

11 February 2021

Ms Merryn York
Acting Chair
Australian Energy Market Commission
Sydney

CC: ESB Board: Ms Kerry Schott
Mr Drew Clarke
Ms Clare Savage

Dear Merryn,

Reserve Services in the National Electricity Market Directions Paper

The St Baker Energy Innovation Fund welcomes the opportunity to provide feedback on the Reserve Services in the National Electricity Market Directions Paper. StBaker Energy recognises the well documented challenges in the energy system brought about by the changing energy mix. As a significant participant and investor in the energy market and in a wide range of businesses involved in the global transformation of the transport sector as well as the electricity sector, StBaker Energy is supportive of the ongoing work to reform the electricity market.

It is clear that we have a good understanding of the underlying issues that are driving the increasing complex challenges in operating the system as well as the additional costs in dealing with them. High levels of variable renewable energy and low operational demand are displacing dispatchable energy and the Essential System Support Services they bring to the electricity system in order for it to operate safely and securely. The challenges and costs are now widely documented both here in Australia as well as overseas as we transition to a low emissions production system. We are therefore well placed to act now by putting in place the right market drivers and frameworks to ensure an orderly transition.

Our submission highlights the clear additional cost to consumers associated with the increasing frequency of directions occurring in the market. Even though these are largely in South Australia, it is widely accepted and expected to grow across jurisdictions in NEM. It is a clear demonstration of the failure of the present NEM Market Design to procure cost-efficient market-based solutions for consumers and investors.

The current NEM market design does not explicitly value and signal the need for essential system support services. To retain existing availability of these services and attract investment in new alternative means of providing these services, a market is the most efficient approach to procure these in the long run.

The NEM has traditionally relied on thermal generators to ensure essential services are available and drawn on as a by-product of dispatchable synchronous energy generation. However, with the growth in non-synchronous generation, forcing traditional synchronous (thermal) generation out of the market, the abundance of essential services on which the current secure system and market relies is rapidly diminishing, driving greater complexity in operations and costs.

Essential System Support Services are critical for a secure and reliable electricity supply system. As thermal plant retires or is more quickly displaced for economic reasons due to the lack of value placed on them by the market, it is critical that we do not underestimate the need or timing for these services to be brought to market.

StBaker Energy is of the view that is best achieved through competitive market for Essential Services that value not only the current services to provide more operational flexibility and management but also attract investment in the specific services in the location they are needed.

Delta Electricity has submitted two NEM Rule Change Proposal, for Capacity Commitment Mechanisms for System Security and Reliability, and for Sustained Fast Ramping Services, as optimum market solutions to meet the emerging critical need for optimised market-based procurement of Essential System Services (ESS) and Unit Commitment for Security (UCS).

St.Baker Energy recommends that AEMC consider these proposals more deeply and concurrently, as Delta intended, as solutions to the clear and obvious immediate need we see in the NEM today. We note, with strong agreement, the ESB statement in relation to its 5th January 2021 Directions Paper for their Post-2025 Market Design, that ESB intends to use the Australian Energy Market Commission (AEMC) rules change process to accelerate this agenda, **noting that many stakeholders noted that valuing and procuring missing system services is a priority that cannot wait until 2025.**

One key observation we must make in relation to the background papers and the AEMC Rule Change Directions Papers is that there seems to be a basic fundamental misunderstanding of how the great bulk of generation dispatch for business energy customers is backed by Contracts-for-Differences in the wholesale market, under which generators are only assured of their full budgeted gross margins if they are physically dispatched at their full contracted levels, and are therefore indifferent to “real-time” Pool Prices, which are cited frequently as being the price signals for investment and for dispatch by generators. Similarly, Gentailers retailing to residential as well as business energy customers face similar indifference to wholesale Pool prices for their contracted retail sales.

This in our view is the fundamental disconnect between much of the commentary suggesting that the present market design should still deliver supply/demand price outcomes that drive efficient dispatch and investment in the market, whereas the evidence points to the present market design being “not-fit-for-purpose”, as the Energy Security Board has concluded, and requires the AEMC to prioritise its considerations market-based solutions for the supply of Essential System Services and for Unit Commitment Services for Security.

With the high level of large-scale intermittent generation and household solar PV now in the NEM compared to the position when the NEM was first established as an Energy Only Market, it seems untenable going forward to have a market design that does not value the very services that it needs on a daily basis and have these competitively sourced from all available technologies.

This submission, together with a separate set of materials being prepared by Delta Electricity, presents a viable course of action that is designed to operate within a NEM market-based mechanism and address these fundamental issues. This recommended action will allow the NEM to operate securely and reliably through to 2025 and beyond as increasing levels of Intermittent Generation enter the NEM and increase the requirement for the supply of Essential Services for system security and reliability that are fundamental to security of supply of electricity for households and business at the lowest possible cost.

Yours faithfully,



Trevor St. Baker

St Baker Energy Innovation Fund (StBaker Energy)

Trevor St.Baker AO, Hon.DEng (Qld), BEng (NSW), BA (Syd), FIEA, FAIE, and FAus IMM, is the founder and a Director of the StBaker Energy Innovation Fund (StBaker Energy), which has major investments in new technology R&D, new-start commercialisation of new low-emission products in the transition of the transport sector to zero-emission electricity drives, globally, and to support expanded uptake of zero-emission electricity generation. StBaker Energy investee companies include:

- Tritium Pty Limited (~30% shareholding) which TStBaker Chairs
- Evie Networks (100%-owned subsidiary) of which TStBaker also Chairs
- Novonix Limited (~18% shareholding) of which TStBaker is a Non-Executive Director
- PURE-EVs Pty Ltd (67% shareholding) of which TStBaker also Chairs
- Printed Energy Pty Ltd (100%-owned subsidiary) of which TStBaker also Chairs
- Nth Degree Technologies Worldwide Inc, of Tempe, AZ, USA (67% shareholding) of which TStBaker Chairs.
- CareWear Corp, of Reno NV, USA (36% holding) of which TStBaker is a Non-Executive Director

StBaker Energy is 100% owned by Sunset Power Holdings, the investment vehicle 100% owned by Trevor & Judith St.Baker. Sunset Power also has a 50% interest in Delta Electricity Pty Ltd group of companies, including Sunset Power International, operator of the Vales Point power station, and Delta Coal, operator of the former Chain Valley Colliery. Sunset Power also has a 50% interest in SMR Nuclear Technology Pty Ltd.

Trevor StBaker has had more than 60 years' experience in the energy sector nationally and globally, including 24 years in the government-owned electricity commissions of NSW and Queensland, 12 years as Principal of a boutique energy consulting practice, ERM Consultants, and 25 years, to date, establishing and directing independent private-sector electricity generation and retail enterprises, ERM Power Limited, Sunset Power International and Delta Electricity Pty Ltd. He has been involved throughout that time in planning electricity generation and supply, with involvement over many years in the Electricity Supply Association of Australia, the National Generators' Forum, of which he chaired for three years, the Australia Energy Council, the successor to the ESAA, and the Energy Policy Institute of Australia, of which he has been a Director for many years. He was actively involved in the processes from which the National Electricity Market was established, and his businesses have been significant market participants in the NEM, in the Western Electricity Market, of WA, the ERCOT Electricity Market of Texas, USA, and in the PJM Electricity Market of the north-eastern States of the USA.

Trevor St.Baker was named an Officer of the Order of Australia in 2016 "for distinguished service to business and commerce as a leader and executive in the energy sector, and through philanthropic support for a range of health, arts and indigenous youth educational programs". On 4th February 2021, Trevor St.Baker AO was bestowed the award of Doctor of Engineering, *honoris causa*, by the Senate of the University of Queensland, "as a highly successful businessman and philanthropist who has been a towering figure in the Australian electricity sector over the past six decades".

Delta Electricity has submitted two NEM Rule Change Proposal, for Capacity Commitment Mechanisms for System Security and Reliability, and for Sustained Fast Ramping Services, as optimum market solutions to meet the emerging critical need for optimised market-based procurement of Essential System Services (ESS) and Unit Commitment for Security (UCS). StBaker Energy is presenting its submission, independent of Delta's submissions on these Rule Change proposals, and will concentrate on the broader energy policy

imperatives of achieving net zero emissions on the Australian continent while ensuring system security and reliability, as well as maintaining internationally competitive electricity supply costs in Australia.

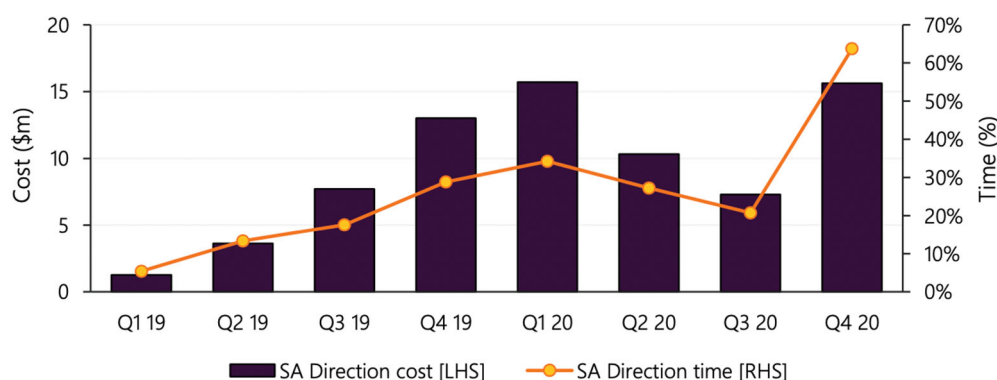
This consultation process is an important opportunity to take stock of the wide range of market design initiatives and consider them as a package.

Market Interventions

Australia has been at the forefront globally in the uptake of variable zero-emission wind and solar generation, particularly of residential and factory roof top solar. This has seen the electricity grid and market design challenged to the point where it has overtaken the capability of the NEM market design to maintain system reliability and security of supply, requiring expensive and regular market interventions by AEMO. In 2020 alone, total costs for directing South Australian generators for system strength was \$49 million, \$23 million higher than 2019¹.

Figure 40 South Australian direction cost and time on directions increased significantly

Time and cost of system security directions (energy only) in South Australia



Note: direction costs reported are preliminary costs which are subject to revision.

The need to curtail wind and solar generation dispatch into the electricity supply grid, and to also direct standby thermal generation into service to maintain an adequate supply of essential system services, is an inefficient and high-cost approach to electricity market management. It is also a clear demonstration of the failure of the present NEM Market Design to procure cost-efficient market-based solutions for consumers and investors.

These costs already exceed hundreds of millions of dollars per annum. They adversely affect the business cases of the very renewables investments that are also subsidised into construction and into service and are clearly relevant to investors. However, there are also other costs to such intervention in terms of the impact on consumers through the reduction in low-cost renewable energy supply that is able to enter the electricity grid.

This is not a sustainable model for the NEM, consumers or Australian business. The AEMO 2020 Renewable Integration Study makes it clear that frequent market interventions as we are now seeing in South Australia demonstrates that the market is not delivering the required outcomes and represents market failure.

¹ P.26 AEMO Quarterly Energy Dynamics Report Q4 2020

While intervention mechanisms have always been a part of operating a secure NEM, historically their use has been low, with intervention used as a last resort to manage specific issues on the grid. An intervention should only arise if there is a failure in the market to deliver the necessary power system outcome. Frequent interventions being needed for the same issue would imply an enduring market failure.

As Section 2.3 outlines, however, intervention is now commonplace in parts of the NEM and is expected to be required more frequently in more NEM regions over the next five years.²

South Australia has experienced the greatest level of interventions, with AEMO directing thermal generators online to maintain system security as a result of high levels of variable renewable energy supply. High levels of variable renewable supply have the impact of reducing price and displacing thermal plant thereby needing the AEMO to intervene and direct these units back onto the system to ensure system security. South Australia is now also recognising the need to address minimum operational demand which in October 2020 saw 100% of underlying demand supplied by renewable energy but, at the same time, AEMO was required to intervene to direct on gas fired plant to ensure the system remained secure. This does not seem an efficient mechanism by which to procure the necessary essential services to maintain security. In December 2020, Victoria also experienced its lowest operational demand, which can be seen an indicator of future interventions.

1.3.3 Negative wholesale electricity prices

During Q4 2020, negative and zero spot prices occurred in 7% of all trading intervals, surpassing the previous record set in Q3 2020 (4.6%), with calendar year 2020 averaging 4.4% compared to 1.7% in 2019. Negative spot prices were most prevalent in South Australia and Victoria, with both states reaching record quarterly levels. South Australia's spot prices were negative 17% of the time during Q4 2020, exceeding the previous quarter of 10%, while Victoria reached a new record of 10%.....

- *Low operational demand – driven by mild conditions and high distributed PV output. In Q4 2020, combined Victorian and South Australian operational demand dropped below 5,000 MW 16% of the time, compared to 7% of the time in Q4 2019.*
- *High variable renewable energy (VRE) output – largely driven by new capacity installed in Victoria. In Q4 2020, combined Victorian and South Australian VRE output was above 2,500 MW 20% of the time, compared to 9% in Q4 2019.....*

Generators' response to negative prices

The large increase in negative spot prices in South Australia and Victoria led to a variety of bidding responses from generators in those regions:

South Australian GPGs – as negative spot price occurrences in South Australia continued to trend upwards, GPGs more frequently sought to de-commit from the market for economic reasons, resulting in AEMO needing to direct them to stay on and leading to a record for system strength directions (Section 1.6.3).³

² P.28 AEMO Renewable Integration Study 2020

³ P.12 AEMO Quarterly Energy Dynamics Q4 2020

In early 2020, the South Australia – Victoria separation event from 31 January 2020 to 17 February 2020⁴ required 65 interventions over the 17-day period to ensure the right combination of essential services from thermal plant were online to support the grid. The event is a salient reminder of the variability and uncertainty in the current system, with market intervention continuing to underpin grid security if more efficient mechanisms are not introduced to manage the grid in advance of the issues arising more broadly in the NEM. It is important to recognise that directions are the last resort tools to secure the grid. The separation event caused significant increases in FCAS costs, a function of the instability inherent in the grid with the changing resource mix, which, no matter how they are allocated, a vast proportion is passed on to consumers.

In Q1 2020, NEM quarterly FCAS²⁴ costs increased to record levels of \$227 million (Figure 30), largely due to the extended separation of the South Australian and Victorian power systems. Of these costs, \$166 million was recovered from generators, with the remainder (\$61 million) recovered from retailers. The largest increase in costs by category occurred in the Contingency Raise FCAS markets, which increased from \$30 million in

Q4 2019 to \$142 million in Q1 2020⁵.

The issue of the need to retain essential services from synchronous generation are well documented and acknowledged in publications from the ESB, AEMO and the AEMC. The ESB Post 2025 Market Design Consultation point to the increasing issue of intervention and the need to create a market mechanism by which services can be procured more efficiently.

Interventions highlight the need for structured procurement of ESS (see Section 6), which may require coordination ahead of real time. Going forward, synchronous generators will likely continue to be an important source of ESS, and AEMO will need a process to optimise the procurement of services. The process by which these services are procured in the operational timeframe can be improved.⁶

Essential Services

In its January 2021 Post-2025 Market Design Directions paper, the Energy Security Board (ESB) advised that it has prioritised the possible procurement of optimised market-based solutions for the following Essential System Services:

- The need to refine frequency control arrangements and, in particular, address the need for enhanced arrangements for primary frequency control and a new market for fast frequency response,
- The need to procure system strength in a structured manner, and
- The potential need for a new operating reserve or ramping service.

⁴ P.35 Renewable Energy Study 2020

⁵ P.25 Quarterly Energy Dynamics Q1 2020

⁶ P.75 ESB Post 2025 Market Design Consultation Paper

The ESB stated that it intends to use the Australian Energy Market Commission (AEMC) rules change process to accelerate this agenda, as follows, noting that many stakeholders noted that valuing and procuring missing system services is a priority that cannot wait until 2025:

- Fast frequency response and primary frequency response – being considered via the Infigen and AEMO rule changes (further details in accompanying AEMC directions paper).
- Consideration of operating reserves – being considered via the Infigen Energy and **Delta Electricity (Introduction of ramping services)** rule changes (further details in accompanying AEMC directions paper).
- NSP structured procurement provision of system strength – being considered via the TransGrid rule change.
- Developing operational scheduling mechanisms to schedule system strength and inertia, including the progression of the UCS and consideration of operational synchronous services markets – being considered via the Delta Electricity (capacity commitment mechanism for system security and reliability services) and Hydro Tasmania rule changes⁷.

The ESB also stated that it intends to further develop these options as follows before proceeding with more detailed Market Design work:

- Use the operational timeframe rule changes on synchronous services (**Delta and Hydro Tasmania**) to progress development of the UCS.
- Consider ahead scheduling of system services first through the rule changes related to synchronous services markets (**Delta and Hydro Tasmania**), and more generally after new system services markets (including system strength, fast frequency response, operating reserves) have been defined.
- Continue to develop the concept of voluntary ahead scheduling of energy and services, assessing the potential size of additional resources that could be brought into the market before proceeding with more detailed design work⁸.

Whilst StBaker Energy is deeply involved in the present critical area of emissions reduction globally, as Australia's energy sector and transport sector transition to low emission technologies that are practical, affordable and efficient, StBaker Energy is conscious of its responsibility that its conventional coal-fired generation business is capable of contributing to the supply of essential system services that the ESB has identified, as well as energy dispatch for as long as it can provide these services at lower cost than other alternatives and without hindering the uptake of technologies that can achieve lower emission targets at affordable cost.

The StBaker Energy submission aims to demonstrate that introduction of the two Delta Rule Change proposals, for Day-Ahead Operating Reserves commitments, together with the Sustained Fast Ramp Offerings over the five to six hours of Net Demand change every day, represent by far the most readily implementable and low-cost optimum solution, there being no current market mechanism to value and capture the essential services that are required from either existing thermal synchronous generators or alternative sources. Both proposals can be readily incorporated into and co-optimised with the present energy and frequency control ancillary service markets under the NEM.

⁷ P.7,8 ESB Post 2025 Market Design Consultation Paper

⁸ P.8 ESB Post 2025 Market Design Consultation Paper

The NEM was established as an Energy (only) market and traditionally relied on thermal generators, a fleet of up to 40,000MW of coal plus gas plus hydro-generation (prior to closures over the last decade) to ensure essential services are brought to market as a by-product of energy generation. Given the historic abundance of essential services, a separate market-based Essential Services procurement mechanism was not necessary, and in fact a separate Essential Services Market would not in the past have established a material pricing for these services.

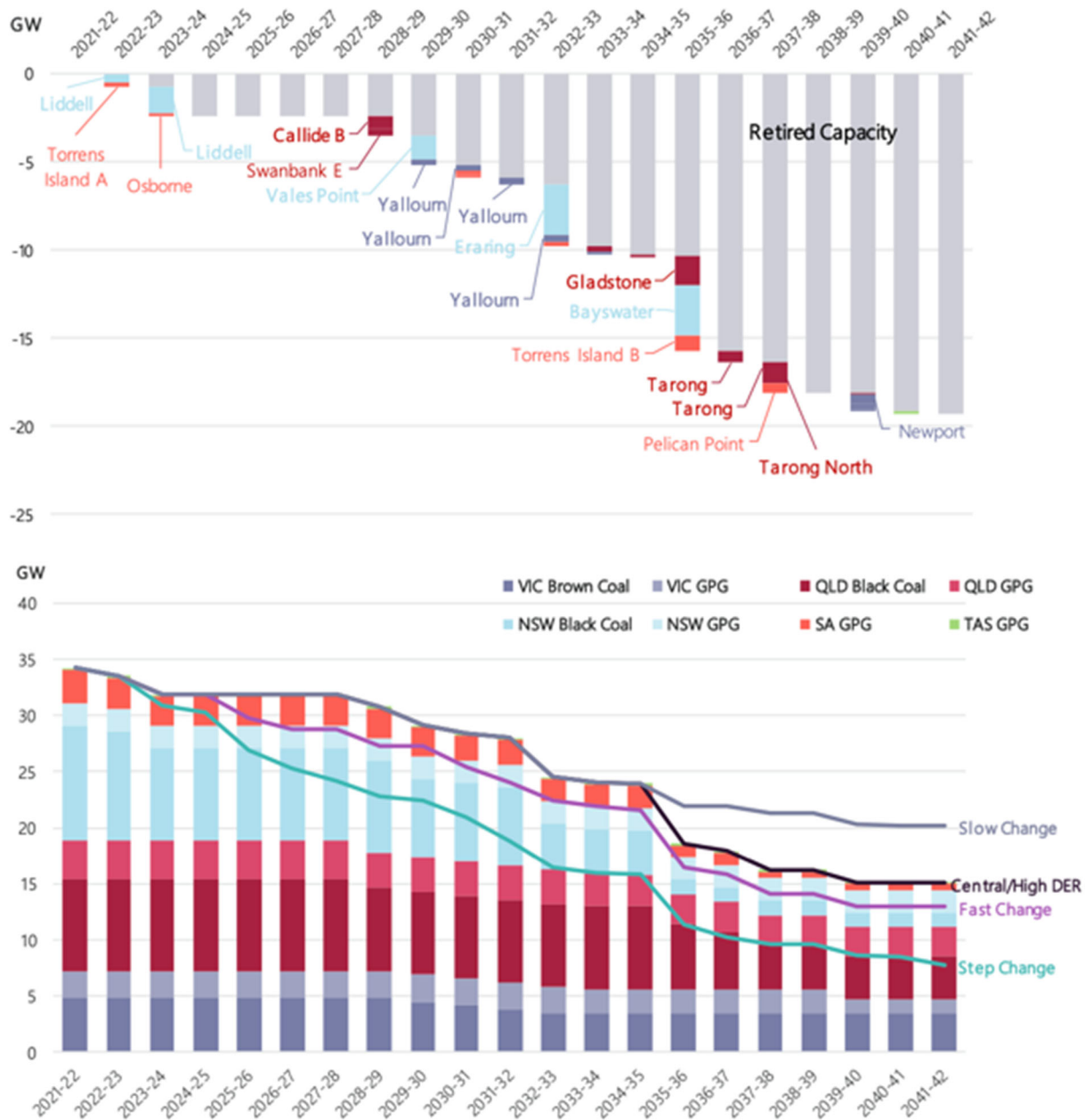
However, with the growth in non-synchronous generation which is forcing traditional synchronous (thermal) generation out of the market, the abundance of essential services on which the current secure system and market relies is rapidly diminishing. The ESB reinforced the view the essential services are vital to the system;

Security remains the most concerning issue in the NEM. Maintaining the electricity system within the required parameters for frequency, voltage, inertia and system strength becomes harder as variable renewable generation increases its presence in the NEM. Wind and solar powered generation resources are non-synchronous and do not have the same technical characteristics as thermal and hydro power generation.⁹

The ISP diagram below clearly shows the decline in availability of essential services by the end of this decade (assuming no early retirements). The ISP is forecasting that about 16,000MW of retiring thermal plant will need to be replaced by up to 26,000MW of variable renewable resource plus up to 19,000MW of dispatchable equivalent generation to firm up the variable energy supply. To attract this level of investment in essential services, the creation of new market mechanisms is required. This would enable new technology solutions to enter the market and displace the thermal generation, so long as such essential system services markets were maintained open and competitive and free from non-market intervention or risk of changing market rules.

⁹ P.7 ESB Health of the NEM

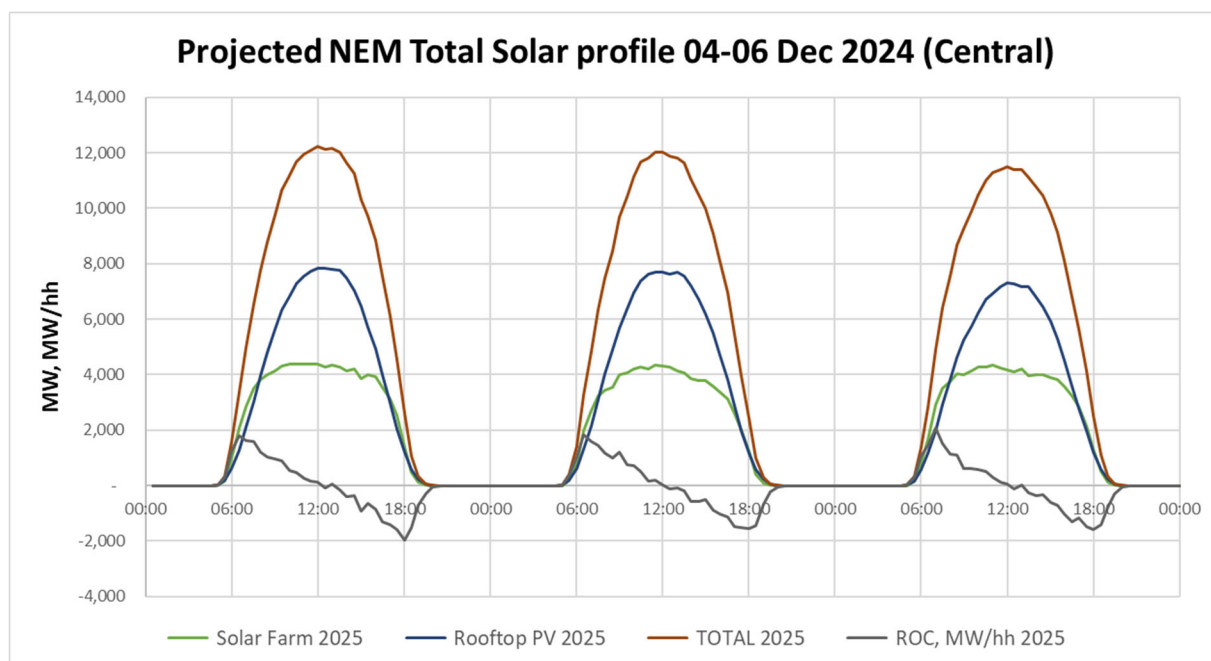
Figure 11 Coal-fired generation and GPG retirements (top) and capacity (bottom)



The challenges that are currently being experienced are expected to continue and increase as renewables take an increasingly larger share of the energy production in the NEM. It is critical that action be taken to avoid a situation where current providers of essential services are prematurely displaced from the NEM as result of the market dynamics within the current NEM design. The current cost of this market failure is known and the future cost to consumers and to Australia's business energy competitiveness. The market design must recognise the transformation that is occurring and put in place competitive markets ahead of time. Introduction of open competitive markets for the increasing operating reserve being called upon for operating reserves and sustained fast ramping over long periods, as the sun goes down each day, for example, will attract bids for the provision of these essential system services from current coal-fired capability, at minimal cost as a result of the abundant supply, and create the market mechanism to transition to a future mix of technologies to provide these services.

The diagram below from Delta's Rule Change Proposal¹⁰ to illustrate one aspect of this with the scale of the solar ramp at each end of the solar day, based on the AEMO/ESB "Central" projection of utility and roof-top solar export into the grid in FY2025.

- This FY2025 estimated maximum and minimum 30-minute Solar ramp rate as shown, from AEMO projections, are +2,090/-2,042 MW/hh (refer the purple trace).
- Large as these ramp rates are, they have already been exceeded by Calendar year 2020 actual data which saw the maximum 30-minute ramp rate for aggregate NEM Operational Demand as +2,587 and -3,136 MW/hh - equivalent to 5 x 660MW units per half-hour trading interval, or 10 x 330MW possible operational reserve per 660MW Unit if the ten 660MW units were operating at 50% rated capacity.
- The solar ramping causes the balance of the market to have to respond, and under causer-pays principles those causing the ramp should pay for the costs of addressing the issue.
- This sustained ramping, over a period of 6-7 hours, is unprecedented historically and is orders of magnitude greater than the available MW in existing FCAS Raise and Lower services which were designed with market fluctuations over much shorter timeframes in mind, such as dealing with the trip of a large generating unit.
- The sustained Net Demand ramp raise from utility and roof-top solar as the sun goes down every afternoon, as indicated from the diagram, is complemented by the characteristic consumer demand rise up to the evening peak load, occurring after the sun has gone down, but also by the coincident reduction in rooftop solar generation to meet demand in homes and premises, behind the meter, as the sun goes down.
- ESB projections of post-2025 total solar ramp raise for Net Demand, of 12,000 MW over 4-5 hours, are according grossly understated, as these sustained ramp raise demand levels are already occurring.



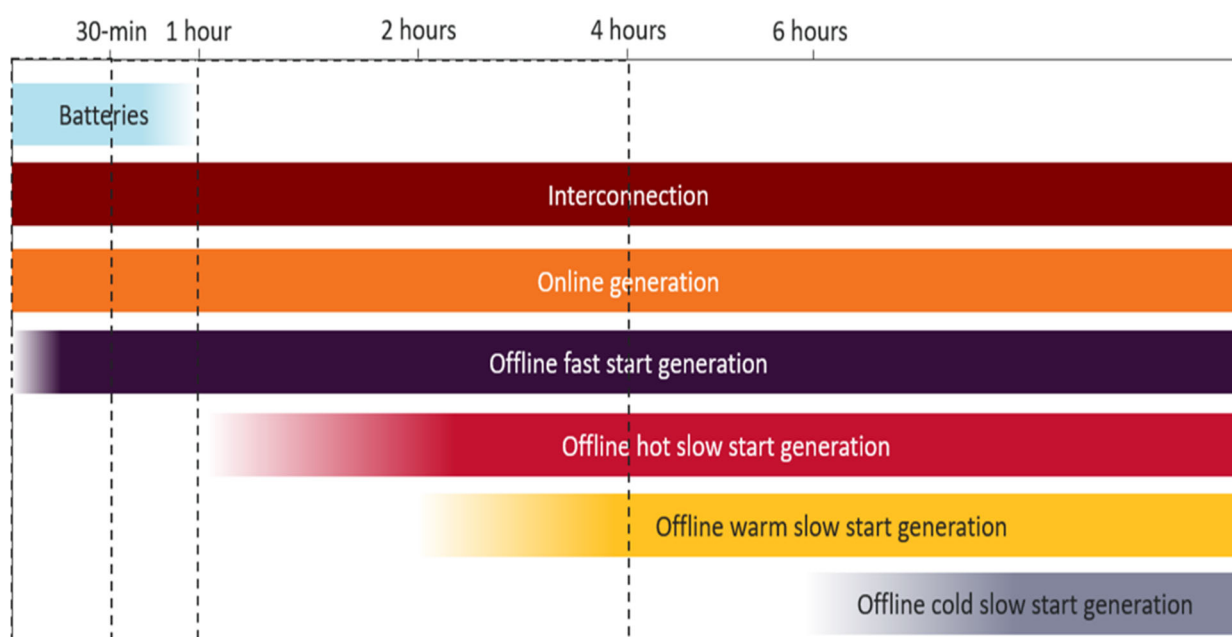
¹⁰ AEMC reference ERC0307, [Introduction of ramping services | AEMC](#)

Market Design Requirements

The current NEM market design does not explicitly value and signal the need for essential system support services, apart from instantaneous FCAS ancillary services. A far greater suite of Essential System Support Services are critically required for a secure and reliable grid, particularly with increasing uncertainty and variability as we transition to a greater mix of variable renewable energy resources. We are already seeing an increasing need for inefficient, and costly, interventions by AEMO. This is a clear and present problem with the existing operation of the market that must be addressed urgently.

A separate Essential Services market will also be required to attract the necessary new investment in this area as traditional synchronous generators retire. In order to attract the scale and timely investment in essential services projected in the ISP, a competitive, technology-neutral market is required. If well designed, the market for Essential Services would make use of the existing thermal plant for as long as it remains the immediately available and most viable source of supply in terms, cost, scale and technical requirements to keep the grid secure. In the short term the abundance of essential services from thermal plant as well the existing capabilities from demand response will have a market value that will provide the right signal to participate or further invest in the provision of services. Over time as new technologies are developed and have been proved to operate at scale, and the value of essential services increases in recognition of their increasing scarcity value, then the investment will occur naturally, driven by the appropriate market signals.

The diagram below highlights how different technologies require different lead times to become available to the market. Some technologies such as batteries can respond in seconds whilst others such as a cold start thermal unit may need a day to become available. The market would recognise the difference in the services that these technologies offer. Batteries at this stage would not be able to sustain a five-hour period of high ramp whilst thermal plant is well suited to that requirement and will be able to respond differently depending on state of operation at the time.



Demand response would also be able to participate in the market and provide services if they were afforded the appropriate ahead timeframes required to manage plant operations in the case of industrial businesses, or in the case of distributed energy, manage the relevant orchestration required by the market.

BlueScope supports a move to Day Ahead Markets and we agree with the following benefits:

A reduction in volatility could be seen since there would be higher transparency and price certainty in the day ahead market which would also assist with risk management.

AEMO would be better equipped to work through solutions if generators were to withdraw, and they would also be able to more efficiently use emergency reserves, which should reduce the number of out of market interventions needed to maintain system security and reliability¹¹.

New Essential System Support Services markets would resolve the existing and increasing operational challenges experienced by AEMO.

- The present market design does not provide appropriate signals to recognise the changing needs of the changing resource mix of the system.
- The present market design does not account for the general indifference to the wholesale pool spot price for the great bulk of generation dispatch for business energy customers which is hedged under Contracts-for-Differences in the wholesale market, under which generators are only assured of their full budgeted gross margins if they are physically dispatched at their full contracted levels
- Similarly, Gentailers retailing to residential as well as business energy customers face similar indifference to wholesale Pool prices for their contracted retail sales, where the generator must be dispatched to its full contracted volume in order to capture the gross margin for its full contracted volume, with no incentive to reduce output to minimum safe operating level to accommodate high levels of wind and solar.
- This results in low wholesale pool prices, down to uneconomic levels, even for the wind and solar generators.
- Unless sustained low pool prices seem assured and without volatility that would result in no lost gross margins on pool price upswings, contracted thermal dispatch is generally indifferent to low pool prices at times of high wind and solar generation.

¹¹ P.3 BlueScope submission to AEMC Reliability Frameworks Review

Delta Rule Change Proposals

The two Rule Change proposals submitted by Delta were the two parts of an optimised total market-based solution to the ahead unit commitment and the tapping of the present abundant potential availability of Essential System services through a market for sustained fast ramping to deliver that committed operating reserve at rates already testing the capability of the system. Importantly, the immediate impact of these Delta-proposed rule changes would be to provide AEMO with the ability to procure via a transparent, competitive market the services needed to keep the grid in a secure state in the timeframes needed.

Importantly, also, the Operating Reserves commitments over long periods and the sustained fast ramp capabilities sought over such large continuous raise periods can only be provided by “in-service reserves over the long ramp-raise periods”. The likely initial sourcing of these “ahead” operating reserve commitments and sustained fast ramping would be the traditional synchronous generators, delivering inertia as a free added bonus for market services.

Comment has been raised that the ahead commitment cannot be co-optimised with the present energy and FCAS markets, yet this was a key consideration of the design by Delta of the proposed market-based services procurement.

- The generator participant would decide which of the ten dispatch intervals for each individual unit it would price to ensure dispatch of the Unit’s minimum safe operating load.
- The generator participant would then decide what relative pricing to bid for energy, for sustained fast ramp to the next 30-minute interval, and for operating reserve if not dispatched, but at a price to win a position in the bid price stack within the operating reserve total to meet the daily maximum demand plus the determined credible contingency, with zero variable in and solar dispatch assumed.
- Importantly, the Delta ahead pre-committed operating rule change proposal is a neat example of a day-ahead bid capacity only capable of being offered by a generator participant bidding to ensure that the generating unit is synchronised and operating above its minimum safe operating load continuously over periods that intermittent wind and solar will be imposing major Net Demand swings on the grid.
- A genuinely bid unit offering for pre-committed operating reserve that is accepted as being within the required peak demand for the day, with credible contingency, could be swinging from interval to interval from an energy dispatch price to a reserve operating reserve price.
- However it should be impossible for any generating unit to be able to offer a credible bid for committed operating reserve over such sustained periods unless synchronised and capable of sustained dispatch, if required.

We have the same concern about “virtual inertia” being offered, similarly to how “virtual capacity” is able to be bid in some Capacity Markets, and at significant cost to electricity consumers for no real service.

The AEMC has expressed concerns about capacity charges generally creating a significant additional cost compared to energy-only Markets. As outlined earlier, the continuing need to intervene in the existing market can be seen as a de-facto capacity payment for dispatchable generation that makes itself available for return to service and sustained operation during high wind & solar generating periods.

The language here matters less than the reality that, as demonstrated above, the current NEM energy-only market is not providing the right signal to keep or bring the essential services online efficiently. This is creating the need for the out of market payments to thermal generators. The cost of the directions process just in South Australia is reaching \$50m per annum, and this amount is net of the free-boarding South Australia is enjoying from its interconnection with Victoria, which would not be available if Victoria closed all its coal-fired generation and relied on the essential coincident solar generation and the somewhat more diversified wind generation, both however being intermittent, around an approximate 30% annual capacity factor.

It is also worth noting that StBaker Energy, as the founding developer behind the growth of ERM Power, which developed six major gas-fired power stations in the 2,000's, every single one only possible as a result of off-take contracts with Govt-owned retailers, greater than ten years, and most in the range of 15-year to 25-year PPA's. Energy-only markets work well when there is a pre-existing surplus of dispatchable synchronous generating capability and can survive with boutique retail insurance hedge products that can back small peak-operating generation additions.

We also note AEMC concerns about co-optimising the day-ahead pre-committed operating reserve with the real-time energy market. We see no conflict about a day-ahead energy bid and an operating reserve bid to be paid only if the operating reserve bid is successfully within the bid price stack for operating reserve to meet the daily peak system demand assuming enough to cover the demonstrated credible contingency and with no wind or solar generation, and is not dispatched for its energy bid price for that generating units dispatch interval.

Addendum – Future Governance Arrangements

Finally, it is critically important as a result of the poor background papers purporting to establish the arguments and options for the need for NEM Market Re-design, and the fundamental misunderstanding that most market participants, be they generators retailers or end-customers either business energy customers, are indifferent to the Wholesale Pool price, that the National Transmission Planning functions required of the Market Manager, AEMO, be separated in to a separate agency, to ensure that AEMO's primary responsibility, to ensure a satisfactory physical generation and supply market, is maintained, and that the contract market responsibilities deliver open and competitive technology-neutral generation and retail competition.

- The fact is that monopoly transmission enterprises are not electricity Market Participants subject to the strict rules and market commitments on which high-risk capital-intensive outlays are committed, without external off-market subsidies, grants, or other payments from off-market charges in electricity consumer accounts or from government treasuries and not for services provided.
- It is disappointing that in the background papers, regulated monopoly transmission solutions abound, with scant demonstration of the cost and efficacy of the solution to deliver reliability and security of supply with fully-evaluated and convincing evidence of cost savings for electricity consumers.
- This is exacerbated by the current resort to changes of electricity law in different States to by-pass the customer price test, the RIT-T test being promoted by non-market regulated network monopolies courting public sentiment for outcomes that are being proposed to bypass independent and objective customer price impact test.
- The approval of major transmission interconnections on the basis of understated estimates, when the regulated monopoly proponent can still be assured of its guaranteed return on capital expenditures that may not just be slightly above the estimate on which the application was approved, but even if the capital cost was more than twice the application case estimate.
- It is bizarre that AEMO could have advised Governments incorrectly that the demolition of the modern and low-cost coal-fired Northern Power station in South Australia would not grossly impact the cost of power generation and impact the reliability and security of supply as it did in that State, only saved from huge costs whilst ever it maintains the solid interconnections with the three-times larger Victorian grid.
- It is totally without merit that multi-billion dollar interstate interconnections are being promoted to connect one renewable energy supply State to another State moving to the same coincident renewable energy reliance, such that there will obviously by no significant diversity in the huge solar energy generation in the newly interconnected regions to source any real revenue to pay of the multi-billion dollar capital cost being imposed on electricity consumers