8 April 2021

Reliability Panel
c/- Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

Submitted by email to aemc@aemc.gov.au

Project number: REL0080

Review of the reliability standard and settings guidelines Consultation paper

Snowy Hydro Limited welcomes the opportunity to comment on matters raised in the Consultation paper from the Australian Energy Market Commission Reliability Panel (the Panel) on the Review of the reliability standard and settings guidelines.

The NEM has undergone a period of rapid transition and this is expected to continue due to changes in the generation mix and associated policy reforms. The Panel's review of the reliability standard and settings guidelines is critical in light of these changes and, in particular, the need to stimulate firm capacity investment.

The NEM serves two related functions. Firstly, it balances demand and supply in real time. Secondly, it maintains resource adequacy by supporting efficient levels of decentralised investment in new supply. Unfortunately, current market settings constrain the NEM's ability to adequately perform this second function. The existing level of the Market Price Cap and Cumulative Price Threshold creates a revenue inadequacy problem for market generators. The predictable result is a lack of investment in firm capacity.

Regrettably, there appears to be a growing acceptance of the fallacy that this underinvestment justifies yet more capacity mechanisms, outside the existing market structure. It is, rather, the very existence of such out-of-market mechanisms which has both created revenue inadequacy for and deterred investment in dispatchable assets. Entrenching more out of market revenues will only make this worse.

Contracting is the crucial link between the spot market and new investment. The contracts market was always designed to fulfil this role, and has done so effectively for more than two decades. It is therefore important that the Panel take a more considered analysis of the settings and the methodology changes required to show that artificial constraints in the spot market are impacting generator revenues in the contract market, and that this is the source of the recent underinvestment in firm capacity. At the centre of this issue is an unnecessarily low Market Price Cap (MPC) and Cumulative Price Threshold (CPT), which have created a missing money problem for peaking plant in the NEM. The CPT reduces investment in deep storage more than other technologies (given its longer exposure to periods of administered pricing). This is the opposite of what is needed to manage the increased penetration of variable renewable energy and renewable energy droughts.

The Panel should therefore strongly consider a moderate increase in MPC to $22.5k/MWh to coincide with the investment in dispatchable capacity needed in the market. This would achieve an appropriate balance between incentivising new investment and not risk the financial viability of retailers or generators. In an energy-only market like the NEM, a long-run equilibrium reliant on sales at market prices is unachievable if the MPC is substantially below the value of customer reliability (VCR). The current MPC ($15k/MWh) is significantly less than the AER's estimate of VCR ($26k/MWh in NSW and $22k/MWh in VIC, 2019). The increase to $22.5k/MWh would strike the right balance by driving a sufficient increase in cap prices to drive investment.

Increasing the MPC will ultimately benefit consumers. In the short term, the correlation between the MPC and consumer prices is weak and in the long-term is likely to be negative, as a higher MPC improves price signals for dispatchable plant and lowers overall cost for consumers. The evidence shows that market volatility has been falling, and that cost of volatility is negligible. The MPC can be safely increased without increasing consumer costs. Alternative mechanisms are instead likely to, and already are, costing consumers much more. Consumer-funded RERT energy can read a cost of $60,000/MWh but market bodies have been unwilling to consider a much more modest increase in the MPC, which would alleviate the need for expensive out-of-market mechanisms.

The CPT trigger which is equivalent to 7.5 hours of MPC; should be also adjusted to 24 hours of MPC. This will reward (incentivise) capacity that can provide 3 days of 8 hours capacity and should cover more extreme weather events when renewable output is low.

The ESB's Post 2025 market design preferred solution seems to be to create new sources of capacity revenue for dispatchable plant outside the existing market rather than placing greater importance on the Panel's reliability setting review. Capacity revenue approaches are inefficient, will distort capital allocation and are likely to increase carbon emissions. While we appreciate that the MPC and CPT fall under the jurisdiction of the Panel, it is incumbent on the ESB to include as part of their recommendations the settings review in its market design work.

The Panel should review all parts of the reliability settings in the Guideline. When the Guidelines were originally developed the NEM was not facing the challenges that have occurred in recent years, particularly the growth of zero marginal-cost generation. Allowing for changes to the methodology of market settings would represent the most straightforward and effective way to improve energy security.

If the NEM is to sustain an appropriate level of capacity, it must allow adequate capacity revenues. The most efficient and least-cost way of determining those revenues is through the existing market structure. The evidence shows that out-of-market revenues are much more costly for consumers.

The focus should, therefore, be on adjusting market settings and the first step is to allow for all aspects of the market settings to be within the scope of the consultation. Snowy Hydro's view on the consultation process is as follow:

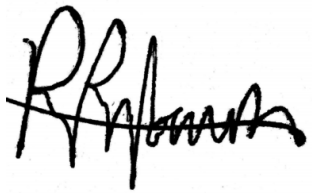
- Changes are occurring at a rapid pace with the replacement of ageing coal plant by weather-dependent renewables. An effective market therefore needs volatility to send price signals for further investment in dispatchable energy to ensure reliable and affordable energy supply for consumers.
- The growth of zero marginal cost generation is making capacity management a critical issue for the NEM. There is no more important issue than ensuring sustainable capacity revenues for flexible plant, in order to ensure system security and reliability.
- AEMO has been essentially running the NEM at a higher level through using off market resources. Should a higher level of reliability be desirable in the NEM then this should be achieved by changing the reliability settings to match the standard.
- RERT has cost $35-52m per year in recent years, with consumers paying more than $60k/MWh for capacity under the RERT and amount significantly above the MPC. These costs flow directly through to the prices that consumers pay as the Australian Energy Regulator and Essential Services Commission incorporate them into the Default Market Offer and Victorian Default Offer respectively.
- Not only are out-of-market mechanisms such as RERT expensive, they do not add any effective capacity to the market and undermine the investments of registered generators.
- To consider enhancements to the existing market structure, in order to deliver greater efficiency, security and reliability, the Panel should give priority to the primary market signals of 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 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.
- Given the substantial changes that are occurring as the market changes and the post 2025 reforms the ability to review reliability components under the 2016 guidelines should be changed.
- Under a one-off change, the Panel should consider in a comprehensive manner reviewing all reliability settings so that they can remain appropriate for the purpose which is intended to serve.
- In an energy-only market like the NEM, a long-run equilibrium reliant on sales at market prices is unachievable if the MPC is substantially below the value of customer reliability (VCR). The current MPC ($15k/MWh) is significantly less than the AER's estimate of VCR ($26k/MWh in NSW and $22k/MWh in VIC, 2019).
- Adjusting caps would reduce the need for RERT, reducing total energy costs for consumers.
- The cumulative price threshold (CTP) is also set too low. The CPT creates a missing money problem. Retailers do not have an incentive to purchase hedging cover above the implied protection of CPT and this is reflected in traded cap prices which results in deferred or absent risk management and high probability of retailers' insolvency

Snowy Hydro appreciates the opportunity to respond to the Panel on the Consultation Paper on the Review of the reliability standard and settings guidelines and any questions about this submission should be addressed to panos.priftakis@snowyhydro.com.au.

Yours sincerely,



Panos Priftakis
Head of Wholesale Regulation
Snowy Hydro

Context: The NEM is Transitioning

Power system reliability to date

To date the reliability standard has essentially been met. The Panel has correctly noted that *"over the past 14 years, interruptions to power supply in the NEM due to a lack of available capacity have been very rare."*[1] The energy-only market has been robust and delivered the required levels of generation investment, system reliability and security. The decentralised decision making in the NEM has ensured investments have been prudent.

The NEM has, since the last review of the reliability settings, experienced unprecedented and transformational change. The Panel correctly highlights some key changes the NEM is facing which include:

- Significant increases in large- and small-scale intermittent, renewable generation (wind and solar)
- Exit of thermal, scheduled generation, especially coal-fired capacity, from the NEM
- Increasing congestion on the transmission network[2]

With these changes occurring at a rapid pace, and likely to continue over the next two decades AEMO has been essentially planning to run the NEM at a higher level and do this using off market resources through the Interim Reliability Measures[3]. In the past the Panel has established the most appropriate level for the Reliability Standard and associated market settings however should a higher level of reliability be desirable in the NEM then this should be achieved by changing both 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.

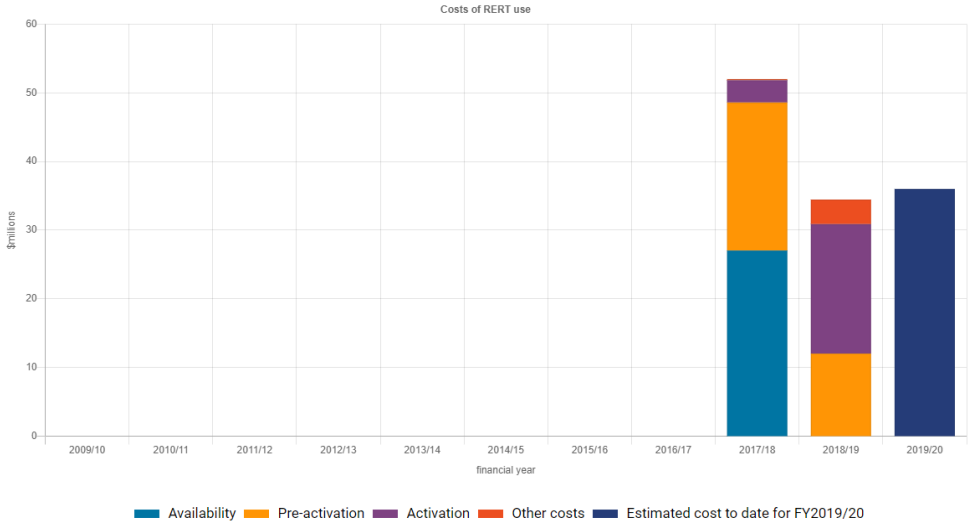
The Panel needs to ensure there is a consistent framework for reliability, market price cap, value of customer reliability and use of the RERT. RERT has cost $35-52m per year in recent years, with consumers paying more than $60k/MWh for capacity under the RERT and amount significantly above the MPC.

RERT costs flow directly through to end prices for consumers. Retailers recover these costs through market offers, while the Australian Energy Regulator and Essential Services Commission account for them in regulatory determinations (for the Default Market Offer and Victorian Default Offer respectively). As an example, the Essential Services Commission included an additional $2.46 per customer in the Victorian Default Offer for 2021 to account for the RERT.[4]

---

[1] Reliability Panel, Review of the reliability standard and settings guidelines, Consultation paper, 4 March 2021, pp5
[2] Reliability Panel, Review of the reliability standard and settings guidelines, Consultation paper, 4 March 2021, pp5
[3] Interim Reliability Measures Review:
http://www.coagenergycouncil.gov.au/reliability-and-security-measures/interim-reliability-measures
[4] Essential Services Commission, 2020, Final Decision

Figure 1: Costs of RERT use[5]



The RERT was intended as a last resort mechanism, to deal with instances of genuine market failure, and should be rarely used. There is only one market in the NEM and all regulatory settings should be calibrated to incentivise participation in the market. The Panel should focus on the ultimate goal which is to encourage participation in the NEM and investment directly into dispatchable energy to meet peak demand. 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 Panel should consider the recommendations from the ACIL Allen Consulting report commissioned[6] by the ESB if there are any changes to the reliability standard. The ACIL Allen Consulting report clearly 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. This approach as the paper notes is the *"most economically efficient approach as it allows the market to naturally clear based on price".* [7]

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. Failure to do so by the Panel will increase reliance on the RERT and likely to produce a less secure market, the opposite of its intended result, and discourage investment in the NEM.

Reforms in NEM

To consider enhancements to the existing market structure, in order to deliver greater efficiency, security and reliability, the Panel should give priority to the primary market signals of 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. 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.

The Panel therefore correctly highlights that due to *"market and power system changes, ESB post 2025 work and the uncertainties related to government policy and schemes, it is important that the*

[5] https://www.aemc.gov.au/data/annual-market-performance-review-2020/costs-of-rert-use

[6] ACIL Allen Consulting report to ESB, 2020, "Reliability Standard: Economic Analysis to support Review"

[7] ACIL Allen Consulting report to ESB, 2020, "Reliability Standard: Economic Analysis to support Review", pp38

approach for review of the reliability standard and reliability settings is fit for purpose and that the reliability settings are considered holistically". The time for a change in the methodology of the market setting is now with the replacement of ageing coal plant by weather-dependent renewables.

Figure 2: Declining coal reliability[8]

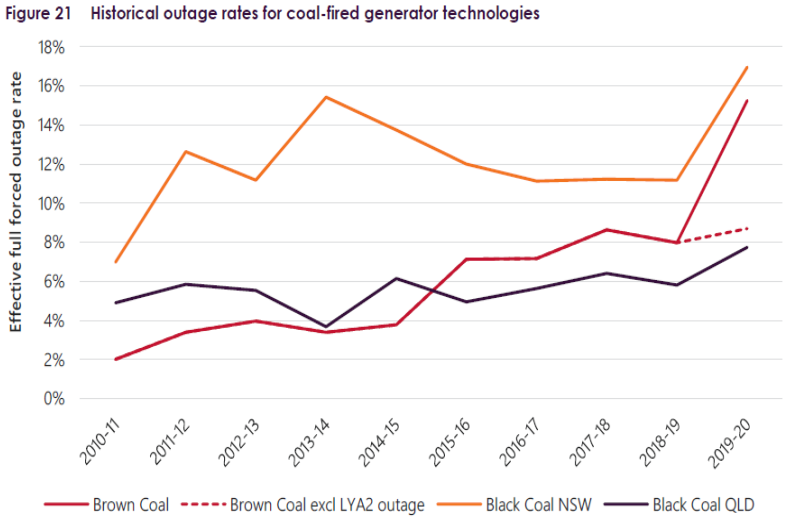
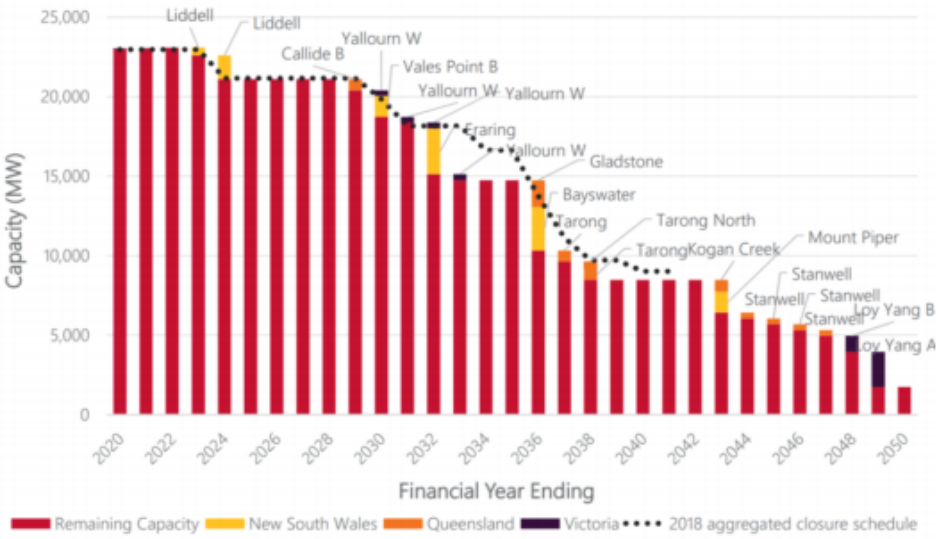


Figure 3: Declining dispatchable energy[9]



Snowy Hydro does not believe a move to additional mechanisms such as the enhanced Retailer Reliability Obligations (RRO). Such a mechanism amounts to a regulatory requirement forcing retailers to purchase hedging cover. It transfers investment risk from generators to consumers whereas reforming market settings would achieve a better outcome at lower cost.

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

[8] Source: p48, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2020/2020-electricity-statement-of-opportunities.pdf?la=en

[9] p24 https://esb-post2025-market-design.aemc.gov.au/32572/1608714620-the-health-of-the-national-electricity-market-volume-1-the-esb-health-of-the-nem-report.pdf

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. 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.

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.[10] 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 the growth of zero marginal cost generation, which has depressed average prices and generator revenue, makes it particularly important that sufficient capacity revenue is available to ensure adequate investment in dispatchable plant. Increasing the MPC and the CPT is, therefore, critical to ensuring sufficient incentives exist to invest in firm capacity. 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.

Matters for the Guidelines - Principles and Assumptions

Given the transformation of the market now underway, as well as the major reforms being considered in the ESB's Post 2025 process, it is appropriate that the reliability components established under the 2016 guidelines should be reviewed. That is, the Panel should consider in a comprehensive, holistic manner reviewing all reliability settings so that they can remain appropriate given changes that are taking place. This includes both the form and the level of the settings. We would expect the ability to review reliability components to revert back to the approach established under 2016 guidelines once this review is complete.

Snowy Hydro understands that there is a need to support stability and predictability in the market to the greatest extent possible, however we agree with the Panel that the benefits from stability may no longer outweigh the benefits of a flexible framework in a changing environment. Making

[10] NER, cl 3.13.7(d)

temporary changes to the guidelines to align with the market design reforms and the changing NEM is necessary.

Assessment Framework

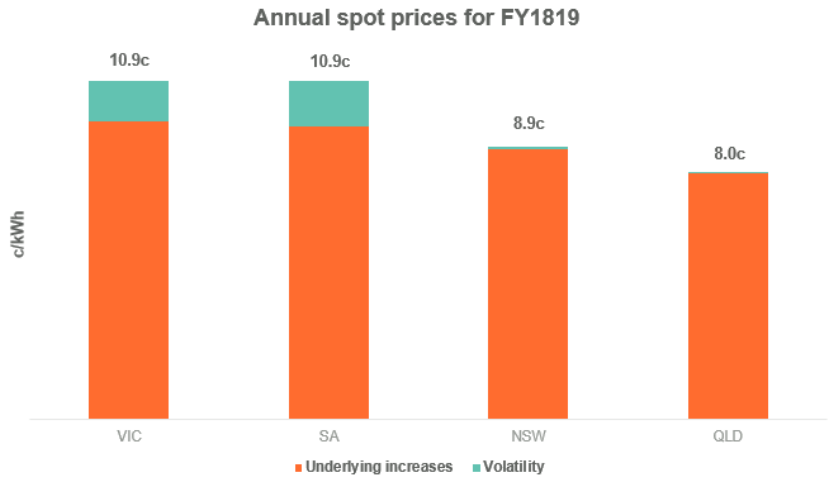
Snowy Hydro agrees with the Panel who considers that "*reviews of the settings take into account the material changes on both the supply- and demand-side of the market to ensure that efficient price signals are sent to market participants to achieve the reliable operation of the NEM.*" It is for this reason we believe the current market with increased penetration of VRE that has led to insufficient investment in dispatchable/firming plants and the market design review requires that the market settings methodology be reviewed. The market price cap (MPC) should therefore be set at a level which preserves this investment signal, while not risking the financial viability of market participants.

In an energy-only market like the NEM, a long-run equilibrium reliant on sales at market prices is unachievable if the MPC is substantially below the value of customer reliability (VCR). The current MPC ($15k/MWh) is significantly less than the AER's estimate of VCR ($26k/MWh in NSW and $22k/MWh in VIC, 2019). This would be significantly less than what consumers already pay for capacity under the RERT which is greater than $60k/MWh.

The Panel should strongly consider a moderate increase in MPC to $22.5k/MWh to coincide with the investment in dispatchable energy needed in the market. This would achieve an appropriate balance between incentivising new investment and not risk the financial viability of retailers or generators. It would support cap prices that are sufficient to drive investment in new firm peaking generation and storage.

The spot market receives a lot of attention when the price hits $15,000/MWh however, beyond its role in managing real-time dispatch, its primary function is as a signalling mechanism for new entry of capacity plants. Wholesale price spikes have little impact on consumer prices as can be seen in the chart below. Retail tariffs are determined by average prices and not peak prices.

Figure 4: Annual spot prices for FY1819



Efficient market settings which include higher price caps, will reduce prices as it will send the right prices signals for further investment in dispatchable energy. Consumers currently pay more for energy during peak periods than is allowed under the caps when AEMO buys energy off-market under its 'reserve trader' (RERT) function. This will worsen with the decline in dispatchable energy.

Adjusting caps would reduce the need for RERT, reducing total energy costs for consumers. It is therefore important to reform market settings would achieve a better outcome at lower cost and would involve a one-off change to market setting then reverting to CPI changes as per the current methodology. The change would be a more efficient and simple alternative to a Post 2025 Market Design Physical Retailer Reliability Guarantee (RRO) that amounts to a regulatory requirement forcing retailers to purchase hedging cover and transfer investment risk from generators to consumers.

The cumulative price threshold (CTP) is also set too low. The CPT creates a missing money problem. Retailers do not have an incentive to purchase hedging cover above the implied protection of CPT and this is reflected in traded cap prices which results in deferred or absent risk management and high probability of retailers' insolvency

The CPT disincentivises investment in storage and capacity. It also favours short duration, in a context where the NEM needs more deep storage to manage the risk of wind and solar droughts. Currently the CPT trigger is equivalent to 7.5hours of MPC; it should be adjusted to 24 hours of MPC. This will reward (incentivise) capacity that can provide 3 days of 8 hours capacity and should cover more extreme weather events when renewable output is low. There is currently no incentive for peaking generation to stay on once CPT hits, and the NEM is more likely to have longer than 1 week renewable droughts in the future

The NEM is no longer able to free ride on its declining stock of coal assets. It is critical that both CPT and MPC are increased through the Panel's next consideration of market settings.

The influx of renewables in the NEM is also increasing congestion in the transmission network. Although transmission investment will solve this to an extent the competition for transmission access is creating risk for existing and future dispatchable generation, as it reduces the firmness of their dispatch when prices are very high. Snowy Hydro believes that the Panel should also consider changes to the form of the market price floor.

Snowy Hydro's simple solution to reduce this transmission access risk for dispatchable generation is to lift the bid price floor of semi-scheduled generation and (ideally also) lower the bid price floor of scheduled generation. This change will benefit the market as a whole as it offers more certain capacity revenue to dispatchable generation, increases the 'price signal' for capacity investment, lowers contract costs to retailers and hence electricity costs for consumers, facilitates the dispatchable generation that future renewable generation relies upon for firming, which enables the evolution of the NEM to a decarbonised and renewables dominated energy supply. Snowy Hydro will provide more details on this proposal during the review.