26 August 2022

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Triennial review of the effectiveness of the Wholesale Electricity Market 2022

The Australian Energy Council (the "**AEC**") welcomes the opportunity to make a submission to the Economic Regulation Authority ("**ERA**") on its Discussion Paper relating to the Triennial review of the effectiveness of the Wholesale Electricity Market 2022 ("**Discussion Paper**").[1]

The AEC is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. Our members collectively generate the overwhelming majority of electricity in Australia, sell gas and electricity to millions of homes and businesses, and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 percent emissions reduction target by 2035, and is part of the Australian Climate Roundtable promoting climate ambition.

The AEC commends the ERA for taking a proactive approach in producing the Discussion Paper on this important matter. The forward-looking nature of the triennial review is welcomed and the AEC supports these reviews continuing to be forward looking, especially during this period of market evolution and transition. The Discussion Paper addresses a range of issues that concern our members, such as:

- Will the WEM objective of reliable supply of electricity at the lowest sustainable cost to consumers be achieved in the future;
- Are there adequate price signals to drive investment in the 'right' type of technologies; and
- Will asset owners earn sufficient revenue to stay in the market.

This is an important topic in light of the energy transition underway in Western Australia. The current generation fleet in the Wholesale Electricity Market ("**WEM**") does not appear to match current requirements.[2] On top of this, the State Government has put forward a range of commitments and proposed policies that will transition the energy sector towards more intermittent and low-emissions capacity. These policies include:

- The State Government's economy-wide goal of net zero by 2050;

[1] See Triennial review of the effectiveness of the Wholesale Electricity Market 2022: Discussion paper
[2] See p26 and p27, Revenue Adequacy for Generators in the WEM

- Synergy's plans to close coal-fired power plants by 2030 and build no new natural gas-fired power plants after 2030, while investing in 800 MW of new wind generation and 4400 MWh of storage[3];
- Western Power's rollout of network connected batteries and standalone power systems; and
- Policies such as the Renewable Hydrogen Target that will require significant short-term investment in renewable projects.

The electricity sector needs to transition quickly because of these announcements. To facilitate this, adequate revenue must be available to keep existing generators in the market and incentivise new investment in intermittent and dispatchable generation to maintain future supply reliability. Failing to do so will have significant consequences, including:

- The WEM objectives may not be met;
- Increased prospects of unserved energy in some trading intervals due to inflexible plant not ramping up sufficiently to meet demand;
- Increased negative price events when renewable output is high and there is not enough battery storage to store the low value energy;
- Energy and ESS prices may increase when inflexible plant exits and it is not replaced with sufficient generation or flexible generation and battery storage;
- Market failure;
- Intervention by regulators; and
- The uncertainty in the market may impede the financing of projects and require investors to receive a higher rate of return.[4]

The AEC considered the issue of revenue sufficiency and investor signalling in 2021 and engaged Marsden Jacob Associates ("**MJA**") to prepare a report that assesses whether the WEM provides revenue adequacy for generators and to recommend measures to enhance revenue adequacy and minimise investor uncertainty.[5] The report was completed in early 2022 and, while the extent of revenue adequacy varies slightly to FTI Consulting due to the assumptions used, the conclusion is clear: most generation types do not and will not earn sufficient revenue, and investors are not incentivised to enter under the current market settings in the WEM.

The AEC will draw on the MJA report, the Discussion Paper, FTI Consulting's reports and member feedback to inform our submission.

What other investment support mechanisms might be needed to support investment in large-scale renewable generation and battery storage?

Technology based capacity price

Capacity markets, such as the WEM, face the challenge of more variable renewable generation entering the system and insufficient real time price signals to incentivise investment in dispatchable generation and storage. Given the lack of scarcity price signals, the WEM relies on the Reserve Capacity Market ("**RCM**") and the ESR Obligation Duration (quantity approach) to ensure dispatchable generation is available to meet demand at peak times. However, this approach has two key problems.

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[3] See Extract from Hansard 15 June 2022
[4] See p27 and p28, Revenue Adequacy for Generators in the WEM
[5] A copy of the report can be found here

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Firstly, the low reserve capacity price ("**RCP**") caused by the capacity price formula that was introduced on 1 October 2021 plus high levels of excess capacity does not incentivise the entry of new storage.

Battery storage will be a critical part of the future market. Modelling by MJA shows that current peak demand is about 4 hours, however by 2040 the period within the day at which peak demand is experienced will increase to 5 hours and, even now, peak demand can occur for up to 6 hours.[6] MJA explains that long duration battery storage will be required for reliability but:

> *"The ESR Obligation Duration, the Capacity Price formula and linear derating method does not provide an economic return for storage facilities exceeding 4 hours. The annualised capital cost of 4-hour storage facility is $159,000 per MW per annum, whereas the annualised capital cost for an 8-hour storage facility is $275,000 per MW per annum … [because of this] an 8-hour facility will not be economic. For example, even if the ESR Obligation Duration increases to 8 hours, the facility will only receive $159,000 per MW per annum on its nameplate capacity. Additional revenue from the Balancing Market will help to cover costs, but the increased penetration of storage in the WEM will likely reduce price spreads (i.e., price arbitrage benefits) post 2031. By this time, it is likely that the ESS market is saturated with storage facilities, which implies that storage facilities will earn no income from ESS markets."*[7]

Put simply, the current market settings in the WEM means that the RCP is not sufficient to incentivise investment in long duration battery storage.

The second problem, touched on by MJA and covered in the Discussion Paper, is that Essential System Service ("**ESS**") and energy market revenue is important for storage to be commercially viable but those revenue streams are expected to diminish quickly. The Discussion Paper lays out this challenge:

> *"The modelling demonstrates that the revenues from the ESS and balancing markets greatly decrease as more battery storage capacity enters the market. This indicates that the revenue opportunities from these markets are shallow, and the entry of a few competitors greatly affects expected forecast revenues. Importantly, ESS markets are a significant revenue source for batteries. However as more battery storage capacity enters the market, the revenue greatly diminishes."*[8]

This situation creates a dilemma. The facilities we will need in the future – those that can generate for longer periods for system reliability and to meet peak demand periods – are not able to cover their costs with the current RCP, and arbitrage and ESS revenue opportunities will significantly reduce as more dispatchable generation enters the market.

To address this, FTI Consulting propose a performance-based capacity price based on gross CONE.[9] This approach would allow dispatchable facilities to cover a substantial portion of their costs, incentivise them to enter the market and make them viable.

Long-term capacity contracts

Another option to consider for enhancing revenue adequacy is the provision of long-term capacity contracts for new entrant generation and storage facilities.

The current capacity pricing mechanism only provides annual prices two years ahead for generators. The RCP can be as low as zero at 30 per cent excess capacity, and 50 per cent of the benchmark reserve capacity price at 10 per cent excess capacity (which is the current level). This variability makes it difficult to

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[6] See p77, Revenue Adequacy for Generators in the WEM
[7] See p73, Revenue Adequacy for Generators in the WEM
[8] See p18, Triennial review of the effectiveness of the Wholesale Electricity Market 2022: Discussion paper
[9] See p147, Triennial review of the effectiveness of the Wholesale Electricity Market 2022: Discussion paper and see p12, Revenue Adequacy for Generators in the WEM

forecast future revenues and build an investment case for new projects, and means investors face higher finance costs and require elevated returns.

Market Participants seeking price certainty are able to nominate themselves to be a Fixed Price Facility during the certification process. Fixed Price Facility prices are pegged to the RCP of the first Reserve Capacity Cycle in which they make their capacity available and after that the RCP from the first cycle is increased by the Consumer Price Index for each subsequent cycle. Fixed Prices are valid for five years.

Given the likely variability in capacity prices resulting from the new capacity price formula introduced in the 2021-22 capacity year, it is unlikely that a 5-year fixed capacity price will be enough to underwrite investment in new flexible generation and storage in the WEM. For this reason, both MJA and FTI Consulting suggest that investors who are willing to invest in long lived generation and storage assets in the WEM should be able to lock in a price at or near the gross CONE for a minimum of 15 years. FTI Consulting notes that:

> *"Offering 15-year contract lengths provides significant benefits to the market, including securing a lower cost of capital that helps reduce the cost of securing required capacity in the WEM and helps reduce market concentration in the WEM."*[10]

There is a precedent for such longer-term contracts, with the UK Capacity Market offering 15-year contracts and the I-SEM in Ireland providing 10-year contracts.

Policy environment that promotes investor certainty

The WEM has experienced considerable reforms and changes over the last few years. There have been amendments to the Access Code, the WEM Rules have been entirely updated, market participants are readying themselves for the new market in October 2023, Energy Policy WA is now considering new market power mitigation measures and, more recently, the Market Advisory Committee has launched a review of the Reserve Capacity Market. These reforms are far-reaching, complex and, when combined, they erode investor confidence.

Constant and widespread policy changes create uncertainty for investors and concern about what else may be amended or implemented in the future. This is especially the case when some of these changes are progressed without advance warning or consultation. One recent example is the State Government's proposed Renewable Hydrogen Target that would require existing generators to effectively subsidise the entry of a competitor and add to their own investment risk by undermining revenue. The AEC understands that a hydrogen blending target is also being investigated by the Department of Jobs, Tourism, Science and Innovation and may require generators to purchase hydrogen certificates. And any potential new incentives for household batteries and/or electric vehicle charging could materially change energy demand profiles and commercial arrangements. Each of these policy changes in isolation have an impact on investor confidence. Together, the stream of reforms and changes undermine investor confidence and make it challenging for investors to establish business cases for their projects.

Some of the reforms also have real consequences for market participants and one way investor confidence could be assisted is by clarifying the role of networks in supplying new generation. For example, Oakley Greenwood pointed out that the changes to the Access Code incentivised Western Power to install a fleet of network connected batteries, creating an uneven playing field for investors.[11] The changes effectively provided Western Power with a first mover advantage, and has the potential to shift demand, limit the ESS market for other battery storage investors, and dent investor confidence in the storage market.

[10] See p147, Triennial review of the effectiveness of the Wholesale Electricity Market 2022: Discussion paper
[11] See Implications of network ownership of grid-side battery assets on competition in the Wholesale Electricity Market

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The AEC agrees with FTI Consulting that reducing uncertainty brought about by changing policies is crucial to encouraging new investment in the WEM.[12] In particular, any attempts to retrospectively adjust revenue streams or add new costs to generators will create sovereign risk, disincentivise investment and reduce revenue sufficiency.

Transmission and congestion

Some of the reforms undertaken by Energy Policy WA have focused on the introduction of constrained network access. Constrained network access could assist with ensuring existing transmission capacity is used before the grid needs to be expanded to accommodate new generation. While this is useful, significant upgrades of the SWIS will be required to handle the expected future investment in storage, solar and wind generation. For example, MJA's modelling forecast an additional 1100 MW of wind farms, 1000 MW of solar farms and 1150 MW of storage will be built by 2035.[13] This modelling was undertaken before it was announced that Synergy would close its coal plants and invest in 800 MW of new wind generation and 4400 MWh of storage, and prior to the State Government releasing plans for a Renewable Hydrogen Target that would promote the development of renewable projects.

A significant amount of transmission investment is needed to accommodate new projects and relieve network constraints. Despite this, the Whole of System Plan released in 2020 proposed negligible amounts of new transmission – largely because of the assumptions used in the modelling – and, as a result, Western Power has not identified any major transmission upgrades. This is in stark contrast to AEMO's Integrated System Plan developed for the National Electricity Market which identifies 10,000 km of new transmission over the next 20 years.[14]

Transmission planning and construction is a lengthy process. The State Government recently announced a plan to assess electricity demand to inform the future network.[15] That is a useful starting point and further comprehensive planning will need to be undertaken in consultation with stakeholders to ensure that the SWIS can accommodate all the forecast projects at the right time. Requiring investors to finance transmission on behalf of Western Power will further reduce revenue adequacy for generators and failing to address network constraints will create investment uncertainty and project delays. Most significantly, a lack of transmission planning threatens the WEM objective of providing a reliable supply of electricity at the lowest sustainable cost to consumers.

The AEC supports MJA's recommendation that:

> *"Western Power's transmission planning process needs to be reviewed and consideration given to significant network upgrades to support the creation of REZ's in North Country, East Country, and the Muja region to facilitate efficient grid connection and decrease the risk of congestion that reduces generator earnings.*
>
> *Given that regulatory investment tests for major transmission upgrades have not been conducted for almost a decade, a review of the current approval process for large transmission projects is also recommended."*[16]

[12] See p148, Triennial review of the effectiveness of the Wholesale Electricity Market 2022: Discussion paper
[13] See p87, Revenue Adequacy for Generators in the WEM
[14] See p12, 2022 Integrated System Plan
[15] See Assessment of electricity demand to inform WA's future network
[16] See p14, Revenue Adequacy for Generators in the WEM

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Conclusion

The AEC sincerely appreciates the ERA undertaking a review of revenue sufficiency for generators in the WEM. This is a major issue confronting the market and the AEC encourages the ERA to consider the above recommendations.

Any questions about our submission should be addressed to Graham Pearson, Western Australia Policy Adviser by email to graham.pearson@energycouncil.com.au or by telephone on 0466 631 776.

Yours sincerely,

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