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10 February 2022

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Submitted by email to: info@esb.org.au

Energy Security Board capacity market initiation paper

AGL Energy (**AGL**) welcomes the opportunity to comment on the Energy Security Board's (**ESB**) capacity market initiation paper.

AGL is a leading integrated essential service provider, with a proud 184-year history of innovation and a passionate belief in progress – human and technological. We deliver 4.2 million gas, electricity, and telecommunications services to our residential, small, and large business, and wholesale customers across Australia. We operate Australia's largest electricity generation portfolio, with an operated generation capacity of 11,208 MW, which accounts for approximately 20% of the total generation capacity within Australia's National Electricity Market (**NEM**).

Current market challenges

Over the next two decades, substantial amounts of new large-scale renewable generation and distributed solar generation are forecast to be connected to the NEM. Forecasts suggest that at least 26–50 GW of new large-scale wind and solar and 13–24 GW of distributed PV will be required to replace aging plant and meet emissions reduction objectives, which will require 6–19 GW of new utility scale, flexible and dispatchable resources, as up to 63% of the current thermal fleet in the NEM retires by 2040.[1]

State policies aimed at meeting emissions reduction targets and climate commitments are also accelerating the uptake of variable renewable generation. In NSW, the Electricity Infrastructure Roadmap will see contracting with 12 GW of new variable renewable generation over the next decade, and in Victoria, the Renewable Energy Target to achieve 50% generation from renewable sources by 2030 is being achieved through reverse auctions.

While large-scale wind and solar are the cheapest forms of *new* generation, the very rapid entry of new generation in recent years has supported through significant incentives and subsidies for generation that may not otherwise have been built based on expected market revenues within the current market design.

Consequently, subsidised investment is placing downward pressure on energy spot prices and contract prices, weakening market signals for investment in new generation and capex spending on existing generation. This is also increasing the pressure on existing generation to exit the market.

Within this context of these trends, it is therefore sensible to consider whether the current structure of the NEM is providing adequate price signals to deliver the right mix of generation that will support the energy transition into the future.

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[1] AEMO, 2020 Integrated System Plan

Shifting towards more direct incentives for new investment

Recent trends in the Australian energy market have diminished the central role of the electricity spot price and its derivatives as the main driver for investment in new generation. In addition to substantial subsidies for renewable generation, governments are intervening in the market and imposing more direct market mechanisms to ensure new generation is being built while being certain that enough capacity remains available to meet operational demand. Spot market volatility, which has historically been a major driver of investment through demand for hedge products and long-term contracts, is increasingly being seen as a problem to be avoided as new retail and customer models emerge that support direct exposure to volatile spot prices.

While it would be preferable to use efficient market mechanisms and leverage to the existing design of NEM in order to respond to challenges presented by the energy transition, it must be recognised that it is no longer politically acceptable for investment to be driven by the cyclical high price periods that have traditionally support longer-term hedging arrangements and contracting. Increasingly, it is an objective of government to ensure that new generation investment occurs in advance closure of aging plant, which presents a challenge where price signals for new generation are not yet apparent.

This is not to say that the fundamental energy-only design of the market NEM is not currently fit for purpose. Over the last 20-plus years, the existing energy-only structure of the NEM has proved remarkably resilient at accommodating a range of changing policy objectives. Currently, reliability forecasts are relatively positive, wholesale prices are low, and record amounts of low-emissions generation are being connected to the grid. Energy-only markets have unique attributes that present opportunities to meet policy objectives in a dynamic and efficient manner, as long as price signals are preserved.

However, continued interventions and utilisation of out-of-market subsidies place increasing pressure on the energy-only structure of the NEM to be able to provide the right investment signals that are needed to support the market through the transition. Over time, the continued departure from using the NEM spot price as a fundamental driver for new investment may therefore necessitate more substantial changes from the existing architecture of the NEM, including mechanisms that focus on attributes other than dispatched energy, including capacity.

While such an approach is likely to involve transitional cost, structural changes as to how generation recovers costs may eventually need to be considered in order to both manage the orderly closure of plant and incentivise investment in efficient levels of dispatchable generation in the future. This may be required to allow the pace of the energy transition to accelerate without adverse consequences to customers in terms of price and reliability outcomes.

Maintaining system reliability to support the energy transition

As an essential service and a key driver for the broader strength of the Australian economy, it is clear that a reliable supply of electricity must be maintained at the lowest cost to customers, and in a way that takes into account the different perspectives that governments have on what constitutes resource adequacy in a modern electricity system.

Throughout the energy transition, it will also be important to balance any incentives for new generation with the value to customers that is provided by existing plant, and especially existing low-cost thermal generation, which provides both bulk energy and essential system services. At the same time, new frameworks for investment will need to be coordinated with transmission developments, as well as broader economic impacts associated with the closure of thermal plants.

While historically the NEM Reliability Standard of meeting 99.998% of energy needs has been met in almost every year since market start, it is clear that expectations about resource adequacy are changing, and there is a perceived greater risk of capacity shortfalls both over longer periods and as a result of high-impact low-probability ‘tail’ events.

While reliability standards have generally been met in recent years, there appear to be too many instances where the operational reserve margin has not been sufficient to cover risks of unexpected events.

Governments have reacted by creating a range of measures aimed at developing more emergency reserves to provide greater comfort in managing contingency events, as well as developing interim and alternative reliability targets, which have been used as a basis for policy interventions outside of the market. The desire to have more ‘spare’ capacity available in the NEM has led to outcomes such as the procurement of greater volumes of AEMO’s emergency reserve mechanism (RERT), pressure to keep aging thermal plant open beyond announced closure dates, and substantial public subsidies in new dispatchable generation.

While there is not currently clear evidence of a generalised ‘missing market’ for resource adequacy, there is however a substantial gap between the operation of the current NEM and government expectations of the quantity of available dispatchable generation capacity into the future.

While there is little evidence to support major restructuring of the design of the NEM, some investigation into various capacity mechanisms and options to maintain reliability at lowest cost the customers is nevertheless a prudent measure to safeguard the energy transition against unanticipated price and reliability concerns.

AGL looks forward to working with the ESB to consider in more detail the issues facing the current structure of the NEM and the potential for a capacity mechanism to be developed that can appropriately safeguard the energy transition by ensuring energy continues to be provided to customers reliably and affordably into the future.

Further information in response to issues raised in the ESB’s initiation paper is included at Appendix A to this submission.

If you have any queries about this submission, please contact Aleks Smits (Senior Manager Policy) at ASmits@agl.com.au.

Yours sincerely,

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Appendix A – Response to Questions raised in the Initiation Paper

Consideration of overarching design principles

Adherence to a set of well-defined design principles will be critical to provide clear advice to the Energy National Cabinet Reform Committee on the relative benefits and challenges of implementing a new capacity mechanism in the NEM.

We provide the following comments on the ESB's proposed design principles:

1. *Achieving the optimal level of reliability: a mechanism should achieve the level of reliability that consumers and governments value.*

As the grid becomes characterised by increasing levels of distributed, flexible, and variable generation, there are likely to be challenges with operating the NEM to ensure certainty of supply at all times. While in most scenarios NEM operations would supported by additional available capacity, these supply excesses in the form of underutilised capacity can represent material inefficiencies that would result in substantial costs being passed through to customers.

Recent concerns with the operation of the NEM have led a number of policy proposals that have been directed towards improving operational (short-term) reliability rather than longer-term supply adequacy. This distinction is evidenced by an increasing shift away from using annual unserved energy (USE) as a measure of reliability, towards other measures including loss of load probability (LOLP) and specific MW reserve shortfalls such as those communicated in lack of reserve (LOR) notices.

It is our view that the function of a capacity mechanism should focus on meeting longer term reliability targets (e.g. market price settings that are derived from an annual reliability standard and the Values of Customer Reliability (VCR)).

Regardless of the standards employed, clear identification of how the capacity mechanism will seek to resolve long-term or short-term supply scarcity, and on what reliability standard capacity will be procured against, will be important to shape the detailed design of a final mechanism.

Steps to improve the short-term resilience of the NEM on an operational timeframe (e.g. the ability to respond to a fast rate of change or unexpected change in supply and demand) should be the focus of more targeted reforms, many of which have already been considered by the ESB in other P2025 workstreams and are currently the subject of Rule Changes being considered by the AEMC.

Lastly, short-term mechanisms and a longer-term capacity mechanism must work in tandem; improvements to the short-term operation of the market will likely translate into an improved long-term reliability forecast and a decreased need for spare capacity to manage contingencies.

2. *Appropriate allocation of risk: a mechanism should efficiently and appropriately allocate risks*

As well as efficient allocation of risks across different organisations, consideration should be made as to the general approach to allowing participants to manage their own risk in the market. Key to the success of the energy only market has been the ability for participants to maximise dispatch efficiency at lowest cost by adjusting their level of risk exposure based on forecast market conditions.

Previous proposals to improve reliability (such as the RRO) have not sought to reallocate risks but rather reduce the ability of market participants to manage their own risks and potential exposures, adding costs in order to reduce the risk of supply not being available during periods of scarcity. While this may provide some greater certainty in the operation of the market, it can diminish the role of price signals in the market and subsequently reduce investment certainty for generators, as behaviour is directed not by financial incentives but by punitive compliance and enforcement frameworks.

In this instance, it will be fundamental to consider the ongoing role of the energy spot price in addition to price signals created by any capacity mechanism, as well as the structure of any compliance and penalty regime to meet any liabilities created by a new scheme.

3. *Technological neutrality: a mechanism should be technologically neutral while recognising the rapid pace of change, noting there are design principles which relate to these criteria that will be addressed during the process.*

While we support meeting energy needs through the broadest range of resources available, we note that a number of design elements may have the effect of implicitly incentivising certain technologies over others. Various international examples provide examples of unexpected outcomes in terms of winners and losers from schemes that have not been adequately structured to accommodate particular technologies.

In developing their proposal, the ESB should be clear in stating the impacts of certain design choices on certain technologies; as international experience suggests that a number of specific design choices must be made to ensure a balance of supply options are incentivised through a capacity mechanism.

This is especially the case as there are particular resources that are more challenging to accommodate into certain designs. For example, both within the NEM and internationally, market reform experience has shown that demand-side resources and storage facilities can present unique challenges as they differ from traditional generation sources. Given that demand-side participation and storage are critical to the energy transition, it may be the case that additional mechanisms or directions need to be considered to meet policy objectives for these technologies.

4. *Minimise regulatory burden: a mechanism should minimise the regulatory burden for market participants.*

In practice, we consider that regulatory burdens are reduced when mechanisms are clear and transparent in their intention and application, and provide sufficient lead time for systems and processes to be amended prior to implementation. As a very general observation, we consider that centralised models are likely to offer greater simplicity and transparency to both participants and scheme administrators.

5. *Emissions reduction: a mechanism should be compatible with emissions reduction targets set out by state and federal governments.*

We strongly support this principle and point to a number of international jurisdictions where emissions reductions mechanisms are being met in combination with a range of different resource adequacy mechanisms. This suggests that if developed carefully, market reforms to meet resource adequacy objectives are not likely to impose a limitation to meeting climate policy objectives.

The more challenging directive would be to design a mechanism that could accommodate federal and state emissions targets that are not consistent.

Observations from international markets

Our investigation of reform programs in other markets has identified that resource adequacy programs have rarely occurred without consideration of broader reforms that may also be required across the market. Most successful reform programs have considered a suite of reforms to meet a clearly stated objective, rather than a single mechanism to meet a range of objectives.

We note that this might present a challenge to the ESB, as it is unlikely that a single capacity mechanism will be able to be developed that meets all the objectives of short- and long-term reliability, certainty for new investment in a broad range of resources, and orderly closure of aging assets.

For example, following major outages and rolling blackouts throughout California in their summer of 2020, the Californian Public Utilities Commission (CPUC) implemented a range of reforms to support future resource adequacy. These include new demand response programs, tariff reforms, and customer incentives; broad energy efficiency schemes and consideration of new microgrids; payments for additional emergency generation reserves; and obligations to procure additional supply and demand side resources for major utilities. Additionally, the CPUC considered structural changes to the market including changes to reserve margins, transmission operation, and overall operation of the capacity market.

The key point to take from this is that the policy suite to meet a resource adequacy objective is likely to be broad and multi-faceted, comprising of a range of policy mechanisms. Within this suite of reforms, however, it is critical that all reforms work towards a clearly stated objective. In this instance, California was clear in its objective of increasing available resources by 2000 to 3000 MW to meet forecast peak demand. In the context of the NEM, the ESB should be similarly clear in whatever reliability improvement it is seeking to meet in terms of USE, LOLP, reserve margin, or any other standard.

When looking at international markets, some caution should be exercised when comparing the NEM with markets with different utility models; for example, markets that have not been restructured to unbundle generation and/or retail services from transmission and distribution services.

Any capacity mechanism should be fit for purpose for the future state of the NEM, not energy systems of the past. While impacts associated with the vertically integrated model that has historically been popular in the NEM in recent years should be considered, mechanisms should not presume that retail entities will also be owners of generation in the future. Indeed, in recent years a pattern of reforms (in both retail and wholesale markets) have decreased incentives for vertical integration, as well as supporting the uptake of new business models based on direct participation from large users, aggregators, customers, and standalone retailers with different approaches to managing wholesale price exposure.

Calculating details of at-risk periods and the quantum of eligible capacity

The calculation of at-risk periods and methodologies for derating or assessing performance of resources able to access any capacity incentive is a relatively detailed design issue that will depend on the overall operation of the mechanism put forward.

In the first instance, it may be useful to first specify the type of reliability improvement that the capacity mechanism is intending to improve, (e.g. MW reserve margin, LOLP, annual USE, etc.) as this might help define the type of capacity that is required. Capacity to provide a generally higher reserve margin across the year will likely require different incentive structure to capacity that is available to meet peak summer demand.

As an example, ensuring availability for short summer peak periods might require a design that puts more emphasis on derating factors and availability over short periods, whereas a focus on managing the grid in periods of extended low wind during shoulder seasons may require greater emphasis on availability over extended periods.

Centralised versus decentralised models

The majority of international capacity mechanisms rely on central forecasts. The NEM also relies on a number of central market operator forecasts to support system reliability; for example, AEMO forecasts are impactful in both the short-term (e.g. dispatching RERT in response to forecast Lack of Reserve (LOR) conditions), and over the long-term (e.g. modelling to support the ESOO and ISP).

This is not surprising, as market interventions to support reliability are likely to reflect centralised intentions (by governments and market operators) to provide an enduring security of supply.

For this reason, it seems sensible as a starting point for a capacity mechanism to be based on a central standard of reliability based on a central forecast with the best available market-wide information. This reflects the policy intention of the capacity mechanism to provide a level of certainty for central authorities that exceeds what the market might otherwise provide without intervention.

Competing arguments for decentralised administration of a capacity mechanism seem to support the utilisation of the existing decentralised financial model of the NEM, where participants are able to forecast their own demand and enter into appropriate risk management strategies accordingly.

Nevertheless, we note that even 'decentralised' models often have a large degree of centralisation, or at least tend to be tightly regulated to prevent unforeseen outcomes from participants meeting compliance obligations in unexpected ways.

For example, reliability options (such as the RRO as developed by the ESB, as well as other international examples) tend to be strictly defined to restrict options for compliance and structured in ways that prevent participants from accepting higher levels of risk with respect to setting and meeting targets. These decentralised models often require more complex regulation and oversight, and an increased penalty framework, to ensure compliance to meet objectives that could otherwise be easily meet by a more centralised approach.

In our view, if fundamental elements of the scheme (e.g. forecasts and procurement targets) are to be strictly prescribed, then any theoretical efficiencies that could be gained from decentralised approaches are very likely to be lost. Instead, where fundamental characteristics of a mechanism are set centrally, in our view they should also be administered centrally to minimise regulatory overheads and provide more certainty of scheme operation.

Transmission constraints and interconnectors

Transmission constraints and interconnection present particular challenges when market mechanisms are not consistently applied across jurisdictions. Many of these same issues were raised by AGL in consultation for the RRO, and although the RRO sought to address concerns by allowing participants to self-assess the firmness of interregional SRAs, the challenge of meeting liabilities across NEM regions with the same resources was not well considered by the design of the final RRO.

While a consistent NEM-wide access scheme might support a framework for allocating capacity across regions, theoretical allocations of capacity across regions prior to dispatch are not currently well supported by the NEM and may present particular issues with the development of a capacity mechanism. This problem may further be exacerbated to the opportunity for States to opt out or derogate from the final capacity mechanism that will be put forward.

Consideration of transmission and interconnector outages and capacity are key elements of ensuring overall system reliability. It may be the case that the ESB should look at this issue more holistically, and consider an adjacent mechanism or additional recommendation to consider more closely the incentives and structures that are currently in place to ensure transmission works to support system reliability, regardless of the final design of any capacity mechanism.

More broadly, the ESB should provide advice to energy Ministers on the implications of creating inconsistent incentives for capacity across the NEM, given that NEM regions are likely to continue to be dependent on each other to maintain system reliability.

Perceived competition concerns

We do not consider there are likely to be any concerns with market power that could not be managed by existing regulatory and competition law frameworks. As a general point, however, concerns regarding market power could be mitigated by utilising more centralised pricing and procurement structures for a mechanism, which are likely to more transparent, and administered by a central authority that can assess any competition issues on an ongoing basis.

Penalties and compliance

Evidence from other international markets suggests that the penalty or administrative price for failing to meet a capacity obligation is critical to the overall performance of the scheme. Rather than acting simply as a deterrent against non-compliance, however, the penalty price is important part of the scheme as it sets the upper bound for over scheme costs and provides a more accurate basis from which to model the operation of the scheme.

In some proposals, penalty regimes are set up simply to encourage compliance with the scheme, rather than as an administered price cap for scheme costs. As an example, the RRO did not allow participants to consider an administered price for non-compliance as liable entities were subject to a number of non-pecuniary penalties including the potential for loss of retail licence. In contrast, under the LRET, liable entities that do not surrender large-scale generation certificates (LGCs) are subject to a shortfall charge of a known quantum, which effectively acts as a cap on the scheme costs.

In our view, and on the basis of international experience, an administered penalty price is an important component of a capacity mechanism. Compliance and penalties should therefore be structured in a way that ensures participants can assess risks against known penalty prices rather than less concrete and possibly more punitive penalties such as loss of licence or other enforcement action.