Iberdrola Australia Limited
ABN 39 105 051 616
Level 17. 56 Pitt St. Svdnev. NSW. 2000

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To: ESB

Iberdrola Australia submission to Capacity Market Initiation paper[1]

Dear ESB,

Our submission focuses on:

- Identifying the problem to be addressed, namely:
  - closing the gap between government targets and expectations (versus what consumers actually are prepared to pay for) for reliability and what a prudent retailer/market can deliver
  - Noting the challenges of a broad-based capacity market design, in particular the costs to consumers associated with subsidising already depreciated emissions intensive assets
  - We consider the greatest risk to NEM reliability is the unanticipated failure of a major coal unit, which can only be addressed through having replacement capacity immediately available when required.
- We propose that these challenges are best addressed through a Physical Reserve Capacity Market model that balances preserving market signals with providing greater certainty for investors when needed.
  - Given the potential market uncertainties, we propose a risk averse approach to procuring reserves – having enough reserves to cover a high level of contingency events, and provide a stable investment environment.

[1] https://www.energy.gov.au/sites/default/files/2021-12/Capacity%20mechanism%20initiation%20paper%20-%20December%202021a.pdf

- A detailed evaluation of our proposed approach against National Cabinet's design criteria.
- We note that any intervention must be accompanied by corresponding signals for coal closure timing certainty and that the ESB must avoid providing further financial assistance to coal-fired power stations that have already received billions of dollars of windfall payments under previous policy mechanism (e.g. Clean Energy Future package).

1. What is the problem?

The NEM has been highly efficient at incentivising energy and delivering low costs to consumers. Australian prices are now 10th lowest (variable charge) in the developed world, and the NEM market design (plus policies such as the LRET that correct for the lack of a value on emissions) have delivered some $26.5 billion in investment since 2016[2].

Reliability has been incredibly high, supported by the prudent use of reserve capacity by AEMO, with approximately 5,500 MWh of RERT resources activated over 2017-2021[3]. These reserves cost $100m over the same period, a small fraction of total NEM wholesale market turnover of ~$60bn over the same period. (Although we note there are opportunities for more efficient procurement of reserves, as discussed below and also proposed in our rule change request to the AEMC.)

However, there may be a gap between the level of reliability increasingly expected by governments (which is currently at least 99.9994% reliability) and what can be efficiently delivered through the market. For example, increasing the MPC to levels sufficient to achieve 100% reliability will have significant impact on contracting efficiency in the market (which can, paradoxically, deter supply).

Key market risks include the risk of extreme events may be difficult for a prudent retailer to hedge against such as peak demand events beyond 1 in 10 year frequency, major plant outages, and periods of low VRE production. Attachment 1 to this submission shares some quantitative analysis on the necessary resources to deliver a reliable future grid, and the greatest risks to reliability. In particular, we find that capacity is only a part of the story, and long-duration storage and renewable fuel based peaking capacity will need to be valued.

Risks of critical failures

Critically, markets can only deliver effective results when they have efficient information. The lack of certainty around coal closures and the risk of major failures is a significant barrier to developing new capacity. We note that no coal closures

[2] https://www.sciencedirect.com/science/article/pii/S0301421521005139

[3] https://www.aemc.gov.au/sites/default/files/2021-12/%5BREL0083%5D%20AMPR%20Market%20performance%20update.pdf

have been predicted by AEMO in their ESOO publication ahead of announcements, and most stations have closed in less than three years.

In the case of critical failures (e.g., Hazelwood), coal power stations at their end of life will close regardless of the regulatory environment – any failure that is expensive to fix will not be undertaken in a plant that is close to end of life. Capacity market/financial contracts will not help manage this risk – generators already have opportunities to contract their capacity over three year or longer timeframes.

If units are unable or unwilling to contract ahead, it means either their capacity is not viable in the market or they do not have certainty of ability to supply. In both cases, an efficient outcome is to transition to more reliable and affordable resources.

The only way to deal with ageing unreliable plant that may exit sooner than expected is to have *replacement* capacity that can be called upon immediately. As such, any capacity payment needs to be for this *replacement* capacity to be ready (but not operating in the market as it would destroy all signals for new investment by all generators and consumers) before coal closures occur.

Similarly, transmission will become increasingly essential for a reliable grid, allowing weather diversity and capacity sharing to deliver low-cost power. However, large infrastructure projects are always at risk of delay, and both new and existing transmission assets face climate-change driven risks such as bushfires, extreme weather outages, etc. Again, if reserves can be procured at reasonable cost, they will reduce the uncertainty through the transition.

2. Broad based capacity markets are not fit for purpose in the future

As we have noted in previous submissions, most market designs around the world have delivered (to greater or lesser degrees) reliable systems. In every case, these markets do not exist in isolation, and need to be considered in the broader context of that jurisdiction.

More critically, the implementation of any new market design will need to be able to be a nearly 100%-renewable energy grid very quickly (as AEMO's 'most likely' ISP scenario highlights). No international markets have yet reached that high a share of renewable energy.

Indeed, capacity markets internationally and in Australia have tended to deliver oversupply of capacity. For example, the Western Australian capacity market has consistently driven an oversupply of capacity and an inefficient mix. With incumbents now protected from price signals through a floor on capacity payments (that is only available to incumbents), this a) imposes costs on consumers instead of investors and b) risks locking in inflexible resources that cannot deliver.

Defining capacity

One key challenge is how to define 'capacity' for demand side response, energy limited resources, or unreliable thermal assets? Most markets currently use "rule of

thumb" metrics such as linear deratings with declining hours of storage, etc. This generally has no material impacts when assets are a small share of the grid.

However, a centralised determination of the value of a 2 hour vs 4 hour battery that imposes a "one size fits all" approach to firming will lead to either a shortfall (with reliability impacts) or excess (with increased costs to consumers) of those units. In contrast, a market is much more likely to deliver a range of resources based on the needs of the grid determined by market-facing investors.

This is analogous to the shift of VRE resources from non-scheduled to semi-scheduled as they matured, and also the increasing obligations on rooftop PV systems.

We also note the difficulty in coming up with even simple rules for the value of capacity under the existing RRO Firmness Guidelines – the ESB should identify what, if anything, has changed since those Guidelines were developed.

Capacity is more than just MW

As most state schemes have identified, the NEM requires flexible resources that meet appropriate ESG metrics. A highly inflexible coal power station cannot be treated the same as a very flexible battery – any scheme that pays equivalent $/MW payments will impose unnecessary costs on consumers.

Reliability is a portfolio outcome

Reliability is ultimately a portfolio outcome – businesses such as Iberdrola Australia consider the interaction between diverse resources to deliver firm energy to customers. Any scheme which attempts to value *all* resources in the NEM *independently* cannot achieve an efficient and affordable energy mix.

Coal-fired generation has already received significant wealth transfers from taxpayers

Significant payments have already been made to coal-fired generators when the Clean Energy Future package was introduced in 2012 and repealed only two years later. None of the ~ $5 billion in assistance provided to coal-fired generators was paid back to taxpayers. Asking consumers to pay again for these power stations to 'stay in the market'' is neither fair, equitable, or efficient.

Any mechanism that prolongs the life of coal-fired power stations is likely to result in poorer reliability outcomes and will only serve to delay investment in the critical technologies that the evolving market requires (including non-energy services, such as FFR).

3. Proposed pathway for capacity market reform

In this section, we outline an alternative pathway, consistent with our problem statement, the ESB's previously stated goals, and National Cabinet's design principles, that will deliver value to the market and consumers.

Deliver certainty around coal closures

The first step of any pathway for the NEM must to be to provide additional certainty to markets around coal closure timelines. This must be either from existing power stations committing to maintaining stations until a specified date (with penalties for failing to do so) or from a coordinated closure scheme (where contracts for closure funded by the remaining coal generators (who will benefit from those closures) are awarded through a competitive tender process).

The Grattan Institute and economists from ANU[4] have both proposed workable schemes that could be delivered at no cost to taxpayers.

Alternatively, penalties could be attached to the Notice of Closure regulatory regime for units that close without providing 42 months notice, regardless of the reason. This would incentivise more accurate reporting of closure dates to the market, increase incentives for efficient maintenance, and compensate consumers for the inefficiency of building replacement capacity without lead times.

It is not clear why the ESB has, to date, rejected proposals such as these that will immediately deliver improved certainty to governments at no explicit cost to consumers.

Implement a Physical Reserve Capacity Market

Based on the problem statement above, there are clear principles that should apply to any capacity market intervention:

- Capacity payments should only apply to new entrants
- Should provide a safety net in the event of lack of investment, but
- Should preserve signals for market-led investment
- Should focus on addressing the gap between operating capacity at any point in time and what governments agree they would like as an insurance policy against unexpected events (such as early coal closure or energy droughts).

We propose a **Physical Reserve Capacity Market** that addresses these principles.

Under this proposal, if an investment gap emerges, a tender/auction is held for suitable capacity to close the gap. This is different from the RRO, where actions available to AEMO are limited to RERT capacity, which tends to focus on low capex, high SRMC resources. Instead, we propose that the auction would seek to procure resources that will deliver long-term value in the market while *also* addressing any shortfall gaps.

The auction would award long-term contracts (5-20 year, as discussed below) that would support or underwrite new generation. However, resources would not immediately be folded into a portfolio but instead kept as reserve resources

[4] https://ccep.crawford.anu.edu.au/department-news/7022/phasing-out-emissions-intensive-power-stations

("reliability hedge" not "financial hedge") reducing the moral hazard of all investors relying on this mechanism. The intent of the contracts would be to procure reserve capacity that would transition to the energy market when it is efficient to do so.

This process would mitigate the risk of two particular market challenges:

- The market is unable to invest due to regulatory or market uncertainty, a lack of customers willing to enter long-term deals, etc.
- AEMO has identified risks to the market that retailers or developers are unable to prudently hedge against.

This addresses the concerns of the ESB (the need for long-term certainty for investment, and the need for clearer, physical procurement mechanisms), but only activates *if* there is a failure of the market to deliver (i.e., it will not significantly reduce investment signals). In contrast, a certificated capacity mechanism only improves long-term certainty if certificates are guaranteed over a long period, meaning consumers are then taking on risk that is better managed by investors.

Our proposed mechanism is outlined below and summarised in more detail in following sections.

i. AEMO identifies a market gap (42 months out)
ii. Ideally, the market delivers sufficient capacity/resources to close gap
iii. Otherwise, an auction/tender is held for long-term contracts for *reserve* capacity. Contracts fund/derisk projects (at a level sufficient to cover debt?) – really, it's about bringing forward investment
iv. Successful projects then offer reserves (for example bid into Iberdrola Australia's proposed Operating Reserve market if implemented, or activated through RERT)
v. Projects eventually transition to the energy market as market signals for the capacity strengthen (due to events occurring that governments were concerned with initially – i.e. unexpected coal closures etc)

AEMO identifies a market gap

Similar to the existing RRO, AEMO would use its ESOO to identify reliability shortfalls 3-4 years ahead. This would be assessed against the market reliability standard, or another standard nominated by jurisdictions. This would allow for higher standards to align with government targets.

The declaration of a shortfall could also potentially include:

- Any shortfall in reserve markets, including FCAS or an Operating Reserve spot market
- Capacity expected by state governments to meet a higher reserve or reliability target
- Shortfalls in inertia

This would allow for procuring resources to address more than just energy, but further design work would be needed to consider how this would interact with other procurement services.

Market-led investment

Through stochastic modelling, AEMO, in consultation with the Reliability Panel, would identify potential investment candidates that would close the gap. This could include specifying:

- The MW of additional capacity/reserves required
- The volume and duration of storage or demand response required

Market participants would then be encouraged to progress projects, secure demand response contracts, etc., to fill the gap. The incentive for industry is to act or risk capacity being introduced through a competitor.

The gap would be projected to be closed if sufficient capacity reached financial close by a cut-off date (e.g.., 2.5 years ahead of the identified gap).

Physical Reserve Capacity Market auction

If a gap persisted, an auction/tender would be held for resources to close the gap.

The auction could be run by AEMO in consultation with the Reliability Panel, or a jurisdictional body (e.g., the Consumer Trustee in NSW).

We propose that the auction would be pay-as-bid, and would consider:

- the least-cost combination of resources that close the gap would be procured
- resources in the long-term interest of consumers would be procured

Successful resources would be awarded a long-term options contracts. We have considered some potential approaches below, which would need to align with other design decisions.

Any contract structure would need to be able to address (at least) two potential investment barriers – derisking investment (e.g., allowing projects to cover their debt, such as the goal of the NSW LTESA design) and, if needed, closing a perceived revenue gap if the market and the central forecaster have different views of market needs in the near-term.

Contracts should also provide incentives or opportunities for resources to be transitioned to the energy market. Broadly speaking, we propose that contracts for options

	Advantages	Disadvantages
Options to take a fixed annual payment or swap. The option cannot be exercised if the participant elects to operate in the energy market during the year, which might need to	• Provides simple investment signal and would likely guarantee investment • Relatively easy to compare projects • Costs are clearly defined	• Operational signals less clear – need clear list of obligations • Would projects bid at their full annualised cost? • Might not be attractive to investors if assets can't be used as part of a portfolio

be determined in advance (similar to the NSW LTESA structure).		• Some risk of "privatising gains and socialising losses"
Shorter duration annual fixed revenue stream (e.g., 5 years) that partially or fully derisks the initial investment timing	• Could be helpful if a resource has long-term value but an investment case cannot be immediately made • Provides clear signals to when the resource will operate in the energy market • Resources could exit early if the market were to deliver value	• Somewhat less attractive to investors • May be more likely to incentivise shorter payback period technologies
Long-term floor payments	• Retains incentive to actively participate in the market • Well suited to a "cost of debt" payment that derisks projects while still encouraging operation in the market	• Complex to administer, difficult to impose operational requirements on assets to improve grid reliability • Creates a long-term liability
Cap contract sold to AEMO/government	• Resources provided with operational signal • Resource can't also be contracted to a portfolio – increases incentive for market-led investment	• More complex • Not all resources suitable for selling caps (e.g., short duration firming)

Transition to energy market

Under our proposed scheme, resources would be incentivised to transition to the energy market when conditions warrant. This would be balanced against requirements for reserve capacity to be available to manage unexpected events (as proposed in our Operating Reserves Rule Change).

Several options for the potential mechanism are proposed below. Our view is that option contracts with the ability to temporarily enter the energy market are likely to be efficient at balancing investment signals with government resilience expectations.

	Advantages	Disadvantages
Time-limited reserve contracts, with resources returning to the energy market beyond that period.	• Resource know ahead of time how long they'll have fixed payments for • Market knows when reserve capacity will enter the energy market	• Prices may well be set at full (annualised) cost recovery for those four years • Risk of transient high price bubble if market knows capacity will transition to energy market in 5 years (say) – meaning no investment until then; can be mitigated by allowing resources to exit the reserve market early
Temporary transition to energy market	• Will help reduce prices in extreme years, or respond to shortfalls in	• Socialises losses and privatises gains • Limited incentive to actually leave the capacity market, depending

Resources can elect to leave the capacity payment mechanism for minimum of [24 months] if energy prices are expected to be higher	capacity (improving price rathe than just reliability) • Proponents would have an incentive to sign shorter term market contracts, while still having the safety net of the Capacity Market	
Trigger for exit based on participation in the energy market	• Resources can voluntarily exit the capacity mechanism	• Resources may be reluctant to leave the energy market
Revenue trigger: If spot market revenue exceeds a threshold, then transitions temporarily/permanently to the spot market	• Ensures resources will participate in energy once needed • Provides incentives for resources to seek external contracts	• May be a disincentive to exit the market if resources do not

Operation of resources

Once procured, the resources operate as “reserve” capacity, intended to be used (in the short-term) as a “reliability hedge” rather than a “price hedge”. Appropriate treatment of dispatch and spot revenues would need to be considered; some options and considerations are presented below.

	Advantages	Disadvantages
Pure market participant, operating merchant in the market or under a cap contract, depending on design -	• Resource can be used for maximum benefit (price and reliability) • If resource was genuinely needed, is now available • Aligns with a “floor price” approach to contracting, more complex with a fixed swap approach	• Likely to defer other investment – won’t get “additional” capacity beyond market expectation • Creates moral hazard of waiting for underwriting before investing
Spot market Operating Reserves	• Resource is kept out of market, but is available when needed • Dispatch is transparent, and other reserves can be managed around it • Revenue from operating in the spot market goes to project? Back to consumers?	• Contingent on AEMC establishing market
RERT or Jurisdictional Reserve scheme	• Simple, established process • Would provide certainty to AEMO that resources are available • Out of market capacity preserves clear signals for market investment • Who keeps spot market revenue?	• Dispatch is not transparent • No benefit to consumers of reducing price

Cost recovery

We propose that the costs of the scheme be recovered either from retailers (on the philosophy that the reliability hedge is of value to consumers) or directly from jurisdictions (if higher reliability targets have been progressed by governments).

4. Consistency with National Cabinet principles

The design of a capacity mechanism must be consistent with the design principles put forward by National Cabinet. We do not find that a centralised or decentralised capacity market can be made consistent with those principles, particularly in terms of efficiency, technology neutrality, and mitigating the risk of unexpected closures. In contrast, a well-designed Physical Reserve Capacity Market addresses all of the criteria, and we look forward to working with the ESB to further develop this option.

1. be consistent with the **National Electricity Objective**	This approach will ensure efficient capacity will always be developed if a shortfall is identified in the market, through underwriting new physical capacity. However, consumers will only be exposed to costs *if* the market does not deliver. Retailers will also be incentivised to develop or contract capacity outside of the scheme, to ensure appropriate hedging is available. In contrast, a capacity market where participants are forced to buy and trade physical certificates will also deter new entrants and disadvantage smaller market participants. It will reduce liquidity and transparency around pricing.
2. focus on **affordability**, **reliability**, **security**, and **continued emissions reduction** of electricity supply	Unlike a whole of market capacity market, this approach will deliver efficient signals for resources that deliver benefits beyond just energy. Payments to coal generators cannot be consistent with continued emissions reductions.
3. provide a **signal to value capacity** that best supports the needs of the NEM	A reserve capacity market improves on a RERT mechanism by allowing for resources to be developed which a) meet a short-term need but b) are identified by the market as having long-term value. In contrast, RERT inevitably focuses on high-variable cost, low fixed cost assets and cannot plan for the future grid. Unlike a certificated capacity market, both the procurer (e.g., AEMO or a jurisdictional body) and market participants will have the ability to deliver targeted resources. As a backstop mechanism, it is credible to use long-duration option contracts that provide certainty for investors *if* sufficient certainty is not available in the wholesale and contracting markets. It is unclear how a capacity market improves investment certainty for long-duration assets.

4. **complement existing energy only market design** and well-functioning **markets** for **financial contracts**, and other reforms in development	The energy-only market will continue to deliver efficient capacity investment and contracting, but a backstop for underwriting capacity will be available. Underwriting resources will ensure they can still be contracted if it is efficient to do so. In contrast, capacity payments for all participants will inevitable distort efficient operating signals (by treating flexible and inflexible resources the same).
5. **minimise regulatory burden** for market participants	As a triggered mechanism, it will only be activated in the event of a lack of investment and regulatory impacts will generally only be on those developers participant in the scheme.
6. **safeguard energy consumers**. In particular: a. ensure costs and revenues are efficiently and fairly allocated; and b. avoid duplication of costs to secure reliability.	A certificate based capacity market will create conflict and overlap between the energy price signal and a comparatively opaque $/MW signal that does not value the performance of resources in the market. A reserve mechanism will ensure that sufficient resources are available to meet reliability expectations of governments and to manage unanticipated coal closures.
7. ensure sharing of resources across the NEM by s**upporting inter-regional contracting**	Valuing inter-regional capacity will be challenging under a certificated scheme. In contrast, the proposed physical reserve capacity market can more readily adapt to changing market conditions and deliver targeted capacity where needed.
8. provide **greater certainty around closure dates** of exiting generation	The proposed mechanism will strengthen signals for existing capacity to accurately signal its intended closure date *and* to ensure units remain reliable until that time. Financial signals under a centralised or decentralised capacity market will improve certainty.
9. **mitigate** reliability risks presented by **unexpected closures** of existing capacity	The only way to deal with ageing unreliable plant that may exit sooner than expected is to have replacement capacity that can be called upon immediately. This mechanism will provide the capacity payments needed for this replacement capacity to be ready (but not operating in the market as it would destroy all signals for new investment by all generators and consumers) before coal closures occur. A whole of market capacity market does not, of itself, drive new capacity. Instead, it would have to drive an oversupply of capacity, with extra payments made to *all* participants rather than just the reserve capacity.
10. encourage the **timely replacement** of existing capacity through driving commitments to new investment within reasonable notice periods of closure of existing capacity	
11. to the extent it does not conflict with state and territory policies, be **technology neutral** to ensure a focus on the ability of each resource to deliver generation on demand, for the	This mechanism will be targeted, and appropriate operating requirements could be placed on any successful resources (e.g., to ensure activation at key times, similar to RERT resources).

periods when it is most needed a. Jurisdictions must be able to determine, via their regulation, provided for in the National Electricity Law framework, which technologies are eligible for participation in a capacity mechanism in their region.	Other criteria could readily be applied on a jurisdictional basis, similar to those in the proposed NSW LTESA tender conditions.
12. recognise relevant **state and territory policies and investment schemes** to account for bespoke arrangements to retain and replace existing capacity	This scheme would not distort existing state schemes. In fact, it could be used to complement existing schemes.
13. enable jurisdictions to opt out, via the National Electricity Law framework	Any jurisdiction could opt out and the proposed mechanism is triggered, consistent with these Principles. In contrast, a whole of market capacity market cannot be easily opted in or out. It is difficult to see how interregional flows, total capacity requirements, and portfolio impacts could be efficiently managed under such a scheme. Furthermore, even if a future opt-out is possible "on paper" it would be very difficult to achieve in practice, and Ministers may find themselves effectively locked in.
14. enable jurisdictions to opt in, through triggered thresholds for the mechanism.	

We look forward to continuing to engage with the ESB. If you would like to discuss this submission, please contact me on joel.gilmore@iberdrola.com.au or 0411 267 044.

Yours sincerely

Dr Joel Gilmore

GM Energy Policy & Planning