25 July 2022

Ms Anna Collyer
Chair
Energy Security Board

Submitted via email: info@esb.org.au

Dear Ms Collyer

Capacity Mechanism: High-Level Design Paper

Stanwell Corporation Limited (Stanwell) welcomes the opportunity to respond to the Energy Security Board's (ESB) *Capacity Mechanism High-Level Design Paper* (the Consultation Paper).

We acknowledge the work of the ESB in preparing the High-level Design Paper, and we thank the ESB for the opportunity to provide a response.

This submission contains the views of Stanwell and should not be construed as being indicative or representative of Queensland Government policy.

As a major provider of electricity to Queensland, the National Electricity Market (NEM) and large energy users throughout Australia, Stanwell is invested in providing reliable and affordable energy for today and into the future. We are currently exploring new generation and storage technologies to help reduce emissions, and ensure Queensland electricity supply remains secure and reliable now and into the future.

As the energy landscape shifts toward more renewable energy solutions, Stanwell understands the need for market reform to accommodate the changes that are currently underway, and to provide additional assurance to electricity consumers and governments that the energy market can be relied on to provide security of supply.

While Stanwell retains its concern over whether the proposed mechanism will be effective or efficient,[1] we have provided further design recommendations in **Attachment 1** with a hope to deliver the best possible outcome from this process.

[1] We understand the ESB intends to present a cost-benefit analysis when it presents its detailed design to Energy Ministers in December 2022, however we consider there should already be a high level analysis available. The recently delivered NERA analysis based on existing international markets does not appear to support the proposal.

Timeframe for development

The indicative timeframe proposed by the ESB would see the capacity mechanism draft detailed design open for consultation in December 2022 with a final design, including draft legislation and proposed Rules, provided to Energy Ministers in February 2023.

Stanwell again raises our concern over the ESB's indicative timeframe. We believe this timeframe is overly ambitious and does not accurately reflect either the amount of work yet to be done in relation to the design, modelling, and implementation of the mechanism, or the need for iteration of the proposed design based on stakeholder feedback.

We note this project has already been subject to a number of delays including the release of the High-level Design Consultation Paper. It is therefore likely this project will take longer than originally anticipated.

Any mechanism designed to value dispatchable capacity will be complex and represents a substantial reform to the energy-only framework of the current NEM. This will have far-reaching implications for new investment, system reliability, and the cost of electricity for end users. Recent experience with major projects (5-minute settlement and Power of Choice) should be taken into account when considering the implementation timeframe, risk and cost.

We strongly encourage the ESB to allow sufficient flexibility within the existing timeframe to support adequate planning, modelling, and implementation to better reflect the work that will inevitably be required. This improves the likelihood that the capacity market will be best placed to meet its proposed objectives, it is fit-for-purpose with the ability to mature (and where necessary adapt) over time, and ultimately provide increased reliability and security of supply as the market transitions to higher levels of renewable energy.

Consideration of international examples

Throughout the consultation process international capacity market examples have been broadly considered, and stakeholders have been asked to consider these examples as workable solutions for application within the NEM capacity market.

We note the ESB has commissioned NERA to provide a summary of a number of overseas capacity markets, and in our view, appears to cast an unfavourable light on the effectiveness and affordability of these schemes. However, this does not appear to include any detailed assessment or analysis as to each example's potential applicability to the issue that the ESB is trying to resolve for the NEM.

Instead, the ESB is seeking stakeholder input along those lines. Asking a broad section of stakeholders with various commercial and social perspectives and objectives to selectively nominate elements from the (undesirable) international examples, will in all likelihood, contribute very little to the creation of an efficient and cohesive mechanism design.

While it may be useful to consider international examples in highlighting things to avoid, the key approach to design should be focused on identifying the primary purposes of a capacity market for the NEM, and then designing a market to meet those purposes.

NEM-wide consistency

One of the principals set by Energy Ministers was for jurisdictions to have the ability to opt out of any of the Post-2025 reforms proposed by the ESB, including the capacity mechanism. This also means that jurisdictions have the ability to determine which technologies should participate in the capacity market within their jurisdictions.

Stanwell recognises the important role jurisdictions play in influencing participation in a capacity market, and determining whether projects are approved, completed, or otherwise delayed. With this in mind, we suggest a capacity mechanism would operate most effectively and efficiently (or indeed at all), where there is consistency across the NEM.

A NEM-wide approach would provide a workable solution that would ultimately be more attractive to investors, and provide additional assurance capacity could be dispatched to meet intra and inter-regional demand, while also supporting a regional approach.

This underlies the proposal to provide jurisdictions with a number of design decisions relating to early auction rounds while requiring technology neutral, whole-of-NEM participation in the final auction round(s). By providing 'levers' for jurisdictions to pursue policy goals within the scheme, unilateral actions should be minimised.

Our approach to procurement and the auction design is outlined further in our Recommendations below.

Market price cap

Stanwell supports a review into the efficient level of the Market Price Cap (MPC) where it can operate in conjunction with the capacity mechanism.

Under a capacity mechanism, new firming and dispatchable capacity would be partially incentivised through a capacity payment rather than solely through a very high MPC.

This would imply a lower MPC with a capacity market than without a capacity market. Some capacity though is likely to receive little or no revenue from the capacity market, and the holistic Post-2025 design should take this into account.

A capacity market should retain a strong financial incentive to be available during times of tightness in supply and demand. The ESB have previously described this as having the spot market do the 'heavy lifting', implying a relatively low cap on capacity payments.

Stanwell recommends that the level of MPC be considered further once other elements of the capacity design are certain as this will have implications to the cost of electricity for end users.

In our view, to fully assess the costs to end users, an understanding of the amount of additional incentive that would be needed to underpin the investment in dispatchable capacity is required. For this to occur, the cost benefit analysis required should be a holistic review and assessment to include not only the price of the capacity payments, but also the current MPC provisions under the energy only market. This would include understanding how much of that incentive should come from the energy only market, and how much should be attributable to the capacity market.

It is only once both of these aspects are fully known that any real assessment of the ultimate costs to end users can be ascertained.

Recommendations

Stanwell has proposed a number of recommendations which in our view, provide a sound basis for the establishment of a capacity market.

A summary of the recommendations is provided below, while a more fulsome overview is provided in the Recommendations at **Attachment 1.**

The role of a capacity mechanism: The primary role of a capacity mechanism is to provide assurance to stakeholders that sufficient supply is in place to meet demand, barring low-probability events. A well-designed capacity market may also support secondary roles including incentivising investment and emissions reductions.

Centralised design forecasting and procurement: While in our response to the Project Initiation Paper Stanwell initially supported a hybrid approach to procurement and forecasting, we consider a centralised approach is required (at least initially) to meet the implementation timeline of 2025. This would include forecasting to be undertaken by the Australian Energy Market Operator (AEMO) in line with their existing forecasting responsibilities. A competitive, sealed-bid procurement process is likely (at least initially) to be the most efficient of the options under consideration. However, as the market matures, we support market participants procuring some or all of their capacity needs.

At-risk periods: The narrow definition of an at-risk period in the high-level design paper appears inadequate to deal with the challenges facing the NEM. It is likely the definition of at-risk periods will vary across regions, accommodate different times of the day during different seasons, will have to encompass prolonged weather-related events, and reflect long-term changes in resource availability such as changes in supply resource availability, droughts, emerging peak demand issues in shoulder seasons, or generator closures and new investment, noting the demand on the network will change over time.

Supply-side participation in the mechanism: Participation in the capacity market be approved by a central body, most likely AEMO, who could ensure that the participating project had met some minimum readiness criteria, and would be visible to, and dispatchable by AEMO. This should include the addition of prudential considerations and regular confirmation by market participants (to AEMO) that new projects can be delivered on time and that existing assets are being maintained.

De-rating: Supplier capability during at-risk periods will be best identified where they are based on AEMO demand forecasts under a centralised, consistent forecasting approach that could be used to match or be easily reconciled with any methodologies used in other AEMO forecasting.

Compliance regime: A robust and transparent compliance regime that should be balanced to ensure compliance is not placing an administrative or regulatory burden on participants or AEMO. Meaningful penalties are important along with participant readiness criteria, monitoring of project development (where delays are evident in the planning window), and future de-rating where capacity is not delivered during the operational timeframe. No penalty should apply where delivery failure was outside the control of the market participant.

Auction Design: A price term visibility of 8-10 years will incentivise investment in firming and dispatchable storage technologies with multiple auction rounds, and first round held 4-5 years ahead with contracts up to five (5) years duration. Subsequent auctions would then occur either annually or at the T-1 mark just prior to long-notice Reliability and Emergency Reserve Trader (RERT) procurement. Initial auction rounds could be limited to facilitate new entrants and low or zero emissions technologies based on jurisdictional policy objectives. Once these have been exhausted, incumbents then participate to fill any gaps.

Emissions reduction through a capacity mechanism: A multi-round capacity auction design where jurisdictions are provided with a number of design options, including setting emission intensity caps and maximum price or volume, procured in the initial auction rounds, would facilitate emissions reductions in line with current end of technical life requirements. Thermal would be used to 'fill any gaps' and shore up the market in later auctions rounds. Over time as more renewables enter the market, thermal generation would eventually be replaced by a combination of new renewable technologies.

New entrant incentives: The auction design will play a key role in incentivising new entrant low and zero emissions technologies to enter the capacity market where (based on jurisdictional policy objectives), they may be prioritised above incumbent generation. Over time thermal generation would be replaced by a combination of new technologies including some form of peaking response.

Conclusion

Whether the capacity mechanism will meet its proposed objective will ultimately depend upon getting the design right, while also recognising the mechanism will work most effectively where it is used as a planning tool to support new investment in visible controllable supply and demand response. For this to occur, substantial work will be needed, and the ESB's indicative timeframe does not support the work required to ensure the mechanism will achieve its purpose.

Ensuring the key components are well-designed, tested and analysed to identify the immediate and longer-term risks and benefits will ultimately determine the success of any capacity mechanism in the NEM.

The ideas and proposals put forward by Stanwell in the Recommendations outlined below, in our view, provide a sound basis on which to further build.

Stanwell appreciates the opportunity to contribute to the ESB's development of a mechanism to deliver a cost-efficient, viable, fit-for-purpose solution, and we look forward to engaging with the ESB further as the initiative progresses over the coming months.

We welcome the opportunity to further discuss the matters outlined in this submission. Please contact Ian Chapman on (07) 3228 4139.

Yours sincerely

Ian Chapman
Manager Market Policy and Regulatory Strategy

Attachment 1.

Detailed design recommendations

Contents

Design Recommendations

In considering the ESB's high-level design for a capacity market, Stanwell has proposed a number of recommendations to support reliability of supply, while also addressing the policy objectives of emissions reduction and incentivising new investment.

1. **The role of a capacity mechanism**

The capacity mechanism should not be seen as a "silver bullet" for the NEM.

The primary role of a capacity mechanism is to provide assurance to stakeholders that sufficient supply is in place to meet demand, barring low-probability events.[2]

A well-designed capacity market is also likely to support secondary roles including incentivising investment and emissions reductions, however, Stanwell considers the design should ensure these objectives do not jeopardise the mechanism's primary purpose. The mechanism should also incentivise in-market investment, that is, supply sources which are visible to and controllable by AEMO.

In subsequent sections we propose design options to support each of the mechanism's purposes.

Stanwell strongly believes that the capacity mechanism should operate as a planning tool to inform whether AEMO or jurisdictional schemes activate "last resort" planning powers.

While participation in the mechanism will require some form of commitment to good engineering practice and responsible commercial planning, the scheme should not extend into dispatch timeframes. Alternative tools (essential services markets, operating reserves) are under development to strengthen system security in the operational timeframes and will be more suited to these aspects of market management.

2. **Centralised design**

In our response to the Project Initiation Paper Stanwell initially supported a hybrid approach to procurement and forecasting,[3] however, we consider a centralised approach is required (at least initially) in order to meet the implementation timeline of 2025.

2.1 Forecasting

We envisage capacity forecasting would largely be undertaken by AEMO in line with its existing forecasting responsibilities. We consider that centralised forecasting is essential in relation to gaining policymaker confidence that participants are not underestimating their capacity procurement requirements.

On this point, we note the importance of ensuring any centralised forecasting is consistent across all of AEMO's forecasting functions. This would include AEMO modelling and forecasting accurately reflecting all existing providers and their related de-rating capacities prior to an auction occurring. It should also account for providers who have already secured long-term capacity (and assuming their capacity requirements are correct – will not need to participate in an upcoming auction), and account for those providers who may need to sell excess or purchase additional capacity.

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[2] Finkel A, et al, *Independent Review into the Future Security of the National Electricity Market: Blueprint for the future / Expert Panel on the Independent Review into the Future Security of the national Electricity Market: Blueprint for the Future: Finkel review into Australia's electricity market*, 2017, p 85.
[3] Stanwell, February 2022, *Capacity Mechanism – Project Initiation Paper*, p 9.

In our view, this approach will ensure that forecasted capacity requirements are known prior to an auction, and the market has a view of who is or is not participating. AEMO can then “lock in” the capacity requirement and set capacity targets accordingly.

Centralised forecasting would also support a ‘transfer limits’ approach to inter-regional capacity trade for market interconnectors, as AEMO would identify the maximum capacity bid into the market that would be available for interstate trade during times of system stress.

It is not clear from the high-level design whether the capacity mechanism is intended to procure reserves, and if so whether this is to be covered through the supply de-rating methodology or through increased procurement volume. This should be clarified in the next ESB report.

2.2 Procurement

Stanwell agrees with the ESB’s conclusion that a centralised, competitive, sealed-bid procurement process is likely the most efficient option of those under consideration, at least initially. We recognise that any mechanism to value capacity will be much less complex to design and implement using a centralised mechanism in the first instance.

However, over time, and as the capacity market matures, we support market participants playing a more active role in procuring either some or all of their capacity needs, including the option to engage in bilateral trade to shore up their capacity needs closer to the delivery date.

Stanwell considers that AEMO will already have in its forecasting process a demand forecast which can be applied to each connection point in the NEM, and which will sum to the total demand forecast underpinning the capacity mechanism. For some connection points this may be a “consumer type” forecast rather than a direct forecast. Augmenting the existing AEMO data structures with this information would be a highly efficient method of identifying what proportion of the total forecast (and cost) each *market customer* is responsible for, as well as setting a base for decentralised procurement.

In our view, this would ensure greater and improved ease of compliance, more accurate capacity procurement, and the ability to correct any under or over procurement (including in the event of unforeseen maintenance or other unexpected issues).

2.3 At-risk periods

A key component of the capacity mechanism will be the definition of an “at-risk period” i.e., the period for which surety of dispatchable capacity would be required. This has yet to be defined and clearly articulated.

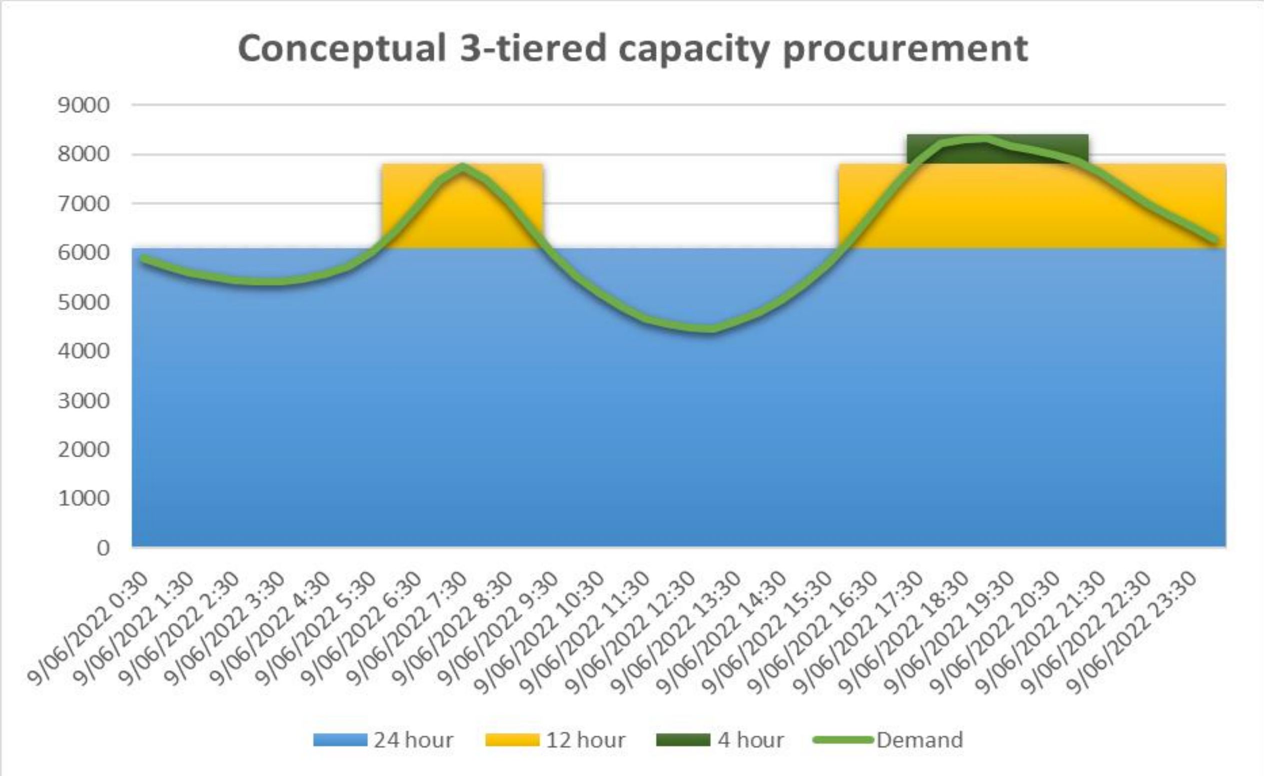
In our view it is likely at-risk periods will vary across regions, accommodate different times of the day during different seasons. These will have to encompass prolonged weather-related events (such as wind droughts or weeks long rain events) and reflect long-term changes in resource availability such as droughts, or emerging peak demand issues in shoulder seasons as we are now experiencing. It will also consider generator closures and new investment, noting the demand on the network will change over time.

The period identified in the design paper – a few hours on summer weekday evenings – appears wholly insufficient for the purpose of the mechanism. Not having enough capacity available outside a narrowly defined at-risk period will not be acceptable to stakeholders. The NEM will require a mix of technologies delivering capacity over different timeframes, not just a stack of 4-hour batteries.

As such we expect that the volume to be procured will need to be defined in tranches which correspond to the expected needs of consumers – for example an amount of 12-24-hour capable plant supplemented by 4-12 hour plant and 2-4 hour plant. Please see the conceptual chart below in Figure 1.

These timeframes would then align with the definitions of storage as categorised in AEMO's Integrated System Plan 2022 (ISP).[4]

Figure 1



Technology could then be de-rated based on its ability to provide capacity during particular system stress events or at-risk periods. For example, a nominally 4-hour battery could provide a lower level of capacity over a 5-hour or 8-hour at-risk period (most likely aligning with an event-driven approach to defining at-risk periods).

The continued increase of weather-dependent resources into the market may also mean at-risk periods will not remain static but change over time. Stanwell considers that any capacity already secured should not be put at risk due to such changes as this would undermine investment incentives. Instead, multi-tiered definitions such as those described above could be flexible enough to incorporate incremental changes to demand patterns.

In order to effectively address the issue of at-risk periods, Stanwell again reiterates that in our view, a capacity mechanism should not be designed to address sudden unexpected changes in supply and demand, this should be provided by operating reserves, strategic reserves and RERT.

[4] Australian Energy Market Operator *Integrated System Plan* 2022, p 54 identifies the following categories of storage: Shallow = 0–4 hour storage, Medium = 4-12 hour storage, Deep = greater than 12 hours.

3. Supply-side participation in the mechanism

Participation as a seller in the capacity market should require approval by a central body, most likely AEMO. The central body would ensure the participating project had met some minimum readiness criteria, would be visible to, and dispatchable by AEMO, and had appropriate prudentials in place to support successful participation in the auction.

3.1 Readiness criteria

We agree with the proposal that a set of eligibility criteria be developed to ensure a level of project maturity and feasibility prior to auction. This could include milestone requirements to track and incentivise delivery, and the development of a participation crediting system, with the potential to maintain a capacity register of available providers.

We propose this system be developed (in consultation with stakeholders) and administered by AEMO as a way to ensure proponents have the ability to deliver in line with their proposed timeframes.

If a project were to fall behind schedule, the multi-round auction design described below would allow the participant (via AEMO) to purchase offsetting capacity from another provider.

3.2 Visibility and controllability

It is not clear from the high-level design whether and how non-scheduled and semi-scheduled participants will be considered in forecasting and procurement. Including such suppliers – particularly non-scheduled capacity – in capacity market procurement may not give stakeholders the desired level of comfort that sufficient supply is in place.

Stanwell considers that the capacity mechanism design should encourage investment in “in-market” supply resources by restricting participation to scheduled (or similar) suppliers.

3.3 Prudential requirements

We would recommend this include the addition of prudential considerations and regular confirmation by market participants (to AEMO) that new projects can be delivered on time, and existing assets are being maintained, to ensure a sufficient level of comfort is provided to the market that the capacity will be there when it is needed.

For example, as identified under the ‘compliance regimes’ the design may allow participants to sell at one auction and buy back later if their project is delayed. If the purchase price is higher than the sale price (likely given there is a shorter lead time), AEMO could be exposed to the participant not paying the difference. A prudential regime would reduce or eliminate such exposure.

3.4 De-rating

Whether the de-rating definition relates to a static time period or a compliance period, we envisage at-risk periods will be best identified where they are based on AEMO demand forecasts under a centralised, consistent, forecasting approach. We consider the de-rating methodology used should match, or be easily reconciled with, any methodologies used in other AEMO reporting.

For example, the recent experience around the Eraring closure announcement – where AEMO initially reported no gap under Electricity Statement of Opportunities (ESoO) methodology. A gap was subsequently reported under the New South Wales State Scheme, highlighting the risk of having multiple competing definitions.

3.5 Compliance regime

It is important that industry stakeholders and electricity users have confidence in the integrity of the capacity mechanism. To this end, a robust and transparent compliance regime is necessary. However, the regime needs to be balanced to ensure that the demonstration of compliance is not an undue administrative or regulatory burden on market participants. In this context, it should leverage existing reporting obligations, where possible.

In our view, meaningful penalties are important to deter selling capacity certificates into the market that are not reasonably likely to be deliverable when they are actually needed.

We suggest (as noted earlier), multiple auctions over time with participation limited to projects which have met some pre-defined readiness criteria. That criteria should increase over time reflecting the expected progress of new entrant providers, but by the last auction, projects would have to be either operating or committed and well progressed. If a project were to be delayed or an operating plant fails, the proponent could purchase (via AEMO), certificates back from alternative suppliers and face the net cost of such procurement. Where relevant, this may reflect the cost of energy procured through the long-notice RERT arrangements. This approach would ensure that consumers are no worse off while simultaneously incentivising participation.

When the last resort planning window has passed, certificate sellers could have their availability monitored through PASA or an equivalent mechanism. Failure to make supplies available in this window could see the provider subject to payment for AEMO procurement of medium or short-notice RERT contracts which are typically much more expensive than market pricing or incremental operational reserve costs.

Then, once into the operational timeframe, failure to deliver the committed capacity should trigger a future de-rating as proposed by the ESB. Where the participant/s can demonstrate the failure to deliver capacity occurred due to conditions beyond their control, no penalty should apply.

This approach would reflect the intent of a capacity mechanism as a planning tool. If a provider is reasonably confident the plant will be available at a junction of the planning and operational windows, that should be sufficient to confirm availability. Existing market Rules would prevent gaming of the PASA and pre-dispatch obligations.

4. Buy-side participation

Market customers already undertake an approval process to become a financially responsible market participant (FRMP) in the NEM, and this appears likely to satisfy the requirements of the capacity mechanism.

Market Customers would participate either directly or via AEMO in the capacity auction and should be assigned cost relative to the requirements of the consumers they are FRMP for.

4.1 Auction Design

Given the objective of the reliability certificate is to strengthen the long-term investment price signal, we see the ESB's proposed 1-4 year auction window as insufficient time to effectively operate within the investment planning horizon, or to inform closure decisions prior to the 42-month notification obligations currently in place.

In our view, new and large-scale generation and storage assets will likely need certainty of returns and strong investment signals that align with their investment and development timeframes. With this in mind, we see a price term visibility of 8-10 years as a better timeframe for a capacity mechanism to incentivise investment in firming and dispatchable storage technologies such as pumped hydro into the market.

Stanwell suggests developing a process consisting of multiple auctions in the lead up to an at-risk period to accommodate the different evolution of policy, technology, and forecasting. In line with the 8-10 year price term visibility required for new investments, one or more early rounds of the auction could offer multi-year contracts to new entrants. If the first auction were to be held 4-5 years ahead, contracts up to five (5) years duration would provide enhanced investment signals without major commitments on behalf of consumers.

Although not directly relevant to new entrants, an auction held 4-5 years ahead would also support meaningful notice of closure (assuming the current 42-month requirement is retained). Subsequent auctions – either annual or at T-1 just prior to long-notice RERT procurement – could provide a way to shore up positions prior to the capacity actually being needed – noting that all capacity auctions and bidding should be visible and transparent to the market.

De-rating should reflect the capability of the technology (i.e., based on the duration it can provide capacity during an at-risk period), including consideration of intra-regional transmission and interconnection constraints. This approach would align with AEMO's ISP which identifies the complementary roles different forms of storage can play during different at-risk periods, while additionally better accommodating the different levels of capacity that various assets can provide.

Consistent with the proposal around emissions reductions, auctions could initially limit participation to facilitate new entrant low or zero emissions technologies based on jurisdictional policy objectives. Incumbents and higher emissions technologies could participate in later rounds to 'fill any gaps' once these policy objectives have been met or supply exhausted. As more renewables and low or zero emissions firming and generation technologies enter the market, the reliance on existing thermal generation will lessen, and eventually cease entirely.

If the capacity mechanism design were to incorporate decentralised procurement, the AEMO-run auction process could be retained but with volumes decreased to account for bilateral arrangements. The sellers of these arrangements would be subject to the same qualifying criteria as sellers in the auction.

This "secondary market" would serve an important role by allowing participants to reflect their risk appetite in capacity procurement, while retaining a centralised backstop if bilateral volumes were considered insufficient.

4.2 Emissions reductions through a capacity mechanism

Stanwell recognises the importance of reducing emissions in line with international, national, and jurisdictional policy objectives and emissions targets. However, as noted above, the primary objective of a capacity market is to value dispatchable capacity to support reliability.

Stanwell believes it is reasonable for a capacity mechanism to be designed to encourage emissions reduction, although it should not in our view, require emissions reductions at any cost, be it reliability or financial cost to consumers.

We suggest within the multi-round capacity auction design, jurisdictions are provided with a number of design options, including setting an emissions intensity cap and maximum price or volume to be procured in the initial auction rounds. This would over time, provide additional financial surety for renewable energy and storage investment, encouraging new technologies to bid into the capacity market.

4.3 New entrant incentives

The auction design will play a key role in incentivising new entrant low and zero emissions technologies to enter the capacity market where (based on jurisdictional policy objectives), may prioritise new entrants above incumbents.

For example, the multiple auction process outlined above, would facilitate a later auction round (or rounds) that could be opened to all technologies and participants to fill any residual capacity gaps in order to meet the primary aim of supporting reliability. In this way, a capacity market would still meet its primary objective, while also supporting and incentivising low/zero-emission new entrants to provide longer-term firming solutions.

Over time as more renewable technologies enter the market, we envisage thermal generation would eventually be replaced by a combination of new renewable technologies which would include storage, and some form of peaking response such as batteries, demand response, and alternative zero-emissions generation technology such as green hydrogen powered turbines.