

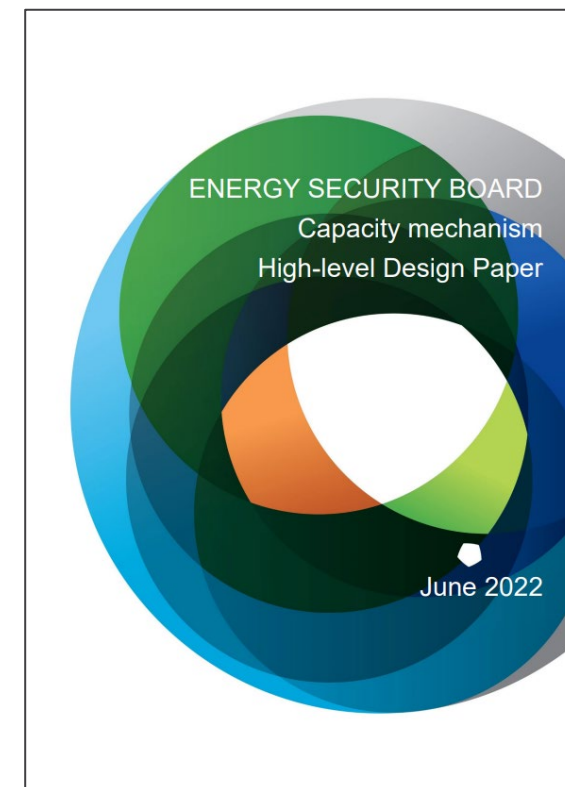
**ENERGY SECURITY BOARD
CAPACITY
MECHANISM – DESIGN
SUMMARY AND NEXT
STEPS**

1 JULY 2022



CONTEXT

- On 20 June, the ESB released a paper outlining its proposed high level design of a capacity mechanism for the National Electricity Market (NEM).
- Over the last six months, the ESB has worked in collaboration with a wide range of stakeholders to develop a strawperson design
- This presentation is designed to be read in conjunction with the consultation paper. It provides:
 - An overview of the case for change
 - A summary of the strawperson design with a worked example to illustrate the execution of the proposed mechanism
 - A summary of outstanding issues that require further detailed design
- In the next phase of work, the ESB will build detail around outstanding issues, and will leverage stakeholder responses to the consultation paper to refine and finalise the overall design

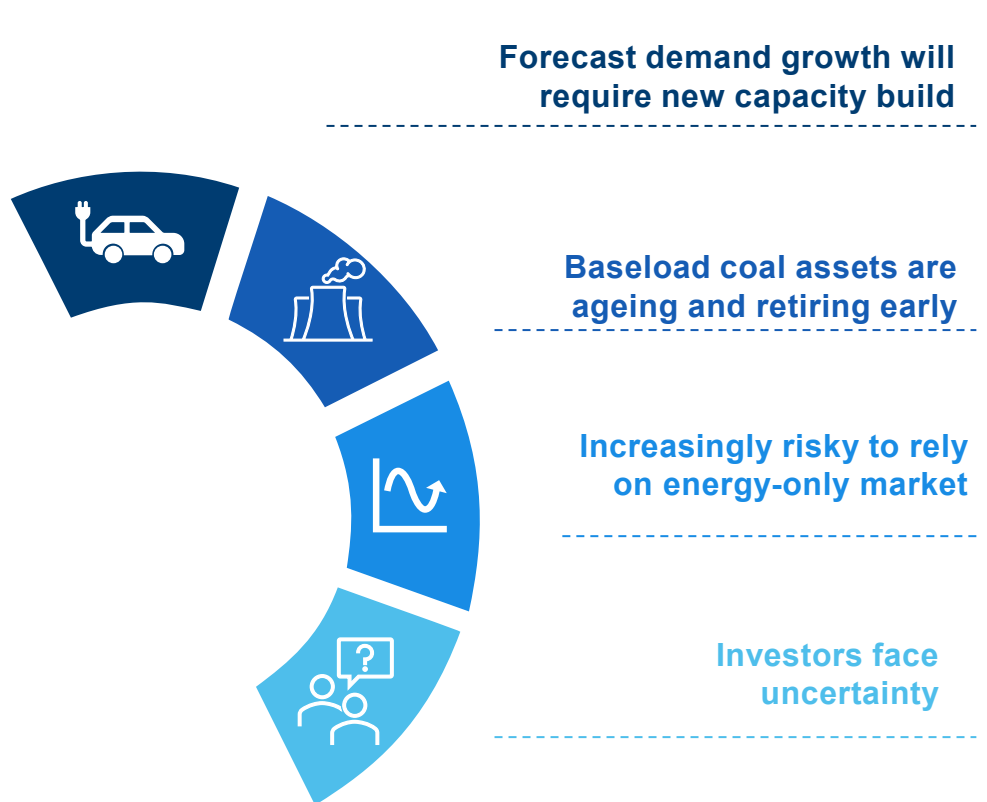


[Link to paper](#)

Submissions close: 25 July 2022
Lodge submissions to: info@esb.org.au



THE CASE FOR CHANGE



- Electricity demand could double by 2050 (according to AEMO step change)
- Coal generators, which account for ~60% of generation, are ageing, and several have announced early retirement dates
- Under AEMO step change, 14 GW coal could exit in the next eight years, representing one third of the NEM's dispatchable capacity.
- The current market framework may not deliver the necessary new investment in line with expectations of governments, because:
 - investors may not respond to investment signals given significant revenue uncertainty and other sources of risk (technology, regulatory, government intervention)
 - only a limited number of market participants can finance new investment in the absence of long-term investment signals
 - sustained high prices are required to elicit market-led investment, but these periods are painful for consumers and governments feel obliged to step in

Implications

- **Without intervention, the transition to the grid of the future is likely to be disorderly**
- **A 'wait and see' approach will risk too little capacity being available, and new capacity arriving too late**
- **A disorderly transition will lead to adverse consumer outcomes, especially on price and reliability**

THE INTRODUCTION OF A CAPACITY MARKET MECHANISM CAN HELP CREATE MUCH NEEDED CERTAINTY IN AN UNCERTAIN ENVIRONMENT



WHY A CAPACITY MECHANISM?

A capacity mechanism resolves key issues ...

Issue	Impact of capacity mechanism
Forecast demand growth will require new capacity build	<ul style="list-style-type: none"> Creates a clear, government-backed, mechanism to incentivise timely build of new capacity, as needed, to maintain reliability
Baseload coal assets are ageing and retiring early	<ul style="list-style-type: none"> As above Enable baseload capacity providers to better manage exit decisions, while incentivising them to contribute during system stress events while they remain in the market
Increasingly risky to rely on energy-only market	<ul style="list-style-type: none"> Directly rewards participants for capacity provision in stress events, thereby minimising exposure to price volatility
Investors face uncertainty	<ul style="list-style-type: none"> Creates a direct signal to investors on the required timing and mix of capacity investment

... and is aligned with approaches taken in global markets

As an energy-only market, the NEM is very much in a minority. A number of major international electricity markets have introduced capacity mechanisms in various forms ...



... and in Australia, a capacity mechanism has been operating in WA since 2006

WHO IS ELIGIBLE TO PARTICIPATE IN THE MECHANISM?



Both new and existing capacity will be allowed to participate but we are considering how we can include additional support for new entrants (for example through long-term commitments)

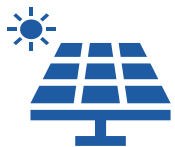
Design principles relating to eligibility

Principle 2: focus on affordability, reliability, security, and **continued emissions reduction** of electricity supply

Principle 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 periods when it is most needed

Principle 11a. Jurisdictions must be able to determine...**which technologies are eligible for participation in a capacity mechanism** in their region.

- Designed well, the capacity mechanism will enable a swifter, less risky and more orderly transition to a net-zero emissions energy system.
- We have asked Ministers for further guidance on the principle of continued emissions reduction of electricity supply to allow the principle to be operationalised in the design in a way that guides the transition without impacting the jurisdiction's ability to determine the technology that is eligible for participation.





PROPOSED HIGH LEVEL DESIGN

	Design element	Question	Agreed ESB position / options for consultation
A	Forecasting and capacity requirement	Who forecasts reliability gaps?	• AEMO
		Who forecasts capacity requirements & derates capacity?	• AEMO
		What 'at risk' periods are used for de-rating?	<ol style="list-style-type: none"> 1. <i>Discrete time periods, determined in advance by AEMO; or</i> 2. <i>Based on forecast occurrences of a defined event (e.g. LOR)</i>
B	Eligibility	New only vs new & existing capacity?	<ul style="list-style-type: none"> • Both new and existing – With additional support available for new entrants
C	Procurement	Who purchases capacity?	<ul style="list-style-type: none"> • AEMO • <i>Optionally retailers</i>
		How is capacity procured?	<ul style="list-style-type: none"> • Auctions (e.g. T-4 and T-1) • <i>Optional procurement by retailers</i>
D	Compliance and incentives	What is the performance incentive for capacity providers?	<ul style="list-style-type: none"> • Availability year-round, with additional requirement to bid availability during actual lack of reserve events (LOR2/LOR3) whenever triggered
E	Cost pass through	How does AEMO recover capacity costs?	<ul style="list-style-type: none"> • Via retailers
F	Interconnectors	Can capacity in one region be used to meet requirements in another?	<ol style="list-style-type: none"> 1. <i>Generation can only participate in its own region's auction, but expected interconnector flows are accounted for when setting the capacity target</i> 2. <i>Generation can participate in other regions' capacity auctions, subject to conditions</i>

WE WILL REFINE THIS DESIGN THROUGH DETAILED ANALYSIS ON A SMALL SET OF OUTSTANDING ISSUES



Design element	Issues and questions for detailed design
A Forecasting and capacity requirement	<ul style="list-style-type: none"> • Should capacity zones align with the NEM regions or some other grouping? • How are generators derated for the purpose of forecasting the capacity requirement and awarding capacity credits under the scheme? • Over which time periods are generators derated and how are these periods determined? • How is the capacity target defined?
B Eligibility	<ul style="list-style-type: none"> • Does new capacity need separate, multiyear contracts? If so, how should long-term products be designed? • What are the project delivery obligations for new capacity and how should these be monitored? • How 'double payment' of providers be avoided?
C Procurement	<ul style="list-style-type: none"> • What are the terms of support on offer to capacity providers through auctions, including long term capacity contracts for new capacity? • Is there a role for retailer-led procurement in a centralised model? If so, what does this look like? • What are the eligibility requirements and obligations for auction participants? • How should the auction be designed, including demand curve design?
D Compliance and incentives	<ul style="list-style-type: none"> • Is a single or two-part payment appropriate? In either option, how should incentives be structured to ensure capacity provision in times of system stress? • What is the definition of availability during times of system stress? What is the methodology for defining system stress events? • What are the implications of any interaction between the performance obligation, capacity payments and existing market design?
E Cost pass through	<ul style="list-style-type: none"> • What is the mechanism and timing of cost recovery?
F Interconnectors	<ul style="list-style-type: none"> • How should capacity be traded across regions? • Which entities would be eligible to trade capacity across regions? • How will the mechanism consider constraints within a region?



NEXT STEPS

- Submissions to the high level design paper are due by 25 July 2022. Please lodge your submissions to info@esb.org.au
- If you have any further questions or would like to discuss this further, please get in contact via info@esb.org.au.

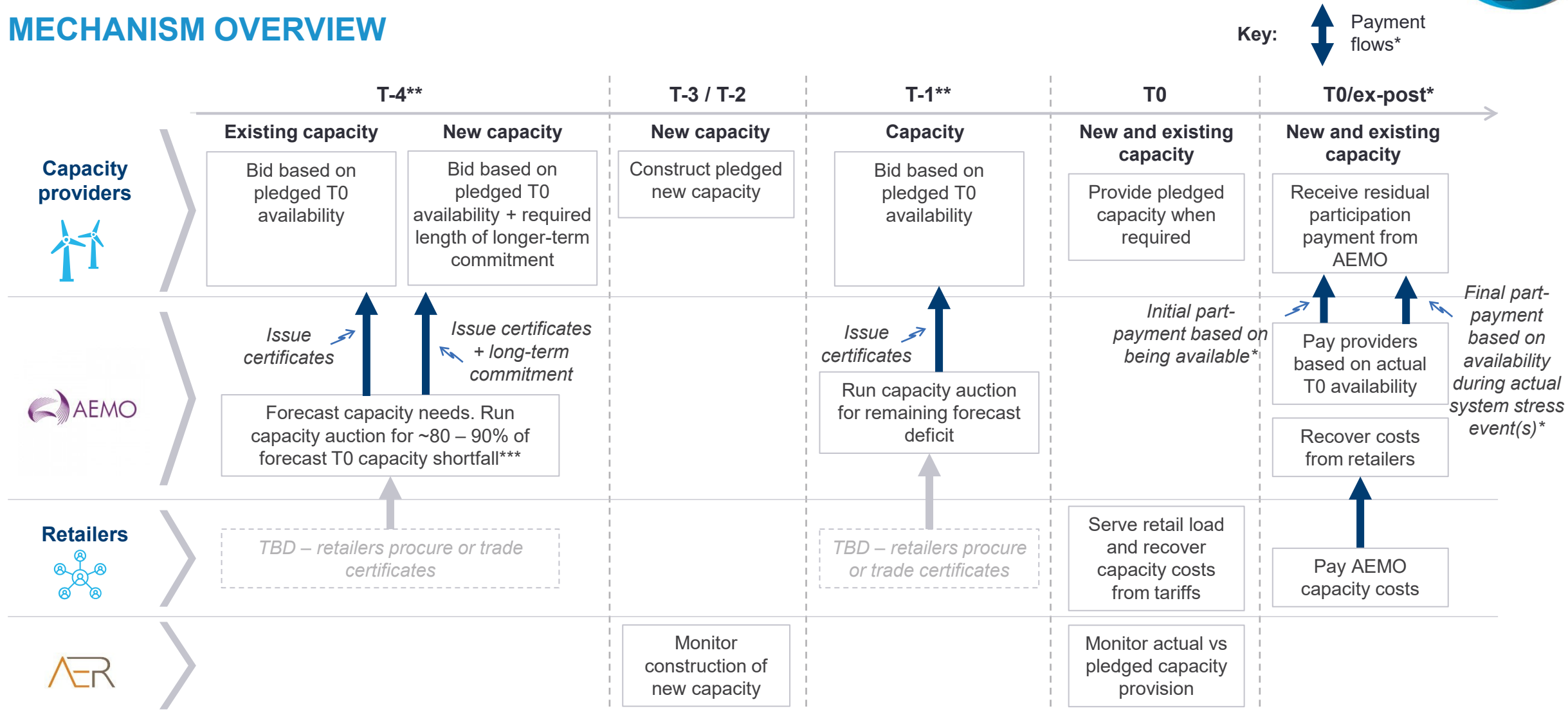
THANK YOU

APPENDIX

THE MECHANISM WILL BEGIN AT T-4 WITH AEMO PLAYING A CENTRALISED ROLE IN FORECASTING, PROCUREMENT AND ENFORCEMENT



MECHANISM OVERVIEW



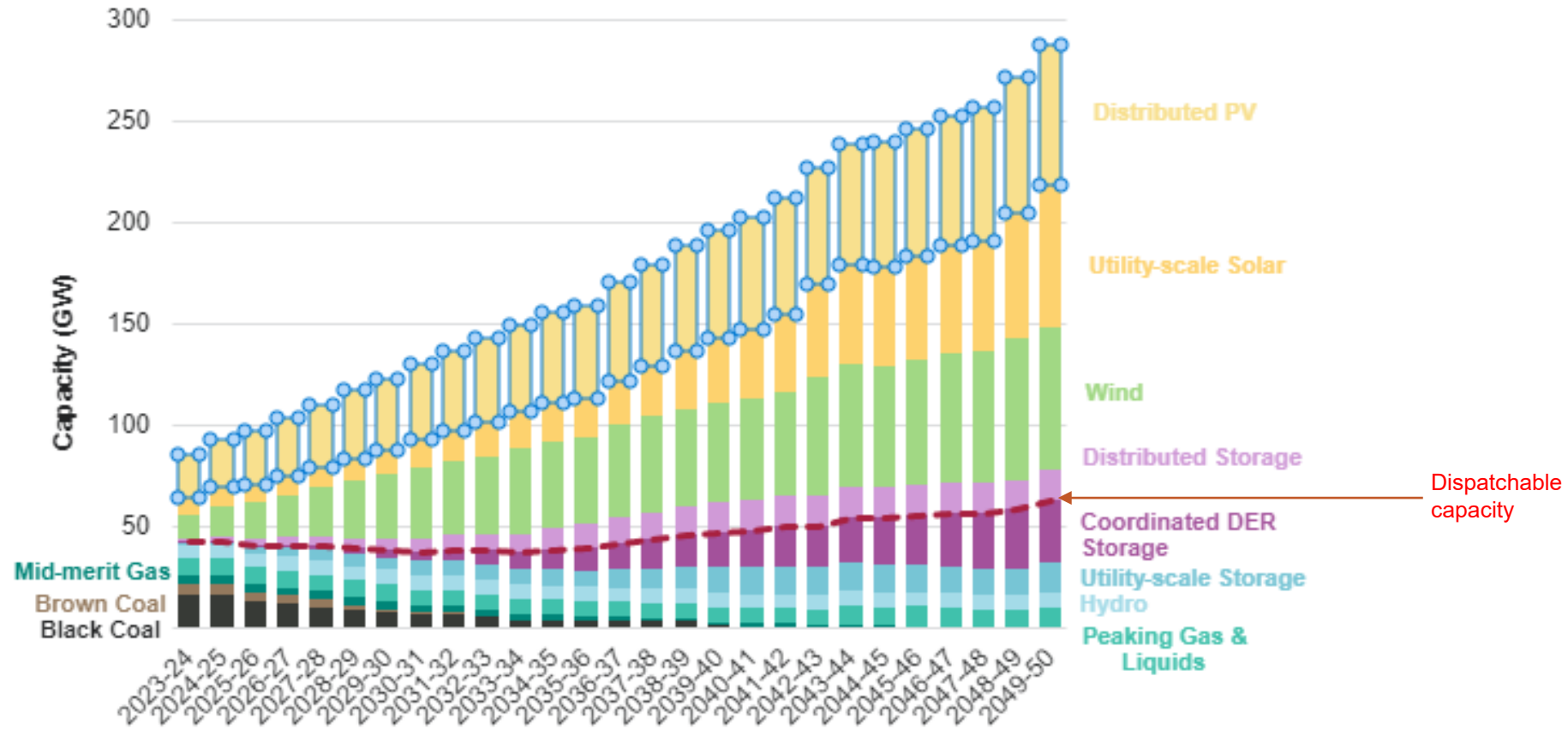
* Actual payment arrangements, including timing and nature of payments are yet to be finalised. Payment flows are shown here for illustrative purposes only

** Auction dates TBD. T-4 and T-1 used for illustrative purposes

*** T-4 forecasts would be adjusted for any long-term commitments made to new capacity providers. 80 – 90% used for illustrative purposes pending final design



ISP FORECAST NEM CAPACITY TO 2050, STEP CHANGE SCENARIO



Source: AEMO 2022 Integrated System Plan, page 9



Key issues

Proposed approach

Rationale

Who forecasts reliability gaps?

- AEMO to centrally forecast reliability gaps

- AEMO can consider **whole-of-system requirements** in its forecasting.
 - However, retailers may have better information about their own customer load. The ESB will explore options for **hybrid approaches** where AEMO can leverage retailers' information in a centralised approach.

Who forecasts capacity requirements and derates capacity?

- AEMO to centrally forecast capacity requirements and management of derating

- This **aligns with AEMO's existing forecasting role** and ensures that the capacity mechanism and the reliability outlook in the NEM Electricity Statement of Opportunities (ESOO) are aligned.
 - The capacity requirement could leverage the pre-existing ESOP process which incorporates stakeholder input and forecast accuracy reporting.
- De-rated capacity is an input to AEMO's reliability forecast

What at risk periods are used?

- Two options (for detailed design):**
1. *Discrete time periods, determined in advance by AEMO; or*
 2. *Based on forecast occurrences of a defined event (e.g. LOR)*

- Ideally, there should be alignment between how the 'at risk periods' are defined for the purposes of de-rating and how the actual compliance events are defined. A disconnect could result in a capacity provider's compliance being assessed on a different basis than what they've been certified.
- However, if compliance events are defined as event-based (as the ESB is proposing), then assessment would need a modelled forecast of when at risk periods would occur. This could be complex and opaque.
- As a result, there may be benefits from using the simpler approach (discrete time periods) despite the disconnect. The ESB will consider these trade-offs further.

'At-risk periods' vs 'compliance periods'

At-risk periods: The time periods which are used to de-rate capacity

Compliance periods: The time periods where the compliance obligation is assessed (see issue D)



Key issues

Should the mechanism only allow participation from new capacity or new and existing capacity?

Proposed approach

- Both new and existing capacity will be allowed to participate
- The mechanism should consider including additional support for new entrants (e.g. through long-term commitments)
- If existing capacity is not eligible other arrangements may be necessary to promote a smooth transition, such as OEMCs.

Rationale

- All resources that participate in the market contribute to reliability. Allowing both new and existing capacity to participate will **enable the mechanism to access and incentivise the most efficient mix of resources to meet reliability**.
 - This would enable all capacity options to be assessed on a technical basis, and the lowest cost options procured to best meet the forecast reliability needs of the system
 - Restricting eligibility to new capacity provides only one lever to manage reliability. However, in some cases, paying to retain or refurbish existing may be more efficient than incentivising a new entrant into the market. This could avoid over-building new capacity before it is needed.
 - Providing payments only to new capacity may give them a competitive advantage, potentially bringing forward closures of existing capacity.
- Participation of both new and existing capacity could allow **better coordination of entry and exit decisions** at lower overall cost.
 - Participation of existing capacity would also enable these capacity providers to obtain better visibility of their expected forward revenue, which could then inform retirement decisions.
- However, as outlined in the case for change, a key reason for introducing a capacity mechanism is to create more targeted incentives to guide investment in new capacity, in line with the needs of the system.
 - The ESB will therefore consider how **procurement** under the mechanism can overcome the specific challenges faced by new entrants, without overpaying existing capacity providers. This could include **longer-term support** for new capacity.

The purpose of a capacity mechanism is not to extend the lifespan of ageing coal generators. These generators face several structural challenges as the NEM transitions to a more renewable-based system, which a capacity mechanism would not, and cannot solve.



Key issues

Who purchases capacity?

How is capacity procured?

Proposed approach

- AEMO to play centralised role in purchasing capacity
- *Retailers may opt to directly procure resources to cover some or all their share of the capacity requirement*

- An initial auction several years in advance (e.g. T-4 or T-3)
- One or more supplementary or reconfiguration auctions closer to the delivery year (e.g. T-1)
- Capacity would be procured as an annual product related to a specific delivery year
- New capacity could be procured through a longer term product that relates to several delivery years
- *Options for retailer-led procurement will be considered further*

Rationale

- Centralised procurement of capacity provides a more **direct route to ensuring adequate resources are procured**
- Procurement by AEMO can **reduce capacity providers' counterparty risk**, regulatory burden and transaction costs, notably for smaller retailers
 - AEMO is also better placed to **offer long term contracts** to support the entry of new capacity, particularly compared to smaller retailers.
- Competitive auctions can deliver cost benefits (which could occur in either centralised or decentralised models), such as allowing for **transparent price discovery**
- However, decentralised procurement may also provide cost benefits, as retailers would have an incentive to seek out the lowest cost options and pursue **more innovative procurement solutions**.
 - The ESB proposes further exploring potential **hybrid options**.
- The **initial auction** would be held within the investment timeframe so it can bring on new capacity, if required. It would be configured to procure less than the entire forecast requirement, to mitigate against over-procurement if the forecast declines in subsequent years.
- The **supplementary auction(s)** would procure any remainder of the capacity requirement

The ESB is considering two hybrid methods:

- AEMO purchases all capacity certificates in the initial auction. Retailers would then purchase certificates from AEMO to cover their anticipated needs.
- Retailers could participate in the capacity auction as buyers, alongside AEMO.

In either option, AEMO would need to recover the costs of the capacity it procures from retailers, including any gap between AEMO's purchases and retailers'.



Key issues

What is the performance incentive for capacity providers?

Proposed approach

- Two part obligation to be available during the delivery year, as well as being bid-available during actual lack of reserve events (e.g. LOR2/LOR3)
- *Payment could also occur in two parts:*
 - *part could be tied to being available during the year,*
 - *part could be tied to performance during lack of reserve events (e.g. with part of the payment being withheld pending performance, or some or all of payment for the relevant period being forfeited in the case of non-performance)*

Rationale

- When compared with alternatives, this approach is **most likely to work with the existing energy market** and have the **smallest impact on other markets or contracts** used to manage risk.
 - e.g. it would leverage spot market signals for dispatch while creating an additional incentive for capacity providers to contribute at key times
- **Meets governments and consumers expectations of reliability**, as the obligation will encourage capacity providers to be available whenever a system stress event occurs, regardless of whether it is in an expected peak time or corresponds to high prices.
- Part payment linked to availability over the whole year gives generators greater revenue certainty and predictability.
 - Linking entire payment to being bid available during LOR events risks making revenues difficult to predict and penalising for non-delivery for reasons which may be out of generators' control.

The ESB is focusing on this compliance model for consultation, but is also considering two other conceptual models for a performance obligation based on:

- *expected availability during time-based performance windows as determined by AEMO*
- *de-rated physical capacity exposure to spot prices above a certain threshold that may be triggered at any time (such as Reliability Options)*



Key issues

How does AEMO recover capacity costs?

Proposed approach

- Retailers expected to recoup costs of the mechanism through retail tariffs

Rationale

- It would align with the current operation of the energy market and **ensure that costs are allocated in a timely way** to customers during the relevant period. It also allows for subsequent meter data revisions to be incorporated.
- Recovering costs from retailers can be incorporated into AEMO's settlements and prudential requirements and reduce the likelihood of cashflow issues for AEMO.
- Recovering costs from retailers using actual demand **incentivises retailers to use demand response** to reduce their load in critical periods.
- Non-competitive participants that are subject to revenue determinations (such as NSPs) should not be involved in competitive elements of the market, unless there are significant benefits.



Key issues

Can capacity in one region be used to meet requirements in another?

Proposed approach

Two options (for detailed design):

1. *Capacity can only participate in its own region's auction, but expected interconnector flows are accounted for when setting the capacity target*
2. *Capacity can participate in other regions' capacity auctions, subject to conditions*

Rationale

- The ESB supports Option 2 in principle, but notes that it adds considerable complexity to the overall design.
- Advantages of Option 2 include the ability to locate capacity resources in the best location from a whole of system perspective.
- Further considerations for Option 2 include:
 - How interconnector capacity limits during times of system stress are accounted for – two options are proposed (transfer rights and transfer limits approach)
 - Whether market interconnectors can participate in the capacity auction.