

19 October 2020



Dr Kerry Schott AO  
Independent Chair  
Energy Security Board  
COAG Energy Council Secretariat  
John Gorton Building  
King Edward Terrace  
PARKES ACT 2600

Dear Dr Schott

**Energy Security Board Post 2025 Market Design Consultation Paper**

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Energy Security Board (ESB) in response to the *Post 2025 Market Design Consultation Paper*.

The attached submission is provided by Energy Queensland, on behalf of its related entities, including:

- Distribution network service providers, Energex Limited and Ergon Energy Corporation Limited;
- Regional service delivery retailer, Ergon Energy Queensland Pty Ltd; and
- Affiliated contestable business, Yurika Pty Ltd including its subsidiary, Metering Dynamics Pty Ltd.

Energy Queensland remains supportive of the ESB's work to ensure the energy market is fit-for-purpose and capable of dealing with future challenges. Should you require additional information or wish to discuss any aspect of this submission, please contact me or Charmain Martin on 0438 021 254.

Yours sincerely

A handwritten signature in black ink that reads "Trudy Fraser".

Trudy Fraser  
**Manager Regulation**

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# Energy Queensland

**Submission to the  
Energy Security Board**

**Post 2025 Market Design  
Consultation Paper**

**Energy Queensland Limited**  
19 October 2020



## About Energy Queensland

Energy Queensland Limited (Energy Queensland) is a Queensland Government Owned Corporation that operates businesses providing energy services across Queensland, including:

- Distribution Network Service Providers, Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy);
- a regional service delivery retailer, Ergon Energy Queensland Pty Ltd (Ergon Energy Retail); and
- affiliated contestable business, Yurika Pty Ltd (Yurika), which includes Metering Dynamics Pty Ltd (Metering Dynamics).

Energy Queensland's purpose is to 'safely deliver secure, affordable and sustainable energy solutions with our communities and customers' and is focused on working across its portfolio of activities to deliver customers lower, more predictable power bills while maintaining a safe and reliable supply and a great customer service experience.

Our distribution businesses, Energex and Ergon Energy Network, cover 1.7 million km<sup>2</sup> and supply 34,000GWh of energy to 2.25 million homes and businesses each year.

Ergon Energy Retail sells electricity to 738,000 customers in regional Queensland.

Energy Queensland also includes Yurika, an energy services business creating innovative solutions to deliver customers greater choice and control over their energy needs and access to new solutions and technologies. Metering Dynamics, which is a part of Yurika, is a registered Metering Coordinator, Metering Provider, Metering Data Provider and Embedded Network Manager. Yurika is a key pillar to ensuring that Energy Queensland is able to meet and adapt to changes and developments in the rapidly evolving energy market.

## Contact details

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# 1 Introduction

On 7 September 2020, the Energy Security Board (ESB) published the *Post 2025 Market Design Consultation Paper* (consultation paper). The consultation paper follows initial consideration of potential market design solutions undertaken by the ESB with other market bodies, i.e. the Australian Energy Market Commission (AEMC), the Australian Energy Market Operator (AEMO) and the Australian Energy Regulator (AER), as well as extensive consultation with industry and consumer groups.

The consultation paper seeks feedback on the potential options for future market design developed by the ESB's seven workstreams to address how the market frameworks will need to change to keep pace with the challenges and opportunities arising from the evolving energy market. The workstreams are as follows:

- Resource adequacy mechanisms (RAMS);
- Ageing thermal generation strategy;
- Essential system services (ESS);
- Scheduling and ahead mechanisms;
- Two-sided markets;
- Valuing demand flexibility and integrating distributed energy resources (DER); and
- Transmission access and the coordination of generation and transmission investment.

The ESB is seeking feedback on the issues and questions raised in the consultation paper by 19 October 2020 to assist in evaluating each of the proposed options for future market design. Energy Queensland's comments are provided in sections 2 and 3 of this submission.

## 2 General comments

Energy Queensland welcomes the opportunity to provide feedback to the ESB on the consultation paper. We remain supportive of any reforms that are necessary to ensure Australia's energy market is fit-for-purpose and capable of accommodating the rapid increase in new technologies, including grid-scale renewables and DER, as well as the changing needs of the electricity system, market participants and customers. It is clear that the transformation currently underway will continue to create significant technical and market challenges with respect to ensuring the future delivery of safe, secure, reliable and affordable electricity to our customers and the community.

However, while Energy Queensland acknowledges there are emerging issues in the National Electricity Market (NEM) that require technical intervention, we are concerned that some of the potentially significant changes outlined in the consultation paper could introduce unintended complexity and costs for customers. We would therefore prefer an incremental approach to change based on clear cost-benefit analysis and building on established capability and understanding of customer impacts. Energy Queensland supports the emergence of new markets and increased customer adoption of DER. However, we suggest that options should explore how new markets can be introduced with existing capabilities to support a smooth transition for all customers. For these reasons, we consider the following matters require further consideration by the ESB before progressing the proposed market design initiatives (MDIs) set out in the consultation paper:

- **Demonstrating the need to introduce new markets** – Further consideration and analysis is required to demonstrate how introducing new and potentially complex markets is the optimal solution to resolving technical issues in the NEM. Further, it does not appear that other, potentially less complex solutions, including the potential for existing approaches to address emerging issues, have been explored. These solutions could potentially include:
  - technology (through 'do no harm' technical and performance standards);
  - responsible parties contracting for services (such as transmission network service providers (TNSPs) for system strength);
  - emerging technical solutions (such as operating envelopes);
  - existing mechanisms (such as tariff reform); or
  - simple, existing tools that already have strong customer acceptance (such as load control programs).
- **Determining appropriate implementation timing** – Energy Queensland is supportive of a fit-for-purpose, incremental approach to reform based on clear and identifiable triggers, with subsequent reforms building on demonstrated success. It is unclear how the proposed market redesign will deliver a sufficient volume of services to resolve issues in a timely manner, particularly considering the pressing short-term problems that already exist

in the NEM, including the continued customer adoption of passive solar photovoltaic (PV). Different jurisdictions have different requirements, with issues emerging at different points in time, and an incremental approach would allow solutions to be developed and targeted to emerging regional issues. Further assessment of how different options can address challenges as they emerge will demonstrate which solutions will be most effective. It is also essential that early reforms should be allowed to embed and demonstrate their effectiveness before further reforms are implemented, such as the wholesale demand response mechanism (WDRM) and five minute settlement.

- **Minimising complexity** – The proposed initiatives will potentially add considerably more complexity to the market, particularly if the two-sided market reform is intended to be applied at an individual residential customer appliance level (which is not clear from the consultation paper). Prior to MDI implementation, evidence is required to demonstrate the extent to which customers are willing or able to participate in the proposed markets and how future approaches will deliver for all customers, not just active and engaged customer groups. Energy Queensland considers that tariff reform is a critical measure in efficient integration of greater levels of customer adoption of DER, including both active and passive DER. However, it is not clear how the MDIs, particularly the proposed two-sided market, will relate to existing tariff reforms. Well-designed tariff signals will assist in addressing many emerging issues and Energy Queensland requests that any reforms that increase market complexity need to consider and demonstrate how customer equity and fairness will be addressed while supporting customers' desire for simplicity.
- **Identifying risks** – Risks, and the potential for unintended consequences or inefficient outcomes, must be identified and documented. Details should also be provided that enable participants to undertake an informed assessment of interactions, interrelationships and potential flow-on impacts of each of the MDIs. Energy Queensland is particularly concerned that reforms focussed on the wholesale market may have unintended consequences for end-customers, existing aggregators and retail businesses. There are also risks that undiversified customer responses to market events may impact on the safe operation of the networks. It is essential that future reforms consider all elements of the existing supply chain and that the risks and impacts of each of the MDIs are properly identified, evaluated and understood by all stakeholders.
- **Undertaking cost-benefit analyses** – It is likely that each MDI could have large upfront and considerable ongoing costs, resulting in a large portion of the risks of the transformation being borne by customers prior to any benefit realisation. It is therefore imperative that a transparent cost-benefit assessment is undertaken, including a sensitivity analysis to ensure a positive outcome for customers (both active and passive customer groups). It is Energy Queensland's view that the costs and complexities of potential arrangements to implement and support new markets should not be underestimated. Care should also be taken to ensure that costs are not imposed on participants through new markets with non-critical system and process changes in the short-term that could become redundant in the longer-term as the markets continue to evolve.

Our feedback on the questions raised in the ESB's consultation paper is provided in section 3 of this submission. We are available to discuss this submission or provide further detail regarding the issues raised.

### 3 Specific comments

Energy Queensland provides the following comments on the questions raised in the consultation paper:

Section	Energy Queensland Comment
<b>Section 1: Consultation and Submissions</b>	
<p>1. The potential solutions and how well the characteristics of these solutions address the challenges identified with the current market design. Where alternative solutions can be identified for discussion, these would also be welcome.</p>	<p>While Energy Queensland supports the need for market reform to meet the evolving nature of the NEM, we have concerns in relation to the potential solutions proposed by the ESB, including the following:</p> <ul style="list-style-type: none"> <li>• It is not clear that the proposed introduction of new markets will be an effective or timely solution to address all of the technical needs of the NEM. There are a range of technical challenges occurring at different times across the NEM which will require different solutions to provide the most cost-efficient outcome, especially considering the issues emerging as a result of the ongoing growth in passive PV (with Queensland, South Australia, Western Australia and Victoria all experiencing record minimum demands). For example:               <ul style="list-style-type: none"> <li>– For system strength, rather than relying on new and potentially complex markets to resolve technical issues, the ongoing and emerging needs of the NEM may be more effectively addressed by consideration of existing and incremental changes, such as ‘do no harm’ technical and performance standards or centralised planning and procurement via TNSPs;</li> <li>– For demand bidding into the NEM, existing market reforms, such as the WDRM and five minute settlement, and other reforms to access and pricing (including the Distributed Energy Integration Program), require time to establish and demonstrate their effectiveness. The consideration of a secondary market to address this issue therefore seems premature; and</li> <li>– For minimum demand, there are a range of potential current and emerging interventions, such as tariff reform to enable appropriate price signalling to customers, operating envelopes, and existing</li> </ul> </li> </ul>

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	<p>capabilities, such as load control programs that have demonstrated customer acceptance and application. These mechanisms all have a role in helping to resolve technical issues.</p> <ul style="list-style-type: none"> <li>• Energy Queensland is concerned about the level of complexity that could potentially be introduced (especially for residential customers) under the proposed market design. While we are concerned about growth in passive DER, the emergence of active DER will take time and the willingness of those customers to participate in new markets should be tested before seeking solutions that address only a segment of engaged customers (particularly given that customer participation in virtual power plants, aggregation and tariff reform has been relatively low to date). How benefits from new programs will be shared with all customers while maintaining customer protections is yet to be outlined and requires greater focus. Furthermore, an assessment of how quickly emerging active customer participation in markets can address developing issues, such as passive solar PV impacts alongside other options outlined above, should be provided to ensure options considered will address these challenges as they arise.</li> <li>• Customers can currently participate in the wholesale market through aggregators and retailers. Further consideration is therefore required as to the potential impacts on end-customers, existing aggregators, the retail market and retail businesses. In particular, the ESB should take care to ensure proposed reforms do not have the potential to impose greater risks and costs on retailers, reduce retail competition or force retailer exits from the market.</li> <li>• The aggregate response of active DER to a wide variety of system market signals poses a risk to the safe operation of the distribution networks. Consideration must be given to the interaction of potential new dynamic market price signals with network limitations and operational parameters. A focus on local network security and simple network price signals for customers should be sustained, with customers who choose to be more active participating in more dynamic platforms and price signals either through retailers or aggregators directly or through other agents. Networks are already progressing no-regrets capability, such as</li> </ul>

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	<p>improving low voltage visibility, to support growing DER adoption and to ensure the ongoing reliable operation of local networks required to support emerging markets.</p> <ul style="list-style-type: none"> <li>Energy Queensland considers that new solutions should be subject to a detailed cost-benefit analysis that also considers how incremental changes to existing structures, technical performance capabilities and standards might address current and emerging challenges when compared with potential new options.</li> </ul>
<p>2. The proposed timing of the implementation of the changes to the market design and reasons for any alternative timing you may wish to propose.</p>	<p>Energy Queensland considers that the requirement for interventions depends on the timing of the identified need in each jurisdiction and the most appropriate manner in which to address that need. More pressing issues are unlikely to be addressed by the immediate creation of new spot markets and, if so, will potentially create a higher risk of unintended consequences. For example, system security is a localised issue and is rapidly emerging across the NEM at different rates in different jurisdictions. In Queensland, system security risks have been identified as early as 2024 in the Integrated System Plan and interventions to address these emerging issues will require investment and planning decisions to commence in the near term. It is not clear if the creation of a spot market will occur soon enough or provide a strong and stable enough investment signal in sufficient time for the market to respond. Notwithstanding, Powerlink Queensland have already committed to investing in synchronous condensers to provide services to potential generation proponents, indicating a non-spot market is forming.</p> <p>With regard to other proposed market interventions, such as the proposed two-sided market, Energy Queensland considers there is a need for current regulatory reforms to embed and mature prior to new market reforms being progressed. We do not consider that a case for large-scale transformational reform has been demonstrated and would prefer that consideration is given to incremental reforms based on clear and identifiable triggers built off past success.</p> <p>Energy Queensland believes that the pace of market reform should be aligned with changing customer needs and expectations on a jurisdiction-by-jurisdiction basis. For instance, customers at the grid-edge in regional Queensland are more likely to be impacted by jurisdictional and local supply</p>

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	<p>issues rather than changes in the wholesale energy market or transmission system, which indicates a need for localised responses such as operating envelopes and tariff reform. Further, in our view, technology being introduced at the grid-edge (supported by an adaptive, technology-based suite of equipment and performance standards) has greater potential to resolve local issues than a wholesale market solution. The ESB’s consultation paper does not acknowledge that the challenges currently emerging in South Australia and Victoria will require different solutions at different times to those of other jurisdictions.</p>
<p>3. Our proposed approach to classifying the broad range of consumer needs, and what may be alternative or complementary incentives or regulatory measures (including consumer protections) to consider in support of these needs.</p>	<p>The consultation paper does not clearly define the upfront costs, benefits or savings that are expected to accrue to customers as a result of each of the MDIs. It is also unclear whether customers (other than a small number of large customers) understand or desire the reforms that are being proposed. As noted, in our view, there are alternative options which do not appear to have been explored by the ESB, many of which are relatively simple and inexpensive to implement, such as ‘do no harm’ technical and performance standards, tariff reform and load control programs.</p> <p>Under the proposed MDIs, retail business models will need to evolve. While not opposed to change where it adds value, we are concerned that the costs associated with these reforms will flow to all customers, rather than just to those who directly benefit. For example, customers with active DER could potentially benefit from the two-sided market, while costs to establish the market are likely to be smeared across a retailer’s full customer base. We therefore strongly urge the ESB to ensure the needs of small customers, and particularly vulnerable customers, are protected as these initiatives are developed.</p> <p>Energy Queensland is aware that many customers will continue to desire simplicity in how their electricity needs are met. The majority of our customers who have invested in DER are predominantly seeking to reduce their electricity bills and / or invest in renewable energy generation. In our view, the majority of small customers will have limited interest in participating in complicated trading models, such as the two-sided market (potentially involving multiple trading relationships). As the vast majority of customers have passive DER and many customers</p>

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	<p>are still unable to invest in DER, it is unclear how the benefits will be shared with all customers or how customers will be protected from unintended consequences. Further analysis is required to determine the rate at which customers will adopt active DER and seek to participate in more complex markets.</p> <p>Further, the ESB must be clear as to which market it is reforming and carefully differentiate between the retail and wholesale markets (which, in our view, the ESB is interchanging), i.e. the retail market involves a relationship between retailers and customers, whereas the wholesale market involves trading of bulk energy between large producers and sophisticated market participants via the energy pool and contract markets.</p> <p>Several of our customer representative groups have requested further updates on how proposed market design reforms are planned or likely to emerge. We therefore suggest that the ESB should provide further opportunities for customer groups to engage and review the impacts and direction of these emerging reforms. We also suggest that the ESB provide further information on how customer engagement and impact analysis is being considered in this reform work.</p>
<p>4. The proposed approach and criteria to evaluate the range of potential solutions identified within each workstream, as well as for assessing market design option(s) to be developed later this year.</p>	<p>It is unclear to Energy Queensland how the ESB intends to assess each of the MDIs against the proposed assessment criteria. We suggest that more detailed cost-benefit analyses must be prepared and consulted upon for each MDI to ensure the benefits outlined in the ESB's consultation paper outweigh the costs associated with developing new markets. In particular, we consider the ESB should undertake additional collaboration with electricity retailers to ensure it has adequately and appropriately identified the outlay required by retailers to implement these reforms, while noting those costs will flow through to customers.</p> <p>Energy Queensland appreciates that the wholesale electricity market's objective is to deliver electrical energy at the least cost and this is achieved through the competitive bidding of generators and demand into an auction market. Although the demand side has been inactive since the beginning of the NEM, the wholesale market has achieved the objective of efficiently sourcing electricity from the least cost producers. However, it is also clear that customers, while expecting low cost energy, use it to make their lives more comfortable and to produce the</p>

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	<p>goods and services by which they live (in short, to power their lifestyles and the economy). It is at the grid-edge where, due to technological developments and rapidly falling costs, the major changes in electricity production are occurring that allow customers to fulfil their lifestyle goals, whether it be to produce goods, improve their comfort or reduce their greenhouse gas footprint. By focussing on criteria like least cost and not addressing the effectiveness of the retail market, the proposed reforms will fail to deliver dynamic efficiency, although they may marginally improve the productive and allocative efficiency of the wholesale market.</p>
<p><b>Section 4: Resource Adequacy Mechanisms – Market Design Initiative A</b></p>	
<p>1. Do you have views on whether the current resource adequacy mechanisms within the NEM are sufficient to drive investment in the quantity and mix of resources required through the transition?</p>	<p>In Energy Queensland's view, there is currently sufficient generation capacity in Queensland to meet long-term demand forecasts. In particular, upon publishing the most recent <i>Electricity Statement of Opportunities</i>, AEMO observed that there is an:</p> <p><i>Improved reliability outlook across the next few years driven by the development of distributed and large-scale renewables, increased transmission capacity and reduced peak demand, while also foreshadowing significant changes in minimum operating demand profiles across the National Electricity Market.<sup>1</sup></i></p> <p>Given recent forecasts, together with the existing RAMs, including the Retailer Reliability Obligation (RRO) and the Reliability and Emergency Reserve Trader (RERT), we question the need for an enhanced RAM.</p> <p>We note that, although the spot market is currently trading at very low prices (including negative prices during the middle of the day), there is a trend towards higher prices during the evening peak. In our view, investment is required in fast response peaking plant to meet the evening peak demand, which we expect to be driven by these price signals.</p>

<sup>1</sup> AEMO, [Summer reliability outlook improves – timely investment is critical](#), 27 August 2020.

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<p>2. Do you have views on whether the short-term signals provided by an operating reserve mechanism or market would provide adequate incentives to deliver the amount and type of investment needed for a Post-2025 NEM in a timely manner? What impact could an operating reserve have on financial markets? What are the benefits of this approach? What are the costs and risks?</p>	<p>It remains unclear how the operating reserve mechanism will deliver long-term revenue certainty for a generator or retailer. In our view, an operating reserve will provide incentives for short-term assets only and will not prepare the NEM for the anticipated challenges in the post-2025 market. Rather, the NEM will require the optimal combination of dispatchable energy, which will be best served by long-term investments driven by price signals.</p> <p>New generation projects require financing backed by a long-term revenue stream rather than short-term contracts or incentives. For example, new energy storage systems would require a revenue stream of between five to 10 years, while a solar generator would likely require 15 years. Therefore, in our view, a short-term operating reserve mechanism extending for two to three years does not provide the right investment signal.</p>
<p>3. Do you have views on whether the signals provided by an expanded RRO based on financial contracts or a decentralised capacity market would provide the type of incentives participants need to deliver the amount and type of investment needed for a post-2025 NEM in a timely manner. What are the benefits of this approach? What are the costs and risks?</p>	<p>As mentioned above, it is Energy Queensland's view that operating reserves are a short-term solution only and will not deliver the outcomes required by the NEM post-2025.</p> <p>An expanded RRO imposes uncommercial obligations and risks on retailers, particularly given the penalties that attach to the obligations. As such, there is a risk that retailers will exit the market, reducing retail competition and driving unfavourable outcomes for customers. We also consider that retailers will wear all of the risk under this option, as generators (including new generators) will always have contracts in place. This situation will also have flow-on impacts for customers.</p> <p>Similarly, a decentralised capacity market will tie a swap to a generator, with the need to identify the dispatchable generator, thereby making the contract more expensive and more segmented. In our view, this mechanism will deliver a direct advantage to generators and disincentivise new market entrants (who largely settle on the spot price rather than hedge their load), creating the potential outcome that retailers will exit the market.</p> <p>Notwithstanding these concerns, if a decision is made to progress this MDI, Energy Queensland would prefer the expanded RRO rather than the decentralised capacity market. The expanded RRO would, in our view, provide more flexibility (i.e. trading contracts rather than certificates) and revenue certainty than the decentralised capacity market.</p>

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<p>4. Do you have views on how an operating reserve mechanism and/or expanded RRO would impact the need for and use of RERT and the interim reliability reserve if they were introduced into the NEM? What adjustments to the RERT and/or interim reliability reserve may need to be made so that they are complementary and not contradictory or duplicative?</p>	<p>Operating reserves, such as the RERT, typically include marginal generators and, as such, it is unlikely that these generators will be captured in the expanded RRO or decentralised capacity market. Therefore, RERT capacity will remain available to AEMO and will not be impacted by a new operating reserve mechanism.</p> <p>Given the future pipeline of new generation projects, transmission investment, renewable energy zones and energy storage projects, there are not expected to be supply capacity issues in Queensland within the next decade. Consequently, Energy Queensland is of the view that the ESB has not demonstrated that the existing RERT is deficient, or that there is a need for an additional mechanism. We therefore suggest that the RERT is the appropriate safety mechanism to manage any supply shortfall in the unlikely event that a shortfall does eventuate in Queensland. Any move to expand the RRO or introduce a decentralised capacity market would simply introduce new costs for no added benefit to Queensland's electricity customers.</p>
<p>5. Do you have views on how RAMs (current or future) can better be integrated into broader jurisdictional policy priorities and programs? Should jurisdictions reflect broader policy priorities through the nature of obligations placed on retailers in an enhanced RRO or decentralised capacity market, or through the qualifying requirements for participation in an operating reserve?</p>	<p>In Energy Queensland's view, the ability to complement variable renewable energy (VRE) with emerging technologies and / or energy storage systems can overcome many of the operating reserve issues identified by the ESB and mitigate the need for a RAM.</p> <p>Technology is further enhanced by the RRO in its current form when the obligation is triggered. As the RRO is relatively immature and has yet to be fully tested (i.e. it has only been triggered in one jurisdiction to date), we suggest more time is required to demonstrate the effectiveness of the RRO before any expansion of the mechanism is considered. Should the RRO not deliver as required, then the RERT will be available for use by AEMO as a backup mechanism.</p> <p>Energy Queensland considers the most appropriate signal for future capacity remains the market price signal. While we agree that low prices during the middle of the day are not a good signal for investors, we suggest there is a strong price signal during the evening peak. It is this price signal that will drive investment in energy storage or gas-fired (or even diesel) generation for the four to five hour window during the evening. In our view, market intervention will likely inhibit investment and the ESB must allow the market to operate in accordance with economic principles.</p>

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<b>Section 5: Ageing Thermal Generation Strategy – Market Design Initiative B</b>	
1. Have we correctly identified the cost, reliability and security risks to consumers from the transition away from thermal generation?	Energy Queensland acknowledges that thermal generators will eventually retire. However, we consider there are already sufficient mechanisms in the NEM to manage the withdrawal of this capacity. Generators must now provide 42 months' notice of closure. Where it becomes apparent that a thermal plant closure will cause supply issues, it is likely that the generator will continue to operate for a short period beyond the scheduled closure date until replacement capacity is available. Nonetheless, in our view, three and a half years' notice to the market of closure will drive new investment and there is no demonstrable need for a MDI.
2. Are these risks likely to be material, particularly those relating to consumer costs?	No comment.
3. Are there additional or alternate market design approaches that will ensure the transition away from thermal generation is least cost to consumers?	No comment.
4. Should the ESB consider and develop any of the options outlined in this section further?	No comment.
<b>Section 6: Essential System Services – Market Design Initiative C</b>	
1. What feedback do you have on the proposed provision of an operating reserve through spot market provision? How could this interact with operating reserve procurement for resource adequacy? Will such a mechanism assist manage greater system uncertainty more efficiently than current	Energy Queensland acknowledges that the ESB is attempting to resolve a combination of complex technical (engineering) issues through this MDI.  However, the implementation of new ESS markets is, in our view, too late given that system services issues are already emerging and require an immediate response (as evidenced by the increasing number of AEMO interventions in the market). We therefore question whether imposing technical standards on generators, or requirements for transmission networks to procure these services could instead provide a more timely and cost-effective response to this issue and alleviate the need to

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<p>arrangements? What additional mechanisms might be needed to foster investment needed for a Post-2025 NEM? What are the benefits of this approach? What are the costs and risks?</p>	<p>establish and operate new, and potentially costly, markets. For instance, we highlight the recent announcement by Powerlink Queensland regarding the provision of system strength support services (via the installation of synchronous condensers) to renewable energy projects in Queensland.<sup>2</sup> In our view, this announcement indicates that a market is forming for some of these services.</p> <p>If ESS markets are considered the appropriate response to the identified issues, then we suggest that the markets must be designed at least cost, and must deliver an efficient and transparent price signal. As noted by the ESB, the current ESS response is fundamentally an un-costed by-product of large, synchronous thermal generators and consequently any move to now cost those services (and operate the market) will likely result in increased electricity bills for customers. We are therefore of the view that utilising existing, straightforward mechanisms that have already proven to be efficient, such as the transmission networks continuing to provide inertia, would be preferable to introducing new market mechanisms.</p>
<p>2. What are your views about developing Fast Frequency Response with FCAS and developing a demand curve for Frequency Response? Will such a mechanism assist manage greater system uncertainty more efficiently than current arrangements. What additional mechanisms might be needed to foster investment for a Post-2025 NEM. What are the benefits of this approach? What are the costs and risks?</p>	<p>As an interim solution, we suggest Fast Frequency Response (FFR) can be provided efficiently by large energy storage participants, as evidenced by the operation of the Hornsdale battery in South Australia. There are a number of large-scale energy storage projects currently being explored across each of the NEM jurisdictions that could provide an alternative to a FFR mechanism in the short-term.</p>

<sup>2</sup> <https://www.powerlink.com.au/news-media/powerlink-secures-australian-first-system-strength-support-model>

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<p>3. What are your views on the proposed structured procurement for inertia and system strength by way of NSP provision, bilateral contracts and generator access standards, or through a PSSAS mechanism? Which approach is preferable, what are the relative benefits, risks and costs? Should the ESB instead prioritise the development of spot market for or structured procurement of inertia? What are the relative benefits, risks and costs of such an approach?</p>	<p>Energy Queensland considers the ESB should explore technical and responsible party solutions rather than pure market solutions. In our view, the most appropriate mechanism to drive system strength is to ensure there is a responsible party that can modify connection standards for inverter-based resources connected to networks or ensure that the appropriate system strength services are procured through market tenders. Such an approach is simple, overcomes the need for a new market, and complies with existing rules.</p> <p>Energy Queensland notes that some systems services requirements would not be best served by technical standards, such as frequency response, whereas a response like voltage ride through is better suited to standards. Our concerns are to ensure that full exploration of the most efficient option is investigated prior to selecting a new market as the most appropriate solution.</p>
<p>4. Given future uncertainties and the potential pace of change, what level of regulatory flexibility should AEMO and TNSPs operate under? What are the benefits, risks, and costs of providing greater flexibility? What level of oversight is necessary for relevant spending? Are there specific areas where more flexibility should be provided or specific pre-agreed triggers?</p>	<p>In Energy Queensland's view, this is not a question for market participants, but rather a decision for AEMO. Notwithstanding, we agree there is a need for further exploration of available options and we look forward to additional detail being provided in the ESB's possible roadmap (as outlined in Figure 23 of the consultation paper).</p> <p>The growth in inverter-based resources is increasing rapidly and, in Energy Queensland's view, the benefits of this technology have been largely untapped. There is considerable potential for the issues outlined in the sections of the consultation paper on RAMs, Ageing Thermal Generation and ESS to be addressed, at least initially, by revising the performance standards governing the connection of inverter-based VRE resources, including dynamic adjustment of those resources to the transmission and distribution networks. Setting performance standards may be sufficient to provide the services that have in the past been largely invisible and often described as 'free' due to the inherent physics of large rotating machines and a one-way flow of energy through networks. Performance standards for inverter-based VRE resources may be sufficient to replace those services considered to be leaving the system due to the increasing penetration of VRE and hence increasing the risks to networks and markets.</p>

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<b>Section 7: Scheduling and Ahead Mechanisms – Market Design Initiative D</b>	
<ul style="list-style-type: none"> <li>The ESB is interested in stakeholder feedback on the options for the ahead mechanisms we have outlined. Are there additional options? Are the options for a UCS and UCS + ahead markets fit for purpose?</li> </ul>	<p>Energy Queensland continues to question the need for an ahead mechanism given the generation mix changes daily based on local weather conditions and demand. For example, in Queensland on any given day demand can vary by 1000 MW. We also acknowledge that a large portion of available generation capacity is weather dependent and capacity is therefore difficult to predict even a day ahead. While we agree that system services operated as a spot market is a commonsense solution, we suggest the challenges with variability of renewable energy will make an ahead mechanism difficult to deliver.</p> <p>Energy Queensland strongly supports the ESB's intention not to progress the introduction of a compulsory ahead market design.</p>
<ul style="list-style-type: none"> <li>The ESB proposes to develop the UCS tool for implementation. Do you support the UCS concept? What factors and design features should be considered for detailed development?</li> </ul>	<p>Energy Queensland provides in principle support for the Unit Commitment for Security (UCS) tool driven by changes in ESS. We agree that a staged approach to implementation is appropriate, and that the UCS is a sensible first step in addressing current interventions in the market. We also agree that further variability driven by the installation of more solar and wind generation capacity means that, in time, there may be a need for a staged transition to ahead scheduling or an integrated ahead market. In our view, the challenge will continue to be the volatility in the variation that occurs because of the volatility in the fuel source in the short-term, i.e. less than the five minute bid period. Altering the performance standards for an inverter-based VRE source to include a reserve operating margin is one possible solution to deal with generation variability. Others could include a physical or market approach such as adding storage of fast response generation based on fossil or renewable stored fuels.</p>
<ul style="list-style-type: none"> <li>The difference between actual and forecast residual demand leading up to real time dispatch has been far more stable in the last decade than the difference between actual and forecast prices (\$MWh) leading up to real time</li> </ul>	<p>Energy Queensland suggests that the difference between actual and forecast residual demand leading up to real time dispatch is related to weather conditions, an increase in VRE and a lack of transparency around increasing demand response that is not scheduled. However, it is not clear how a move to an ahead market will remove this uncertainty.</p> <p>In our view, the key issue is not demand forecasts, which have generally maintained their relative accuracy and are still improving, with more sophisticated forecasts able to</p>

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<p>dispatch. What do you consider the drivers of this may be?</p>	<p>accommodate shorter-term weather effects. The increase in the difference between forecast and actual price is, however, a market forecasting issue and it is noted that the spread does converge closer to dispatch. The observed increase in price variances could be due to five minute rebidding within a 30 minute settlement and forecasting models that may or may not account for the volatility of price bids. The introduction of the five minute and global market settlement reforms may improve forecast modelling and reduce price volatility.</p>

### Section 8: Two-Sided Markets – Market Design Initiative E

<p>1. What do you consider are the risks and opportunities of moving to a market with a significantly more active demand side over time? How can these risks be best managed?</p>	<p>In our previous submission to the ESB on the two-sided market consultation, Energy Queensland questioned the nature and extent of the problem the proposed two-sided market is intended to resolve. Customers can already participate in the market through retailers or aggregators and can respond to tariff and price signals to shift load accordingly. Further, the mechanisms for demand bidding have been available since the beginning of the market but have rarely, if ever, been used. This implies that the pool price is an efficient clearing price and that any demand side actions are already taken into account via off-market contracts. This situation results in the pool price being set by the marginal generator against an aggregate demand forecast prepared by AEMO. Therefore, Energy Queensland considers the issue to be addressed is why participants do not currently submit demand bids into the market. We suggest that a more thorough examination of the reasons for this failure may reveal a more effective and lower cost solution that could be achieved via current market mechanisms (and participants) rather than endeavouring to extend the pool of market participants to enable demand bids.</p> <p>Further, it should be noted that an active two-sided market promoting a large direct response to wholesale market price signals from grid-edge DER has significant potential to disrupt the safe and reliable operation of the distribution networks that were not designed to manage concurrent load or export. Diversity is a key factor in the operation of distribution networks and is best achieved through tariffs, local management strategies and wholesale risk management rather than short-term dynamic pricing for small customers. Without the diversity of customer responses there will be an increased need for network technologies such as dynamic operating envelopes to</p>
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Section	Energy Queensland Comment
	<p>ensure that wholesale market interventions do not expose network businesses to increased risks which may drive inefficient investment. Energy Queensland is concerned that the current options do not outline how they will relate to current reforms at the network level. We consider that reform of the retail market, encouraging distribution networks, retailers and other market participants with direct access to customers to work together to provide tariff reforms and services to customers, allowing them to maximise the utility from their investments, is an important approach to consider. Tariff reform also has a critical role to play, but it is unclear how the two-sided market work overlays with tariff reform (which can address a range of local and global challenges emerging with the growth of DER).</p> <p>In Energy Queensland's view, there are significant risks in moving to a two-sided market, including:</p> <ul style="list-style-type: none"> <li>• implementation costs being under-estimated;</li> <li>• demand response being at the discretion of the customer and not achieving anticipated levels;</li> <li>• negative impacts on retailers' hedging efforts and market exposure; and</li> <li>• demand forecasting issues.</li> </ul> <p>In particular, attention must be given to the allocation of risks when considering the enablement of small-scale DER into the wholesale market. As retailers manage a wide variety of customer outcomes other than wholesale energy costs, the risks for retailers with respect to managing their obligations need careful consideration.</p> <p>Energy Queensland also suggests that interactions between the two-sided market prices and retail and network tariffs is critical to managing distribution network constraints. There is a significant risk of unintended consequences from operating a market that reaches down to customers connected to the distribution system. Examples include:</p> <ul style="list-style-type: none"> <li>• undiversified responses to market signals causing networks to approach local system thermal limits and, in the worst case, blowing a fuse and causing an outage;</li> </ul>

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	<ul style="list-style-type: none"> <li>undiversified responses occurring rapidly which could potentially result in adverse interactions between network control systems and customer inverters creating local voltage instability; and</li> <li>allocating transmission use of system and distribution use of system charges and customer protections to the appropriate parties in the supply chain.</li> </ul>
<p>2. What are the barriers preventing more active demand response and participation in a two-sided market? What are the barriers to participating in the wholesale central dispatch processes?</p>	<p>Barriers that may prevent more active demand response and participation in a two-sided market include:</p> <ul style="list-style-type: none"> <li>the need for telemetry, communications and IT upgrades for participating customers, including (in our view) every small customer who participates in aggregated demand response;</li> <li>the need for traders to have a sufficiently large portfolio to mitigate the risk that small customer demand response cannot be delivered;</li> <li>insufficient benefits and incentives for demand response customers to participate in the wholesale market;</li> <li>customers' desire for simplicity and products that respond to their needs (rather than the market's needs);</li> <li>complexity of the governing regulations; and</li> <li>appropriate allocation of risk amongst new entrants and incumbents.</li> </ul> <p>Importantly, as already noted, it has not been clearly demonstrated that customers (particularly residential customers who comprise the majority of customers in the NEM) want and are willing to invest in active DER to participate in a more dynamic two-sided market or whether a two-sided market is more appealing to customers than utilising DER for optimising a retail tariff. We recommend that modelling is progressed to demonstrate the participation levels required to support a two-sided market and justify potential expenditure on development to provide comfort to all businesses that this capacity is in fact available. Our enduring experience, based on customer feedback (and also highlighted by Energy Consumers Australia in <i>A Future Energy Vision Consumer Expectations Research</i>, 2019), is that a significant number of customers want simplicity. While we agree that a small number of customers will be highly engaged and active in emerging markets, it is unclear how the</p>

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	<p>benefits of a more complex market will be shared with all customers without inadvertently increasing costs and complexity for other customers.</p> <p>As noted, customers are already responding to price signals provided through tariff reform initiatives to shift load or voluntarily allow their loads to be switched to manage local network issues efficiently. It is unclear the extent to which a two-sided market will increase demand side elasticity over and above tariff reform initiatives currently underway while maintaining the principles of equity and fairness.</p> <p>It is our view that existing mechanisms, such as virtual power plants, demand response contracts, small generation aggregation, time-of-use or controlled load electricity tariffs and potential application of tariff structures such as capacity based tariffs, need to be further explored to better understand the demand response that already exists and how those existing mechanisms could be better utilised, or incrementally developed, to deliver a similar outcome.</p> <p>There has been a substantial investment in tariff reform initiatives over the past decade and this is ongoing. Energy Queensland considers that tariff reform is an important enabler to support efficient customer adoption and operation of DER and suggests more information is required to outline how such reform will interact with the potential emergence of a two-sided market.</p>
<p>3. Do you think any other near-term arrangements or changes to the market design can be explored in this workstream?</p>	<p>In our view, and as set out in Energy Queensland's previous submission to the ESB, the recent WDRM reform should be allowed sufficient time to embed and mature in order to demonstrate it is capable of delivering its objectives. The two-sided market should only be triggered once the benefits of the WDRM are proven and provide a useful demonstration of the viability of a transparent two-sided market mechanism.</p> <p>Energy Queensland considers there may only be marginal gains from extending demand response to small grid-edge customers as the effects of demand response are limited by the local network conditions and the diversity (or lack thereof) as the physical limits of the network impose constraints. Further assessment should be considered to determine likely customer participation in demand response markets and the costs and complexity needed to enable such participation.</p>

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	<p>While Energy Queensland expects that the energy market will change over time, especially with the introduction of storage and electric vehicles, we expect that the vast majority of the load will remain within the top few percent of the customer base for considerable time to come. We do not expect electric vehicles to impose a significant wholesale load until 2030 or even beyond depending on uptake rates.</p>
<p>4. What measures should be deployed to drive consumer participation and engagement in two-sided market offerings, and what consumer protection frameworks should complement the design?</p>	<p>Energy Queensland suggests there is a demonstrated need for detailed customer education programs. It is only when customers understand the market and how it will operate that they will be sufficiently confident to consider participating. We also suggest that customer uptake will correlate with simplicity in the design of the market and the products offered.</p> <p>In our view, participation will need to be seamless and driven by automation rather than customer decision, i.e. technology that delivers demand response based on a series of pre-programmed customer preferences.</p> <p>We also consider that developing appropriate consumer protections for a two-sided market will be critical, given the requirement to balance the needs of the market (firm obligations backed by penalties) with the needs of customers, noting that risk is likely to be transferred to retailers.</p>
<p>5. What might principles or assessment criteria contain to help assess whether it is timely and appropriate to progress through to more sophisticated levels of the arrangements?</p>	<p>Principles and assessment criteria should allow for a staged transition to a two-sided market for small customers. In our view there is a requirement to determine:</p> <ul style="list-style-type: none"> <li>• the need that is driving the two-sided market design option;</li> <li>• benefits that will be provided to all customers;</li> <li>• other market and non-market options that may provide alternative solutions;</li> <li>• eco-system implementation costs, including the timing and sensitivity of the costs;</li> <li>• the extent to which the proposed market can be designed for simplicity without transferring more risks to retailers; and</li> <li>• the appetite for continual and sustained small customer demand response.</li> </ul>

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<p>6. The ESB is considering combining the DER integration (below) and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?</p>	<p>Energy Queensland agrees that there is an interrelationship between the two-sided market and DER integration. However, we are of the view that the two workstreams should remain separate since not all customers adopting DER will participate in the two-sided market and the continued uptake of DER should not be construed as a willingness by customers to participate in a two-sided market. Rather, there is a need for small customers to be consulted as to their interest in participating in demand response or dynamic markets.</p> <p>Energy Queensland also suggests there has not yet been a good example of local trading and how it will work in practice. In our view, retailers will remain responsible for consumption in and out of the meter and we therefore question the design of and need for local trader models.</p> <p>While we are yet to see proven examples of local trading by moving to a two-sided market, the chances of local trading are further reduced as all customers will be expected to trade through the pool and need to have contracts around the pool, resulting in more complexity which would curtail dynamic efficiency.</p>

### Section 9: Valuing Demand Flexibility and Integrating DER – Market Design Initiative F

<p>1. Are there any key considerations for the incorporation of DER into the market design that have not been covered here? For DER to participate in markets, it needs to be responsive. How should the Post-2025 project be thinking about enabling responsive DER?</p>	<p>Energy Queensland supports initiatives intended to facilitate integration of DER and suggests there are several key considerations for incorporating DER into the market design, including:</p> <ul style="list-style-type: none"> <li>• appropriate price signals;</li> <li>• availability and penetration of technology and software that responds to market signals and drives small customer response;</li> <li>• trading practices of market participants, including market customers (retailers), generators (including virtual power plants) and aggregators;</li> <li>• the need for DER performance standards capable of participation; and</li> <li>• the need for a cost-benefit analysis to clearly identify the costs and benefits for all parties of different design options.</li> </ul>
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	<p>In Energy Queensland's view, the vast majority of small distribution-connected DER is not currently capable of being responsive. Our forecasts indicate that this position will remain unchanged until the existing fleet of inverter-based resources are replaced or customer adoption of active DER grows.</p>
<p>2. In the next phase of the project the ESB proposes to focus on development of a detailed DER market integration proposal. What are the most important priorities for DER market integration? The ESB is considering combining the DER integration and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?</p>	<p>In Energy Queensland's view, the most important priorities for DER market integration include:</p> <ul style="list-style-type: none"> <li>• consistent technical standards;</li> <li>• emergence of new technologies to drive new opportunities and solutions;</li> <li>• increasing DER penetration and new IT and software driving price outcomes and participation;</li> <li>• further investigation into how DER can be delivered as a network solution;</li> <li>• acknowledgement that the emergence of prosumers does not necessarily correlate to active participation in a two-sided market; and</li> <li>• minimising new risks and challenges for market settlement.</li> </ul>
<p>3. How can we ensure that owners of DER can optimise the benefits of their DER assets over time as technology and markets evolve? How do we time reforms to manage the costs and benefits for DER owners?</p>	<p>In Energy Queensland's view, customers take actions that suit their particular circumstances which, as noted above, may not necessarily optimise market outcomes. Consequently, the ESB should aim to design a simple, transparent market that allows for ease of access and for the customer (or their trader) to optimise their benefits.</p> <p>Energy Queensland considers that a review of the retail market arrangements and the interactions of small DER customers will be of more benefit to those customers than making complex and costly changes to the wholesale market (or at least articulating or exploring how more active and dynamic markets could overlay with network tariff reform and current retail arrangements for small customers).</p> <p>Energy Queensland supports the staged (incremental) approach to implementation proposed by the ESB, i.e. voluntary participation driven by markets and competition rather than compulsory obligations placed on market participants.</p>

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<b>Section 10: Transmission Access and the Coordination of Generation and Transmission – Market Design Initiative G</b>	
1. The Integrated System Plan is now in its second year. Do you have any comments on how its implementation can be made more efficient and timely?	No comment.
2. The cost of major transmission investment projects is of concern. Do you have any suggestions on how these projects can be built for less than currently expected? Why have costs increased so markedly? Given the rising costs, are there alternative approaches to transmission project development, design and implementation which could lower the cost?	Energy Queensland recommends that the ESB should explore this issue further with the AER and TNSPs. The AER reviews the capital and operating costs and governance of TNSP investments.
3. The development of Renewable Energy Zones is important for the transition underway in the NEM. Do you have any suggestions on how large-scale priority REZs can be more efficiently developed and connect into the network?	No comment.
4. NERA Economic Consulting’s modelling of the benefits of introducing transmission access reform in the NEM has been published. What do you think about the modelling	<p>Energy Queensland makes the following observations:</p> <ul style="list-style-type: none"> <li>The benefits observed in NERA’s modelling relate to years 2036 to 2040 (refer NERA Figure 3.3 page 26). The savings are from lower investment expected as a result of reform which was an assumed input. Most of the additional investment occurs from 2035 onwards,</li> </ul>

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<p>and assumptions used? What does this suggest about how fit for purpose the current access regime is? If you are unsure of the merits of locational marginal pricing and FTRs what other suggestions would you make about how risks of congestion might be managed by generators?</p>	<p>sparked by the retirement of over 4 GW of coal capacity and the tightening supply and demand balance on the system. We therefore question whether investment will be that much more efficient as investors already have incentives under the current regime to build in the right location through dispatch load capability and loss factors.</p> <ul style="list-style-type: none"> <li>• The modelling confirmed that the current regime already encourages ‘race to the bottom’ efficient bidding behaviour. This is shown from the modelling as benefits were not observed in the front end 2025-2035, as volume weighted average price results were higher than the regional reference price.</li> <li>• Modelling assumed that financial transmission rights (FTRs) would be accessible at fair cost and therefore no additional costs were included. However, this is unlikely to be the case as there are costs associated with resourcing an entirely new market for which there will be multiple contract points and settlement periods. Perfect hedging of FTRs is limited by time-of-use access, dispatch knowledge and cost of FTR contracts for congested lines and periods, all of which will add costs to the operation of the market.</li> <li>• The rollout of energy storage technology will take the pressure off grid congestion issues. Where renewable plant is currently constrained and limited in its dispatch capabilities it is incentivised to install batteries which can ensure greater usage of the asset by charging during times of congestion and dispatching when generation is low. Wide-scale rollout of batteries will reduce the congestion issues without requiring fundamental redesign of the grid as the incentives already exist.</li> </ul>
<p>5. The AEMC has released an updated technical specification paper on the transmission access reform model, alongside this report. The updated proposal provides additional information on the options regarding the design of the instruments,</p>	<p>Energy Queensland considers the transmission access reform model is an excessively complex and costly reform to solve an issue for which there are already economic incentives to find solutions. Ultimately, the cost to the consumer will increase due to the increased cost of resourcing and operating under the new model. The NERA economic report identified over 1000 locational marginal pricing (LMP) nodes while conducting its modelling of the NEM. If each LMP node can trade FTRs with adjoining nodes and with the regional price, then the number of FTR auctions required will be in the thousands. This is prior to</p>

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<p>pricing, and trading. How well do you think the proposal would address the identified challenges?</p>	<p>accounting for the granularity of each settlement interval for each of these locational contracts and potentially dual directional flowing FTRs. The size of the FTR market requirement, although not insurmountable, will be excessive in comparison to intended outcomes.</p> <p>Energy Queensland is concerned that it is not clear how these reforms will apply to distribution-connected generation, thereby confusing investment signals.</p>
<p>6. What are stakeholder views on the current suite of locational investment signals? The ESB welcomes stakeholder views on alternative solutions to address the need for improved locational signalling for generators.</p>	<p>Improvements to marginal loss factors can resolve market congestion issues and incentivise the right investments in the right locations. This can be achieved without changing the market dispatch engine.</p> <p>An alternative solution would be for AEMO to publish a time of day (7 day / night or 7 day shape) loss factor monthly ex-ante, with an outlook beyond the firm prompt month or quarter. Loss factors per unit represent the congestion experienced locally at that time of day, as investment occurs (i.e. batteries are installed) and as congestion adjusts, and the marginal loss factor also adjusts for the following month / quarter. Generators will be incentivised to run when congestion is low and reduce load or recharge batteries when congestion is high. Ex-ante firm marginal loss factors would ensure participants are aware of the position ahead of time. The non-firm outlook would provide an indication of where investment is required (signalling) and some confidence to generators of the landscape ahead and how it is adjusting over time. The time of day shape of the marginal loss factor will encourage the right type of investment in the right locations.</p> <p>Further consideration also needs to be given to Government policy decisions in the construction and development of renewable energy zones to ensure that the market structure supports policy objectives.</p>