>	<p>While the introduction of a CRM leads to more efficient real-time outcomes, it does not address investment incentives. The priority access component of the hybrid model is designed to:</p> <ul style="list-style-type: none"> • efficiently coordinate generation and transmission investment • discourage new entrants from locating in areas of the network that cannibalise existing VRE assets. <p>The cost benefit analysis also identified priority access as a significant driver of the quantified net benefits.</p> <p>Potentially, the CRM could be introduced ahead of the priority access. However, priority access supports the effectiveness of the jurisdictional REZ schemes and a deferred introduction would affect the benefits of the scheme. These benefits need to be considered relative to the implementation costs, which the ESB are currently working through.</p>
<p>9. Hybrid model</p>	<p>Can individual jurisdictions opt out of prioritisation and/or the CRM?</p>	<p>The ESB is continuing work with the jurisdictions and considers that the arrangements are flexible enough to support individual state policies especially in regard to REZs and network development.</p> <p>Participation in the CRM is voluntary and at this stage we do not expect that whole jurisdictions would need to opt out of the design. If individual market participants do not wish to participate, then these participants can simply opt out of the CRM.</p> <p>Indeed, given the NEM is an interconnected system, it would be difficult for a state to entirely opt out of the CRM and /or allocating priorities within their region. This is particularly since our work has shown that constraints affecting inter-regional flows are where many benefits of an improved transmission access regime can arise.</p>
<p>10. Priority access</p>	<p>The ESB proposes that prioritisation is triggered when generators bid at</p>	<p>The ESB is applying priority access to the market floor price (MFP) because the market cannot resolve the dispatch issue via competition.</p>

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	<p>the market floor price. Why has the ESB adopted this approach compared to the Clean Energy Investor Group’s proposal which would trigger prioritisation in the event of any tied bid?</p>	<p>Generator bids are adjusted by the marginal loss factor (MLF). Given this MLF adjustment, it is less likely that bids are exactly the same and, if they were, there would be an incentive for parties to adjust their bids. This is not true of bidding at the market price cap (MPC) or MFP which are limited at the regional reference node.</p> <p>For prices above the MFP, competition can still distinguish between bids. If two prices are tied at \$0/MWh, then one party can rebid to -\$0.1/MWh and remove the tie.</p> <p>Also, there are technical challenges with applying priority access for all tied bids. The technical team is concerned with the computational time to solve this sort of approach and its ability to work in a meshed network. It looks like it could create significant implementation issues for an event that would be unlikely to be realised in practice (because parties could marginally adjust their bids to avoid the tie-break).</p>
<p>11. Priority access</p>	<p>Will priority access encourage more disorderly bidding to the market floor price so a generator takes advantage of its priority status?</p>	<p>There will always be forms of disorderly bidding in any market, noting that in an energy market such as the NEM, generators can exercise such approaches to make sure they recover their fixed costs.</p> <p>Bidding to the MFP is already a bidding strategy that generators pursue when they are subject to one or more binding constraints and their costs are lower than the RRP.</p> <p>The following instances could represent ‘additional’ disorderly bidding compared to today’s bidding behaviour:</p> <ul style="list-style-type: none"> • If the generator is not subject to a binding constraint and bids to the MFP. However, there is a lower probability of this eventuating because the generator risks dropping the RRP unfavourably. <i>Note that when a generator is unconstrained, bidding to the MFP would not be categorised as ‘disorderly’ because they are exposed to setting the RRP.</i> • If the generator is subject to a binding constraint and its costs are higher than the forecast RRP. This change in bidding incentives was discussed in the previous directions paper. <p>The ESB (with the AER leading on this item) is exploring the potential for market manipulation and potential options to address this issue.</p>
<p>12. Priority access</p>	<p>What impact will priority access have on the regional reference price?</p>	<p>The ESB recognises that this question is a key area of interest for stakeholders. The consultation paper focuses on policy questions to help refine the preferred design of the hybrid model. We are still exploring both the</p>

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		<p>materiality of any impact that there may be, as well as the technical considerations. The paper provides a status update on technical considerations but investigations are ongoing including materiality, technical feasibility, solve times, feasible dispatch and the impact of priority access on the regional reference price (RRP). It is a complex area of investigation and we propose to revert to stakeholders with updates following this consultation period.</p>
<p>13. Priority access</p>	<p>Can the ESB be more specific about the proposed delineation of the tiers and indicatively quantify the metrics that would define tier 1 vs tier 2 vs tier 3?</p>	<p>The ESB recognises that stakeholders will want to know an indicative definition of the tiers. The consultation paper flags there are a number of open design choices which we are currently working through and considering including:</p> <ul style="list-style-type: none"> • geographic zones to which the tiers would apply • the delineation of tiers • the hosting capacity of the network and available hosting capacity of the tiers in each zone. <p>The proposed delineation of tiers would require inputs from multiple stakeholders (including network service providers (NSPs), market bodies and jurisdictions) as well as preliminary congestion modelling analysis. The scope and inputs will need to be carefully planned and executed before publishing indicative tiers by zone. The tiers will also depend on the particular network configuration and capacity at the time. Therefore, it is important that the assessment is undertaken closer to the time when the scheme might be enacted to provide the most useful information to participants.</p> <p>In the interim, the ESB is working with the market bodies and jurisdictions to leverage any existing load flow modelling analysis. There are overlaps in scope with the enhanced information rule change that is seeking to address gaps or inconsistencies in the provision of congestion information to help investors, policymakers, and NSPs to assess the cost of congestion across the network.</p> <p>The ESB will notify stakeholders about the release of information and provide details of future consultation following the Ministers’ decision in mid 2023.</p>
<p>14. Priority access</p>	<p>How is the defined MW total quantity determined for a REZ? Who determines it? Who pays for the network investment needed to</p>	<p>This question forms part of the ESB’s consultation with jurisdictions. A number of jurisdictions have announced plans to develop REZs. They are at various stages of design and development. It is expected that the defined MW quantity would be determined during the REZ development process. It would be analogous to an</p>

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	<p>accommodate that capacity?</p>	<p>individual generator reaching a defined stage in the connection process and securing a queue number or tier/s.</p> <p>The central agency would assign the priority level, based on inputs from the jurisdictions. The consultation paper sets out the different roles required as part of the centrally determined tiers model. The governance structure is not decided; the roles could be fulfilled by a central agency or agencies that might include AEMO, TNSPs, jurisdictions (or a representative of them), jurisdictional planning bodies or even a new agency set up for this purpose.</p> <p>Each jurisdiction is working with its jurisdictional planning body to determine the scope and configuration of REZ transmission works and the associated hosting capacity. Payment arrangements to fund the REZ network form part of each jurisdiction’s REZ planning process.</p>
<p>15. Priority access</p>	<p>How are batteries incentivised to locate in congested areas if they’re given low priority and can’t back their contracts?</p>	<p>The question assumes a certain type of contract that requires the battery to discharge, even during periods of congestion. The locational signal of priority access applies equally to batteries. If a battery has entered such a contract arrangement, it will not be incentivised to locate in congested areas with a high queue number or high tier equivalent to a low level of priority.</p> <p>The business case for a battery locating in a congested area may instead be driven by:</p> <ul style="list-style-type: none"> • the ability to achieve higher profit through arbitrage by charging at lower CRM prices and discharging at higher CRM prices or at higher RRP (either because of a high priority level during periods of congestion, or at any priority level during uncongested periods) • alternate contract arrangements that reward a different suite of services e.g. between the battery and generators in that congested area • the trade-offs between value and probability for different revenue streams e.g. if the RRP is high during periods of congestion, this may represent a high value low probability event.
<p>16. Priority access</p>	<p>What level of priority is assigned to interconnectors?</p>	<p>There are two key types of interconnector:</p> <ul style="list-style-type: none"> • regulated • market network service providers (MNSPs) <p>The consultation paper has not proposed to assign priority to regulated interconnectors. The flows on these interconnectors would be determined by the regional</p>

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		<p>demands and the bids and priorities of generators i.e. as they currently are.</p> <p>For the MNSPs, such as Basslink (note this is expected to be converted into a regulated asset post 2025), we envisage that it could be given a priority at the exporting end similar to the approach for generators.</p>
<p>17. Priority access</p>	<p>How do you deal with a generator if X% of its capacity can be accommodated in one tier and the balance is in a lower tier?</p>	<p>Under the centrally determined tiers model, the generator is assigned to a tier or tiers based on:</p> <ul style="list-style-type: none"> • delineation of the tiers • load flow modelling of the location and technology of the generation connecting. <p>A generator could be assigned to more than one tier.</p> <p>Say an incoming wind generator has a total capacity of 100MW, of which:</p> <ul style="list-style-type: none"> • 80MW can be accommodated in tier 1 • 20MW in tier 2 <p>The assignment would include both the tier number/s and the MW quantity associated with each tier.</p> <p>In the energy market dispatch, if the generator offers X MWs at the market floor price:</p> <ul style="list-style-type: none"> • $X \leq 80$ MW receives a tier 1 priority • $X > 80$ MW receives 80MW at tier 1 priority and $(X-80)$ MW at tier 2 priority. <p>This may involve some pre-processing of bids/offers depending on how any priority access is implemented or may require some alignment of bid quantities with tiers.</p>
<p>18. Priority access</p>	<p>Will the ESB quantify the potential cost of capital reductions as a result of introducing priority access e.g. on the basis of an investor survey similar to the AEMC's?</p>	<p>In March 2023, the ESB released a cost benefit analysis and cost of capital report.</p> <p>The cost of capital report was insightful to support the ESB's recommendation to pursue priority access rather than congestion fees (an alternative variant). The conclusions pointed to "an overall downwards impact on the risk factors that determine the cost of capital for the CRM and priority access reforms"² compared to a more ambiguous impact of the congestion fees model depending on how the fees were set. The analysis was directional, rather than quantifying cost of capital reductions.</p> <p>It is challenging to quantify the magnitude of changes to the cost of capital. In 2019, the AEMC conducted a cost of</p>

² CEPA, Transmission access reform – Cost of capital impact, 7 Feb 2023, p. 6 Available at: [cost of capital report](#)

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		<p>capital survey but faced a number of survey limitations; the response rate was low and the small number of responses included estimates of the change in cost of capital rather than providing data.</p> <p>The case for change is already compelling. The CBA identified a substantial net benefit associated with transmission access reform. The preferred model combination (CRM and priority access) results in quantified net benefits estimated at \$2.1-5.9 billion, plus a reduction in emissions by 23 million tonnes over 20 years.</p> <p>Energy Ministers have tasked the ESB to bring forward a detailed design for the hybrid model. While the ESB does not plan to conduct an investor survey to quantify the cost of capital impacts, the current consultation paper requests feedback on these same topics. It will be insightful to understand investor’s responses to the design choices <i>within</i> the priority access model and the impacts for risk allocation and the ability for investors to manage access risk. Investors may choose to conduct analysis to provide data and evidence to the ESB on the impacts of the reform on the costs of capital as part of their submissions.</p>
<p>19. CRM participation</p>	<p>What if there is limited participation in the CRM?</p>	<p>Our modelling shows that, on a real time trading basis, there are profits to be made by participating in the CRM. This includes detailed modelling using PLEXOS and the NEMDE CRM prototype (case studies provided in Appendix E of the consultation paper).</p> <p>However, most generators hold portfolios of contracts and, in the case of renewables particularly, some contracts or power purchase agreements are volume based and carry various obligations. These would modify trading outcomes and require parties to modify their bidding strategies into the CRM to manage these impacts and choose the volume they offer at various prices. It is expected these parties will expand their participation over time, including the potential to modify contracts to allow them to realise the benefits from CRM participation. The impact of the CRM on contracts was previously analysed in Appendix D of the directions paper.</p>