19 October 2020

Energy Security Board
Level 26, 1 Bligh St
Sydney NSW 2000

By email: info@esb.org.au

Response to P2025 Market Design Consultation Paper

Snowy Hydro Limited welcomes the opportunity to comment on matters raised in the Energy Security Board's *Post 2025 Market Design Consultation Paper* (**Consultation Paper**).

The success of the National Energy Market (NEM) has been achieved by decentralised, market-led investment, responding to efficient price signals. The NEM has delivered cheap, reliable energy for two decades and remains fundamentally sound. It was designed to maximise competition through a deep and liquid forward market. An important part of its success has been the adoption of an energy-only structure, which places maximum reliance on the private sector to deliver energy security and reliability.

Snowy Hydro is concerned that the Consultation Paper mischaracterises and shows a lack of understanding of the role of the contracts market. It states: "*A possible shortcoming of the financial contracts market is that it has never evolved to be longer than two to three years duration. This does not provide a long duration price for underwriting new investments….*".[1] That is simply incorrect. With few exceptions, almost every utility-scale solar and wind development under construction in the NEM has been underwritten by a long-term financial contract. That is to say nothing of the many long-term financial contracts routinely agreed between generators, retailers and other large users, such as smelters.

The contracts market is the primary vehicle for trading electricity in the NEM. It is where long-term price discovery occurs and is the basis upon which investment decisions are made. The volume of energy traded on the contracts market significantly exceeds physical demand and all serious participants have medium to long-term energy hedges in place. The spot market, on other hand, operates as a balancing or tertiary market, designed to meet the physical needs of the system by dispatching resources based on short run marginal cost. To a large extent, market consumers are indifferent to spot market outcomes. Accordingly, any serious analysis of energy market reforms must include a detailed assessment of the impact on the contracts market.

Transmission access reform would introduce unnecessary complexity, undermining the contracts market and, therefore, the efficiency of the NEM. Whereas today generators and retailers can transact with confidence against a common reference price, under access reform they would need to contend with hundreds of potential nodal prices. The Australian Energy Market Commission (AEMC)'s implicit assumption is that generators will have confidence that firstly, they will be able obtain the desired level of Financial Transmission Rights (FTRs) and secondly, that the FTRs will provide sufficient hedge against price separation, and that this will in turn induce them to offer a similar level of contracts to today's arrangements. They further appear to assume that the costs of FTRs will not be passed on to consumers. That these assumptions are obviously flawed appears to be an uncomfortable fact that the AEMC would rather not address. Moreover, while large incumbent generators

[1] Consultation Paper, p34

may have the resources and financial wherewithal to manage (to a degree) this risk, it is highly likely that smaller generators will not. Barriers to entry will increase and competition will be harmed.

For these reasons, Snowy Hydro commissioned Baringa Partners to provide a qualitative-based critique of the NERA report. Baringa's critique highlights significant deficiencies in NERA's modelling methodology, including the "real-world" (i.e. non-modelling) implications of access reform. That report, which is attached as part of this submission, speaks for itself. However, we use this opportunity to make three observations of what NERA claims as one of the singular benefits of access reform; namely that it will result in 20GW less of (mostly solar) capacity being built:

1. Australia's emissions trajectory will be higher under access reform than would otherwise be the place. Given the absence of a price on carbon there are significant unpriced externalities not considered in the NERA report.

2. Achieving State-based renewable energy targets, through renewable energy zones or otherwise, will become more expensive under access reform.

3. The NERA report argues that access reform will improve consumer outcomes, even though it results in 20MW less of the cheapest generation capacity being constructed in the NEM. NERA's modelling shows that by 2040, spot prices will be higher under access reform than would otherwise be the case ($100/MWh as compared to $90/MWh with no access reform).

The benefits to competition from the current market design should also not be underestimated. A robust contract market allows new entrants to compete effectively against large, incumbent participants and the mere threat of that competition (new-entry) provides an important deterrent against anti-competitive behaviour. While some reform is necessary to accommodate the growth of variable renewable energy, this is not the time to adopt radical changes which do not reflect the challenges of the NEM, and which will abandon important benefits of the current market structure.

The most urgent issues facing the NEM are the need to: 1) increase flexible capacity and storage 2) augment the transmission system at lowest cost; and 3) address 'missing markets' for essential system services. These challenges have arisen from the growth of variable renewable energy, itself a positive supply shock which has lowered both the cost of energy and the emissions intensity of the stationary energy sector. By taking action now to address these challenges, it will be possible to resolve the 'energy trilemma' - providing affordable, reliable and low emissions electricity.

The solutions are largely at hand. AEMO has developed the Integrated System Plan (ISP) as a roadmap to deliver low-cost, secure and reliable energy, and identifies the optimal development path for the NEM. Accordingly, the starting point for energy reform should be to implement the ISP as soon as possible. The transmission augmentations it identifies will unlock existing capacity, both firm and renewable, and will go a long way to addressing the current challenges in the NEM. To take one example, Snowy Hydro has over 1,000MW of the most advanced dispatchable capacity in the market, which must remain idle during Victorian heatwaves because of a lack of transmission capacity. Addressing this issue directly through the ISP will deliver immediate, tangible benefits for households and business.

The ESB should, accordingly, focus on the fundamental problem in the NEM - a lack of transmission capacity - and abandon its access reform proposal. It is concerning that modelling commissioned by the AEMC contends that one of the principal benefits of the reform is that it will avoid over *"20 GW of additional capacity being constructed in the NEM by 2040, most of which is solar plant and occurs after the retirement of most of the coal plant in the system from 2035"*[2] at a time when the NEM is already experiencing an investment slowdown.

The next step is to consider enhancements to the existing market structure, in order to deliver greater efficiency, security and reliability. The NEM does not have an energy problem. It arguably has a capacity incentive problem, insofar as investment signals do not currently provide sufficient incentives for the development of firm generation, and socialises the risk away from market participants who under-insure their wholesale price exposure. Two market settings encourage this moral hazard; the market price cap (MPC), which limits the wholesale price of energy in any dispatch interval, and the cumulative price threshold (CPT), which limits the wholesale price if the CPT is exceeded over a seven day period.

There is an understandable concern whenever high demand events spike the wholesale price of energy. There is a further (misplaced) presumption that these events must occur because of sharp practice by market generators. This presumption is, in fact, reflected in the National Electricity Rules, which require the AER to investigate any instance when the spot price exceeds $5,000/MWh.[3] What is less well understood is that, firstly, occasional high price events are an intended feature of the NEM's energy-only market design, and secondly, the evidence shows that these events do not have a material impact on consumer electricity bills. The ACCC's *Retail Electricity Pricing Inquiry* found that in NSW, the biggest NEM region, the cost of "volatility" represented around only 2% of wholesale electricity costs in 2018, (and an even smaller fraction of consumer energy bills). On the other hand, that 2% provides critical value to consumers. It quite literally ensures that the lights stay on when demand is high.

From a consumer perspective, the great advantage of the NEM is that investment risk in electricity generation capacity falls on the energy industry itself, rather than energy users. Generators are not guaranteed revenue. Peaking generators are even more exposed. They must build and maintain sophisticated assets, with comparatively few opportunities to recover their investment costs. This structure remains fit for purpose, but some enhancements can be made. Increasing the MPC and the CPT is critical to ensuring sufficient capacity is able to meet peak demand. Far from worsening consumer outcomes, it will improve efficiency of investment, ensuring the right mix of generation is built and maintained. This is all the more important given that bulk energy supply will increasingly be delivered by low cost but intermittent renewables.

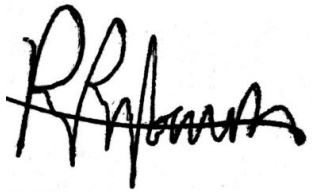
Finally, the growth of variable renewable energy and the retirement of thermal capacity has increased the need for essential system services. The need for such services is a physical reality and the market must provide sufficient incentives to ensure they are adequately supplied. The ESB must not be tempted by 'solutions' whereby system services are procured by regulatory fiat. It is disappointing that this approach has been adopted in the case of mandatory primary frequency response. Setting minimum technical standards in a way designed to misappropriate value from service providers without adequate

[2] NERA, Cost Benefit Analysis of Access Reform: Modelling Report Prepared for the Australian Energy Market Commission 7 September 2020, ppii
[3] NER, cl 3.13.7(d)

compensation will lead to underinvestment and an unreliable system.

Snowy Hydro appreciates the opportunity to respond to the Energy Security Board on the Post 2025 Market Design Consultation Paper. Any questions about this submission should be addressed to panos.priftakis@snowyhydro.com.au.

Yours sincerely,



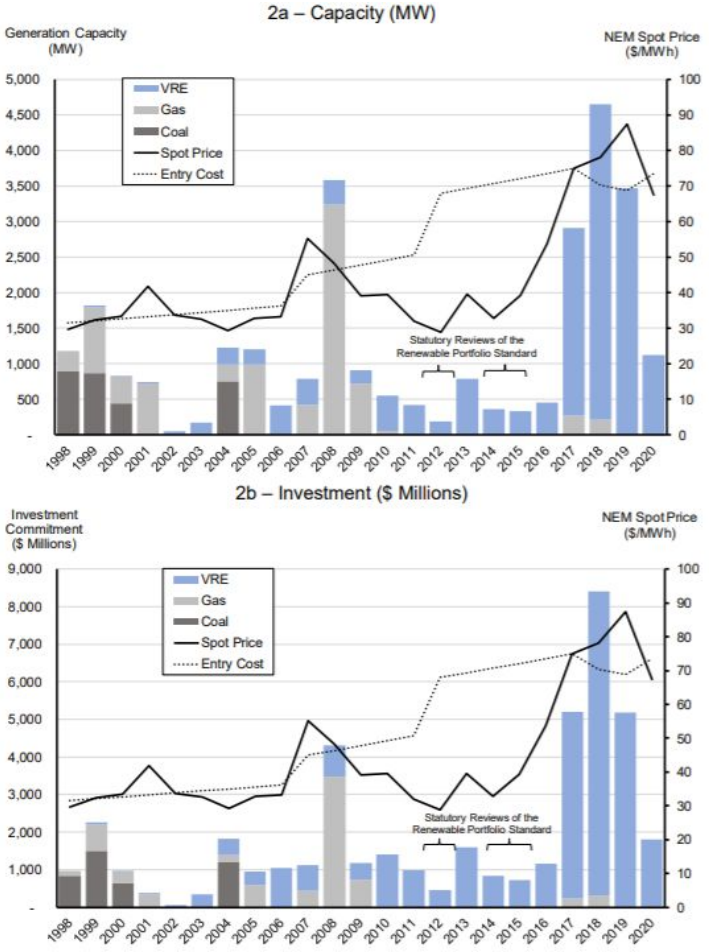
Panos Priftakis
Head of Wholesale Regulation
Snowy Hydro

Resource Adequacy Mechanisms

The design features of the NEM's energy-only market are well-understood. It is a mandatory gross wholesale pool into which generators sell all of their electricity. Bids are dispatched by AEMO on an economic merit basis (subject to reliability and security constraints), with the price set by the marginal generator. This imposes powerful competitive discipline on generators to bid at, or even below, short-run marginal cost (SRMC) as they must compete with each other through the interconnected system by submitting bids for every five minute dispatch interval. The Long-run Marginal Cost (LRMC) is a signal to invest and not to intervene in the market.

From 2012-2017 the NEM experienced disruptions from sudden coal plant closures. However, the supply-side response that followed from 2017-2020 was an investment megacycle which included 12,000MW of plant commitments comprising $20+ billion across 105 projects most of them Variable Renewables as shown below in Figure 1 and 2[4]. One of the notable underperformers in the list of 2017-2020 entrants was dispatchable capacity which has led to system Frequency outside normal bands, failing System Strength, rising FCAS costs and increasing AEMO interventions.

Figure 1: Generation plant commitments 1998-2020[5]



[4] Simshauser, P, Gilmore, J, 2020, *"Is the NEM Broken? Discontinuity and the 2017-2020 Investment Megacycle".*

[5] Simshauser, P, Gilmore, J, 2020, *"Is the NEM Broken? Discontinuity and the 2017-2020 Investment Megacycle".*

For these reasons Snowy Hydro believes that in considering any enhancements to the market design, the ESB should give priority to the primary market signals of Unserved Energy (USE), Maximum Price Cap (MPC), Minimum Floor Price (MFP), and Cumulative Price Threshold (CPT) as a means to signal the need for dispatchable capacity investments to maintain reliability and security. A fundamental market redesign is unnecessary. The post 2025 market design should be built on the strengths of the existing wholesale market design which for two decades has been a success based on decentralised decision making. The existing market design can be relied upon to support reliability in the long-term with the NEM.

In considering enhancements to the market design, the Commission should always give priority to these market signals. In particular, the Commission should consider increasing the MPC as the primary means to improve system security. A higher MPC would not pose a systemic risk to Market Customers. Rather, it would address the moral hazard associated with an artificially low MPC and CPT, which encourages under-contracting and which reduces investment in peaking capacity. This reform would also avoid the need for complicated reserves or capacity mechanisms, and would impose no additional administrative burdens on either participants or the market operator.

Snowy Hydro is also concerned that resource adequacy mechanisms may punish generators who supply the market during periods of volatility. Volatility is an inherent feature of energy-only markets and is a reflection of a reflection of the non-storable nature of electricity. All over the world, even under ahead markets, electricity prices exhibit high volatility due to spikes in demand and high levels of price inelasticity. Factors which increase volatility in the NEM include transmission constraints, weather induced demand spikes, increasing penetration of variable renewable energy and the interconnection of regional markets. This is simply the physical reality of the electricity system.

The risk of volatility should be acknowledged as an exposure which drives participants to adopt prudent risk management strategies. That insight - that market incentives will incentivise an efficient level of contracting (and the firm capacity needed to defend those contracts) - was at the heart of the design of the NEM and it remains valid today. Rather than creating new mechanisms in an attempt to short up firm capacity, the ESB should consider why a shortfall exists in the first place. Market Customers have inadequate incentives to contract when the costs of failing to do so are borne by others in the market.

Snowy Hydro does not believe a move to a centralised capacity procurement regime is warranted and welcomes the ESB's decision to not consider it further. In Australia, capacity markets have been examined previously and been shown to add complexity to the already complicated electricity market. Under a capacity market, risk is borne by both consumers and either the government or a market operator acting as the facilitator. This would transfer risk from market participants (under the current energy-only structure) to consumers.

Reliability Standard in the NEM

Reliability in the NEM is largely driven through market participants responding to financial incentives and information provided about the need for resources. The NEM is an energy-only market. Under this structure, peaking generators such as Snowy Hydro, and others, regularly invest large amounts of capital to ensure they are available during times of

scarcity. They do everything possible, at their own cost and own risk, to ensure they are ready to generate during the relatively few periods when demand cannot be met by other types of market generation. It is therefore important that there are robust market structures in place and accurate information available to underpin investment, retirement and operational decisions.

A higher level of reliability may be desirable in the NEM but this should be achieved by changing the reliability standard and the reliability settings to match the standard. This would mean that the desired NEM reliability would be achieved via market processes rather than via off market transactions with AEMO.

There needs to be a consistent framework for reliability, market price cap, value of customer reliability and use of the RERT. The reliability settings of targeted levels of unserved energy and the market price cap should be used as the primary investment signals for additional supply.

The ESB should consider the recommendations from their consulting report if there are any changes to the reliability standard through the post 2025 market design. The ACIL Allen Consulting report notes that if there is a need for a tighter reliability standard through the current NEM market arrangements then this can be achieved through changes to the market settings. As the paper notes, this approach is the *"most economically efficient approach as it allows the market to naturally clear based on price".*[6]

To date the reliability standard has essentially been met. The reliability standard of 0.02% unserved energy has provided an appropriate balance between providing a reasonable level of reliability without significantly increasing costs to consumers in providing a higher target.

Operating reserve market

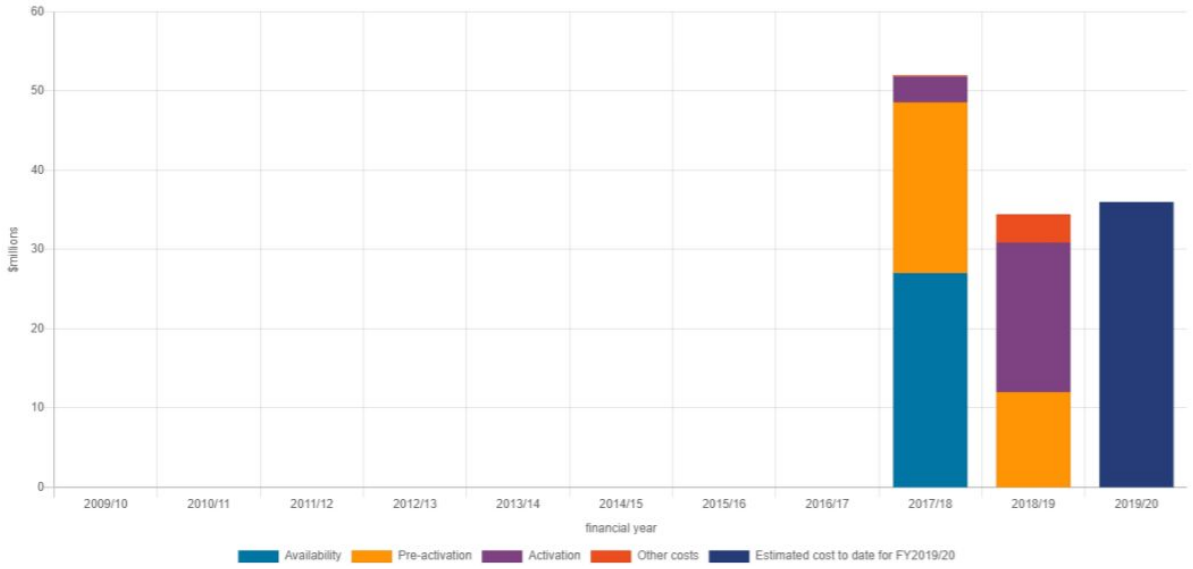
If the NEM operates (and is permitted to operate) as intended there should be no requirement for an operating reserve. However Snowy Hydro submits that should there continue to be a need for reserves, they should be transparent and only be used as a last resort safety net with the energy-only market left to deliver the economic level of bulk supply reliability to customers. With this in mind and AEMO's increasing reliance on intervention mechanisms, it is sensible to consider a mechanism that has capacity participating in the market rather than outside of it. An Operating Reserve would draw resources into the market, however more work needs to be done to assess how it would operate in the market. The proposal would require the handling of new dispatch bids, constraint equations and other software changes within AEMO, and these implications would need to be addressed.

Snowy Hydro understands the challenges AEMO faces in managing energy supply. While adjusting market settings would be the most efficient, least-cost approach, providing a market price signal for Operating Reserves would be preferable to AEMO interventions. It would also reduce the quantity of out-of-market RERT otherwise required to achieve the same reserve levels. In addition, it would improve transparency, through a visible procurement process in the market, by clearly pricing the trade-offs between different options for managing system security. Transparency of strategic reserves is important in providing more certainty for participants on the costs.

[6] ACIL Allen Consulting, 2020, "Reliability Standard: Economic Analysis to Support"

Operating reserves will represent a cost to consumers, however if they are in good supply and effective, during times when they are priced to reflect the need. This according to the operating reserves rule change would remove reserves needed for RERT which has cost $35-52m per year, with the costs highlighted below.

Figure 2: Costs of RERT use[7]



AEMO already has significant backstops it can deploy in times of emergency. This includes the ability to contract for emergency reserves, along with intervention mechanisms such as Directions and Instructions, to be utilised in cases of genuine market shortfall. RERT including, 'Short-Notice' or 'Medium-Notice' forms, are appropriate tools which allow AEMO to purchase reserves 7 days and 10 weeks respectively from the anticipated shortfall, providing an appropriate trade-off for maintaining sufficient levels of unserved energy in the NEM. There is a trade-off with cost per unit of the Short-Notice RERT and Medium-Notice RERT being more expensive than a multi-year out of market capacity reserve. Multi-year mechanisms impose significant long-term costs in deterring new capacity from the market.

The proposal notes that reserves would be paid the marginal 'availability' price when called, being the MPC. It is unclear whether the current MPC will be sufficient to incentivise enough participants to participate in the operating reserve. If the MPC is not sufficient, the ESB should assess whether an availability as well as an energy payment is required.

The signals for long term investment signals could also be impacted as operating reserves could be seen as another revenue stream for existing dispatchable resources that would otherwise retire or be mothballed. This would not directly facilitate new investment. In addition, with AEMO being responsible for determining target quantities to be procured through the operating reserve, the market could be left with a scenario where AEMO continues to use RERT and directions along with the operating reserve costing consumers more than what previously was intended.

Should there continue to be out-of-market resources used by AEMO, it is more efficient for these resources to be drawn into the market. This would benefit retailers and customers by

[7] Reliability Panel, 2019 Annual market performance review, Final report, 12 March 2020

increasing availability of hedging products, making additional lower-cost contracting available to consumers. The benefit from greater flexibility and certainty AEMO will obtain from Operating Reserves should allow the removal of the:

- Interim Reliability Reserve Rules - multi-year out of market capacity reserve;
- Victorian Jurisdictional Derogation final rule for multi-year contracting of RERT; and;
- Long-notice RERT.

Essential System Services

The success of the NEM rests with decentralised decision making, liquid and deep contract markets and stable regulatory frameworks. System security and reliability remains a critical aspect of effective energy delivery which should be achieved through minimal market intervention. Snowy Hydro supports competitive markets being used or developed to deliver the required energy and ancillary services with all forms of interventions remaining a last resort and not distorting the market.

AEMO is currently being forced to intervene in the NEM. The repeated need for interventions in South Australia has sometimes been referred to as evidence of a market failure. However, it is necessary to distinguish between a failure of market design, and the lack of appropriate markets included within the market design.

Evidence from the NEM is that security and reliability of supply is increasingly challenging but responses to these challenges through recent rule changes, such as the Mandatory Primary Frequency Control Ancillary Services (FCAS) rule change are inadequate for the long term efficient operation of the NEM. Given the transformation underway, not all services required for the efficient, secure and reliable operation of the changing system are being valued or appropriately procured. As a result, the power system is experiencing or approaching binding limits across a range of technical and economic parameters.

It is therefore welcoming that the ESB has highlighted the glaring omission in the current NEM design, being an absence of an explicit reward for several essential system services. We agree with the focus on directly procuring unpriced essential system services, rather than restructuring the energy market.

Procurement Options for Essential System Services

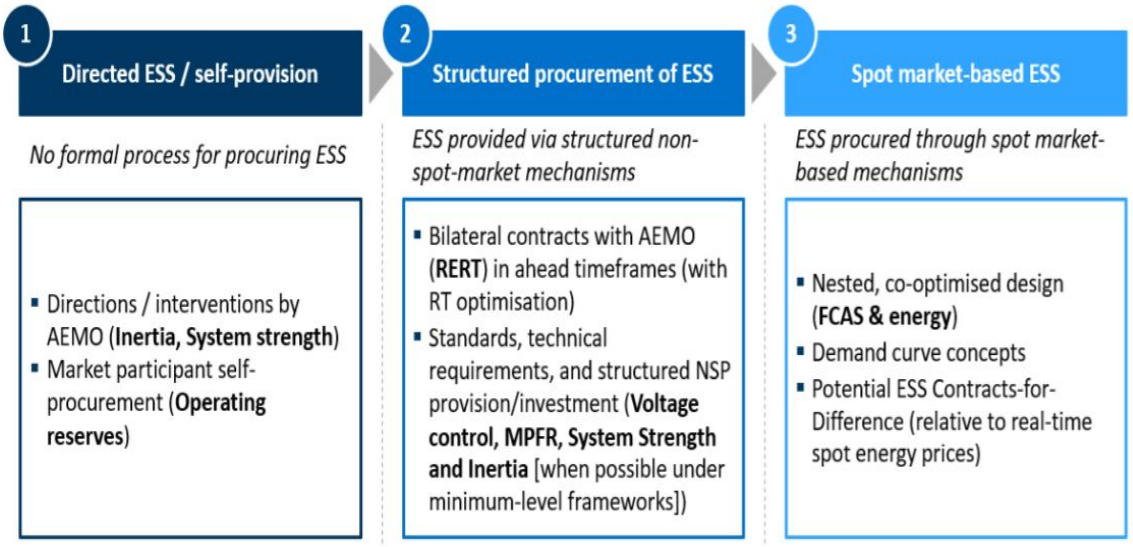
As a general principle, we believe that a market-based approach enables a technically sound solution through the most efficient allocation of resources in the long term. The development of an efficient and effective policy mechanism requires a performance-based and incentivised approach consistent with the value these mechanisms offer the system. This will assist AEMO and market participants through enhanced transparency.

Appropriate incentives that align with existing market structures is the most cost effective and efficient means of supporting the provision of primary regulating response and addressing current concerns with frequency performance. A market based mechanism, appropriately aligned with power system stability fundamentals, enables a technically sound solution through the most efficient allocation of resources. Additionally, a technically sound

solution is more likely to be realised through industry consultation rather than one directed by AEMO.

From ESB's three procurement options for Essential System Services (ESS), shown below, Snowy Hydro supports option 3 where system services can be valued in real time, leading to price discovery, transparency and efficient allocation of resources. These services include Frequency Control Ancillary Services (FCAS), fast-frequency response and inertia. The continued use of Option 2 is also sensible for services not suitable for real time markets, such short-run aggregate supply curve (SRAS), Network Support and Control Ancillary Services (NSCAS), provided negotiations are conducted at arm's length and there is recognition of the significant capital costs of the assets providing these services. Regrettably, we have observed AEMO seeking to compensate these services based on marginal cost, which is inappropriate for a peaking service and will ultimately deter investment and availability. Furthermore, where a long-term need exists for these services (eg. NSCAS) AEMO should not use directions as a procurement tool to avoid entering contracts. That is a misuse of the directions power and will harm investment.

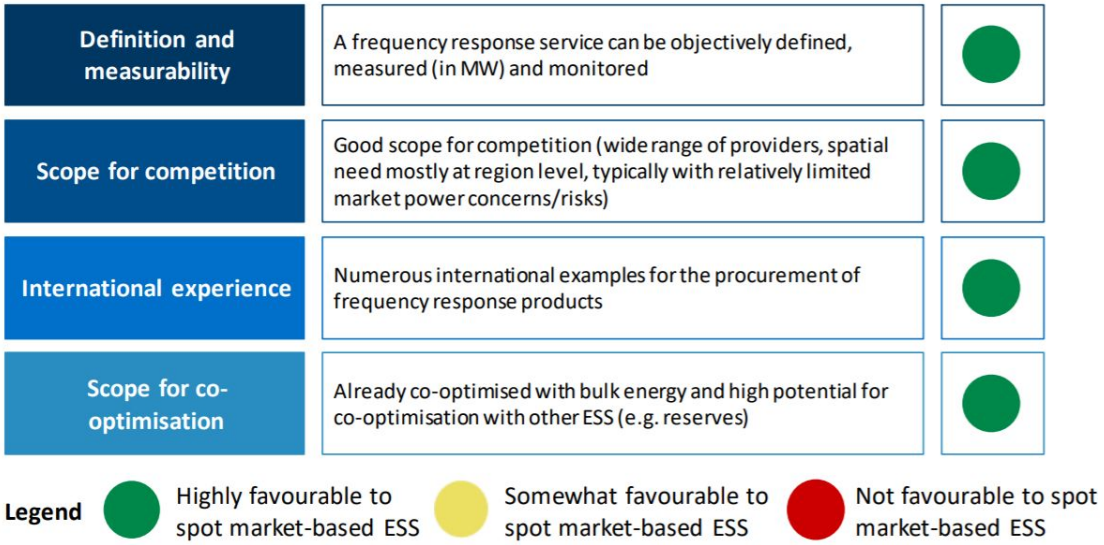
Figure 3: Procurement options for Essential System Services[8]



For this reason Snowy Hydro welcomes the ESB proposal to develop a range of options for frequency control, which coordinates closely with the work of the AEMC. As shown below the initial assessment of the market design characteristics of frequency control show favourable spot-market based ESS.

[8] Energy Security Board (ESB), 2020, *"Post 2025 Market Design Consultation Paper", pp61*

Figure 4: Initial assessment of the market design characteristics of frequency control[9]



Snowy Hydro supports the creation of synchronous services markets for services such as inertia, voltage control and fault level/system strength as recently consulted on by the AEMC. The performance of frequency control markets and the basic thrust of the contingency services have worked quite well. As is now well understood, the retirement of thermal generation and increase in inverter-based generating systems has reduced inertia. The main issue now is that the current categorisations of the services are not always fit for purpose, particularly in potential islanding areas where there can be large amounts of variable renewable energy (VRE) generation and low inertia. With increasing levels of inverter-based generation, the inertia of some subsystems like North Queensland, Tasmania and South Australia are already low at times of high VRE generation. This will worsen in the future. As inertia reduces, frequency control becomes more challenging as there is less time available to address imbalances in supply and demand.

The need for energy services such as Frequency Control Ancillary Services (FCAS), reactive power and inertia will continue to increase as the generation mix continues to change. An inertia market is therefore required to ensure that the current NEM energy-only design delivers ongoing security and reliability of supply as the energy transition continues.

The effectiveness of an inertia market will depend on its ability to provide adequate incentives for the provision of the service. Snowy Hydro understands the difficulty in integrating an inertia price within the energy market price, however we believe further assessment can be undertaken in an inertia spot market like the FCAS market, where generators and synchronous condensers are evaluated.

The synchronous services markets proposes to address this issue by integrating the dispatch of a “synchronous service” with the existing energy and FCAS spot markets. It is important that the proposal is effective in addressing a number of key issues identified with our current system strength frameworks with minimal disruption to the market. The market could, for example, lead to two sets of spot prices, which could dilute the contract market,

[9] Energy Security Board (ESB), 2020, *“Post 2025 Market Design Consultation Paper”, pp67*

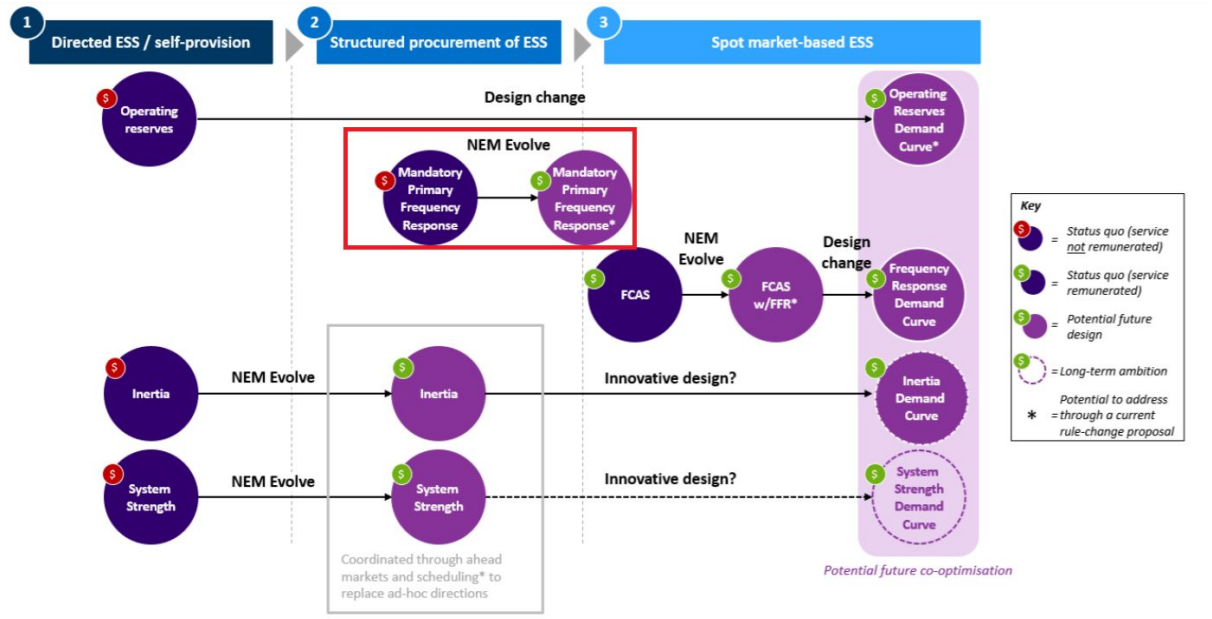
and requires further consideration of a discrete synchronous services market, with separate settlement to energy to minimise the impact on the contract market.

In addition to inertia, Snowy Hydro believes that the recent rule change reviewed by the AEMC on a fast frequency response market ancillary service should operate in a similar manner to the existing market arrangements for FCAS. AEMO should determine the specifications for the FFR service in the Market Ancillary Services Specification (MASS) and the market would be open to generation, loads and aggregators. Introducing the FFR service could help reduce overall volumes of services required to operate the system.

As synchronous inertia in the power system decreases, the rate of change of frequency (RoCoF) following contingency events increases, which increases the need for a faster acting frequency response to meet the requirements of the power system frequency operating standard. Fast-acting technologies can manage risks associated with system frequency in a low inertia system, including the management of RoCoF.

Problems associated with Directed ESS/self-provision - Option 1

The NEM has successfully acquired frequency control services from spot markets for twenty years and for this reason Snowy Hydro strongly opposed the Mandatory Primary Frequency Control rule change, which was not a long-term solution. The system operator can't continue to free ride on the existing stock of synchronous generation as a way to procure system services. The requirement that it be supplied by generators as part of their technical requirements merely disguises its cost and does not provide a sustainable basis for future supply. There needs to be recognition of the role of incentives. It is therefore concerning that the ESB appears to contemplate the continued use of Mandatory Primary Frequency Control in the Consultation Paper, even though the final determination of the rule change includes an explicit sunset date of 4 June 2023. The ESB diagram notes the following:



The AEMC acknowledged that primary frequency control requires incentives to ensure the adequate supply of primary frequency response following the sunset date[10]. We support the AEMC's consideration of a market based mechanism that appropriately aligns with power system stability fundamentals and enables a technically sound solution through the most efficient allocation of resources in the long term. Under the Primary frequency response incentive arrangements rule change request, the focus should remain on effectively remunerating providers of primary frequency response and maintaining the sunset date for Mandatory primary frequency response[11].

There are types of generation which are well suited to providing primary frequency control. However, some generation capacity is not, without installation of additional equipment, which risks making the projects unviable and stalling the development of new capacity. In addition to negatively impacting investment, the mandatory proposal violates the technology neutrality principle that underpins the NEM leading to inefficiencies, as it would discourage other, more suitable technologies. Only recently AEMO highlighted in their primary frequency control update that the changes in frequency control settings are *"expected to result in changes in power system frequency performance, including reducing the contribution to the need for regulation FCAS from larger generating systems."*[12] This highlights that the mandatory primary frequency control change is essentially substituting the paid-for service with one provided by regulatory fiat, distorting investment and the proposed essential system services markets.

Snowy Hydro therefore supports a market based approach for primary frequency control. The performance of frequency control markets have worked quite well. The main issue has been that current categorisations are not always fit for purpose, particularly in potential islanding areas where there can be large amounts of variable renewable energy generation and low inertia. However, this can be resolved by the ESS options 2 and 3.

Scheduling and Ahead Mechanisms

The current market design in the NEM does not warrant a mandatory day-ahead market or any further aheadness. The ESB has correctly noted that interventions highlight the need for structured procurement of essential system services markets (ESS). The ESB should focus on the lack of a market or other structured procurement mechanisms for some ESS, and particularly for system strength. However, the need for structured procurement of ESS does not imply a need for a unit commitment for security; they should not be bundled together as a single reform.

Many of the benefits of a day-ahead market are already addressed by the forward contract market that supports the NEM's real-time market; this does not appear to have been well understood by the ESB. Market Participants can already hedge pricing risk using sophisticated financial derivatives under the current framework so any scheduling improvements from a day-ahead market would be limited. In addition, generators can structure their bids in the real-time market based on costs, plant characteristics and contract position to ensure dispatch of their generation fleet to cover their contract positions. This provides some certainty over which plant will be running and for how long. If the expectation

[10] AEMC, Mandatory primary frequency response, Draft rule determination, 19 December 2019

[11] AEMC, System services rule changes, Consultation paper, 2 July 2020

[12] AEMO Communications, 24 September 2020, *"Primary Frequency Response implementation update"*

is that the proportion of fast-start plant in the NEM is going to increase to manage real-time volatility then market signals for slower-start generation may not likely be needed.

Ahead Mechanism Design Options

Snowy Hydro does not support the need for the implementation of a Unit Commitment for Security (UCS) approach and the consideration of approaches for voluntary, financial ahead markets to procure and/or trade system services (including those that may not have a real-time market). The ESB has correctly highlighted that pre-dispatch has worked well and is an *"effective means for price discovery and informing risk management strategies, combined with the forward contract markets (including ASX futures, OTC trades, and retailing to consumers) providing mechanisms for long term hedging."*[13] Should the market operator have concerns with transparency and predictability then the focus should be on improving scheduling. The UCS and ahead mechanisms contemplated by the ESB would impose unnecessary costs and risks on market participants, both in terms of one-off implementation costs and ongoing monitoring, trading and compliance obligations through UCS and voluntary financial ahead markets.

Through Short Term Projected Assessment of System Adequacy (PASA) and pre-dispatch, AEMO is made aware of the intentions of generator participants. AEMO should rely on the stated intentions of participants rather than try to infer commercial drivers from a set of contract data. It is the participant's intentions with regard to the NEM mechanisms such as the PASA and pre-dispatch that provide AEMO with the insight that they require to understand and assess reliability.

Furthermore, the current market design has a number of advantages over an ahead market. Having a spot market operate in real time, as with the NEM, improves decision making under uncertainty and overall market efficiency. In contrast to an ahead market, participants have superior knowledge to guide their participation in the spot market, and are able to reflect the most up-to-date information in their bidding behaviour. Snowy Hydro therefore welcomes the ESB's decision to not proceed with a mandatory ahead market. The ESB correctly highlighted stakeholder concerns that a mandatory ahead market would limit flexibility and depart from the self-commitment nature of the NEM.

As the NEM generation mix becomes more variable and intermittent, day-ahead markets are less suited than they are in other markets. In the US PJM market, which is an ahead market, there is a large proportion of both nuclear generation and generation with long start time. Nuclear generation is generally not dispatchable by PJM, whereas slow start generators generally engage in self commitment rather than being committed by PJM in the day-ahead market. The PJM market clearly highlights that any day-ahead market proposal allows for inflexible baseload unit to be optimised and provides enough notice for the slow start plant to be online when they are needed.

The ahead market mechanism therefore does not appear to support or incentivise the provision of flexible generation at a time when flexibility is becoming an increasingly important attribute given the transition to VRE. If the expectation is that the proportion of fast-start plant in the NEM will increase to manage real-time volatility then market signals for slower-start generation may not be needed. In fact, it is likely to have the opposite effect. Peaking generators are most likely to be prejudiced from any proposal which hinders their

[13] Energy Security Board (ESB), 2020, *"Post 2025 Market Design Consultation Paper", pp76*

ability to respond to real-time events. A lack of flexibility is also likely to impose a risk-premium in bids of fast-start generation. Snowy Hydro therefore does not support UCS as currently constructed, given the costs of the proposal and the fact that any benefits, such as they are, will likely flow mainly to inflexible plant. In addition, the UCS would not change a generator's long-term decision of whether to withdraw or decommit from the market and therefore does not provide any further certainty to the market operator.

Unit Commitment for Security

It is disappointing that the consultation paper conflates the need for a structured procurement of ESS with a unit commitment mechanism. Snowy Hydro agrees that the current *ad hoc* approach to procurement of ESS is unsatisfactory, and that a formal procurement mechanism would be beneficial. However, this does not imply a need for UCS. The consultation paper provides no evidence that system security is being harmed by a lack of unit commitment. In fact, to the extent there is a lack of system security in the NEM, this is symptomatic of more fundamental problems around inadequate market incentives, lack of transmission capacity and deficiencies in the scheduling process (discussed below).

As proposed, the UCS approach amounts to little more than a more formal mechanism for the market intervention currently undertaken by AEMO. It does not address the causes of deficiencies in system security.

The ESB and the market operator should be seeking to improve scheduling as a solution to improve uncertainty. Scheduling would promote transparency in areas that are currently quite opaque as well as being predictable, so that market participants can make efficient investment and operational decisions.

Snowy Hydro has consistently argued that the price discovery, transparency and overall more efficient utilisation of resources for the NEM is vital. In 2017, Snowy Hydro and ENGIE submitted rule changes relating to the accuracy of pre-dispatch demand and price forecasting, which were ultimately not made into a final rule. The reason for proposing these rule changes was that the behaviour of non-scheduled generation and price-responsive load is causing pre-dispatch forecasting inaccuracies, leading to inefficiencies in the market.

The price discovery process will become more challenging in a dynamic NEM environment over time, with increasing distributed generation and demand response. System and market operators require information about consumption decisions to perform their own functions which necessitates common scheduling, dispatch and other information provision obligations. The scheduling features necessitate a number of obligations and incentives consistent with the obligations imposed on current scheduled generators. These include compliance with dispatch targets, bidding and rebidding obligations and incurring FCAS contribution factors deviating from dispatch targets. These obligations are vital for maintaining the integrity of the central dispatch and price setting process.

AEMO operation of financially settled ahead market

Snowy Hydro believes the ESB should consider other market operator options when examining the costs of implementation and operation of the proposed financial binding ahead market. It is unclear why a financially-settled ahead market is required given the existence of a deep and liquid derivatives market. Furthermore, we question the suitability of AEMO having oversight of such a market. To the extent such a market is considered

desirable, it would be better suited for operation by an independent third-party. The short term forward market consultation undertaken by the AEMC[14] highlighted that a financially-settled market by the market operator could unnecessarily impact incentives for commercial development of market products. In addition it highlighted limitations on its statutory powers to introduce a financially-settled market operated by a party other than AEMO.

The ESB needs to understand the cost and consequences of AEMO operating a financially settled ahead market as there has been little consideration of details regarding such a proposal. Under the short term forward market (STFM) rule change proposal, AEMO noted it could run an STFM using the Trayport platform. The proposal assumed that the market could follow a similar model to that used in the Gas Supply Hubs (GSH), using the same platform and processes for clearing, settlement and prudential arrangements all being operated by AEMO. Snowy Hydro questioned the efficiency of AEMO running their own trading platform for short term contracts and noted the costs associated with implementing the STFM through Trayport which include:

- Trayport platform costs for AEMO and licensing for participants
- AEMO update of systems and processes, which could be dependent on the level of
- integration with existing systems
- legal/consultant fees to design products for the exchange
- STFM participation fees to cover the operating costs of the exchange
- any education and training of participants that is required[15]

The majority of participants whom the proponent noted as benefiting from a AEMO STFM at the time which included smaller players who were unlikely to be registered to Trayport.

The ASX has the systems and processes established to offer short term financial contracts. Additionally, Financial and Energy Exchange (FEX) Group has attained a licence from the Australian Securities and Investments Commission (ASIC) to start trading Australian financial derivatives. The ASX and FEX would provide the most efficient markets at the lowest cost avoiding the need for the AEMO to form a trading platform.

Finally, it is important to recognise that there are important differences between financially-settled contracts - in effect derivatives - and commodity transactions. Derivatives are inherently risky and therefore subject to substantial regulation and oversight. The financial services licensing regime imposes significant regulatory requirements on those who wish to trade financial products and the operators of financial markets. Accordingly, any consideration of a financially-settled ahead market would require an assessment of AEMO's ability to satisfy these requirements, as well as the likely regulatory requirements for market participants (for example, the need for an Australian Financial Services Licence).

Transmission Access and the Coordination of Generation and Transmission

Snowy Hydro strongly opposes the Australian Energy Market Commission (AEMC)'s transmission access reform because it introduces unnecessary complexity and ignores the

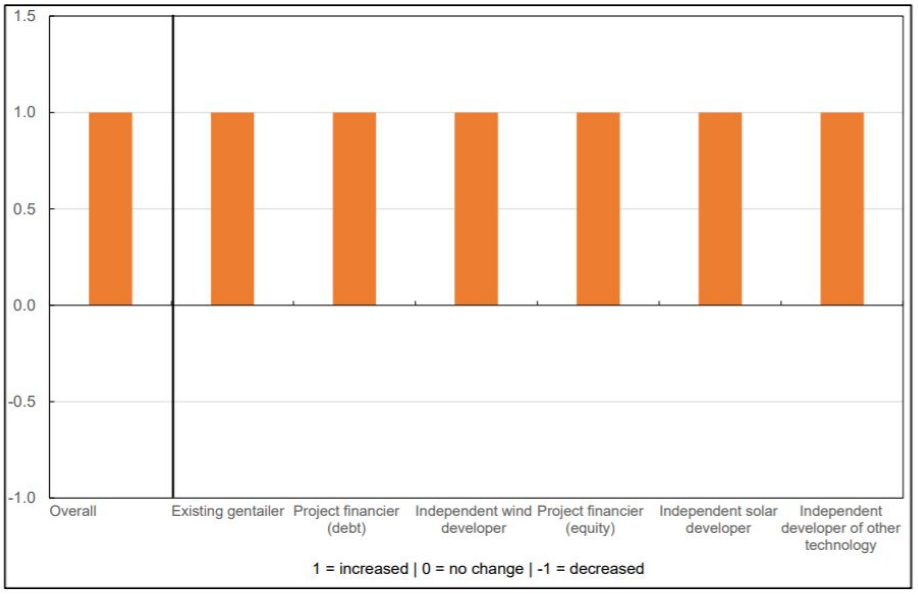
[14] AEMC, Short Term Forward Market, << https://www.aemc.gov.au/rule-changes/short-term-forward-market >>
[15] AEMC, Short Term Forward Market, Consultation paper, 11 April 2019, pp24

impact on the electricity contracts market, where most wholesale energy is transacted. It creates a new risk for generators, who must try to manage the risk that the revenue they receive for their output is less than that they must pay under financial contracts.

The proposed Financial Transmission Rights (FTRs) mitigate this risk but do not overcome it. This will also harm retailers, as generators will be less willing to offer price protection contracts, ultimately affecting retail bills. The reform is also strongly opposed by renewable developers, who generally seek to underwrite projects by pre-selling their output in power purchase agreements and will now be exposed to more revenue uncertainty.

A recent survey undertaken by Alan Rai and Tim Nelson for a *"financing costs and barriers to entry in Australia's electricity market"*[16] paper investigated the potential impact on generators' weighted-average costs of capital (WACC)s and hurdle rates from a potential introduction of nodal pricing. The survey noted an increase of WACCs by 150-200 basis points p.a. (15-20 per cent), due to concerns around the firmness of financial transmission rights and ability to automatically access intraregional settlement residues. The chart below shows the effect on WACC from adopting nodal pricing reforms. The Energy Security Board (ESB) must consider these impacts.

Figure 5: Effect on WACC from adopting nodal pricing reforms



Snowy Hydro believes it is important that the ESB acknowledge that the findings indicate that transmission access reform will have significant policy implications for renewable investment, namely the need to consider the interaction between economic theory and real-world financing models when designing and implementing energy sector reforms.

The fundamental problem in the NEM is a lack of transmission capacity, and this will be more effectively resolved with an Actionable ISP. Transmission congestion and a lack of network investment are central to the current difficulties being experienced in the NEM. Congestion has caused a slowdown in investment in new renewable and firming capacity, increasing prices and grid instability. Increasing transmission capacity should be prioritised

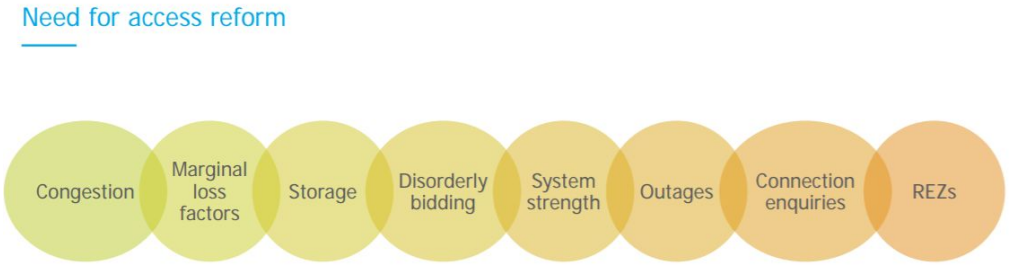
[16]Rai, A and Nelson, T, August 2020, *"Financing costs and barriers to entry in Australia's electricity market",*

in the reform process and this is best achieved by an actionable ISP with committed timelines and funding. The AEMC has itself acknowledged that auction of FTRs under access reform will have no direct influence on transmission planning.[17]

Snowy Hydro has therefore strongly supported an Actionable Integrated System Plan (ISP), which obviates the need for access reform. The ISP displaces, rather than complements access reform. The renewable energy industry has almost unanimously adopted a similar position. The actionable ISP sets out proposed augmentations of the transmission system to support connection of the capacity that is projected to occur. The ESB consultation paper correctly highlights that *"the transmission grid needs to be reconfigured to accommodate the changing resource mix. To meet future needs we expect to have to accommodate:*

- *More variable, renewable generation with lower average capacity factors than conventional generators, and in different locations.*
- *More storage, both from pumped hydro and batteries.*
- *More distributed generation and storage.*
- *Emerging issues of system strength and voltage instability*[18]

Transmission upgrades will accelerate the integration of renewables and large scale storage into the grid, both of which are good both for consumers and Snowy Hydro. The Actionable ISP can clearly address most of the problems transmission access reform is attempting to solve, shown below. This includes removing congestion, solving Marginal Loss Factor (MLF) issues, connecting Renewable Energy Zones (REZ) and improving system strength. Implementing transmission access reform at a time when the ISP will solve the exact same problems will only increase costs for consumers.



Transmission Access Reform Impact on the contract market

Transmission access reform will reduce the quantity of contracts available to each regional reference node due to increased risk imposed on generators, it will create a barrier to investment in new generation and it will add significant complexity through the sheer number of nodes and FTRs available for auction. These impacts on the financial contracts market have not been properly addressed by the AEMC and the ESB.

Risk is a key consideration in deciding what volume of contracts a generator is willing to supply, consequently it is likely access reform will reduce the quantity of contracts made

[17] AEMC, 2019, "*Coordination of Generation and Transmission Infrastructure Proposed Access Model - Discussion Paper*" pvi
[18] Energy Security Board (ESB), 2020, *"Post 2025 Market Design Consultation Paper"*

available in each region. This is a detrimental outcome for contract market liquidity and customers who rely on these contracts for certainty of retail pricing.

It will introduce an additional layer of risk that buyers and sellers will need to factor into their contracting risk frameworks and contracting decisions. There is the risk that they will have insufficient transmission rights at a time when an Locational Marginal Pricing (LMP) is low, whilst the Regional Reference Price (RRP) which is used to settle contracts is high. With the volume, duration and firmness of FTRs not certain, most prudent market participants will need to fator in the risk exposure associated with insufficient FTRs, and this will limit contracting to lower volumes and shorter durations than the current levels.

Some proportion of contracting volume will be pushed to the local nodes and settled at the LMPS, fracturing traded volumes across numerous nodes. This has been evidenced in the past, when there was a separate Snowy node. A non-negligible volume of contracts were referenced to the Snowy node, and they were moved to NSW and Victoria when the node was removed. NERA appeared to deliberately ignore the Snowy node experience when assessing the contract market implications. An important reason for abolishing the Snowy node was to improve contract liquidity, yet the AEMC now appears to believe that introducing hundreds of nodes across the NEM will have the opposite effect. The AEMC asserts access reform will improve liquidity by forcing participants to purchase FTRs. However, the participants who will ultimately be responsible for issuing contracts - generators - by an overwhelming majority reject this assertion. Unfortunately the AEMC has paid little heed to these concerns and appears to be determined to proceed with the reform at all costs.

Snowy Hydro therefore strongly believes access reform does not deliver lowest costs for consumers when taking into account all factors, including the impact on generators' ability to offer firm financial hedges, competition and implementation costs. As previously noted, a large portion of transmission-related issues will be solved by the projects identified in the ISP, without the significant contract market disruption associated with access reform.

NERA Cost Benefit Analysis of Access Reform: Modelling Report

Snowy Hydro has significant concerns with NERA's modelling undertaken as part of their 'Cost Benefit Analysis of Access Reform for the AEMC' (**NERA CBA**). We commissioned Baringa Partners to provide a qualitative-based independent assessment and critique of the NERA CBA, and we attach that report as part of our submission as Appendix A (**Baringa Report**). The Baringa Report speaks for itself. In this section we provide further observations related to access reform and the NERA modelling.

The NERA CBA contains a number of notable omissions. It focuses on the spot market and does not pay sufficient attention to the role of contracts. The financial contracts market is the primary mechanism through which energy is transacted in the NEM. Accordingly, any modelling which does not take adequate account of this market cannot accurately describe the benefits or otherwise of introducing transmission access reform.

The NERA CBA does not adequately consider the costs of the reform, both transitional and ongoing. The initial, preliminary high-level benchmarking figures provided by Hard Software,

[19] suggest that a well-planned implementation in the NEM could cost in the order of $60-$70 million for AEMO's costs alone. Costs for individual generators are also likely to be significant. This is supported by similar figures in the introduction of similar reforms in Ontario. The AEMC considers that these figures are on the lower side of what a more detailed assessment of the cost of implementation is likely to reveal.

The modelling approach hasn't considered or has only superficially addressed a number of real-world factors, including grandfathered FTRs and necessity to purchase FTRs to build, which are key components of the access reform proposal. It also makes heroic and entirely unrealistic assumptions, such as average spot prices of $30/MWh in the NEM until 2030. There is no generation fleet capable of supplying the NEM at this price over this timeframe.

NERA's erroneous assumptions, underestimates of implementation costs and exclusion of real-world factors have led to its estimate that reform would provide a total consumer benefit between $6.2b and $8.2b from 2026 to 2040, in net present value terms[20]. Beyond its questionable assumptions, it is simply not credible for NERA to not consider that any downside risk will arise from the reform.

Impact on Competition and Investment from NERA

The NERA modelling claims that one of the foremost benefits is of the reform is it will avoid over *"20 GW of additional capacity being constructed in the NEM by 2040, most of which is solar plant and occurs after the retirement of most of the coal plant in the system from 2035"* [21]. In short, NERA claims that the loss of 20GW of renewable capacity should be interpreted as a reason to proceed with access reform, implicitly good for consumers. With the NEM experiencing unprecedented and transformational changes and Renewable Energy Targets in Victoria (VRET, 50% by 2030), Queensland (QRET, 50% by 2030) and Tasmania (first phase of TRET, 100% by 2022), the NERA report is proposing to slow investment, as a benefit, at the time the NEM needs it the most.

Despite the implementation costs and complexities associated with the reform, NERA also considers that, at worst, transmission access reform will have no impact on competition. Snowy Hydro considers adapting to this design would be a costly and unnecessary burden on all market participants. This reform risks lowering the overall level of competition in the wholesale and retail market.

The complexity of nodal pricing will create challenges for participants seeking to manage their risk, as noted earlier in the submission. For example, independent retailers in New Zealand (which is fully nodal) have difficulty managing their exposure to the wholesale market. The need to manage this risk has driven a trend of vertical integration, with retailers tending to secure retail customers close to their generation. This has led to several integrated generators/retailers effectively having regional monopolies on supply in their area. This illustrates the problem with and the implications of nodal pricing, namely its tendency to create significant barriers to generators' and retailers' ability to transact hedging instruments, harming competition.

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[19] Mackenzie, H,Thorncraft, S, Vickers, P, Wallace, S, 2020, *"A preliminary indication of the Information Technology costs of Locational Marginal Pricing"*

[20] NERA, "*Cost Benefit Analysis of Access Reform: Modelling Report Prepared for the Australian Energy Market Commission*" 7 September 2020

[21] NERA, "*Cost Benefit Analysis of Access Reform: Modelling Report Prepared for the Australian Energy Market Commission*" 7 September 2020, ppii

The NERA CBA ignores the impact on existing contracts (including hundreds of PPAs) across the market which will be disrupted because they are 'wired' to the long-standing NEM design. These contracts typically run for at least 15 years and can exceed 20 years in tenor. Attempting to renegotiate PPAs to accommodate access reform risks undermining the complex contractual and financing arrangements which underpin renewable developments. Furthermore, as highlighted in the Baringa Report, the proposal poses serious risk to the capital market financing and refinancing of new and existing generation capacity.

Snowy Hydro believes increased interconnection facilitates improved competition between major load centres in the NEM, and that the current status quo of open access should be supplemented by more strategic planning of the transmission network. Timelines for interconnection for strategic projects is vital as the NEM transforms with a more actionable Integrated System Plan (ISP).

Two-Sided Markets

The existing market structure has been largely successful in achieving the National Electricity Objective (NEO) and already has the ability to support demand side response. The ESB should therefore not abandon the foundations of the existing market design with any proposed changes to participants being technology agnostic, and enable a transparent market that aids the price discovery process.

The ESB notes the complexity of existing arrangements can be reduced and that it is a barrier to engagement and a significant contributor to the ability and motivation of consumers to engage in better offers. The NEM however is structured to allow the demand side to both participate in and respond to price signals in the spot market, and for the interaction of supply and demand to determine an economically optimal outcome for all parties, including end-use customers. Facilities are already available for demand response to participate in the NEM, either directly as a wholesale participant, or via a retailer which the ESB needs to properly consider before taking further steps.

The ESB has taken a sensible approach in planning the additional steps needed to facilitate an expanded two-sided market beyond 2025. The proposed steps and changes however need to be tested through NEM modelling or an equivalent technique to establish that the impact on end-use consumers will in fact be positive. This modelling should be clearly targeted to proving that the perceived problem is actually going to be solved, to a reasonable degree of certainty before proceeding with the next steps. Rather than applying every stage to a certain year, it should be undertaken on the need and the basis that one step has been successful before moving to the next stage.

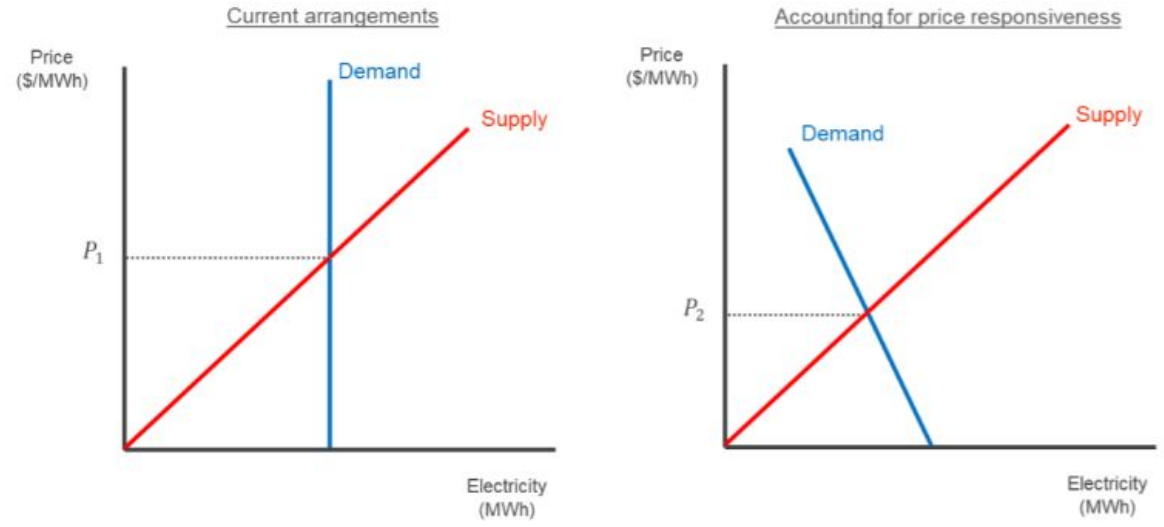
Our concern is that the two-sided market proposal continues to remain overly complex and a costly version which, without a full cost benefit analysis, will not factually prove the consumer benefit or whether this proposal could ever be a cost-neutral approach for consumers. Furthermore, while we agree with the ESB that some consumers are increasingly assessing how to optimise their consumption and generation decisions, the precise nature and extent of any demand response remains unclear. This includes the willingness of various consumer segments - including residential and small business consumers - to face the risk of exposure to potentially volatile prices. In our experience, few consumers have been willing to face these risks and prefer retailers to manage it on their behalf.

As such, we are concerned that measures to promote greater demand side participation could create distortions that impose a net cost on consumers over the longer term. Examples might be the preferencing of some specific technologies or business models, or a dilution of established consumer protections. Regulators and policymakers have also developed obligations for wholesale market participants to assist with their planning and system functions and any reduction in those obligations could undermine those functions, particularly at a time when system balance is becoming more challenging.

Meeting the needs of the system

The ESB correctly notes that *"having price responsive demand and supply is good for the system. It helps align supply and demand and results in a better utilisation of the power system."* The resulting analysis from the ESB however, as shown below, using supply and demand charts which highlights that consumers and producers make efficient decisions leads to an efficient clearing of the spot market that maximises the benefit to both producers and consumers of electricity is inefficient in providing evidence on the need for a two-sided market.

Figure 6: Benefits of Participation from Price Elastic Demand and Supply[22]

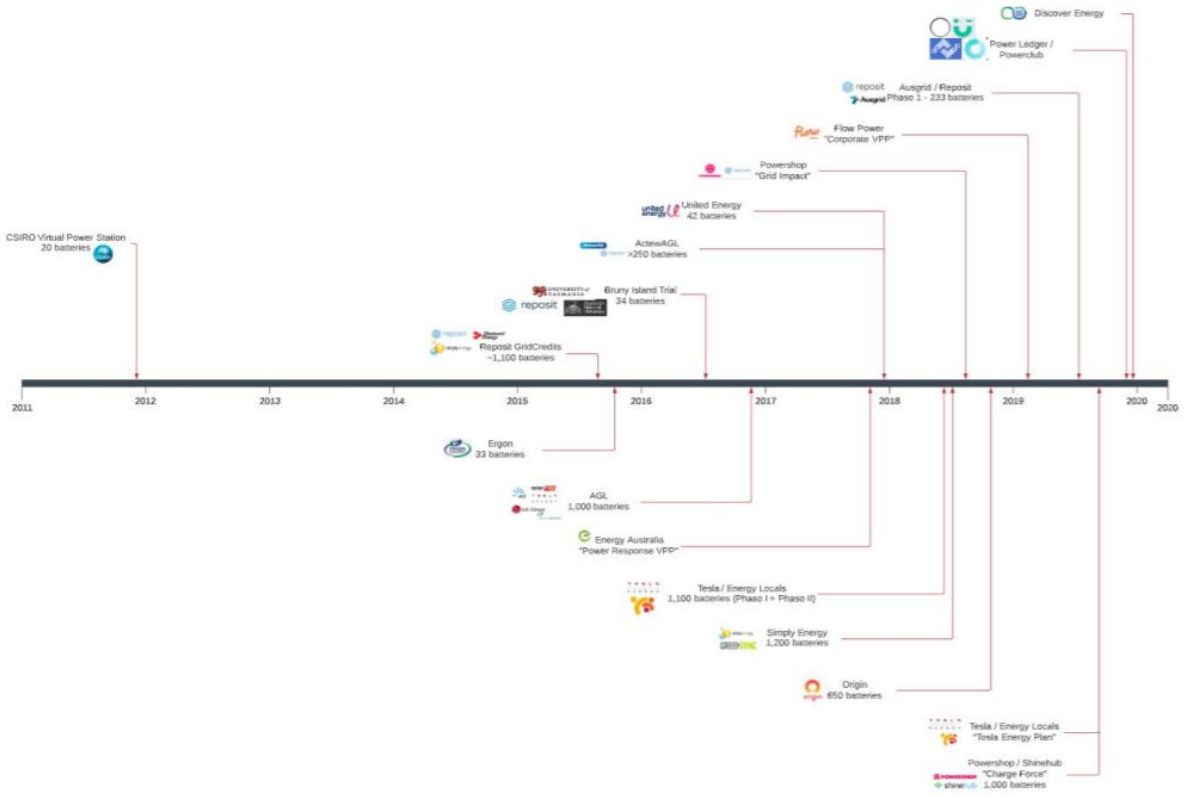


The price elasticity of demand model assumes that all small and large customers would respond in the most efficient manner. However, the ESB's assessment of the potential demand response as a basis for significant changes to an established market framework must be broader than a theoretical assessment based on simple supply and demand charts.

Should there be a concern for small customers not utilising demand response under the current market conditions, the AEMC had correctly noted in the Wholesale Demand Response Mechanism (WDRM) that *"there are a number of opportunities emerging under the current arrangements for these consumers to participate in demand response."*[23] Most jurisdictions in the NEM have established, or are developing, programs to incentivise the

[22] Energy Security Board (ESB), 2020, *"Post 2025 Market Design Consultation Paper"*
[23] AEMC, Wholesale demand response mechanism, Draft rule determination, 12 March 2020, ppv

uptake of technology that will enable residential and business customers to participate in demand response programs.



A consumer for example may be a party to a virtual power plant arrangement and wish to have their residential storage and solar PV separately metered to enable participation with the virtual power plant. There has been significant investment in establishing and operating Virtual Power Plants in the NEM. The chart shows a timeline of industry players conducting trials of Virtual Power Plants (VPPs). Other forms of demand response - either individual or aggregated - occur at the network level.

Our experience with network tariff reform to this point suggests that more work is necessary to provide smaller consumers with enough clarity and certainty about more complex pricing before any organisation can be sure about the nature and extent of demand response. In general, we have found a high degree of scepticism and confusion about the more complex pricing structures that many network businesses have proposed in recent years.

It is for this reason Snowy Hydro believes that more analysis is necessary to understand the extent to which smaller customers want to adopt such pricing risks and in what form it might take before proceeding with substantial changes to the current framework. Snowy Hydro could not support a framework that offers benefits to a very small proportion of consumers but exposes other consumers with less ability to invest in DER and/or with less flexible consumption profiles to additional costs.

The ESB could consider behavioural economics which would assist in specially engaging with customers and understanding how the two-sided market would operate commercially

and whether there is a need. When highlighting barriers to entry there could also be a barrier to consumer interest which has not been assessed by the AEMC or the ESB.

Wholesale Demand Response Mechanism

The Australian Energy Market Commission (AEMC) Wholesale Demand Response Mechanism (WDRM) which is currently being implemented in effect privileges the demand side. The ESB should therefore address the concerns with the WDRM before the next step is undertaken on the two-sided market. It is important to acknowledge that demand response mechanisms involve both activation and opportunity costs.

For business, the cost of demand reduction is foregone output (and therefore income), and for households, a loss of consumer welfare. These costs can be significant and are avoided when demand is fully supplied. If the assumption in the two-sided market argument is that energy consumers are highly engaged and hence the two-sided market will drive demand response that will be an overall economic benefit the ESB needs to quantify that there is sufficient consumer engagement to deliver a positive net market benefit from introducing the two-sided market. The WDRM should be allowed to work and the results guide the discussion to the next steps.

Scheduling under Two-sided Market and DER

If demand side technologies are to provide alternatives in addition to the services offered in the ESS markets there will need to be enhanced technical capabilities, which increase the visibility of DER and consumer loads, and increasing certainty. It is important that AEMO has the visibility of demand response and the implication on its ability to manage power and system security in the short-term and longer-term. The ESB should understand in any scheduling obligations there needs to be a consequence for not responding and not providing a service otherwise the scheduled service will not have a reason to improve the reliability and performance of the service. The price discovery process will become more challenging in a dynamic NEM environment over time, with increasing distributed generation and demand response. Earlier chapters discuss Snowy's position on scheduling.

In addition to scheduling obligations, AEMO has and will increase its access to available demand side response through the existing Demand Side Participation Information and will increase this with the global settlements initiative, register of DER (which installers and distributors populate) and Consumer Data Right (CDR). These measures will further inform AEMO's planning functions and obviate the need for further obligations on other market participants, such as retailers, over and above those that currently exist.

Snowy Hydro submits that a core feature of any market design is the rules regarding eligibility to participate, calculation of payments and compliance. In considering these issues competitive neutrality as a guiding principle will avoid favouring specific business models and technologies and will encourage superior consumer outcomes if effective competition is allowed to flourish.

Consumer Protections

Consumer protections remain essential in this context and must apply in a competitively neutral way. It is important to align with the AEMC's current work program to consider the appropriate form of consumer protections in evolving markets with the two-sided market program. One of the main issues to resolve is how existing regulations relating to the supply of an essential service will apply in a two-sided market, particularly where more than one party (e.g. a retailer and an aggregator) are able to influence or interrupt supply.

The ESB has suggested there may be merit in reassessing the issue of multiple trading relationships (MTR) as part of the two-sided market process. However, previous analysis of MTR concluded there would be no net benefit for consumers, due to a number of operational matters and unresolved questions about the administration of existing regulatory requirements.

For example, it is unclear how the management of hardship customers will occur where one market participant is aware of a customer experiencing financial difficulty but not the other or in situations where the customer requires life support. This complexity is furthered when a consumer is eligible for a concession or rebate and it must be applied to an account. The separation of load across various settlement points also creates complexity with the requirement to deliver meter data information to a customer.

As a further point about MTR, the ESB will be aware of the AEMC's previous analysis in the context of the Power of Choice initiative. It previously found that the substantial cost of implementation clearly outweighed any potential benefits, particularly as competitive metering and other developments in a competitive market would start to generate benefits of their own. Furthermore, the existing framework allows individual customers to install multiple connection points and therefore, multiple market participants at their premises. These customers bear the cost of the additional wiring and metering and can freely choose alternative service providers if their current provider does not provide a competitive offer for either or both connection points.

These issues illustrate that the ESB must carefully assess all aspects of any steps towards a more active two-sided market - including how they account for well established consumer protections and existing processes - before proceeding. Otherwise, these protections may be undermined or some market participants may bear a disproportionate compliance burden. In many instances, the purported benefits of a two sided market (and related measures, such as MTR) can be readily achieved through existing market arrangements without creating these risks.

Valuing Demand Flexibility and Integrating DER

Snowy Hydro acknowledges that DER is a rapidly growing presence in the NEM, through a broad cross section of technologies, as noted by the ESB. The staging approach set out is sensible and needs to be carried out in conjunction with the two-sided market workstream.

As part of the staged process the ESB notes that there has *"been little progress towards implementing cost reflective network tariffs that consumers and retailers have been willing to*

embrace or reflect their preferences and needs."[24] Snowy Hydro understands that there is an opportunity for networks to improve their processes by developing network prices that reflect the efficient costs of providing network services. This encourages consumers to respond to network prices by reducing their consumption in higher cost periods and reward through lower network charges. It should also encourage efficient investment behind the meter (in solar, batteries and smart appliances, for example). Despite the little progress towards implementing cost reflective network tariffs as noted by the ESB, in the coming years, these prices will influence when owners of electric vehicles charge their vehicles and when they feed energy back into the network.

To achieve cost reflective tariffs there needs to be more effective engagement with consumers and with retailers. In the past, some networks have proposed overly complex network tariffs that few small consumers understand and have then sought to mandatorily assign them. This strategy has been less than successful because consumers need to understand the price signal embedded in the tariff to reduce their overall network usage or change their usage patterns to avoid using the network in peak times.

The ESB should continue to align the Post 2025 Market Design process with other work programs to reform the regulatory framework, such as those addressed through current AEMC rule change processes. One of the most relevant is the rule change requests submitted as part of the DEIP Access and Pricing Work Package, which relate to networks' planning processes, how they should explicitly account for DER integration, and mechanisms for efficient cost recovery. This rule change process will address one of the key issues under the ESB's work program. However, it also illustrates that current governance arrangements encourage and allow for reform to existing market arrangements in a careful and considered way that seeks to maximise consumer benefits.

About the Snowy Hydro Group

Snowy Hydro Limited is a producer, supplier, trader and retailer of energy in the National Electricity Market (NEM) and a leading provider of risk management financial hedge contracts. We are an integrated energy company with more than 5,500 megawatts (MW) of generating capacity. We are one of Australia's largest renewable generators, the third largest generator by capacity and the fourth largest retailer in the NEM through our award-winning retail energy companies - Red Energy and Lumo Energy. Collectively, they retail gas and electricity in South Australia, Victoria, New South Wales, Queensland and the ACT to over 1 million customers.

[24] Energy Security Board (ESB), 2020, *"Post 2025 Market Design Consultation Paper"*

Appendix A: Baringa Report

Please find the document attached as a separate appendix.