



9 June 2021

Dr Kerry Schott AO  
Independent Chair  
Energy Security Board

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

Dear Dr Schott

### **Post-2025 Market Design Options Paper**

Origin Energy Limited (Origin) welcomes the opportunity to provide comments on the Energy Security Board's (ESB) Post-2025 Market Design Options Paper. We thank the ESB for the progress it has made to this point and note the consolidation of the work program into four market design initiatives (MDI) has focused the priority areas, making it easier for us to comment on the proposed measures.

#### **Resource adequacy**

For some areas, more qualitative and quantitative analysis (including modelling where appropriate) is needed before firm recommendations can reasonably be made. This is particularly true in the case of *MDI A – Resource Adequacy and Aging Thermal Generator Retirement*. While we agree the policy priorities should be to ensure timely investment and orderly exit of retiring plant, there is little indication of how the proposed modifications to the Retailer Reliability Obligation (RRO) (essentially the primary options presented) would address these issues. To assist stakeholders in better understanding the merits of the proposals and ensure Energy Ministers can make an informed decision, Origin recommends the ESB:

- expand on the mechanics of how the proposed RRO modifications are expected to help stimulate new investment and support orderly exit, with the use of modelling and/or other quantitative analysis;
- address the concerns raised by stakeholders relating to the proposed RRO modifications, which includes additional compliance burden and costs;
- develop and consider alternative reform options, including establishing an operating reserve and changing the reliability settings (noting the Reliability Panel will soon commence its review); and
- conduct further public consultation on the above areas before finalising its recommendations.

#### **Essential System Services**

Origin notes the good progress that has been made in developing mechanisms for the provision of essential system services (ESS), with the Australian Energy Market Commission (AEMC) currently processing rule changes in relation to fast frequency response (FFR) and system strength. The provision of ESS is an immediate priority and critical in minimising the need for market interventions such as directions and delays in connecting new generators.

## **Integrating Distributed Energy Resources**

The consolidation of the *Integration of Distributed Energy Resources (DER) and Demand Side Participation* initiative has clarified the overarching policy intent of this MDI. We support the immediate priorities, including ensuring consumer protections keep pace with the changing nature of the market; and the new Maturity Plan, which should allow for enhanced stakeholder engagement on a raft of DER integration issues.

However, the initial reforms including the scheduling lite concept, flexible trading arrangements, and trader services model, require further development to allow for a better understanding of whether the expected benefits are likely to outweigh the costs. In the case of flexible trading relationships, a previous review by the AEMC concluded that there unlikely to be net benefits in implementing the mechanism.

## **Transmission and access**

The rapid entry of variable renewable energy (VRE) has presented many challenges for the grid and a holistic approach is required to ensure the evolution of the transmission framework to meet the changing needs of the market. Origin supports the ESB's prioritisation of renewable energy zones (REZs) to better coordinate generation and transmission investment. REZs are a crucial first step, but we agree they only address localised issues and extensive augmentation of the wider shared network will also be required.

While acknowledging the ESB's view that a move to locational marginal pricing is the long-term ideal, contemplation of changes to the access regime cannot reasonably precede REZ implementation and timely/efficient augmentations to the shared network.

The three proposed medium-term (or interim) options each address different issues, ranging from locational signals, congestion management and the sharing of transmission costs. For this reason, we do not consider them to be wholly comparable and note they represent significant changes to the market, which calls into question the practicality of them being deemed interim measures. Origin does not support or see the need for the Congestion Management Model (CMM) or Generator transmission use of system charges (G-TUOS).

If you wish to discuss any aspect of this submission further, please contact Steve Reid at [steve.reid@originenergy.com.au](mailto:steve.reid@originenergy.com.au) or on 02 9503 5111.

Yours Sincerely,



Keith Robertson  
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## Executive summary

### MDI A – Resource Adequacy and Aging Thermal Generator Retirement

- Enhancing long-term investment signals in the national electricity market (NEM) will be important to facilitate the entry of dispatchable generation capacity needed to maintain reliability of supply. Consistent with our response to the ESB's earlier Consultation Paper, we consider this objective could be efficiently addressed by establishing a targeted mechanism for new flexible dispatchable resources. Origin is unconvinced the modified RRO options proposed can help bolster new investment.
- In the absence of a suitable NEM-wide mechanism, the entry of dispatchable plant will continue to be driven by a combination of jurisdictional schemes/initiatives and Commonwealth interventions. Origin is therefore supportive of the ESB developing a common set of principles that could be applied to guide the design of jurisdictional schemes and ensure interventions do not undermine the efficiency/integrity of the NEM.
- Requiring generators to report a reason (e.g. maintenance outage, seasonal shutdown) and estimated recall time when submitting MT PASA inputs could address concerns around the status and recallability of plant reported as unavailable.
- The proposal to capture mothballing under the notice of closure mechanism is predicated on the view thermal plant could be taken offline under the guise of a temporary shutdown to avoid a breach of the rule. However, there is no indication this is a credible risk or any evidence to suggest the existing mechanism is not fit for purpose. Restricting generators' ability to mothball plant in response to market conditions will lead to higher operating costs and earlier plant closure.
- More broadly, there is little detail or supporting analysis to demonstrate how the modifications to the RRO are expected to support new investment or orderly generator exit. The ESB should therefore undertake additional qualitative and quantitative analysis; develop and consider alternatives (including establishing an operating reserve and changing the reliability settings); and conduct further stakeholder consultation prior to finalising its recommendations.

### MDI B – Essential System Services, Scheduling and Ahead Mechanisms

- Further development of the Unit Commitment for Security (UCS) proposal is appropriate. A well-designed framework will allow for the efficient scheduling of ESS procured through contracts (e.g. system strength) and assist with streamlining the use of market directions.
- However, the case for developing the System Security Mechanism (SSM) to enable the procurement of additional system strength in operational timeframes has not been made given other related reforms. In particular, the framework being developed by the AEMC would require the advanced contracting of an efficient level of system strength, with the UCS providing a mechanism for managing real-time differences.

### MDI C – The Integration of Distributed Energy Resources and Demand Side Participation

- Origin supports the immediate reform options proposed, including ensuring consumer protections keep pace with the changing nature of the market; and the new Maturity Plan, which should allow for enhanced stakeholder engagement on a raft of DER integration issues.

- However, the initial measures require further development to allow for a better understanding of whether the expected benefits are likely to outweigh the costs. This includes the scheduling lite concept, flexible trading arrangements and trader services model.
- We do not consider there is merit in introducing multiple trading relationships, particularly given the AEMC's earlier decision to not adopt the model.

#### **MDI D – Transmission and Access**

- The prioritisation of REZs is appropriate and will assist with the efficient coordination of generation and transmission investment. While REZs are a crucial first step, they only address localised issues and extensive augmentation of the shared network will also be required.
- The three proposed medium-term (or interim) options each address different issues, ranging from locational signals, congestion management and the sharing of transmission costs. For this reason, we do not consider them to be wholly comparable and note they represent significant changes to the market, which calls into question the practicality of them being deemed interim measures.
- Origin does not support or see the need for the CMM or Generator TUOS.

## MDI A – Resource Adequacy and Aging Thermal Generator Retirement

- [1] Origin agrees the policy priorities as they relate to resource adequacy are ensuring timely investment and the orderly exit of retiring plant. However, the nature of energy-only markets (such as the NEM) when combined with the current transition can present several challenges in meeting these objectives.
- [2] Energy-only markets rely on generators earning sufficient revenue from the selling of energy. Problems arise where returns in the market are too low to enable generators to recover their fixed costs. Growth in zero short run marginal cost generation (i.e. VRE resources) can have the effect of suppressing the wholesale price below efficient levels (where generators cannot recover long run costs). This has direct implications for the viability of existing generators, as well as incentives for new investment needed to replace retiring plant and supplement the increasing entry of VRE.
- [3] As we have stated in previous submissions, enhancing long-term investment signals in the NEM will be important to ensure the entry of new dispatchable generation capacity needed to maintain reliability of supply. To this end, we remain of the view there is significant merit in establishing a targeted capacity mechanism for new flexible dispatchable resources that could be applied on a NEM-wide basis. Such a framework would provide the revenue certainty needed to justify investment in long lived assets. Importantly, it would also provide a competitive, transparent, and nationally consistent approach that could be used by state governments and/or the market operator to meet jurisdictional reliability targets.
- [4] The Options Paper implies modifications to the RRO could assist with supporting investment. However, as discussed further below, limited detail has been provided on the proposed modifications and how they are expected to achieve that objective. Origin is therefore unconvinced the modified RRO options proposed could help bolster new investment.
- [5] In the absence of a suitable mechanism, the entry of dispatchable plant will continue to be driven by a combination of jurisdictional schemes/initiatives and Commonwealth interventions. While this is not ideal (as it takes us further away from a national, market driven approach), there is little indication this trend will be reversed in the foreseeable future. Origin therefore supports the ESB's intent to establish a common set of principles to guide the design of such schemes.
- [6] With respect to orderly exit, it is important to define what this means. Origin's view is orderly exit is consistent with retiring plant satisfying the 42-month notice of closure requirement and not seeking an exemption to close early. This includes circumstances where a generator brings forward a previously announced closure date, but still satisfies the 42-month notice requirement. Orderly exit occurs so long as there is sufficient time for a market response.
- [7] To the extent the NEM does not explicitly value the provision of capacity, it is conceivable this could lead to premature closure of plant that becomes less reliant on energy provision for revenue over time, thereby heightening the risk of disorderly closure in the NEM. However, further analysis is required to understand the nature and materiality of this risk, which includes determining whether there is a systemic or transitional issue that needs to be addressed. How the enhanced RRO options presented are expected to address this issue in practice and the specific design choices that would need to be made to achieve that, also requires more detailed consideration by the ESB.
- [8] Noting the above, we also recommend further exploration of alternate reform options that could more efficiently mitigate a demonstrated risk of disorderly closure if required. This includes the development of an operating reserve that could be used to explicitly remunerate the provision of capacity in the NEM on a more dynamic basis; and/or augmenting existing market settings, noting the Reliability Panel will commence its review of the reliability standard and settings in mid-2021.

## **A.1 NEM-wide approach to jurisdiction investment/underwriting schemes**

- [9] Origin is generally supportive of the ESB developing a common set of principles that could be applied to guide the design of jurisdictional schemes and ensure interventions do not undermine the efficiency/integrity of the NEM. Key principles that should be adopted in this respect include:
- aligning any targets for new entry with projected capacity shortfalls relative to the defined NEM reliability standard; and
  - designing the tender/auction process and associated contract structure in a way that will ensure capacity providers continue to bear investment risk and face incentives to respond to wholesale market signals.
- [10] In relation to the latter, Origin does not support the ESB prescribing the adoption of options style contracts. Depending on the specific design choice, such contracts could expose consumers to material future costs, particularly in an environment of declining wholesale prices that increases the likelihood of the options being called. Such arrangements could unduly insulate proponents from wholesale market dynamics, shifting the risk to energy consumers.
- [11] Origin agrees consideration should be given to whether the Australian Energy Market Operator's (AEMO) existing reporting requirements could be enhanced to provide jurisdictions with greater clarity around potential future resource needs. This could potentially include additional sensitivities on the level of dispatchable resources that may be required in a region under certain scenarios. However, a specific gap in existing reporting requirements should be identified prior to progressing such reforms.
- [12] With respect to requiring governments to provide additional clarity around the resources to be underwritten, it is not clear what this could practically entail. It would be useful for the ESB to clarify whether this reform is intended to require the provision of information on new resources that would not otherwise be made available through AEMO's Generator Information Page under existing requirements.

## **A.2 Increased information around mothballing and seasonal shutdowns**

- [13] Generators currently report detailed information relating to their future availability through the projected assessment of system adequacy (PASA) process. This includes capacity that can be made available with 24 hours' notice over a three-year outlook period. Under its intervention powers, AEMO can also request recall times for plant that has been taken offline.
- [14] To the extent there are concerns over the status and recallability of plant that has been reported as unavailable for the purpose of the MT PASA, this could be addressed by requiring generators to report a reason (e.g. maintenance outage, seasonal shutdown) and estimated recall time when submitting MT PASA inputs. As previously recommended by AEMO, limiting this reporting requirement to a one-year outlook would assist with reducing the administrative burden on market participants while also providing the required level of supply-side visibility.
- [15] Origin considers this change would be more efficient than requiring market participants to complete multiple versions of MT PASA with availabilities defined over different return to service durations. This is because it would avoid duplication of processes and provide a clearer view of the recall times associated with particular generators. It would also negate the need to augment the Generator Information Survey to require additional information about ongoing changes to generator availability over more granular time periods.

### **A.3 Expanding the notice of closure requirements to include mothballing**

- [16] The proposal to capture mothballing under the notice of closure mechanism is predicated on the view thermal plant could be taken offline under the guise of a temporary shutdown to avoid a breach of the rule. However, there is no indication this is a credible risk or any evidence to suggest the existing mechanism is not fit for purpose.
- [17] Following the closure of the Hazelwood power station and subsequent implementation of the notice of closure mechanism, there has been a significant level of scrutiny around closure decisions and their timing. As a result, market participants have demonstrated a propensity to provide clear and advanced notice of closure decisions.
- [18] The AEMC also considered the rationale for capturing mothballing when designing the current mechanism and ultimately determined it wasn't necessary.<sup>1</sup> This was primarily because decisions to temporarily withdraw generating capacity are reversible if market conditions become more favourable. Generators that have been temporarily taken offline are required to ensure their generating units comply with the relevant generator performance standards until their classification is terminated, regardless of their availability. AEMO can also direct offline plant to generate if deemed necessary to maintain or re-establish the power system to a secure operating state, a satisfactory operating state, or a reliable operating state.
- [19] The benefits of allowing mothballing were evident following the closure of Hazelwood, with several previously mothballed plant returning to service (including Pelican Point CCGT, Swanbank E and Tamar Valley CCGT) in response to the change in market conditions.<sup>2</sup> Coupled with optimisation of existing capacity, this market response reduced the net loss in available capacity from around 1,300 MW to 460 MW.<sup>3</sup>
- [20] Expected changes in market conditions will increasingly require large thermal plant to adopt more flexible modes of operation that will likely involve taking units offline for varying periods of time. Increasing the compliance burden for market participants by requiring plant to seek authorisation to make units unavailable may impede their ability to achieve this, which could lead to earlier exit than may have otherwise been the case. This would be counterproductive to supporting resource adequacy in the NEM and as noted by the AEMC, is inconsistent with the voluntary nature of generator engagement with the market.
- [21] Notwithstanding the above, if the ESB decides to pursue this option further, it will be essential to define mothballing and/or any associated thresholds for assessing plant availability such that the focus is on the type of outages that may be of concern (i.e. indefinite long term unit outages). This will ensure more flexible operating modes such as two-shifting (which in the extreme can involve taking units offline during the middle of the day and returning them to service for the evening peak) and seasonal outages are not captured. Further consideration would also need to be given to how an exemption application would be assessed.

### **A.4 Integrated process to manage early exit**

- [22] Establishing a formal mechanism to allow governments to assess the ongoing viability of thermal plant and potentially intervene in closure decisions would create a moral hazard, inadvertently incentivising early retirement. Bilateral engagement between governments and individual plant

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<sup>1</sup> AEMC, Generator three year notice of closure – Final Determination', 8 November 2018, pg. 26.

<sup>2</sup> Oxford Institute for Energy Studies, "Electricity Sector Transition in the National Electricity Market of Australia: Managing Reliability and Security in an Energy-only Market", November 2018, pg. 30.

<sup>3</sup> Ibid.

operators where necessary to support reliability/security of supply is likely a more appropriate approach that will reduce the level of overall market intervention. The propensity for generators to engage with governments ahead of time on exit decisions also likely limits the value of establishing a mechanism that would only be triggered within the 42-month notice of closure period.

- [23] Origin considers the purpose of the integrated processes should be limited to providing governments with a more detailed understanding of the reliability/security impacts of an early closure request. This should include an assessment of whether any identified reliability/security issue could be resolved by new investment, reliability and emergency reserve trader (RERT) procurement and/or any other available mechanisms (e.g. directions and network support agreements). We also agree limiting the integrated process to a designated set of generators that are considered system critical would reduce the resultant compliance burden, though relevant size thresholds would need to be determined.
- [24] Origin does not support the inclusion of a Market Risk Assessment as part of the process, noting this could facilitate intervention in closure decisions with the intent of suppressing prices rather than addressing an identified reliability/security need. Such an outcome would be counterproductive, given it would create additional uncertainty for prospective investors and ultimately stifle the market signals required to stimulate new investment.
- [25] Origin is also not supportive of establishing a more onerous process for assessing the ongoing viability of an exiting generator through the Continuing Operation Assessment. It is already unclear under the existing notice of closure mechanism how the AER is expected to assess and conclude there is a *'reasonable prospect the station could be operated safely, reliably and commercially for a period beyond the early closure date'* in contrast with the view of the plant operator. Expanding the process to require the provision of more detailed technical/financial information will increase the overall compliance burden for the impacted generator and is unlikely to facilitate a different conclusion. To the extent there is a demonstrated reliability/security concern arising from the closure of a coal plant, it would be more appropriate for governments to engage with the facility to explore the potential for the plant to remain in operation.

## **A.5 Modifications to the retailer reliability obligation (RRO)**

### ***Investment signals are unlikely to be improved***

- [26] Decentralised trading frameworks like the RRO provide a relatively indirect (and consequently uncertain) means of facilitating new investment. Changing the nature of the existing retailer obligation under the RRO (i.e. by removing the T-3 trigger or transitioning to a physical certificate trading requirement) will not resolve this fundamental issue, or provide governments with assurance the requisite level of investment will occur in a timely manner.
- [27] Under the modified RRO options proposed, a retailer's obligation (which is intended to drive new investment) will continue to be dependent on factors such as the uncertain nature and timing of its contracting with commercial and industrial (C&I) customers. A retailer's C&I load is highly variable, as these customers tend to enter relatively short-term contracting arrangements with retailers and churn regularly. There is also uncertainty around the longevity of major industrial loads and the outlook for grid demand more broadly. Establishing a continuous trading obligation (whether financial or physical) would not overcome these natural constraints and is therefore unlikely to lead to a *'higher level of enduring contracting by retailers'*, as suggested in the Options Paper.
- [28] A physical trading requirement would also rely on signalling scarcity through the value of defined certificates. Comparisons have been made to the Large-scale Renewable Energy Target (LRET)



in this respect. However, it is important to note the success of the LRET was primarily due to the mechanism providing a clear and a firm long-term target for new investment, in an environment of declining renewables costs.

- [29] In contrast, under the physical RRO model the capacity target is uncertain and there is only likely to be value in reliability certificates during years where the supply/demand balance is forecast to be tight, with the price of certificates expected to reduce when new entry occurs. This boom/bust dynamic has been observed under a similar scheme in France, with auction prices reducing from €18,000/MW in December 2018 to €0/MW in May 2019, in part due to low demand from liable entities and additional supply being made available on interconnectors.<sup>4</sup> Examples of market participants paying a shortfall charge under the LRET also highlights the risk that willingness to enter into long-term arrangements to procure certificates (and therefore underwrite investment) are likely to be weak if there is an expectation certificate prices will be lower in future periods.<sup>5</sup>
- [30] Given the above, it would be impractical for retailers to enter longer-term financial contracts or arrangements to procure reliability certificates to support new investment. A merchant investor looking to capture the scarcity value of certificates (should that signal arise) would also not have the requisite revenue certainty to support new investment.
- [31] A lack of long-term price signals for new investment was also highlighted by the European Commission in its initial assessment of the French capacity market framework when proposed.<sup>6</sup> As a result, the final design of the French market was augmented to include a mechanism for allocating seven-year contracts to new entrants with a view to supporting financing of those projects.<sup>7</sup>
- [32] More broadly, it is evident most capacity market frameworks recognise the need to provide prospective investors with the certainty required to support new build through access to longer-term contracts. These include ISO-NE, Ireland and the UK, which provide 7-, 10- and 15-year contracts respectively for new build.<sup>8</sup> Consideration is also currently being given to the design of a new capacity market in Spain that would make 5-year contracts available to proponents.<sup>9</sup>

### ***The impact of a modified RRO on orderly exit requires further assessment***

- [33] Origin does not consider removing the T-3 trigger as proposed under Option 1 is likely to assist with facilitating orderly closure. Under the proposal, the threat of a T-1 trigger is intended to strengthen incentives for retailers to contract with generators, thereby providing generators with additional revenue to support ongoing operations. However, a prudent retailer would likely have entered into contracts to hedge a high proportion of its retail load more than one year ahead of time. The methodology used to determine the default market offer (DMO) assumes a risk-averse retailer would ensure its forecast customer load for an upcoming 12-month pricing period is completely hedged at least three months prior to that period commencing.<sup>10</sup> Any increase in contracting activity and by extension, additional generator revenue, is therefore likely to be limited.
- [34] Introducing a requirement to trade physical reliability certificates will provide increased revenue potential for all existing resources to supplement spot and financial contract market revenue. However, it is unclear whether the proposed mechanism would drive any material improvement

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<sup>4</sup> Montel, 'French energy regulator mulls capacity market reform', 25 September 2019, online article, accessed 7 June 2021.

<sup>5</sup> Origin Energy, '2021 Half Year Results – half year ended 31 December 2020', investor presentation, slide 16.

<sup>6</sup> European Commission, 'Commission Decision on State Aid Scheme – SA.39621 2015/C (ex 2015/NN)', 8 November 2016.

<sup>7</sup> Ibid.

<sup>8</sup> The Brattle Group, 'Capacity Markets and Wholesale Market Outcomes', 28 May 2019, slide 10.

<sup>9</sup> Timera Energy, 'Battery investment focus shifts to Spain', online article, accessed 7 June 2021.

<sup>10</sup> Australian Energy Regulator, 'Default Market Offer Prices 2020-21 – Final Determination', 30 April 2020, pg. 33.

in the availability of capacity or mitigate the risk of disorderly exit. This is because the existing wholesale market framework provides strong signals for plant to make capacity available (to access high prices or defend financial contracts) during the periods that would be captured by the reliability certificates. Further, any disorderly exit of large thermal plant would likely be driven by unexpected and material changes in market conditions and/or capital expenditure requirements that are unlikely to be overcome by access to certificate revenue.

***There is a range of unintended consequences that should be considered***

[35] The modified RRO option proposed could give rise to a range of unintended consequences that may ultimately increase the compliance burden for impacted parties and reduce the overall effectiveness of the reforms relative to the defined objectives. As discussed below, the range of potential impacts is particularly acute under the physical RRO option.

- Efficient approaches to risk management may be undermined: Requiring retailers to hedge their load beyond prudent levels by prescribing defined levels of trading (whether financial contracts or physical certificates) could result in market participants deviating from their optimal risk management strategies, which would have cost implications for consumers. The impact of introducing a physical certificate trading requirement on financial market liquidity is also yet to be fully explored. If the ability for non-vertically integrated retailers to manage risk is impeded in some way, this could potentially limit their capacity to compete for C&I customer demand.
- The physical RRO would create additional price uncertainty for consumers: As discussed above, the value of physical reliability certificates is expected to be highly variable, with certificates only likely to be valued in years where there is a forecast reliability gap. This somewhat binary nature of pricing would lead to cost variability for large and residential customers alike, noting regulators currently base regulated retail prices on short term market price forecasts.
- The compliance burden for retail market participants will increase: It is difficult to assess the level of compliance burden associated with the physical RRO option in the absence of more detailed information relating to its design (e.g. procurement targets/obligations, certificate creation and penalty provisions). However, it is clear the physical RRO option will lead to additional compliance costs for retailers relative to the existing framework as it introduces a new trading requirement.

[36] Given the above factors, Origin generally considers Option 1 to be a more light-handed and incremental approach to reform relative to Option 2. Accordingly, where reforms to the RRO are to be contemplated to address a demonstrated risk of disorderly closure, it would be prudent to explore the application of Option 1 in the first instance prior to considering more fundamental changes to the financial trading obligation. It would also be important to ensure the changes are provided with sufficient time to take effect, noting the existing RRO has only been in place for a limited period (since 1 July 2019).

**A.6 Consideration should be given to other options**

***Establishing an operating reserve***

[37] The concept of an operating reserve was originally put forward as a tool that could achieve two potential objectives: improve short-term operational signals; and strengthen longer term investment signals by more explicitly valuing reserve capacity. While we do not consider the mechanism would provide the certainty necessary to underwrite new investment, there may be a role for an operating reserve in supporting reliability of supply in operational timeframes by more

explicitly valuing the provision of capacity. This will require a broader assessment of the benefit of an operating reserve than has been undertaken by the AEMC to date, which has focussed largely on the value of the reserve from a system service perspective, rather than how it may support resource adequacy

- [38] The existing market framework has been effective in facilitating the availability of reserves. However, as discussed above, significant growth in VRE could lead to a reduction in the frequency and magnitude of high price events in the NEM. This would reduce the ability for dispatchable plant to recover the long run marginal cost (LRMC) of capacity provision, the impact of which may be particularly acute for flexible low capacity factor plant. An operating reserve could theoretically assist with overcoming this issue by introducing an explicit mechanism for remunerating capacity availability.
- [39] The ESB notes the benefits of introducing an operating reserve would need to be weighed against the additional transaction costs and risk management actions required relative to the existing framework. However, we consider these costs/risks would be lower than under the proposed physical RRO framework. The operating reserve is also likely to provide a more effective framework for remunerating the type of flexible capacity that will be required in the market to support the increasing penetration of VRE, given it can be designed to remunerate more responsive capacity.
- [40] Given the above, Origin is supportive of the ESB undertaking additional modelling around the circumstances or scenarios in which a reserve service would be valuable and the key design choices that would need to be addressed.

### ***Revising market settings***

- [41] The market settings of the energy only NEM are expected to be defined and set in a way that facilitates reliability of supply through timely entry and orderly exit, consistent with consumer expectations. This is achieved by ensuring wholesale prices can reach the level required for plant to recover both energy and capacity costs, with new entrants displacing more marginal plant over time. Origin understands it is not the purview of the ESB to provide advice on the adequacy of the existing settings in this respect. However, if important consideration is given to whether the settings could be augmented to address the objectives identified. In putting forward its final recommendations, it would therefore be prudent for the ESB to ensure the outcomes of the Reliability Panel's upcoming review of the reliability standard and settings in mid-2021 can be taken into consideration prior to implementing more fundamental reforms.

### ***Further work is required before there is a firm recommendation in this area***

- [42] It is essential further analysis (qualitative and quantitative) is undertaken to allow for a more informed assessment of the modified RRO options relative to the defined objectives. Specifically, this should include consideration of:
- how the RRO is expected to help drive new investment;
  - the extent to which the NEM is expected to value capacity and whether there is likely to be a 'missing money' problem for increasingly low capacity factor dispatchable plant;
  - the factors that could drive premature closure, particularly for large thermal plant – this could include an assessment of generator SRMC relative to expected pool prices, and the extent to which ongoing operational expenditure and any upcoming major capital expenditure could impact plant economics and viability;

- how the creation of physical certificates is expected to improve incentives for plant to make capacity available at periods of high demand relative to the existing framework, given existing market settings and financial contracting incentives;
- the expected drivers of the certificate price and resultant additional revenue for generators;
- the extent to which the risk of premature closure is mitigated by factors such as the need for vertically-integrated retailers to require contracts or replacement generation to manage their retail load; and
- the likely effectiveness of alternative reform options such as establishing an operating reserve and changing the reliability settings, relative to the proposed RRO modifications.

[43] This work should be completed and shared with stakeholders as part of a consultation process ahead of the ESB recommending a preferred reliability mechanism.

## **MDI B – Essential System Services, Scheduling and Ahead Mechanisms**

[44] Origin notes the good progress that has been made in developing mechanisms for the provision of ESS, with the AEMC currently processing rule changes in relation to FFR and system strength.

[45] We support the introduction of the proposed new 2-second FFR markets given they will increase the resilience of the system to frequency incursions as inertia levels decline with the exit of thermal plant. It is important to note, however, that FFR is not a perfect substitute for inertia, and continuing investigation of an appropriate mechanism to incentivise the provision of inertia should remain a priority.

[46] Origin also remains strongly supportive of transitioning to a market-based framework for primary frequency response (PFR) from June 2023 that incentivises voluntary provision of the service and facilitates the procurement of the most efficient resources, consistent with the workplan set out by the AEMC.

### **B.1 Unit Commitment for Security**

[47] We agree further development of the Unit Commitment for Security (UCS) proposal is appropriate. A well-designed framework will allow for the efficient scheduling of ESS procured through contracts (e.g. system strength), assist with streamlining AEMO's use of directions and increase transparency around market interventions more broadly. Some of the detail that still needs to be worked through is discussed below.

- Timing: The timing of the current intervention framework appears reasonable. It provides a balance between intervening as soon as possible to maximise slower start unit participation and address any forecasting uncertainty. The same principles should apply to the UCS.
- Net market benefit: Origin is not supportive of AEMO scheduling additional contracts for a net market benefit. AEMO's role is to maintain the system, and therefore its objective should be to procure and schedule the level of ESS needed to keep the market in a secure state. Anything beyond this could result in the operator unduly influencing market outcomes, disrupting market signals and increasing uncertainty.
- Costs: It is important the costs of interventions are appropriately valued by the UCS. If the UCS standardises cost inputs, opportunity costs must be included as they account for substantial portfolio costs and provide a more complete view of the imposts incurred by

generators. While it may be simple to verify the physical costs of starting a unit, it does not fully represent the true cost to a generator.

## **B.2 System Security Mechanism**

[48] The case for pursuing the development of the System Security Mechanism SSM to allow AEMO to procure additional levels of system strength in operational timeframes has not been made. The system strength framework currently being developed by the AEMC would require the contracting of an efficient level of system strength ahead of time, with the UCS providing a mechanism to manage any real-time differences. It is therefore not clear why the SSM is needed, or how the provision of services would be optimised under both long-term contracting (and subsequent scheduling under the UCS) and the SSM. If this optimisation is not achieved, it could add to the risk of over-procurement and increased costs. The basis on which the cost of the SSM would be allocated is also not clear.

## **MDI C – The Integration of Distributed Energy Resources and Demand Side Participation**

[49] Origin considers the ESB has done well in streamlining this design initiative, with the overarching policy intent now more evident. Our views on the various immediate and initial reform options are set out below.

### **C.1 Consumer protections**

[50] Origin supports the development of an assessment tool to ensure consumer protections keep pace with the changes in the market, and as new products and services are developed.

### **C.2 Maturity Plan and minimum demand**

[51] Origin welcomes the commitment to ongoing engagement with industry on key issues for the integration of DER through the proposed Maturity Plan. We also agree that options to address minimum demand should be an area of focus in the Maturity Plan.

[52] In managing the challenges associated with DER integration, measures that provide consumers with appropriate signals to make decisions that are consistent with broader system needs should be prioritised. An example of this is the concept of registered agents that was introduced as part of the Smarter Home package in South Australia in 2020. Under this initiative, a registered agent (that could be a customer's retailer) is responsible for helping ensure solar exports better match the needs of the system. Coordinating responses through registered agents is likely to provide a better consumer experience than remote disconnections or mandatory control of devices by network companies or the market operator.

### **C.3. Trader Services**

[53] As highlighted in our previous submission, more work is required to demonstrate the merits and practicality of the suggested streamlining of the participation framework through the trader services model. This includes determining whether the current approach serves as a barrier to the integration of new technologies and business models and whether the cost and complexity of moving to the new model would be outweighed by the expected benefits.

### **C.4 Flexible trading relationships**

- [54] The concept of flexible trading relationships is being promoted as a tool to facilitate competition in the market by allowing consumers to choose providers for different services. However, it is not evident the existing framework is acting as a barrier to innovation or competition. We consider almost all barriers to customers entering arrangements with multiple retailers are technological and cost based, not regulatory. Customers purchasing additional meters and rewiring for multiple connection points with different retailers is currently allowed but is prohibitively expensive.
- [55] When the issue of unbundling services was last examined in 2016, the AEMC opted not to adopt the concept of multiple trading relationships on the basis it would introduce too much complexity for retailers and networks.<sup>11</sup> To address this concern, both ESB options suggest that any implementation and upfront costs would be borne by consumers that can identify opportunities. However, consumers are unlikely to take-up connection arrangements where there is added complexity.
- [56] Additionally, any policy framework introduced to encourage consumers to have multiple retailers for different services will need to evaluate how consumer protections will operate under such a regime. Current protections are based on a single retailer having responsibility for a variety of customer obligations. Where customers are receiving energy services from multiple providers, consideration will need to be given to how these will interact, and any consequent impact on the consumer experience. For example, if a customer is in financial difficulty while under contract with multiple retailers it is not clear if they will be expected to move onto separate hardship programs for each of their suppliers.

## **C.5 Scheduling Lite**

- [57] While Origin understands the need for market transparency and the provision of accurate information to the market operator, the practical application of the scheduling lite concept will be dependent on minimising the cost and complexity of non-scheduled generation and DER participation in dispatch.
- [58] An initial step could involve AEMO working with industry to determine what information it needs to effectively manage the system. One of the objectives should be the promotion of market-based mechanisms that allow for greater participation by the resources in question. Market-based approaches that are likely to enhance information provision to AEMO include, an increasing number of virtual power plants (VPPs) participating in frequency control ancillary services (FCAS) markets, and the impending commencement of the Wholesale Demand Response (WDR) mechanism.

## **MDI D – Transmission and Access**

- [59] It is well documented that the rapid entry of VRE has presented many challenges for the grid. Origin maintains that a holistic approach is required to ensure the evolution of the transmission framework to meet the changing needs of the market. With this in mind, we support the ESB's prioritisation of REZs. The efficient coordination of generation and transmission investment through well-designed REZs will play a significant role in addressing some of the current transmission-related challenges, including connection delays and higher than expected curtailment rates.

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<sup>11</sup> The AEMC considered that the costs of implementing the Multiple Trading Relationships rule change was "expected to be significant and ... likely to result in higher electricity prices for all customers". (AEMC, 2016, *Multiple Trading Relationships Final Determination*, pg. 56).

- [60] We note the ESB's and jurisdictions' intent to strive for alignment as they progress their respective approaches to REZ implementation. This will be crucial in achieving a consistent approach to renewables investment and integration across the NEM.
- [61] While REZs are a crucial first step in the effective coordination of new generation and transmission investment, we agree they only address localised issues. Extensive augmentation of the wider shared network will also be required to accommodate the significant volume of VRE set to enter the market. AEMO's Integrated System Plan (ISP) is well positioned to manage this task and we welcome the continual streamlining and improvement of the ISP process. Consistent with this, Origin also supports the recent announcement by the AEMC for the 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. We understand that the scope of this work is broad and likely to include financing, regulatory and governance issues.
- [62] While noting the ESB is still of the view that a move to locational marginal pricing is the long-term ideal, Origin maintains that contemplation of changes to the access regime cannot reasonably precede REZ implementation and timely/efficient augmentations to the shared network. The apportioning of access through financial transmission rights (FTRs) or other financial tools is not a substitute for physical upgrades to the network.
- [63] We discuss some of the proposed measures set out in the Options Paper in greater detail below.

## **D.1 Changes to the Regulatory Investment Test – Transmission**

- [64] The Options Paper flags potential changes to the regulatory investment test for transmission (RIT-T), though there is scant discussion on what these might be. We suggest the ESB consult on any contemplated changes before making recommendations. The RIT-T plays an important role in safeguarding against overbuild by ensuring that individual projects provide net benefits. In our view this complements the broader whole of system focus of the ISP. Therefore, any erosion or removal of the RIT-T is likely to result in higher risk to those who fund transmission assets.
- [65] We also note the length of the regulatory process for interconnector approvals has been topical. However, progress has been made in this area. The actionable ISP changes will result in a speeding up and streamlining of the regulatory process for large projects.<sup>12</sup> Upgrades such as Project Energy Connect (SA-NSW interconnector) and most current RIT-Ts, were initiated prior to the actionable ISP changes being implemented and do not entirely reflect the streamlined process. The full effect of the actionable ISP changes should be reflected in the 2022 ISP that is currently being prepared.
- [66] While the timely augmentation of the network is crucial, the regulatory process should also account for the uncertainty and lead times associated with these large projects. Specifically, there should be an opportunity to account for new information and changes in market conditions (including policy developments and revised cost estimates).

## **D.2 The proposed medium-term options represent significant changes to the market**

- [67] The three proposed medium-term options each address different issues, ranging from locational signals, congestion management and sharing the costs of transmission. The hybrid options

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<sup>12</sup> The ISP replaces the first stage of the RIT-T process, speeding it up by removing duplication. Transmission businesses are also generally required to use the same inputs, scenarios and assumptions as the ISP, thereby streamlining the process. The ISP also sets out a specific date by which transmission businesses must complete their draft RIT-T report to ensure the timely progress of the regulatory process. See ESB, Recommendation for National Electricity Amendment (Integrated System Planning) Rule 2020 Decision Paper, March 2020.

involve implementing multiple complex reforms in tandem to address separate issues that are yet to be substantiated.

- [68] In addition, each option requires significant changes to the market framework, which calls into question the notion of them being interim. There was no discussion in the Options Paper regarding how transition from the status quo (including distinct jurisdictional REZs) to the medium-term and proposed long-term ideal (with locational marginal pricing) would work.

### **D.3 Congestion management model**

- [69] The rationale for considering the CMM model is seemingly to address disorderly or race to the floor bidding. Yet, there is no evidence to demonstrate this is a major problem in the NEM currently, or any recent modelling to support the view that is likely to become a significant issue warranting an intervention of this manner.
- [70] Not all bids below short-run marginal cost (SRMC) are necessarily inefficient – some plant may need to bid low, to reflect technical limitations, such as the need to keep generating consistently to avoid ramping up and down. In fact, this was part of the reasoning for having a negative market floor price. The Reliability Panel could examine the appropriateness of negative floor prices in a grid with a higher penetration of renewables if the ESB remains concerned about this issue.
- [71] Where congestion gives rise to a significant amount of so-called disorderly bidding, this is likely to be an indicator of congestion being beyond an efficient level due to insufficient network capacity. This is even while noting it is not efficient to build out all congestion. In addition, the introduction of five-minute settlement is expected to further reduce the incidence of disorderly bidding<sup>13</sup>, while REZs and the actionable ISP should improve timely transmission investment.
- [72] The CMM is not a minor change and would likely create new risks and uncertainty relative to the status quo, for unclear benefits. It does not address all the concerns that we raised regarding the coordination of generation and transmission investment (COGATI) framework. For example:
- While simpler than COGATI, the proposal would still require more complex bidding strategies. The stylised examples provided in the Options Paper were simple, but real life dispatch outcomes are likely to be more complex given the meshed and interconnected nature of the network. There would still be consequential implementation costs to address this.
  - While settlement would still be at the regional price, not all generators would be better-off under the proposal. For some, there would be financial/basis risk involved that cannot be hedged. In addition, there would be uncertainty around the amount of rebate to be received which would increase risk.
  - The proposed variations to the base model would also create complexity. For example, the CMM for REZs would in effect apply locational marginal pricing for new generation locating outside of REZs, exposing those new entrants to basis risk without the ability to hedge.
- [73] There are also some outstanding issues around the schemes design. It is unclear if the rebates would apply to existing interconnectors and would replace settlement residue auctions; or if semi-

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<sup>13</sup> Five-minute settlement will improve dispatch efficiency by removing strategic late rebidding (e.g. withdrawing capacity) in the latter parts of the 30-minute dispatch interval. The AEMC, in its final determination to the five-minute settlement rule change, noted that it will better align generators' bidding strategies with the efficient outcome of the market. See AEMC, 'Five Minute Settlement – Final Determination', 28 November 2017, pg. 14.



scheduled generators would be required to become scheduled or to self-forecast to obtain their availability (the basis of the rebate).

#### **D.4 Locational connection fee**

- [74] The locational connection fee option is aimed at improving locational signals. The ESB states the current market design rewards generators and storage for locating in the wrong place, and that the access framework does not adequately incentivise hydrogen to locate on-grid.
- [75] However, the combination of the actionable ISP and REZ framework is leading to a more centralised approach to generation entry in the NEM, further strengthening locational signals. As noted, the ESB should focus on REZs as a priority. In addition, storage already receives signals that reflect its flexible role in the NEM. For example, it is recognised as a non-network option to transmission augmentation in the RIT-T and can also provide ancillary services such as network support and frequency control.
- [76] While further exploration of how storage, load and hydrogen could be further incentivised is warranted, particularly in REZs, options to do so should build on existing frameworks such as incentives to provide network support services; improving how storage is treated as an alternative (or complement) to network augmentation in the regulatory process; or TUOS charge exemptions within REZs.
- [77] The connection fee, while simpler and a more direct approach when compared to locational marginal pricing, would also represent a significant change to the framework. The option runs the risk of dampening investment signals if the fee is set too high or if transmission build is lagging.
- [78] If it is progressed, our preference would be for the fee to be designed so that only those generators locating in congested areas would face a charge – it would be akin to a deep connection charge. The fee would not apply to existing generators or those participating in a REZ access scheme. While the fee may be difficult to forecast, the amount only needs to be sufficiently high to act as a locational signal and need not perfectly represent the net present value of congestion.

#### **D.5 Generator transmission use of service**

- [79] G-TUOS is aimed at addressing who pays for transmission. Given the magnitude of the task of building transmission to integrate new generation and the cost concerns that go with this, consideration should be given to the suitable apportioning of costs and risks of transmission build (i.e. between consumers and generators, and across jurisdictions).
- [80] Market bodies could examine a range of options in relation to sharing of costs between consumers and generators, including hybrid funding options. These could involve simple changes to the regulatory process to more explicitly allow for hybrid funding options (e.g. external – generator or otherwise – funding that could be used to bridge net benefit gaps identified in RIT-Ts). Another option could involve improving the ability for regulated projects to leverage existing or planned private assets, such as large dedicated connection assets (DCAs).
- [81] G-TUOS would also be a significant change from current arrangements and is unlikely to be a medium-term solution or easily implementable. In assessing how the risks are shared, the ESB should be cognisant of the impact of any changes on existing generators and incentives for new investment. Solutions should not create disincentives for new generation and storage to connect to the NEM.