VIC
Ground Floor 109 Burwood Road
Hawthorn VIC 3122
PO Box 6074 Hawthorn VIC 3122

PROGRESSIVE GREEN T/AS FLOW POWER ABN 27 130 175 343

9 June 2021

Dr. Kerry Schott
Chairperson
info@esb.org.au

Dear Dr. Schott,

Re: Post 2025 Market Design Options Paper – April 2021

Flow Power welcomes the opportunity to make a submission in response to the Energy Security Board's April options paper for post-2025.

Flow Power is an electricity retailer that works with business customers throughout the NEM. Our vision is to redefine how customers manage energy, putting them at the centre of the market and accelerating Australia's progression towards a net-zero future.

We empower our customers to take control of their energy usage, lower their bills and reduce their carbon footprint. We provide customers with:

- Transparent retail tariffs that reward demand flexibility and encourage electricity usage at times of plentiful renewable output.
- Hardware solutions that provide greater visibility and control over energy use.
- Access to renewable energy, either through distributed solar and storage installed on site, or through a virtual generation agreement with utility-scale wind and solar farms.

Our retail model is built around supporting the energy market transition and has been selected by leading Australian corporates and government organisations to best deliver on their renewable energy ambitions. We believe that by equipping customers with these tools, we can lower costs for all energy users and support the transition to a net-zero carbon future.

Overview

The key points we would like to make regarding the ESB's options paper are:

- **The Energy Security Board has progressed two areas of important change: essential system services and integrating demand flexibility**. These are two aspects of the energy transition that have been under-explored. As the generation mix becomes increasingly

NSW
Suite 2, Level 3
18-20 York Street
Sydney NSW 2000

ACT
Suite 2 Level 2
1 Farrell Place
Canberra ACT 2601

SA
Level 24 Westpac House
91 King William Street
Adelaide SA 5000

QLD
Level 19
10 Eagle Street
Brisbane QLD 4000

P 1300 08 06 08
E go@flowpower.com.au
W flowpower.com.au

decentralised and inverter-based, substantial work will need to be undertaken to maintain system security and effectively integrate decentralised resources.

- **The ESB should not seek endorsement of recommendations that have not been thoroughly assessed**. Our submission highlights a range of issues, particularly with proposed expansions of the physical retailer reliability obligation (PRRO) proposal that have not been considered or consulted on. Before the ESB forms recommendations, it is critical that the ESB spends more time considering the full range of potential risks and costs to consumers posed by these proposals. The ESB should only seek endorsement from Energy Ministers on recommendations that have been thoroughly detailed and subject to full assessments of costs and benefits. The AEMC should be tasked with carrying on any work in considering whether the regulatory framework remains fit-for-purpose.
- **Regulatory stability has been undervalued**. The post-2025 reform process has placed consistent emphasis on the importance of broad regulatory change to accompany shifts in technology types and the generation mix. While it has often been taken as a starting proposition, in many cases significant regulatory change undermines the ability for market participants and consumers to adopt and utilise new technologies and integrate them into the market. Starting with clear problem statements that have broad acceptance, as shown with the work on essential system services, provides stakeholders with greater confidence in the process of making change.

Regarding the workstreams, our high-level views are:

Resource adequacy and aging thermal generation:

- We are strongly opposed to the ESB's proposals to expand the RRO or to introduce a decentralised capacity market (through the physical RRO). These proposals risk hard-fought gains in retail competition and innovation and will significantly add to consumer bills.
- We support the principles for integrating the various jurisdictional schemes. These principles would help reduce distortion and support the role for existing contract markets.
- We remain concerned that the proposed contracts for maintaining the operation of coal-fired power stations will harm future investments. The sudden retirement of thermal generators should ideally be managed through existing mechanisms such as the Reliability and Emergency Reserve Trader. If the ESB is going to provide tools to prolong the operation of thermal generation assets, they should remain cognisant of the risk that this mechanism could undermine new investment.
- The operating reserve proposals offer value in discussion regarding resource adequacy. While the ESB has focussed on the role for an operating reserve in providing essential system services, it should be considered under the resource adequacy mechanisms workstream as an option for increasing certainty of resource adequacy and supporting the development of new resources such as demand flexibility.

Distributed energy resources and demand flexibility:

- We support the ESB's exploration of the role for distributed energy resources and demand flexibility in the future NEM. We think both will play a key role in improving outcomes for energy consumers.
- The maturity plan could provide a new method for consulting and achieving coordination on challenging issues. However, it may also add to the currently unclear governance, and add new regulatory processes that require more resources.

- We support proposals from the ESB to increase the cost-reflectivity of network tariffs and exploring greater roles for the demand side in the wholesale market through ‘scheduled light’.

Essential system services:

- We support introducing competitive markets for essential system services. This will best prepare the NEM for the withdrawal of assets; providing system security services by driving new entry to replace retirements.
- We also encourage the ESB and AEMC to continue explore the role for distributed providers engaging in these markets.
- We support expeditious resolution of system strength and inertia shortfalls that are most frequently causing AEMO to intervene. However, this should only be taken as a transitory step towards competitive markets.

Transmission access reform:

- Flow Power supports the development of transmission infrastructure necessary to allow new supply into the market. We consider the long lead times on developing new transmission projects to be one of the most significant challenges for developing new supply.
- We are also supportive of the ESB’s attempts to increase the national consistency between renewable energy zones being developed in different jurisdictions. This would improve the ability for market participants to make investment decisions across the NEM.
- We are do not consider there has been a strong case made for the need for medium term access reform and remain opposed to the long-term proposal to introduce locational marginal prices and financial transmission rights.

We have provided more detailed comments on various aspects of the options paper below and provided a longer discussion on the proposals considering expanding the retailer reliability obligation as an appendix.

Resource adequacy mechanisms and thermal generator retirement

Managing the balance of supply and demand will remain a central challenge in the energy transition. We will need to develop new supply, demand flexibility and energy storage to fill the gaps as thermal generation retires and do so in a way that meets energy consumers expectations of reasonable prices and service levels. Growing willingness from the Federal and State governments to intervene in the market, or set out their own broad energy policies, only adds to the challenge.

Despite the magnitude of this challenge, the ESB has provided no clear evidence of why the current regulatory framework is not fit for purpose. The ESB has not adequately demonstrated how its proposed solutions to resource adequacy improve outcomes for consumers. The ESB has even noted that the reforms it is considering could lead to:[1]

- imposing bigger regulatory burdens
- overcompensation of existing thermal generation assets
- reducing the liquidity of contract markets
- eroding competition on retail and wholesale markets.

We acknowledge the ESB is under significant pressure and is developing policy in an extremely complex environment. Ultimately though, the ESB must make recommendations where it is sure these recommendations are in the long-term interests of energy consumers. Expanding the RRO risks undermining competition in the NEM, increasing costs for consumers, and disrupting the transition to a net-zero power system.

Regarding this workstream:

- We do not support an expansion of the retailer reliability obligation or the introduction of a physical retailer reliability obligation.
- We are supportive of the ESB's intention to improve the transparency and national consistency of jurisdictional underwriting schemes.
- An operating reserve analogous to the model proposed in Infigen's rule change request would support resource adequacy and should be properly considered in this workstream.
- The retirement of thermal generators should be managed through existing mechanisms such as the Reliability and Emergency Reserve Trader. If the ESB is going to provide governments with the option to prolong the operation of thermal generation assets, they should highlight the risks of undermining new investment.

We have provided a longer exploration of our concerns with the proposed expansion of the retailer reliability obligation in an appendix.

Integrating jurisdictional schemes

We support the ESB's proposals to integrate the various jurisdictional schemes with the existing NEM market mechanisms.

The principles set out by the ESB are sensible. Where governments are looking to support generation entering the market, they should be looking to maintain exposure to the wholesale market price signals and should look to maximise the contracting between underwritten generation and other

[1] Energy Security Board, *Options Paper – Part A,* p. 36.

market participants. This would help to maintain contract market liquidity and reduce the exposure of energy consumers or taxpayers.

In addition, governments should be transparent and offer foresight regarding plans to invest or underwrite resources in the market. This would help other market participants in making their own investment decisions, as well as increasing the competitiveness of government tendering processes. Aside from the beneficiaries, recent instances of government intervention have unquestionably impacted the confidence of industry in making investment decisions for new generation and firming assets in the NEM.

Changes to the retailer reliability obligation

We are strongly opposed to the ESB introducing changes to the retailer reliability obligation. The ESB has suggested that expanding the retailer reliability obligation could improve the entry and exit of supply in the NEM. We do not agree with the ESB's suggestions, and think the actual outcomes of expanding the RRO would be to:

- Add significant new costs that would be borne by energy consumers.
- Favour large gentailers over other retailers, leading to reduce competition and innovation.
- Unnecessarily delay the retirement of aging thermal generators, delaying the transition to a clean power system.
- Introduce new sources of uncertainty, undermining investment cases.
- Have a significant lead time to introduce, in the range of five years.

In addition to this, the ESB has failed to clearly set out a problem statement and has failed to explore the range of detailed design questions associated with these proposals.

We have provided expanded feedback on the physical RRO in an appendix to this submission.

Thermal generator retirement

We are concerned that the proposed contracts for maintaining the operation of coal-fired power stations will harm future investments. The retirement of thermal generators is captured by the notice of closure requirements, providing the rest of the market with forewarning of when a large generator will leave. Any arising security or reliability shortfalls should ideally be managed through existing mechanisms, such as the Reliability and Emergency Reserve Trader

While there are challenges associated with the retirement of thermal generators, there are processes in place to manage these risks. The notice of closure requirements obligates generators to notify the market of their intentions to retire, and mechanisms like the RERT are in place to manage reliability risks.

If the ESB is going to provide tools to prolong the operation of thermal generation assets, they should remain cognisant of the risks that this mechanism could undermine new investment.

The proposed contracts to maintain the operation of thermal generators beyond slated retirement dates present some new risks. Firstly, there is the moral hazard risks introduced by potentially incentivising generators to artificially accelerate retirement dates to access underwriting contracts. Secondly, these contracts could add risks to new projects looking to enter the market and fill the gaps left by retiring generators. The potential for keeping a generator online past its retirement date could suppress wholesale prices, undermining the investment case for any replacement capacity.

The ESB should take steps to minimise these impacts, including by providing the market with as much forewarning of when these contracts might be exercised.

Operating reserve

The operating reserves proposal should have been considered more thoroughly in the resource adequacy stream. An operating reserve that sits out-of-market and provides greater certainty to AEMO and government that reliability shortfalls can be addressed, appears to meet several the objectives of the resource adequacy workstream. It would strengthen incentives for new dispatchable capacity, support demand response and does not have the substantial adverse impacts associated with expanding the RRO. Flow Power encourages the ESB to include an operating reserve in its assessment of resource adequacy mechanism options.

Integration of distributed energy resources and demand side participation

As a service provider, we work with our customers to integrate demand flexibility and distributed energy resources into their operations. As a retailer, we pass through incentives to our customers to encourage them utilise their demand flexibility to use electricity at times of low prices and high renewable output. This improves outcomes for our customers and improves market wide outcomes by moving load out of peak periods into otherwise low demand periods, improving reliability and integrating grid-scale renewables.

Demand flexibility is an umbrella term for a highly varied range of services the demand side can provide, all of which will play key roles in supporting the transition to a net-zero power system. Demand flexibility includes:

- Rapid short-term changes, usually in response to frequency deviations or sudden price spikes, which are generally automated.
- Demand reductions for at least 30 mins and up to many hours. Usually used to avoid prolonged high prices or when participating in the Reliability and Emergency Reserve Trader.
- Dynamic load-shifting based on the expected price profile for a day or week. This might involve changing operational patterns to avoid high prices and to take advantage of low prices.
- Behavioural or long-term change can mean reorganising processes to take advantage of longer-term price trends. For example, maximising day time load to coincide with on-site solar or low wholesale prices.
- Energy efficiency means reducing the energy needed to run existing processes.

These facets of demand flexibility provide valued services and reduce the overall strain on the power system. Complexity often arising because energy consumers do not necessarily fall into specific buckets – the demand flexibility they provide will be highly dependent on numerous variables. However, some consistent elements to unlocking demand flexibility across the board include:

- Engaging with consumers. Direct engagement with customers is a precursor to any meaningful demand flexibility.
- Providing customers with choice. Energy customers engaged in providing demand flexibility need to be provided with choice regarding how, when and if they participate.

- Delivering value. Energy consumers need to be able to understand and access the value of demand flexibility. Without the appropriate incentives in place, consumers will not provide demand flexibility.

We are highly supportive of the ESB's emphasis on the role for demand flexibility. As we have shown, when done well it can be a no regrets approach for consumers and for the whole power system. We support the ESB's approach to not introduce major regulatory changes to facilitate more flexible demand, but instead to focus on more incremental improvements to the framework.

Set out below, we have provided our views on:

- the maturity plan
- scheduled light
- tariff reform
- interactions with other reforms in the 2025 work program.

Evolving frameworks through a maturity plan

The ESB's maturity plan proposes to resolve specific distributed energy resources related issues in short-term sprints. This could provide an effective framework for progressing some areas of regulatory reform where regulators are struggling to find a way forward.

However, the introduction of the maturity plan appears to add additional governance and bureaucracy into energy reform. There have been numerous forums used to explore distributed energy resources related issues, including ARENA's distributed energy integration program, that have demonstrated how difficult it can be to build consensus on issues relating to energy equity, particularly through "sprints".

Flow Power is participating in the current trial run of the maturity plan. If participants find the process to be successful, it may prove to be a successful ongoing approach for distributed energy resources policy development.

If it is not considered to be successful, the resources could instead be diverted into the ECA/AEMC with emphasis provided on supporting specific stakeholder groups working in the distributed energy resources space that feel unable to engage within the existing frameworks, particularly those with limited resources.

Scheduled light

There are benefits of having greater visibility and understanding of how the demand side will respond to market conditions. Understanding the likely demand and the variability of that demand will increase efficiency in the system, improve reliability forecasts and likely lead to reduced costs for consumers. For example, demand response is not currently accounted for in pre-dispatch forecasts and in clearing the wholesale market.

The challenge will be determining the time or materiality at which more transparent participation should be sought, and what this looks like. We support the consideration of scheduled light and suggest there will also need to be some trial and error in determining the best methods for integrating more demand side participation.

The principles listed by the ESB for guiding the development of scheduled light are appropriate. Of the two models considered for scheduled light, we think the visibility model is most likely to be adopted by consumers. This model is best suited to demand flexibility derived from price exposure,

or that voluntarily responds. The challenge will be making it compelling for retailers and aggregators to participate.

The benefits of scheduled light apply to resources that are not easy to centrally forecast by AEMO. These resources that are difficult to centrally forecast are those that are most likely to respond to variations in wholesale prices. Therefore, when considering a visibility model, a completely accurate forecast of consumption submitted at the start of the day could become invalidated following a change in market conditions. Therefore, the visibility model should seek to incorporate the feedback loop between forecast consumption and variable price forecasts, especially if it is the accuracy of consumption forecasts that are used to derive the participation incentives i.e., reduced FCAS costs.

The dispatchability model appears better suited to resources under direct control. These resources will typically have some telemetry and communications equipment that would interface with an aggregator.

The incentives the ESB has suggested in aggregate would likely encourage participation from demand side resources. However, we note that some of these incentives would likely require NEL changes to implement, which would delay any implementation.

Tariff and regulatory changes

We support the ESB exploring different approaches to tariff design. In a two-sided market, characterised with greater levels of demand flexibility, cost-reflective price signals from across the entire supply chain will be key. We pass price signals from the wholesale market to our customers, which encourages them to use more energy in periods of high renewable output and low prices. Greater cost-reflectivity in network tariffs, including at times of high distributed solar output, should reward customers for using electricity at times where the network is not under strain, and ultimately it should lead to more efficient utilisation of the network and reduced network costs for consumers.

Market-based solutions generally lead to better outcomes for consumers when compared to centralised control. There has been a trend toward introducing standards and centralised control of distributed energy resources to maintain system security and distribution network service levels. This has overlooked the role of competitive forces to find the most efficient way to better integrate solar into the network. For example, instead of a command-and-control approach or hard export limits, the massive growth of distributed PV could be better utilised by shifting consumer load into the middle of the day, and by incentivising customers to ramp down solar in instances where it may be adversely impacting network voltages. Noting the challenges faced by expanding cost-reflective tariffs, there are significant benefits available in increasing the price signal from networks.

We welcome further exploration of portfolio level tariffs. This could reward retailers for developing portfolio wide responses to network challenges and incorporating assets like community batteries to reduce network costs.

Interaction with other reforms in 2025 work program

This demand-side workstream is highly consumer-centric and seeks to engage the demand-side to support the energy transition. This will be a central tenet of transforming the power system without imposing risks and costs on consumers.

Despite the focus on the demand-side in this workstream, there is an over-emphasis on supply side solutions in the other ESB workstreams. For example, while demand flexibility is very well suited to providing resource adequacy, the solutions focussed on expanding the RRO are likely to have a detrimental effect on demand-side outcomes. The ESB suggested a physical RRO could operate by having AEMO assessing different types of plant to determine a quantity of physical certificates. This

is highly unlikely to be an approach that is well suited to assessing the resource adequacy value of a distributed fleet of resources providing a probabilistic response to wholesale prices.

We would encourage the ESB to acknowledge the risks of undermining the progress of demand-side initiatives by implementing a physical RRO, and factor this into its assessment framework.

Essential system services

The provision of essential system services is a clear gap in the current regulatory framework. Ensuring system voltage and frequency are kept within acceptable bounds will require new approaches and markets as the thermal generation fleet retire.

In general, we support the moving to competitive markets wherever possible. This will best prepare the NEM for the withdrawal of assets providing system security services by driving new entry to replace retirements. We have seen significant investment in response to FCAS markets, with storage and demand response now dominant players in these markets.

We also encourage the ESB and AEMC to continue exploring the role for distributed providers engaging in these markets. Certain essential system services can be effectively provided from a portfolio of distribution network connected resources, such as frequency response. When establishing frameworks for essential system services, the program specifications should allow distributed providers to compete on an equal playing field.

Regarding the more immediate system security issues, we support expeditious resolution of system strength and inertia shortfalls that are most frequently causing AEMO to intervene. While more efficient procurement mechanisms for these services may be desirable, they come with significant complexity, likely significant implementation costs and timeframes, and are not assured to be viable. As such, it may be more appropriate to address the immediate concerns through network investment contracting, as has been the approach used in South Australia to manage inertia and system strength. However, this should only be taken as a transitory step towards competitive markets.

Transmission access reform

As Australia decarbonises, the NEM will need to become a power system characterised by renewable generation, a dynamic demand side and firming technologies. While we have observed a strong appetite for continued investment in these resources, significant upgrades to the network will likely be needed to facilitate and support this transition.

There are significant challenges with transmission infrastructure needed to facilitate the growth of renewable energy. However, we are not convinced that the proposed transmission access reforms are the appropriate solution to the most pressing issues relating to the coordination of transmission and generation assets. Further, we are particularly concerned with the implications associated with adjusting existing contracts to account for dynamic regional pricing, and the potential reduction in contract market liquidity. Flow Power has signed agreements with 12 solar and wind farms around the NEM, so the impact on our business would be significant.

Therefore, we are do not consider there has been a strong case made for the need for medium term access reform and remain opposed to the proposed long-term need to introduce locational marginal prices and financial transmission rights.

Interim renewable energy zones

Flow Power supports the development of transmission infrastructure necessary to allow new supply into the market. We consider the long lead times on developing new transmission projects to be one of the most significant challenges for developing new supply.

We are also supportive of the ESB's attempts to increase the national consistency between renewable energy zones being developed in different jurisdictions. This would improve the ability for market participants to make investment decisions across the NEM.

Medium term options

Congestion Management Model

While we welcome the ESB's decision to not progress LMPs and FTRs in the short-term, we remain unconvinced about the need to introduce a medium-term option for addressing congestion on the transmission network, or specifically within REZs, and do not support these measures being characterised as stepping stones to an LMP/FTR framework.

It is unclear to us what benefits a congestion management model would provide. The CMM seems mostly intended to improve bidding outcomes. If this is the case, it is hard to see how a CMM would improve outcomes on the transmission network and address the more pressing challenges of having more transmission investment progressed.

In addition, these medium-term proposals continue to introduce regulatory uncertainty impacting long-term contracting. Trying to account for unclear, significant future regulatory change or change in law impacts the ability for counterparties to enter long-term offtakes. It is time consuming, costly, and very difficult to anticipate all the potential outcomes of a COGATI reform and then must allocate the risks of those potential outcomes on either party.

As noted by the ESB, more complicated outcomes will arise on more complex network arrangements. This suggests further work is required to fully understand the impact of CMM and so the relative merits of introducing the CMM compared to the status quo. The extent of these complications exists, they also potentially going to result in the problems with COGATI that industry have consistently raised. As such, Flow Power does not support the implementation of a congestion management model.

For the same reasons, we do not support applying a CMM specifically within REZs. Having separate access frameworks for generators connected within a REZ compared to those on the broader transmission network risks introducing significant complexities at the intersection between those areas of the network. This could lead to unintended consequences for generators seeking to connect to the network and deciding between REZs and the broader network.

Locational signal

There are existing locational signals that factor heavily in the decisions made by investors. The risks of congestion and MLF degradation had large impacts on some investors and consequentially are subject to much more rigorous assessment prior to investment. We do not think there is a clear need to introduce new locational signals for generation investment.

Of the options proposed for locational signals, we are most supportive of introducing locational connection charges. A single charge upfront for connecting generators, that is transparently determined would best allow connecting parties to factor this into their investment decisions.

In conclusion

We support the work the ESB has done to date on essential system services and demand flexibility; however, we do not support progressing the medium- and long-term changes to transmission access reform, and do not support expanding the RRO. The ESB should only seek endorsement from Energy Ministers on recommendations that have been thoroughly detailed and subject to full assessments of costs and benefits. The AEMC should be tasked with carrying on any work in considering whether the regulatory framework remains fit-for-purpose.

If you have any queries about this submission, please contact me on (02) 9161 9068 or at Declan.Kelly@flowpower.com.au.

Yours sincerely,

Declan Kelly

Regulatory Policy Manager

Flow Power

Appendix - The introduction of a physical RRO is unwarranted and will cost energy consumers

The Energy Security Board (ESB) is proposing to introduce a new obligation for retailers to buy and surrender physical generation certificates, effectively forcing retailers to pay revenue to dispatchable generators, the majority of which are fossil-fuelled powered.

The proposed scheme is referred to as a physical retailer reliability obligation, detailed in the ESB's options paper. The ESB argues the scheme would address reliability concerns, despite providing no evidence to suggest there is a pressing concern regarding reliability, and why resource adequacy cannot be met through the influx of renewables, storage, and demand flexibility.

In practice, this proposal will result in energy consumers subsidising ageing thermal generators, prolonging their asset life beyond their efficient commercial lifetime. The negative effects of this proposal are expected to fall most heavily on small retailers, harming innovation and slowing the growth of demand flexibility. Further, this proposal is likely to add significant new uncertainty to business cases for new dispatchable capacity, undermining new investment in storage needed to complement renewables. Not only will this be costly for energy consumers, but it will make meeting state environmental targets more difficult and costly and detract from long-term climate ambitions in Australia.

Instead, the key challenges presented by the transition to a low carbon power system can be addressed through several processes already in place or underway. The ESB and AEMC are exploring and designing new markets for essential system services, such as system strength and inertia, which will be required as thermal generators retire. This will reward new technologies like batteries, which are able to provide fast frequency response and other valuable services.

Summary

The rest of this appendix is set out as follows:

- Introduction
- The current reliability framework
- The ESB's options
- Our concerns with these proposals
- A better way forward

Introduction

The National Electricity Market (NEM) is a complex web of engineering, economics and regulation that is meant to keep the lights on, and the costs down. As the power system decarbonises and decentralises, the question is rightly being asked: does the framework for resource adequacy still work? This is a question the Energy Security Board is asking in its post-2025 market design review.

A lot is at stake. If the framework is insufficient, it can have chaotic impacts on the system, and can lead to the market operator using emergency resources to manage the system. Alternatively, a poor regulatory approach risks overbuilding, over-prescription and market concentration. Due to the long lifetimes for investments in energy, introducing poorly considered changes to the regulatory framework risks long lasting ramifications for energy consumers.

The current reliability framework

What do we mean by resource adequacy?

A “reliable power system” has enough generation, demand-side, and network capacity to supply customers with the energy that they demand with a very high degree of confidence. This requires several elements: efficient investment, retirement, and operational decisions by market participants (on both the supply and demand side) resulting in an adequate supply of dispatchable capacity, reliable transmission and distribution networks, and a secure system.

This extends beyond the wholesale market to networks. In addition to having enough supply to meet demand, there should be enough network to connect both sides of the market. This focus of this submission is on the bulk system challenges.

Power system reliability is a system property. No single market participant is responsible for managing overall reliability, but by having generators and retailers responding to the market-based incentives, the overall reliability of the power system is supported.

What are ‘resources’, and where do they come from?

If we are exploring resource adequacy, it is key to explore what these resources are and where they come from. Resources is a deliberately broad term; it can refer to any of the following:

- An aging coal fired power station
- A wind farm
- A battery
- A consumer that adjusts their energy use at high prices
- A device in a smart home that only runs in low prices.

Clearly, these resources have varying degrees of capability in maintaining supply and demand. A wind farm’s output is limited to times when the wind is blowing, a coal-fired power station is at risk of unit failure, a battery has a limited duration and a consumer’s desire to change consumption depends entirely on what they are using that energy for. It is the combination of the above alongside many more resources that collectively provide for resource adequacy. The optimal set of these resources is constantly in flux as technology and resource costs change.

Looking at the list, it is also apparent that the drivers for new resources is equally diverse. These drivers can range from purely commercial, to more value driven decisions such as being environmentally conscious or “taking charge”.

At the utility scale, there is a massive amount of money riding on any single project. As such, most projects have a long lead time with financing being a key step. Building a new thermal generator will look to long term offtake agreements, and the swap and cap market to project revenues, and potentially vertically integrate with a retailer. In this case, price certainty is derived for the supply and demand side of the market hedging fluctuations in the energy price. A large renewable project goes through a similar process but are financed by a combination of revenue certainty from the sale of energy and Large-scale Generation Certificates. The long-term contracts giving financial certainty to renewable projects have increasingly been sold to corporates making climate commitments, giving these corporates some price certainty but also demonstrating a commitment to their ESG goals.

Right at the other end of the scale, a consumer may become a smarter user of energy because they have been enabled by a smart home kit or have moved to a retail plan that rewards them for using energy outside of peak periods.

Overlaying all of this is the role for government policy. Governments have played a particularly significant role in providing certainty to new renewable projects through the LRET, and through more direct financing.

This is all to say that the concept of managing resource adequacy is complex. We must consider an increasingly broad range of resources entering the market for an increasingly diverse range of reasons. This level of complexity is part of the attraction for market-based solutions.

As the ESB explores more administrative approaches to providing for reliability (i.e., centralised, or decentralised capacity markets), it will encounter the challenge of trying to define nebulous concepts such as ‘firmness’ of different resources. In practice, firmness can be provided by a range of resources with very different characteristics, including generation, demand response and distributed energy resources. The firmness of these resources varies with resource availability, production schedules, contract market positions etc. There is a risk in prescribing a level of firmness or capacity that oversimplifies the differences between these types of resources and favours a particular approach. This introduces an uneven playing field between different resource types. In addition, this introduces significant administrative and compliance burdens on market participants. Instead, it should be left to the market to determine the value of different types of firm resources and appropriately use them. These market driven efficiencies are exactly what we are putting at risk by expanding the RRO.

Incentives in the existing framework

The NEM already has a comprehensive set of mechanisms to manage reliability through strong market incentives and a combination of safety nets. The market incentives relate to the wholesale price for electricity and the associated contract market, and the safety nets include the current RRO and the Reliability and Emergency Reserve Trader (RERT). The combination of a market-based approach with safety nets should provide confidence that the lights will stay on, and consumers will benefit from efficient investment.

In addition to the comprehensive existing frameworks, there is no evidence these frameworks do not work. The best current forecasts from AEMO suggest we will achieve our reliability targets.

Market incentives

Wholesale market

The National Electricity Market uses a single price signal to incentivise efficient long- and short-term decisions. The wholesale electricity price generally hovers between $20/MWh and $100/MWh. However, it can go as high as $15,000/MWh and as low as -$1,000/MWh. This is due to the

importance of keeping supply and demand always balanced (a requirement for a functioning power system). The potential for extremely high, or negative prices, encourage rapid changes in supply and demand when needed.

This potential for extreme volatility also encourages generators and customers (i.e., energy retailers) to find ways to manage this risk. Generators and retailers have typically done so through a combination of:

1. Buying and selling derivatives. Generators will often sell price hedges to retailers. This gives both parties greater price certainty. It can also be used by generators to provide certainty for project financing.
2. Vertical integration. Instead of hedging risks through financial derivatives, retailers can purchase generation assets to physically hedge price risk.
3. Risk sharing with customers. Other retailers pass risk through to customers and allow the customers to manage this risks through either changing consumption or investing directly in assets like solar and battery storage.

Retailers have historically engaged in the first and second methods only. Flow Power and other innovative retailers have used all three approaches. Importantly, the current market allows an individual retailer to trade off all three against each other to provide the greatest value to its customers. The retailers that do this well will be competitive in the market.

The approaches taken to manage for volatility in the market are intended to provide the necessary signals for long term investments in new generators and in demand response. That is, retailers are either driven to invest in new supply, buy derivatives (that might help finance new supply) or risk share with customers which encourages customers to invest in supply themselves, or shift demand out of peak periods. This is how the NEM currently uses a single price signal to encourage efficient long term and short-term decision making and manage supply and demand.

This is important historical context when considering major changes to the regulatory framework. Businesses have developed the most attractive products possible to customers under this framework and have taken decisions regarding specialisation or differentiation. By suddenly changing the regulatory framework to explicitly preference one of these approaches (as the ESB is proposing to do with the PRRO), it will substantially change the playing field for retailers, and heavily punish the retailers that are not vertically integrated or have considerable market power when it comes to purchasing hedges.

The changing nature of the power system is reflected in the wholesale price. As more renewables enter the system, prices will fall in sunny and windy periods, and rise as sun and wind lower. This signals the value of firming resources which are technology neutral, that can earn in these higher priced periods.

It has been shown that the dispatchability/firming premium in South Australia has significantly grown with the influx of renewable generation (see figure on the following page). These market incentives also help manage minimum demand and negative spot prices.

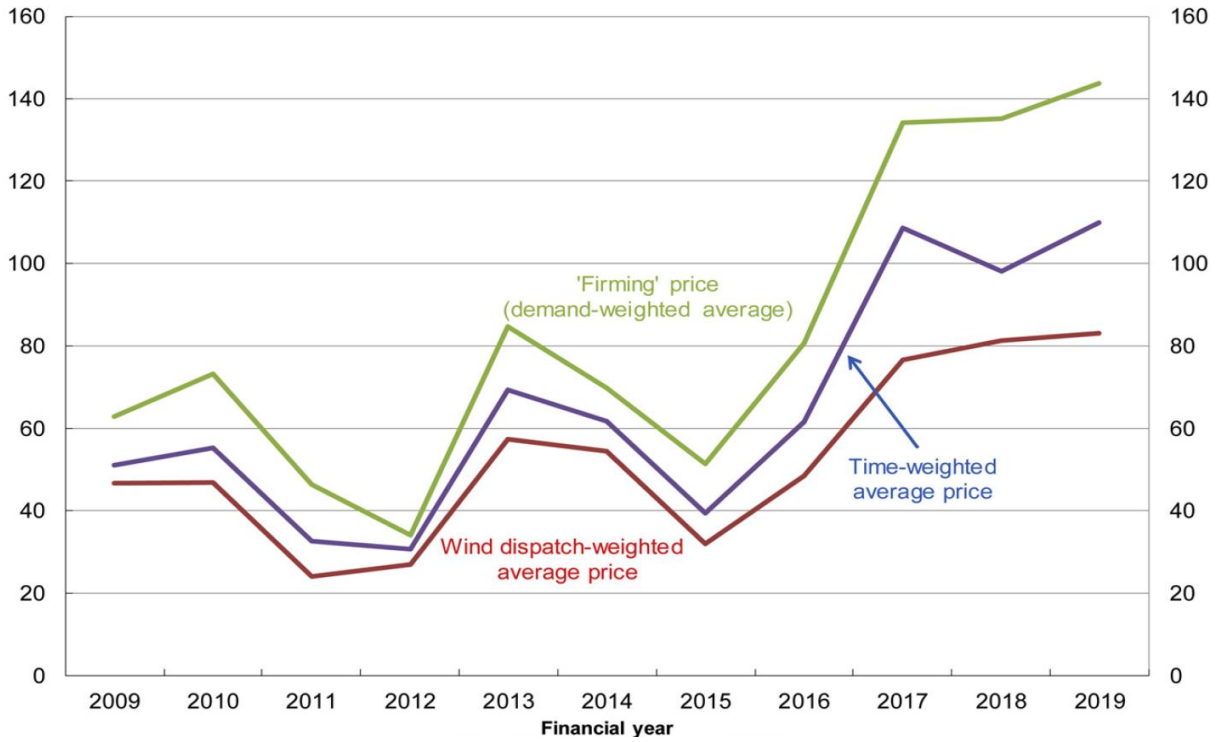

Figure 1: Three dispatch-weighted spot prices in South Australia ($/MWh).[2]

The strong financial incentives associated with our wholesale price play a key role in keeping the lights on in the short term by balancing supply and demand. The introduction of five-minute settlement, which is set to commence in October 2021, will strengthen this financial incentive, and support new, dispatchable capacity.

Contract market

A contract market exists to help market participants manage their exposure to the wholesale market. To manage their exposure to the spot market, participants typically seek to enter contracts which convert uncertain future spot prices into more certain wholesale prices. In the short-term, contracted positions put very strong incentives on generators to 'defend' their position by generating in high-priced periods.

In the longer term, the contract market supports reliability by facilitating efficient generation investment and retirement decisions. It does this by:

- providing information on expected future market prices
- providing a mechanism through which new generation can be financed.

The contract market also adapts as the market changes. For example, participants are entering into 'super-peak' contracts, that show the market value of firm resources.[3] Additionally, new products are being developed based on the value provided by storage.[4]

[2] Rai, A., Nunn, O., 2020. *Is there a value for "dispatchability" in the NEM? Yes**, The Electricity Journal, vol 33, no. 2, p. 7.

[3] https://www.afr.com/companies/energy/snowy-super-peak-contract-to-fill-solar-downtime-20200409-p54in7

[4] https://www.afr.com/companies/energy/hydro-macquarie-shell-in-game-changer-storage-deal-20210119-p56vby

Both the contract market and the wholesale market are changing to place greater incentives on firm capacity, supporting new investments in storage and demand response.

Backstops

The NEM has two major backstops to make sure the lights do not go out: The Reliability and Emergency Reserve Trader (RERT) and the RRO.

In the tumultuous period following the retirement of the Hazelwood Power Station, the RERT was strengthened and the RRO was introduced, both intended to support the reliability of the NEM as future generators retire and more renewables come online.

Reliability and Emergency Reserve Trader (RERT)

The RERT is a mechanism which allows the Australian Energy Market Operator to contract additional capacity (reserves) not otherwise available in the market when reserve shortfalls are projected. This gives AEMO greater certainty it will have the resources available to manage potential shortfalls. The RERT has also supported the development of demand response resources.

Current Retailer Reliability Obligation (RRO)

The RRO started on 1 July 2019. It was designed to support reliability in the National Electricity Market (NEM) by incentivising retailers and some large energy users to contract or invest in dispatchable and 'on demand' resources. It is important to note that the Council of Australian Governments Energy Council agreed to implement the RRO to help manage the risk of declining reliability.[5]

On 4 June 2019, the Council unanimously agreed to amendments to the National Electricity Rules needed to implement the RRO by 1 July 2019.

What is the ESB considering?

The ESB is considering potential changes to the framework for reliability and resource adequacy. It has focused on two options for a modified RRO:

- a small but qualitatively significant design by removing the T-3 trigger; and
- a more significant proposal to replace the RRO with a decentralised capacity market or 'Physical Retailer Reliability Obligation' (PRRO) as referred to by the ESB.

A PRRO would likely require electricity retailers to buy and surrender certificates from generators with a specified level of dispatchability and contract firmness for times of the year when reliability is a concern. This would most likely be for expected peak days in summer.

In practice, the likely outcome would be requiring the retailers that do not own large dispatchable generators to buy certificates from the coal generators that dominate the market. The ESB says without the change, the closure of coal generators will be unpredictable or disorderly, creating price shocks and reliability risks.

The ESB is also considering, alongside potential changes to the RRO, a status-quo based option that is the existing framework for reliability but supplemented with changes made in the ESS workstream.

[5] https://energyministers.gov.au/sites/prod.energycouncil/files/publications/documents/RRO%20Bulletin%20-%2020190701.pdf

The ESB has acknowledged that these considerations are at least partially politically driven, and therefore, in addition to reliability, the ESB's proposals are intended to diminish the willingness for political intervention.

Our concerns with these proposals

We are very concerned with the ESB's proposals to expand the retailer reliability obligation. We think the introduction of a physical RRO:

- ignores the absence of a clear case for change.
- would add substantial new costs to consumer bills.
- would have deleterious impacts on retail competition.
- unnecessarily prolongs the operation of aging thermal generators.
- does little to diminish governments willingness to intervene in markets.

The case for change has not been made

It is reasonable to question whether the current market framework will provide the right signals to deliver the necessary amount and mix of investment as thermal generation retires. However, we are concerned that the ESB has failed to present the necessary analysis to assess whether any change is needed. The current framework, complete with market-based incentives and backstops, have been effective at managing reliability to date. In addition, the current RRO and interim reliability standard have only been recently introduced and so have had limited time to demonstrate their effectiveness in supporting reliability objectives. Further, the introduction of five-minute settlement and the wholesale demand response mechanism are expected to support more dispatchable capacity.

There are significant risks associated with changing the market frameworks that are well understood by investors and market participants. As such, there must be a clear assessment of the costs and benefits associated with making any change.

Further, based on the most recent forecasts of reliability, there does not appear to be forecast risk that is not going to be addressed by the investment commitments that have already been made.

Without having clearly made the case for change, it does not follow that the ESB could reasonably ask the National Cabinet to endorse this recommendation. There is clearly a significant amount of regulatory work in train that would support resource adequacy, and an absence of pressing reliability risks. As such, we do not support any recommendations being made to Energy Ministers that would involve a significant overhaul of the reliability framework.

The physical RRO will be costly to consumers

The physical RRO will be highly costly, particularly compared to the status quo. Under the financial RRO, arguably the primary cost is associated with compliance or with the additional contracts procured by retailers to manage their obligation.

However, the physical RRO introduces new costs associated with buying certificates that have no intrinsic value, other than for retailers to meet their obligations under this scheme. Ultimately these additional costs will be passed on to consumers. Without evidence of an investment problem, consumers would essentially be paying higher costs for the same service. There is also a risk that

customers will pay for capacity that is not required, as each retailer must manage an administratively determined obligation rather than allowing the market to determine the efficient level of contracting and capacity.

In addition, the physical RRO would be designed to encourage conservatism on both supply and demand sides. Retailers would likely be incentivised to over-procure physical RRO certificates to cover an uncertain load, and generators would be conservative in offering physical certificates due to risks of plant failures (such as the failure at Callide). This would result in an extremely tight market that would be devoid of financial players providing any liquidity. As a result, the physical RRO is likely to impose significant costs on consumers even when the market has sufficient supply to meet demand.

The physical RRO would introduce an imbalanced playing field and favour vertically integrated "gentailers"

The physical RRO is likely to be anti-competitive as it benefits vertically integrated retailers that have ready access to a physical hedge via their generation portfolio. It is likely to be harder for independent retailers to access certificates, particularly when they may be forced to buy them from their competitors. In 2019, the three largest retailers controlled 46% of generation capacity in the NEM and four second tier retailers controlled a further 18% of generation capacity. Levels of market concentration are higher within regions: except for South Australia, the two largest owners of generation account for over half of total capacity.

Having to obtain physical RRO certificates would be a significant barrier to entry and may lead to retail market exit by smaller, independent retailers, particularly as the price for certificates would need to be high to incentivise investment. A less competitive retail market will increase costs for customers, as well as remove competitive pressure for innovation at a time when digital technology is creating new opportunities. The physical RRO is also anti-competitive within the generation market, favouring large, vertically integrated incumbents, rather than diverse, renewable generation and storage portfolios.

The AEMC's *Retail competition review* highlighted the big steps forward for the Tier-2 and smaller retailers over the past four to five years.[6] This has two obvious benefits for consumers – driving down retail margins and rewarding innovation. When you look at this developing competition, not only has it driven down prices, but it has resulted in retail offers that incorporate technology like DER, innovative hedging arrangements, and responding to corporate ESG goals.

The AEMC's retail competition review also found that non-vertically integrated retailers experience much greater barriers to either entering the retail market, or growing their market share, shown in the figure below.

[6] AEMC, *Retail competition review 2020*, p. 30.

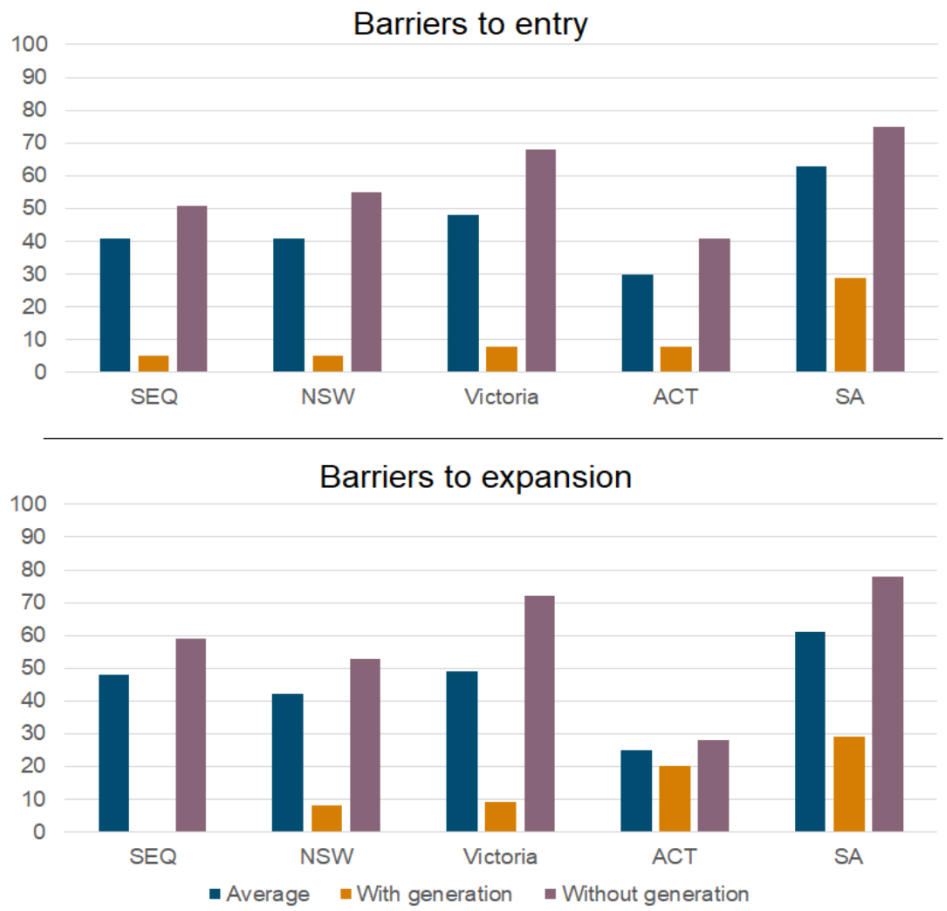

Figure 2 Retailers rate barriers to entry and expansion.[7]

In the box below, we have set out a highly simplified example of how the physical RRO benefits vertically integrated retailers, to the detriment of standalone retailers.

Competition impacts of physical RRO

Consider three retailers, all with 100MW of consumer load.

- Retailer 1 is a standalone retailer, who hedges by sharing price risk with its customers and buying swaps and caps from the ASX.
- Retailer 2 is partially vertically integrated, owning a 100MW wind farm.
- Retailer 3 has a 150MW coal-fired power station.

Under the current arrangements, these three retailers are allowed to compete for customers equally. Starting from this level playing field, the physical RRO would substantially distort the playing field in favour of Retailer 3.

Retailer 1 would need to buy at least 100 certificates to manage the compliance risk introduced by the physical RRO. Retailer 2 would need to by at least 50 certificates (assuming the wind farm is given a firmness factor of 0.5). Retailer 3 would be able to sell its excess certificates back to the other retailers.

So, despite originally being able to equally compete, Retailer 3 now has a substantial competitive advantage over its competitors because it is vertically integrated with dispatchable generation.

[7] AEMC, *Retail competition review 2020*, p. 39.

As this example shows, a physical RRO would entrench and elevate the barriers faced by smaller retailers.[8] AGL, Origin and EnergyAustralia's share of generation capacity in the NEM has grown from 11% in 2011 to 46% in 2019. On the other hand, while we have seen several smaller retailers enter the market, the vast majority are either standalone or own smaller renewable generators. For smaller retailers vertically integrating with dispatchable generation is difficult until you get to a significant scale or have huge financial backing. Therefore, introducing a physical RRO over the top of the current market will reward gentailers at the cost of smaller retailers and effective competition. It may be that for the ESB, the introduction of the physical RRO is more important than supporting retail competition but if this is the case, the ESB should clearly state this.

In addition, comments from the ESB about extending the price signal to support investment so retailers must contract or buy certificates multiple years in advance would be incredibly challenging for smaller retailers. There are economically prudent reasons why retailers do not contract this far in advance including:

- The level of uncertainty in retail position
- Risk of locking in high prices
- Restricting our ability to flexibly build our hedge positions.

By forcing retailers to fully contract further in advance *just for the sake of establishing a price signal* is difficult to understand. This would add a massive level of compliance and risk to retailers and would have marginal impacts on financing new generation.

The potential for a physical RRO will harm new investment

The prospect of having a physical RRO introduced will create significant new uncertainty. There are numerous aspects to the physical RRO that the ESB has not fleshed out. These include:

- What are the criteria for "firmness"? How is it determined? Will it change over time? How is it impacted by network constraints or changes in the demand profile?
- How much firmness can be provided by interconnectors? With significant proposals in place to expand the interconnection between regions, this role of interconnectors in a physical RRO was a notable omission from the ESB's paper.
- Over what duration would retailers need to manage this obligation? As noted above, generation projects would prefer long-term offtakes but this would cripple smaller retailers in the NEM.
- Will there be a centralised system for buying and selling certificates? If there is a fully centralised market for trading these certificates, it is not clear that long term offtakes could even be entered into to support investment.
- What are the obligations placed on generators vs. retailers?
- How will the design manage competition risks? Despite acknowledging the potential competition risks, the ESB offered little insight into how these risks might be managed in practice beyond reiterating aspects of the existing financial RRO. It has not clarified how the bias towards vertical integration in the physical RRO could be resolved.

[8] This contrasts with the introduction of the LRET and Large-scale Generation Certificates, which were only available to *new* projects, as opposed to funding existing assets.

- What are the impacts on wholesale prices, and wholesale price volatility? How does this impact investments in storage and demand flexibility?

The ESB has also provided no clarity on what the value of these certificates are likely to be. The ESB has noted that they are subject to supply and demand, potentially becoming a very volatile commodity, not unlike the wholesale price for electricity. As such, a physical RRO may not even address concerns about price volatility held by governments.

Without more detail, it is not possible to understand how this would impact on the investment decisions currently being considered. Depending on the design of a physical RRO, it could reduce the expected value of projects and cause them to become unviable. This potential risk exists now, because of the ESB's deliberations on the physical RRO.

In addition, the ESB has provided little guidance on the potential implementation timeframe for a physical RRO. Given there is significant detail to develop, combined with the nature of the changes required, the necessary implementation timeframe for a physical RRO is likely to be at least five to six years. Over this time, the market could see an investment freeze due to uncertainty – the opposite of what is intended – and so slow down the transition to renewables. The level of uncertainty will make it difficult not only for investors to obtain finance for new developments but will make it challenging for existing projects to be refinanced.

The physical RRO slows the decarbonisation of the NEM

The physical RRO would slow the decarbonisation of the NEM. The physical RRO is likely to:

- Add investment uncertainty for renewables and storage
- Boost revenue for existing dispatchable generation, including coal and gas fired power stations.

As such, it should be expected that the introduction of a physical RRO would slow the decarbonisation of the NEM.

No suggestion a physical RRO would address political appetite to intervene

Political intervention in the NEM has had a major impact, and its continuation is undeniably a key challenge. However, it is a misnomer to think the physical RRO is going to break this cycle. The state governments are driven to intervene in the market for a range of reasons, including a lack of federal leadership on climate change, driving regional growth, and concerns and energy prices, not just reliability.

The federal government has used the state policies as justification for its own intervention, which delays the retirement of coal-fired power stations and in turn, harm the states' ability to achieve their climate goals. This vicious cycle will not be broken through a, complex and expensive, policy that is unlikely to provide an adequate additional investment signal to the market for new, clean generation sources.

Further, despite the federal government clearly being supportive of the introduction of the physical RRO, it is still directly intervening in the market by proposing to underwrite the Kurri Kurri gas-fired power station. This clearly demonstrates that regardless of how the ESB progresses, it is unlikely to deter future intervention, particularly if it tries to do so by introducing the PRRO which would have significant adverse price impacts on consumers due to the fixed cost that will be passed through on consumer bills.

A better approach

We have a robust regulatory framework already in place that is intended to meet the objectives of managing entry and exit of resources, keeping costs down and providing certainty to regulators, governments, and consumers. The key challenges presented by the transition to a low carbon power system can be addressed through several processes already in place or underway.

The ESB and AEMC are exploring and designing new markets for essential system services. These new markets will make sure necessary essential system services required as thermal generators retire, including system strength and inertia. This will reward new technologies like batteries that are able to provide fast frequency response and other valuable services.

Investments in transmission are unlocking new renewable resources. Renewable energy zones, new interconnectors and other transmission upgrades will unlock new renewable resources that can provide new supply into the market.

Further, there will be continued growth in demand side participation. There is a new wholesale demand response mechanism being introduced that will come into effect in November 2021 by the AEMC. A consultant working for the ESB found there was about 4GW worth of demand flexibility in the market and that this would continue to grow.[9] Innovative retailers and aggregators will continue exploring opportunities for helping to maintain the reliability using demand flexibility, distributed energy resources and smart homes.

The current reliability framework supplemented by new markets for essential system services, new transmission infrastructure and demand flexibility is a far better approach for managing resource adequacy compared to the physical RRO.

[9] Energy Synapse, *Demand response in the National Electricity Market – Final report,* December 2020. Prepared for the Australian Energy Market Commission.