



Monday, 24 June 2024

Ms Jessie Foran
Project Leaser
Australian Energy Market Commission

Lodged via email to: jessie.foran@aemc.gov.au

Dear Ms Foran,

Clean Energy Council Submission on Consultation Paper – Transmission Access Reform EPR0098

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia, representing nearly 1,000 of the leading businesses operating in renewable energy, energy storage, and renewable hydrogen. The CEC is committed to accelerating the decarbonisation of Australia's energy system as rapidly as possible while maintaining a secure and reliable supply of electricity for customers.

We welcome the opportunity to comment on the AEMC's Consultation Paper – Transmission Access Reform EPR0098.

The CEC strongly recommends further work on the TAR project be stopped as soon as possible. Recognising the AEMC has been tasked with recommending a pathway forward to Ministers, we consider it would be appropriate and accurate for the AEMC to recommend to Ministers that the costs and uncertainties associated with continuing with TAR at this point in time outweigh any of the theoretical benefits of the reform.

Our reasoning for making this recommendation is set out in more detail in the submission below. In brief, we consider that work on TAR be stopped as we consider that the reforms being considered:

- **increase consumer energy bills through increases in wholesale prices:** The Hybrid Model will create material uncertainties, which will act to suppress investment in new renewable generation and storage capacity. This will drive increases in wholesale energy costs as supply side shortfalls worsen, exacerbated by the increased ability of remaining coal and gas generation to exercise market power for sustained periods and increase wholesale prices. It may also eventually lead to reliability issues, if new generation capacity is materially delayed.

AEMO's own modelling has also demonstrated there is a real possibility that the Hybrid Model will lead to material increases in wholesale energy market prices, driven by the significant dispatch distortions created by the Priority Access component of the Hybrid Model. These increases in wholesale market prices would likely outweigh any of the putative efficiency gains of the Hybrid Model, driving up consumer bills for no clear benefit.

- **require more transmission and REZ infrastructure to be built.** A key effect of the Priority Access component of the Hybrid Model is to put all risk of marginal congestion onto low queue order generators, making those lower priority order generators increasingly difficult to finance. This will reduce volumes of new investment seeking to connect to the transmission system. However, given that underlying reliability requirements of the system remain unchanged, this simply means this low priority generation capacity will need to be hosted elsewhere, increasing the requirement for more transmission network to be built.
- **be inconsistent with the new emissions reduction objective in the NEO.** The current approach to grandfathering of incumbent fossil fuel assets appears to guarantee high queue position for the life of said asset, many of which are not scheduled to retire from the NEM until the mid to late 2030s. This will have the effect of promoting in dispatch the highest emitting generation in the NEM, which clearly runs contrary to the direction set by all governments across Australia to decarbonise the power system.
- **fail to address purported issues around disorderly bidding and inter regional counter price flows.** Grandfathering of existing fossil fuel generation assets will also likely result in continued disorderly bidding – as identified by the AEMC’s own analysis undertaken by NERA consulting, much of the current disorderly bidding in the NEM is undertaken by gas, as well as brown and black coal generators.¹ More generally, prioritising all incumbent assets at queue position 1 may act to lock in behaviours that drive existing counter price flows and interconnector clamping, by formalising the ability of incumbent generators to be dispatched in a manner that maximises individual profit, while reducing overall system efficiency. Relying on participation in the CRM to alleviate this effect is unproven and runs completely contrary to the policy and design intent of the CRM.
- **undermine existing jurisdictional schemes.** As evidenced by AEMO, the currently proposed CRM model would destabilise existing state underwriting schemes, by triggered “LMP event” clauses resulting in reopening of contracts. This would be a major blow to the investment certainty created by the LTESA scheme and would run contrary to the clear direction of the NSW Government through the Electricity Infrastructure Roadmap. We also expect this will effect the ongoing viability of CIS contracts.
- **be largely unnecessary given the roll out of jurisdictional policies.** Queensland, Victoria and New South Wales are all progressing down the pathway of developing their own physical access / controlled access regimes, to manage the congestion risks faced by REZ connected generators. Given these measures are well under way, we consider that the TAR reforms are now largely unnecessary.
- **do not adequately consider the extent to which the market is already responding to congestion, through installation of energy storage with new generation:** the continued trend toward construction of hybrid assets – consisting of energy storage with wind and/or solar behind the same connection point – will significantly change the materiality of congestion in the NEM and improve network utilisation. Neither the AEMC’s work, nor that of ACIL Allen, appears to adequately consider the effects of this key investment trend, which will have a significant impact on the materiality of congestion.
- **is likely to run counter the work of the Connection Reform Initiative and reduce the effectiveness of the connection process:** The connection process remains one of the key issue areas for getting new renewable generation online. The CEC and AEMO have been

¹ NERA, Cost Benefit Analysis of Access Reform: Modelling Report, p52, Figure 5.2

working on the connection reform initiative for some time and while issues remain, progress has been made in improving the overall process. A key outcome has been a willingness to focus on addressing issues in a timely manner, with a collaborative problem solving approach using engineering judgement being adopted by both parties. The effect of the queuing element of Priority Access in the Hybrid Model threatens to derail all of this progress, by introducing a clear benefit to rushing projects through in order to win a higher queue position than other competitor generators. This will create a strong incentive to rush studies, with commercial pressure pushing NSPs, AEMO and developers to prioritise speed over good process. There are significant risks to all parties if this were to occur and so far, we have not seen them addressed by the AEMC in its analysis.

We also consider that stopping work on TAR will free up limited resources to be used on more productive reform areas. TAR is the latest iteration of a long series of since discarded reforms, including OFA, COGATI and CMM. Together, these projects have drained the limited resources available in industry and the market bodies, resulting in delays to more effective and crucial reform of the NEM regulatory frameworks.

The CEC itself has expended significant resources on trying to reach a resolution of this drawn out policy debate, by proposing a truly voluntary CRM as a circuit breaker. Unfortunately, it appears that landing a solution which works for industry and other stakeholders remains as unlikely today as it did nearly 3 years ago, when the CRM was originally flagged as a sensible solution.

The CEC therefore strongly recommends a line be drawn under this reform, to allow limited human and capital resources to be redirected where they are needed most, such as fixing the connection process, managing system strength and power system stability and development of new energy reserve markets to support reliability.

Further to the above, the CEC considers the significant work put into this reform area by the AEMC could be more effectively redirected toward supporting State governments and agencies in designing access and connection frameworks to support the many Renewable Energy Zones being developed across the NEM. We consider the AEMC should refocus its TAR work program to offer expert advice to the various jurisdictions on methods to streamline and coordinate their various REZ and renewable support mechanisms.

Overview

Below we set out our key issues with the Hybrid Model, before answering the AEMC's consultation questions – plus key industry questions – in the main body of the submission.

No Additional Benefits

Transmission Access Reform is no longer needed as:

- State and Commonwealth governments have already implemented policies which provide locational signals for new investment (including through the adoption of REZs and the Capacity Investment Scheme)
- States have also implemented policies which enable them to control access to the transmission network and to REZs, to prevent or minimise 'cannibalisation' of the access rights of REZ connected generators
- Better locational decision making is now enabled through more effective congestion information provision available from a variety of sources
- The market is already responding and developing mechanisms to reduce the costs of congestion, through increasing development of generation / storage 'hybrid' projects and long duration energy projects.

We do not consider that Transmission Access Reform will deliver any additional benefits in improving the efficiency of decisions in the investment timeframe (which amounts to 88% of the reform's \$4.03 billion stated benefits). Accordingly, the benefits of the reform in the ESB's Cost Benefit Analysis should be reduced by this amount or at least heavily discounted.

Significant net costs

The costs of implementing the proposed reform in its current form, and the harms on energy and financial markets have not been accounted for, or have been underestimated, in the ESB's 2023 Cost Benefit Analysis. These include:

- increased hedging costs and reduced availability of hedging contracts: see paragraph 6.2
- costs of renegotiating Power Purchase Agreement (PPAs) and Long-Term Energy Service Agreements (LTESAs): see paragraph 6.1
- harm to competition at both the wholesale and retail level, resulting in higher consumer prices: see paragraph 12
- underutilisation of transmission assets which results in more transmission and/or REZs being built (and consumers incurring higher TUOS charges): see paragraph 15.1
- undermining the market for contestable transmission connections and costs saving from introducing contestability: see paragraph 14
- increased levelized cost of capital for new investments: see paragraph 12.2
- increased regional reference prices (RRPs), increasing the wholesale cost of energy and therefore customer bills: see paragraph 2.1
- increased emissions from raising barriers to, and delaying, new renewable investment, as well as prioritisation of incumbent thermal coal and gas generation: see paragraph 11.1
- increased implementation costs of the co-optimised CRM model or the Dynamic Grouping option for priority access if adopted: see paragraph 2.2 and 6.3.

There is sufficient evidence to indicate that, if these costs and harms are fully accounted for, there would be significant **net costs** from implementing the reform (even if the benefits are not discounted): see paragraph 15.

We recommend the AEMC reassess the validity of the ESB's Cost Benefit Analysis and therefore its justification for proceeding with this reform.

Informed recommendations cannot be made before the end of 2025

Significant problems remain with the Hybrid Model:

- We note that two-stage dispatch model does not work as intended, as shown by AEMO's testing, and will result in an increase in RRP's. We are concerned that the AEMC is considering increasingly complex and unproven designs simply to "patch over" or minimise the model's flaws. We recommend the AEMC should first reconsider the need for the Hybrid Model in the first place, rather than continuing down this pathway of applying patches.
- The co-optimised model is contrary to the design parameters set by the ECMC. By including CRM bids in the NEM dispatch, it in effect imposes a form of mandatory locational marginal pricing and makes participation in the CRM no longer voluntary². Accordingly, the AEMC must not pursue this model.

² ECMC Communique dated 7 July 2023 (which refers to a voluntary Congestion Relief Market) ; ECMC Communique dated 24 February 2023 in which Ministers ruled out any models using locational marginal pricing.

To be in a position to make **informed** recommendations to the ECMC in relation to the Hybrid Model, a significant further amount of work would need to be undertaken by the AEMC, AEMO and consultants, as outlined in paragraph 3. In our view, a more realistic timeframe for completing this work, and making recommendations to the ECMC, would be the end 2025.

We are concerned that the AEMC has not allocated adequate time for industry to be consulted on this further work. Industry has not previously seen the co-optimised model (which is complex and will involve new bidding strategies), the dynamic grouping option for Priority Access nor ACIL Allens results (which considers practicality of including Priority Access congestion modelling in investment decisions). Industry needs to be consulted on any modifications to, and/or testing results of, its Hybrid Models.

Of course, our overarching position is that the amount of work required to adequately explore these issues and make informed recommendations, as well as ensuring industry is properly engaged, is not justified at the moment. We remain of the view that the cost of this additional work is not justified in terms of the putative value of the TAR process itself.

No consideration of hybrids and LDES in managing congestion

The AEMC has not taken into account the role of hybrid projects (solar/wind integrated with energy storage) in management of congestion and optimisation of network utilisation. Hybrid projects allow for better carrying of energy through time, reducing the effects of physical and economic curtailment and allowing for more efficient utilisation of available network.

Hybrid projects are becoming increasingly prevalent in the NEM, enabled by reforms such as the IESS rule change and incentivised by existing congestion and economic curtailment risks.

The AEMC also has not taken account the various roles of storage more generally in minimising congestion and increasing utilisation of the available network. Storage assets can deliver this by providing system protection integrity schemes, system strength services and a raft of other capabilities that increase network hosting.

TAR undermines connection reforms

The AEMC's reform proposals undermine other work of the AEMC and AEMO in the Connection Reform Initiative and in development of contestable connection frameworks.

TAR has the potential to undermine competition in contestable transmission connections and its queuing policy is likely to undermine improvements in the connection process arising from the Connection Reform Initiative (including the recent R1 rule change).

Regarding the CRI generally, the key risk we see is that by creating a strong incentive to rush projects through connection, TAR will undermine the positive developments toward a more collaborative connection and GPS negotiation process that has flowed from the CRI, where engineering judgement is allowed to be exercised effectively. The significant benefits associated with securing a high queue position will create strong incentives for developers to rush through the connection process in order to secure a higher queue position. This would run counter to the emerging better practice of focusing on collaborative working to progress connection, which has been one of the most significant, but hard won, outcomes of the CRI.

Consumers will be worse off and face higher energy charges because of reform will harm competition at a wholesale and retail level and because of higher TUOS charges from underutilisation of transmission infrastructure.

Targeted reforms are needed

We consider that the need for transmission access reform and/or the design of any new transmission access model should only take place after there has been a holistic review of changes affecting the power system. This should include:

- changes since the ESB first started looking at Transmission Access Reform in 2016 (including already implemented State and Commonwealth policies achieving the reform's objectives and the alleviation of congestion and the increase in hosting capacity provided by hybrid projects and long duration storage); and
- future changes (including plans to redesign the NEM or to integrate Distributed Energy Resources as Virtual Power Plants).

We recommend that any further work on Transmission Access Reform should only take place as part of the post 2030 NEM review or after access rights to REZs have come to end.

The Hybrid Model is primarily a punitive/blocking measure and therefore does not complement jurisdiction led reforms aimed at achieving the target of 80 per cent renewables by 2030. The resources of AEMO and industry should be focussed on targeted reforms, implementable in a timeframe to facilitate meeting the 2030 target, which have the objective of unlocking new investment in generation and transmission, facilitating the speed of transmission roll out and ensuring that the power system can remain stable and reliable.

For the overwhelming majority of generators in the NEM, curtailment due to congestion remains low. Transmission access reform is a disproportionate response to dealing with high curtailment rates which primarily affect solar farms in a few parts of the grid. Grid black-spot programs can more efficiently deal with the smaller transmission problems causing curtailment via incremental upgrades in targeted areas. In doing so, they have the potential to unlock significant existing capacity, permitting better utilisation of the grid and reducing the number of REZs that need to be built: see paragraph 4 below. In NSW, LTESAs have already been awarded for long duration storage projects which are located next to solar and wind farms experiencing high levels of curtailment: see paragraph 9 below.

Part 1: CEC's concerns about the Hybrid Model and recommendations for future work

1. The CEC does not support the Hybrid Model

The AEMC is consulting on various options for both the 'Congestion Relief Market' (CRM) and the 'Priority Access' Model components of the Hybrid Model.

For avoidance of doubt, the CEC does not support the Hybrid Model in any form proposed in the Consultation Paper. This includes both designs of the CRM, including the 2 step and co-optimised design, on the basis that both models no longer reflect the core policy intent of what the CEC originally proposed.

Further, we consider this statement in the Consultation Paper that "the CRM was originally proposed by Edify Energy and supported by the Clean Energy Council (CEC)" is now misleading as it may suggest that the CRM is supported by CEC and has wide industry support. The AEMC's CRM is fundamentally different from the models proposed by Edify Energy and CEC for the reasons given in section 2 below.

We categorically reject any suggestion that the current Hybrid Model, or any of its component parts, is supported by the Clean Energy Council.

We request that AEMC's make it clear in communications with the ECMC and in written papers, that due to its linkage with Priority Access in the Hybrid Model, the version of the Congestion Relief Market described in the Consultation Paper does not have CEC support specifically, or industry support generally. This is on the basis that the proposed Hybrid Model fundamentally departs from the original core concepts of the CRM as a market based mechanism, voluntarily entered into by industry participants, which would have little to no impact on energy market bidding options or energy wholesale market outcomes.

Differences between AEMC's CRM model and the model proposed by Edify Energy and Clean Energy Council

There are significant differences between the AEMC's CRM model and the model proposed by Clean Energy Council.

1.1. The CRM is no longer a separate market to the energy market

A core principle of the original CRM was that it would be separate from the energy market. As such the CRMP should not have had any material effect on the RRP.

The AEMC is consulting on a 'co-optimised' model as the two-stage dispatch model does not work as intended. The 'co-optimised' model will no longer keep the CRM and energy markets separate as energy and physical dispatch are run in parallel and the RRP and CRM bids are 'co-optimised' to produce a single dispatch price – a new RRP. The RRP in the energy market is changed and the 'new RRP' can be set by CRM bids as they are an input into the calculation of the new RRP.

The CEC considers this represents a material change from the original policy intent of the CRM as a market for trading in congestion relief, rather than outcomes in the energy market. As such, we also consider it runs contrary from the clear instruction from the ECMC to move away from locational marginal pricing (LMP) models, which would have had the effect of forcing parties into an LMP and weakening the original regional pricing model of the NEM.

1.2. The CRM is no longer voluntary

The original versions of the CRM were entirely voluntary, both in design and in practice. This was a fundamental element of the design and was crucial to ensure stable uptake by industry, while minimising distortionary impacts on existing markets.

Participation in CRM under the AEMC's Hybrid Model is only nominally voluntary. In practice, participants are likely to be compelled to participate in the CRM:

- to address the significant inefficiencies in the Priority Access Model. In fact, the AEMC's design explicitly requires parties to actively participate in the CRM in order to alleviate the many distortionary impacts of the Priority Access Model on dispatch.
- if required by their PPA Agreement, for example, because of a clause obligating the generator to maximise electricity generation. We understand that many existing PPAs will fall into this category.
- to be influencing price in order to defend a hedge position where access and physical dispatch are determined in parallel under the co-optimisation model³.

Of all the elements of the Hybrid Model, this departure from the voluntary design of the original design is perhaps the most disappointing. The original design offered the possibility for a market led approach to congestion relief, which would have maximised operational and investment efficiency. Instead, the mechanism has become little more than another source of investment uncertainty.

³ AEMO considers that participants with contracts would need to participate in the CRM under a co-optimisation implementation approach: see 3 of TWG meeting [notes](#) dated 29 May 2024.

1.3. The CRM has been combined with the Priority Access Model

CEC proposed a CRM as a standalone model. In contrast, the AEMC has combined the CRM with the Priority Access Model to address inefficiencies in the Priority Access Model.

This represents a key departure from the original design and intent of the CRM. It appears that the CRM is being relied on to 'fix' the significant distortions in dispatch created by the Priority Access Model. This was not the intent of the CRM and it is entirely unclear whether the mechanism is actually able to alleviate these distortions.

2. The Hybrid Model remains fundamentally flawed

The Hybrid Model remains fundamentally flawed for the reasons given below:

2.1. Two-stage dispatch model

We note that the CRM was added to the Priority Access Model to deal with the inefficient outcomes of Priority Access. However, testing undertaken by AEMO using a NEMDE prototype has shown that the Hybrid Model does not work as intended as:

- it does not actually protect incumbent, high queue position generators; and
- it acts to increase the wholesale regional prices.

In particular, the testing found that in a significant proportion of cases, it led to a significant increase in the RRP in the access dispatch (in 13% of cases a price increase of more than 25% in at least one region and in 31% of cases a price increase of more than 5% in at least one region). By selecting generators with higher coefficients over generators with lower coefficients, the Hybrid Model reduces the amount of generation that can be dispatched behind a constraint, which **increases the pricing power of those generators** that have been prioritised.⁴

We are concerned that the AEMC is considering further design changes to patch over critical problems with the two-stage dispatch model in an attempt to minimise the inefficiencies of priority access. Instead, these inefficiencies should never have been created in the first place, which is what has required the forced hybridisation of priority access with the CRM.

We note that the priority access is contrary to the emissions reduction objective of the National Electricity Objectives and, in any event, does not achieve its stated objective of prioritising incumbents over new clean energy generation.

The AEMC justification for this approach is as follows:

“given the large expected “size of the prize” in terms of better investment efficiency, as well as improvements to the way generators can manage congestion risk, **even capturing a small proportion of the benefit** could be worthwhile”.

We are extremely concerned by this approach as:

- there is no prize from the proposed reform, but only net costs: see paragraph 15;
- patching over a fundamentally flawed model is poor regulatory design; and
- AEMO has serious concerns with both the two-stage model (based on its testing using a NEMDE prototype) and the co-optimised model (as outlined in paragraph 2.2 below). AEMO

⁴ The AEMC notes “concerns that priority access may enable market participants to exercise their market power over the RRP determined in the access dispatch in the two-stage model prompted the AEMC to explore the alternative co-optimised approach”: page 107 Consultation Paper.

is of the view that any model that AEMC proposes to adopt must be proven to fix the impact of priority access on RRP by rigorous testing.

2.2. Co-optimisation model

As the CRM and Priority Access Model does not work as intended, the ESB requested the AEMC to consider other options. We consider this recognition that the flaws of the two-stage model cannot be addressed by further design choices.

For this reason, the AEMC are consulting for the first time on the 'co-optimised' model of the CRM (where access and physical dispatch are co-optimised and determined in parallel to produce a single dispatch price).

However, we have fundamental concerns about the co-optimised model as, in our view, it is **not voluntary and results in locational marginal pricing**, contrary to the design parameters set by the ECMC⁵.

AEMO's concerns with co-optimised model

We share AEMO's serious concerns⁶ about the co-optimisation model, which are as follows:

- **It changes the RRP:**
 - The new RRP can be set by CRM bids which could be perceived to undermine the voluntary nature of the CRM.
 - A new RRP could impact the wholesale contract market and trigger reopeners on existing contracts such as LTESAs (which have a Locational Marginal Pricing event clause).
- **There could be a funding shortfall:** The lack of a regional energy balance constraint in the access dispatch means there could be more receivers of RRP than payers, creating a settlements shortfall.
- **Bid combinations can undermine priority access:** We note that again this model does not fulfil its own objective of limiting cannibalisation of incumbent generators.
- **It is unproven and has not been rigorously tested:** It is a new market design that has not been tested nor proven to fix the impact of priority access on RRP.
- **It will be more costly to implement:** The complexity around bidding and dispatch means it will likely be more costly to implement than the two-stage dispatch.

3. Significant work is still needed to address the concerns of industry and AEMO

To be in a position to make **informed** recommendations to the ECMC in relation to the Hybrid Model, the following significant work would need to be undertaken by the AEMC, AEMO and consultants. In our view, it will take at least until the end 2025 to complete this work and to conduct adequate consultation with industry. We recommend that work on TAR be suspended immediately, on the basis that this further work program would represent a waste of limited resources.

3.1. Two-stage dispatch

In relation to the two-stage dispatch, AEMO needs to address:

⁵ [ECMC Communiqué dated 7 July 2023](#) (which refers to a voluntary Congestion Relief Market) ; [ECMC Communiqué dated 24 February 2023](#) in which Ministers ruled out any models using locational marginal pricing.

⁶ AEMO's concerns are set out in [slides](#) in a presentation to the TAR Technical Working Group on 29 May 2024

- The flaws with the two-stage model identified by AEMO's testing
- Industry's serious concerns about the impact of the Hybrid Model on:
 - financial contracts and markets
 - the contracting market; and
 - the risk of outages and curtailment being disproportionately borne by new entrants.

The CEC remains of the view that these problems (including inefficiencies stemming from priority access) cannot be meaningfully addressed at all. However, should the AEMC propose an amended two-stage dispatch model, AEMO would need to rigorously test the model, and following testing, further consult with industry.

3.2. Co-optimised dispatch

The co-optimised model is only a concept model. Significant further work would be required on the co-optimised model in order to work it up in the level of detail as the two-stage dispatch model.

The AEMC has stated the following additional work needs to be undertaken prior to September:

1. Addressing AEMO's concerns
2. Obtaining an estimate of implementation costs from AEMO
3. Developing a prototype to further test co-optimisation
4. Further consideration of more detailed design options.

We consider that the AEMC cannot make any **informed** recommendations concerning the co-optimised concept model to the ECOM until it has been designed in detail, rigorously tested and **proven** to fix the impact of priority access on RRP and until there has been **adequate further consultation** with industry.

3.3. ACIL Allen ongoing work

The AEMC has engaged ACIL Allen to assess whether:

- investors can include priority access in congestion modelling to contribute to investment cases
- priority access is likely to have the desired impacts on investment decisions.

We are disappointed that our members, **who are investors and developers of new projects**, have not been given the opportunity to have input into this work prior to providing their submissions on the reforms. As this work has not been finished nor published, we consider that there is not sufficient time before September for industry to be consulted on in respect of the results, and for their views to be taken into account.

Following lodgement of submissions, the Technical Working Group (TW) have been advised that in modelling of priority access ACIL Allen proposes to:

- not include storage nor REZs
- use annual renewable capacity targets as a substitute for government policies
- assume 100 per cent participation in the CRM.

We consider that any modelling by ACIL Allen will be fundamentally flawed if it fails to include in its modelling:

- battery energy storage systems - which are being co-located with solar farms (to obtain financing) and which are likely to be installed behind the connection point with solar and

wind farms with electricity able to be discharged by batteries through a single connection as a result of the IESS rule change: see paragraph 8 below

- long duration energy storage projects - which are already being installed next to solar and wind farms with high curtailment rates: see paragraph 9 below
- the locational signals provided by the Capacity Investment Scheme and State Schemes like LTESAs and provided by REZs (including the controlled access regimes in Queensland, Victoria and NSW). It is not sufficient to use annual new renewable capacity targets as a substitute for government policies.

In assessing the modelling under the reform and comparing it to the status quo, ACIL Allen assumptions should reflect that investors will not lend to single asset projects in locations with high existing congestion levels and that investors will not lend to new projects in the future, or will do so at much higher capital costs, if the projects bear all the risk of outages and widespread curtailment under the reform.

We consider that a lower participation rate in the CRM should be assumed as:

- AEMO at page 4 its submission considers a lower level of participation is more likely
- several submissions outline situations where market participants may not have the incentive to participate in the CRM – see for example submissions from AFMA, Snowy Hydro and Baringa. We note that Snowy Hydro in its submission has indicated that it is unlikely to opt-in to CRM, or at most, it would only do so on a very limited basis
- AEMC has assumed that market participants would choose not to participate in the CRM if it triggers contract re-openers – see page 17 of the Consultation Paper.

We also suggest that ACIL Allen use the projected curtailment rates in AEMO's final 2024 Integrated System Plan and/or in AEMO's 2024 Enhanced Locational Information Report.

We do not consider that ACIL Allen should run their modelling until all stakeholders (including industry, AEMO and ACIL Allen) have an opportunity to read, be briefed on, and understand the issues raised in submissions on the Consultation Paper. In this way, an informed decision can be made, for example, on whether and how to include REZs, as well as storage in the modelling. We note that industry may request other issues to be reflected in the modelling after being made aware of the submissions of other stakeholders (rather than the TWG only being given a few days to provide their input into the modelling so that this work can be completed before an artificial September deadline).

We request that the AEMC also share their instructions to ACIL Allen so that industry can understand how their modelling has been limited in scope in accordance with these instructions.

3.4. Cost Benefit Analysis

Industry has raised serious concerns about the ESB's 2023 Cost Benefit Analysis. We consider that the AEMC should fully account for our concerns raised about the Cost Benefit Analysis outlined below in paragraph 15, and those raised by Baringa and by other stakeholders, before making recommendations to the ECMC and progressing with the Transmission Access Reform.

A robust Cost Benefit Analysis is critical given the AEMC's flawed reasoning that "*even capturing a small proportion of the benefit [of the reform] could be worthwhile*".

3.5. The flaws in the Hybrid Model cannot be resolved in the short or medium term

Given the complexity and materiality of the issues remaining with the Hybrid Model, and the volume of work that still needs to be undertaken by the AEMC, AEMO and consultants, the CEC considers that the AEMC will not be in a position to make informed recommendations to the

ECMC, and allow adequate further consultation by industry, by September 2024. A more realistic timeframe for making recommendations is the end of 2025.

4. Our focus should be on targeted and applied reforms which can support the energy transition

We also note the significant workload a continuation of the Transmission Access Reform program would create for AEMO. The CEC questions whether it makes sense for AEMO to allocate further resources to this reform process.

Instead of pursuing a reform which is focussed on mechanisms to restrict or prevent new entrants to protect incumbents, we consider that the limited resources of AEMO and industry should be focussed on targeted reforms, which can be applied in a timeframe to support the energy transition and ensure that the Commonwealth and States can reach their renewables targets by 2030. These include reforms to:

- unlock new investment in generation and transmission – such as the refinements to the system strength frameworks and connections processes
- increase the speed of transmission buildout
- ensure that the power system can remain stable and reliable.

We also consider the costs of implementing the Transmission Access Reform would be better spent on:

- grid black-spot programs.

A grid black-spot program could:

- address smaller transmission problems causing curtailment via incremental upgrades in targeted areas.
- unlock significant existing capacity (equivalent to building several REZs) at a much lower cost than building new REZs
- be an alternative, fast-track pathway to the regulatory investment test for transmission
- permit market to identify the needed programs
- be co-funded by established pathways at national or state levels such as Rewiring the Nation, Victoria's Transmission Investment Framework and State Electricity Commission, the NSW Transmission Acceleration Facility, and CleanCo Queensland, as well as by proponents of curtailed projects⁷.

We note that overall curtailment from congestion is low, and high curtailment is mainly **concentrated in certain areas** (particularly Western New South Wales and North West Victoria) **rather than being evenly distributed throughout the NEM**⁸, as confirmed in AEMO's Enhanced Locational Information Report dated June 2024: see paragraph 10.2 below.

Transmission access reform is a disproportionate response to dealing with high curtailment rates which only affect a few parts of the grid. Grid black-spot programs can more efficiently address higher curtailment rates in these specific locations than transmission access reform as they would deal with the smaller transmission problems causing curtailment via incremental upgrades in targeted areas. In doing so, grid black-spot programs have the potential to unlock significant existing capacity and permit better utilisation of the grid, unlike transmission access reform which will result in the underutilisation of the grid: see

⁷ See discussion at <https://www.ecogeneration.com.au/proposed-black-spot-program-to-ease-grid-congestion/>

⁸ [Curtailment due to congestion: what's the state of play? - Battery Storage and Grid Integration Program \(bsqip.com\)](#)

paragraph 15.1. (In addition, States are already addressing curtailment through their long duration storage tender processes. In NSW, LTESAs have already been awarded for long duration storage projects which are located next to electricity from solar and wind farms experiencing high levels of curtailment: see paragraph 9 below.)

- non-networks solutions⁹, and grid enhancing technologies¹⁰ which increase the utilisation of existing and new transmission lines, as well as lowering grid costs.
- Network Support and Control Ancillary Services (NSCAS) / Essential System Services (ESS) to maintain power system security and reliability of supply of the transmission network, or to maintain or increase the power transfer capability of the transmission network.

5. AEMC should postpone its consideration of transmission access reform

We consider that the need for transmission access reform and/or the design of any new transmission access model should only take place after there has been a holistic review of the changes to the power system. This should include:

- changes since the ESB first started looking at Transmission Access Reform in 2016 (including already implemented State and Commonwealth policies achieving the reform's objectives and the reduction of congestion, and the increase in hosting capacity, provided by hybrid projects and long duration energy storage); and
- future changes (including plans to redesign the NEM and to integrate 'orchestrated' Consumer Energy Resources as Virtual Power Plants, as well as mature long duration energy storage technologies that will minimise curtailment from congestion¹¹).

We suggest that any further work on Transmission Access Reform should only take place as part of the post 2030 NEM review or after access rights to REZs have come to end.

We recommend that the AEMC's immediate efforts should be focused on providing advisory support to State jurisdictions in relation to the build out of Renewable Energy Zones and the implementation of State policies to control access to transmission network to prevent or minimise 'cannibalisation' of the access rights of REZ connected generators.

Part 2: Detailed analysis of impacts of the Transmission Access Reform

6. Stakeholder concerns have not been addressed

Stakeholders have previously raised concerns, which still have not been addressed, about the impact of the transmission access reform on:

- the contracting market
- financial contracts and markets; and
- the risk of outages and curtailment being disproportionately borne by new entrants.

⁹ See section 6.5 of the draft 2024 [Integrated Services Plan](#) which notes: "Batteries improve the utilisation of new and existing transmission lines. Several large-scale grid batteries are contracted to provide system integrity protection services. Some of their capacity is held in reserve to inject power on short notice to help stabilise the lines and allowing the lines to operate at higher levels. This reserve can increase the capacity of congested grids, so that new renewable generation can be connected".

See also [Lowering Grid Costs by Increasing the Utilisation of Transmission Lines \(fluenceenergy.com\)](#)

¹⁰ See discussion of GETs in [Super cheap transmission upgrades could double capacity and open floodgates for renewables | RenewEconomy](#)

¹¹ [The-future-of-long-duration-energy-storage.pdf \(cleanenergycouncil.org.au\)](#)

Unless addressed, these concerns could undermine any suggested benefits of transmission access reform. Before making final recommendations to the ECMC, the AEMC must consider whether alternative policies would be needed to address these concerns, rather than failing to address the concerns by understating their impacts.

6.1. Impact on existing Power Purchase Agreements (PPAs)

Currently, most renewable generation investment is underwritten by Power Purchase Agreements (PPAs). The design of the CRM may lead to material instability in the contracting market for the reasons given below. This will not only affect generators but also entities providing firming services such as the Commonwealth owned Snowy Hydro. The AEMC has understated the CRM's impacts on contracting markets.

(a) Triggers re-opening of PPAs

There is a risk that the CRM will trigger the reopening of the PPA agreements.

Ashurst has expressed the view that:

- the implementation of the CRM will be a change in law or a market disruption event¹²-under many existing PPAs
- this will result in opportunities for parties to try to reopen the terms of the existing PPAs and for financiers to reconsider their position under their financing arrangements.

(b) Maximise generation output

PPAs almost always include one, or more, clauses obligating the generator to maximise electricity generation (except for certain economic conditions such as negative prices). Therefore, an offtake party could claim a generator must participate in the CRM, to fulfil their obligation to maximise generation output – even if this would mean the generator having to participate in the CRM at a lower price than in the energy market. This would nullify the voluntary nature of the CRM and would also likely result in a re-negotiation of the PPA. This in turn likely to create uncertainty in the generation development market, as it creates a real possibility that contracts will be reopened – which in turn creates further risks of slowing down new investment.

(c) Co-optimised model

The co-optimised model would lead to complications for existing hedging contracts which require generators to exchange the contract strike price for the spot price (currently, the RRP).

(d) AEMC has understated the reform's impacts on contracting markets

The AEMC considers the reform's impacts on PPA agreements would be mitigated by:

- the reform's intention that generators can opt-into the CRM (and if they choose not to, there would not be a difference in prices that either party to the contract are exposed to).
- the expiration of many PPAs by the time the reform is implemented (currently anticipated in 2028).

¹² Market Disruption Events (MDE) for OTC ISDA transactions contained in s7.4 of the 2005 ISDA Commodity Definitions include a "**Material Change in Formula**" which is defined as "the occurrence since the Trade Date of the Transaction of a material change in the formula for or the method of calculating the relevant Commodity Reference Price" (s7.4(iv)).

We do not consider that this materially mitigates the reform's impacts as:

- in practice the CRM is no longer voluntary for the reasons given in paragraph 1.2 above.
- there has been a ramp up of PPA agreements in recent years with a duration of 10 – 15 years, which means many of these contracts will remain on foot until around 2035.

(e) LTESAs and LMP clauses

As noted by AEMO, the co-optimised model would, if adopted, trigger reopeners on existing contracts such as LTESAs (which have a Local Marginal Pricing event clause).

6.2. Impact on financial markets

For the first time, the proposed reform's impact on financial contracts and, more broadly, on financial markets is being considered. The AEMC admits "this has not been a focus to date" and they have only recently begun engaging with AFMA.

We share AFMA's serious concerns that the reforms introduce basis risk into the market¹³ which could reduce the volume of contracts sold by generators. This is of concern as:

- "reduced availability of contracts for retailers could increase costs or leave them unable to hedge their risks, which would lead to reduced competition and increased retail prices. Ultimately, this would lead to increased costs for consumers", as acknowledged by the AEMC at paragraph 6.2.1 of their Consultation Paper.
- it leads to sub-optimal levels of clean energy investment because a limited availability of long-term contracts leaves risk-averse investors exposed to uninsured risk, hindering power system decarbonisation¹⁴.

AEMC is understating the impacts of the reform on financial markets by relying on the "voluntary" nature of the CRM to mitigate these impacts. However, as discussed in paragraph 1.2, the CRM is only nominally voluntary and participants may feel compelled to participate.

6.3. Outages and constraints have a disproportionate impact on low queue position generators and will deter new entry

One of the key issues identified by the CEC and our members relates to the impact of outage and new constraints which cannot be predicted and accounted for in investment decisions. These include:

- widespread system strength and stability limits that limit total renewables such as were imposed by AEMO on connected generation in the West Murray Zone. We consider there is a material risk of these kinds of emergent constraints will occur in future years as the system transitions to higher levels of IBR generation.
- non-local outages, for example, on interconnectors
- emerging constraints that AEMO may impose under the "Transitional Services Framework". This may include regional and national limits on total instantaneous renewable generation which AEMO can impose at any instant (as proposed by AEMO's Engineering Framework papers).

¹³ i.e. the movement in the difference between the RRP and the local prices that would be faced by participants.

¹⁴ [Consequences of the missing risk market problem for power system emissions - ScienceDirect](#)

If TAR were to apply to these outage and new constraints, generators in a low queue position would face the entire impact of these outages and new constraints. This is likely to deter new investment and make it nearly impossible to deliver the volumes of investment needed to meet decarbonisation targets and maintain reliability, as well as significant underutilisation of transmission lines. As a practical matter, there is unlikely to be no new investment unless the government were prepared to subsidise new projects for losses incurred during these outages/widespread constraints (which is likely to cost the government more than underwriting new investment under the current Capacity Investment Scheme).

We also note that if batteries were de-prioritised and not made available during widespread constraints, this may make the system strength impacts worse, and remove an important revenue stream in their business model. We also understand that if the battery assets were needed to provide inertia or system strength services, AEMO would need to manually override the access dispatch process, to ensure these assets were dispatched. This runs contrary to the general approach of developing more efficient dispatch and system security services.

Dynamic Grouping

The AEMC has noted that excluding these outage and constraints from prioritisation would undermine its benefits and is unlikely to be a credible solution except under the dynamic grouping option: see pages 71-72 of the Consultation Paper.

We share AEMO's concerns that the dynamic grouping option:

- is complex, introducing a pre-dispatch run to allocate bid price floors (and may be more costly to implement than other options)
- introduces investment uncertainty as a generator will not know if they will be prioritised (undermining one of the objectives of the reform).

7. Transmission Access Reform is no longer needed

One of the stated objectives of the transmission access reform is to achieve better long-term signals for market participants to locate in areas where they can provide the most benefit to consumers, taking into account the impact on overall congestion – para 11, page ii of the Consultation Paper.

The transmission access reform proposal put forward by the AEMC is not needed to achieve this objective for the reasons given below.

7.1 Commonwealth and State policies already provide locational investment signals

The Commonwealth Capacity Investment Scheme (CIS) and, at a State level, the Renewable Energy Zones (REZs) and other State policies such as the Queensland Energy Job Plan and the NSW Electricity Map and Electricity Infrastructure Roadmap, are already providing locational investment signals.

7.2 There are regulatory controls to minimise 'cannibalisation' of generation in and outside REZs

The Consultation Paper states that "without reforms to transmission access, as recognised by Energy Ministers, REZs may be undermined by generators located outside the zone, free riding on investments intended for REZ participants": para 21, page iii.

We do not agree as there are regulatory controls in place at a Commonwealth and State level aimed at minimising the 'cannibalisation' of existing generation or future generation in REZs.

(a) Commonwealth controls

The merit criteria for the Commonwealth Capacity Investment Scheme¹⁵ prioritises:

- projects with a connection that is not likely to lead to material curtailment and/or congestion of the project's own generation or the generation of nearby renewable projects
- generation projects which are combined with storage because projects are assessed on the system security benefits they offer.

Generation projects which include batteries are likely to be assessed more favourably as batteries provide Network Support and Control Ancillary Services (NCESS)/Essential System Services (ESS) as well as reduce congestion and curtailment such that other projects can dispatch additional MWh.

(b) State controls

In designing their REZs, many jurisdictions have already put in place "controlled access" regimes, giving the States powers to prevent or limit connections outside the REZ to transmission infrastructure connecting to a REZ:

- Queensland legislation does this through the designation of "REZ controlled assets"¹⁶. Transmission assets that materially affect the capacity or functioning of the REZ (that are outside the REZ or inside the REZ but not part of the 'REZ transmission network') will be identified as controlled assets in the REZ management plan¹⁷.
- NSW legislation contains the power to prohibit a proponent connecting to infrastructure within a renewable energy zone¹⁸.
- In Victoria, under its recently announced access regime, a new project outside a REZ will be subject to a grid impact assessment as part of its connection application and will not be allowed to connect unless it demonstrates that it does not impose undue incremental network curtailment on existing and planned REZ generators or unless it can mitigate their impact on the level of curtailment faced by REZ generators by funding minor network augmentations and/or investing in storage¹⁹. Projects will pay an additional fee for their grid impact assessment.

The Victorian regime contemplates it would not adopt national transmission access reforms if it resulted in access arrangements that did not meet the objectives of REZ development in Victoria. This could possibly occur as the reform is likely to result in underutilisation of transmission assets and, by raising barriers to new clean investment, is likely to make it difficult to meet State renewable energy targets.

Tasmania has recently announced its first Renewable Energy Zone and legislation to support its REZ is currently under consultation and can be expected to include similar controls to incentivise investment.

¹⁵ Market Disruption Events (MDE) for OTC ISDA transactions contained in s7.4 of the 2005 ISDA Commodity Definitions include a "**Material Change in Formula**" which is defined as "the occurrence since the Trade Date of the Transaction of a material change in the formula for or the method of calculating the relevant Commodity Reference Price" (s7.4(iv)).

¹⁶ See *Queensland Energy (Renewable Transformation and Jobs) Act 2024*, Subdivision 2 and 3

¹⁷ *Queensland REZ design and development considerations* (powerlink.com.au)

¹⁸ *Electricity Infrastructure Investment Act 2020*, section 29

¹⁹ *For industry, business and developers* (energy.vic.gov.au) see section 2.4 Victorian Access Regime June 2024

In NSW, renewable energy generation projects that are not part of a REZ must satisfy the Consumer Trustee that they have 'outstanding merit' in their bids for LTESAs. This permits an assessment of a project's congestion impacts on REZ projects.

8. Hybrid plants alleviate curtailment from congestion

The AEMC has not taken into account the role of hybrid projects (which include storage such as batteries or pumped hydro) in the management of congestion - ie, they allow for better carrying of energy through time, reducing the effects of physical and economic curtailment and allowing for more efficient utilisation of available network.

Industry is increasingly managing the effects of curtailment (from congestion but also due to system conditions such as system strength), and alleviating congestion, by co-locating wind and solar farms with batteries.

Up until now, wind, solar and battery projects have had separate connection points. The *Integrating energy storage systems (IESS) into the NEM rule change*, which came into force in June 2024, provides a regulatory framework to better integrate storage and hybrid systems, and to encourage hybrid generation and storage projects to act in concert with a single connection point. Batteries charge from solar and wind behind the connection point and then dispatch at times when there is no curtailment from congestion²⁰. This permits solar and wind to supply into the grid with a degree of control they have never had before, and batteries can provide all the services they already do and discharge clean energy. In this way, the hybrid project will alleviate congestion and increase hosting capacity.

Generators are also considering adding batteries to the existing solar and wind sites to maximise the commercial value of the projects and to deal with congestion risks²¹. The Connection Reform Initiative is progressing a workstream to streamline the process for adding storage to legacy plants.

Hybrid projects are becoming increasingly prevalent. This trend is supported by the CIS which, as noted above, prioritises generation projects with storage. Across Australia, since 2017, 52 hybrid projects have been announced, which are in various stages of development. The IESS rule change is intended to make it easier for future solar and wind projects to firm themselves with storage behind their point of connection.

Higher curtailment rates have affected some single asset solar projects that were built in weak parts of the grid when large scale solar projects were first built. These were "pioneer" projects and industry have learnt from this experience. Furthermore, we understand that banks are unlikely to finance single asset solar projects without storage in the majority of cases. With new investments adopting a hybrid project model, and with wind and solar projects adding storage such as batteries to their projects, fewer incidents of projects with comparable high curtailment levels can be anticipated.

²⁰ See discussion of announced hybrid projects sharing the same connection point: [Italian energy giant gets approval for "very first" solar and battery hybrid in Australia | RenewEconomy](#); "Unimaginable challenges:" World-first integrated wind, solar and battery hybrid finally at full capacity | RenewEconomy

²¹ The [Gannawarra Energy Storage System project](#) was the first attempt at retrofitting a battery behind the existing point of connection of a utility scale renewable energy power plant and, at that time, the largest integrated renewable energy and battery system in Australia and among the largest in the world. ARENA describes the benefit of the project as: "helping integrate more variable renewable energy into the grid. For example, the battery could assist by reducing curtailment of future renewable energy generation on what is a relatively constrained line in the Victorian electricity system hence supporting higher levels of renewables in the region by reducing or controlling peak loading on these circuits". ANU Battery Storage and Grid Integration Program at page 8 of their [submission](#) to the ESB dated 21 December 2022 confirmed that batteries such as this one were bidding in such a way as to charge and relieve local congestion.

9. Long duration energy storage will help minimise congestion risks

The AEMC has not taken account the increasing role of long duration energy storage will play in minimising curtailment from congestion.

Large scale batteries and other forms of alternate long duration storage (such as pumped hydro and compressed air) will play an important role in increasing hosting capacity and delaying network upgrades by balancing load profiles.

Within the NEM, there are 11 large utility scale batteries which have already been built and another 15 are in the pipeline.

Following NSW's Long Duration Storage Long-Term Energy Service Agreements tender processes, battery energy storage systems (BESS) projects have been awarded Long-Term Energy Service Agreements, which will be located next to existing or proposed solar farms. This includes:

- RWE's Limondale battery energy storage system with a planned installed capacity of 50 megawatts (MW) and 400 megawatt hours (MWh). The project has now reached financial close and will be located next to RWE's existing 249 MWac Limondale Solar Farm (one of the largest solar farms which currently experiences high curtailment levels).
- Lightsource bp's 49 MW, 392 MWh Goulburn River battery in the upper Hunter Valley (which will be co-located with a planned solar farm)
- Ark Energy's 275 MW, 2,200 MWh lithium-iron phosphate battery at Myrtle Creek, south of Casino in the north of NSW, which will be co-located with Ark Energy's proposed Richmond Valley Solar Farm.²²

Hydrostor, which is building a compressed air facility for Transgrid at Broken Hill in NSW, has also been awarded a LTESA. That project is also expected to ensure that the two local renewable generators, the 200 MW Silverton wind farm and the 53 MW Broken Hill solar farm are not so badly constrained as their output can be stored locally²³.

A third LDES tender in NSW is in progress.

There are hydro projects also in the pipeline and other mature long duration storage technologies are close to commercialisation at scale.

10. Locational information relating to congestion

There is locational information relating to congestion available from a variety of sources.

10.1 AEMO and TNSP

The ESB's [Transmission access reform Enhanced Locational Information](#) paper provides a good summary of the local information already provided by AEMO and the TNSP.

Locational information relating to congestion provided by AEMO includes:

- The ISP, which provides a NEM-wide description of Renewable Energy Zone (REZ) transmission limits, and broader opportunities for development out to 2050.
- Information on transmission augmentation and generation projects.

²² [NSW Government awards project an LTESA \(arkenergy.com.au\)](#)

²³ [World's biggest eight-hour lithium battery wins NSW long duration storage tender | RenewEconomy](#)

- Power system models for PSSE (Power System Simulation for Engineering) and PSCAD (Power Systems Computer Aided Design)
- Electricity market models for the Electricity Statement of Opportunities
- Marginal loss factors
- The Congestion Information Resource, which focuses on historical congestion
- The Connections Simulation Tool, which provides an optional fee-for-use service, enabling participants to develop higher-quality models, independent of the connections process.

Locational information relating to congestion provided by TNSPs includes:

- Transmission Annual Planning Reports, which provide granular congestion and network capacity information
- System strength charges.

AEMO, as part of the Enhanced Information Reform, is now required to:

- publish annually an Enhanced Locational Information Report which draws upon and consolidates the locational information from AEMO and the TNSPs; and
- work with TNSPs to ensure consistency in their locational information (including the inputs, assumptions and methodologies used when calculating information on congestion and network capacity information).

10.2 Enhanced Locational Information Report dated June 2024

In June 2024, AEMO has published its inaugural **Enhanced Locational Information Report** providing detailed information about curtailment levels (historic and projected) throughout the NEM, and broken down by States.

The ELI Report found that in 2023:

- **across the NEM**, most semi-scheduled generators, particularly wind farms, **experienced low curtailment**, with curtailment from
 - **wind** generation ranging from 0.0% to 9.0% and averaging **1.4%**.
 - **solar** generation, ranging from 0.0% to 50.7% and averaging **4.6%** (Please note the average level would be much lower if high solar curtailment which are concentrated in local areas are excluded).
- approximately half of semi-scheduled generators experienced curtailment **less than 1%**.
- high curtailment was mainly **concentrated in certain areas** (particularly Western New South Wales and North West Victoria) **rather than being evenly distributed throughout the NEM**.
- outside NSW and Victoria, the curtailment levels were lower:
 - In Queensland, wind farms ranged from 0.0% to 2.0% and averaged **0.6%**. and solar farms ranged from 0.0% to 3.9% and averaging **0.8%**.
 - In South Australia, wind farms ranged from 0.0% to 9.0% and averaged **2.0%** and solar farms ranged from 0.0% to 4.4% and averaging **0.5%**
 - In Tasmania, curtailment was low (less than 1%).
- most transmission lines do not experience significant congestion.
- the curtailment for each REZ in each State between 2025 to 2027 is forecast to be low and stable.

10.3 Other sources

In progressing the transmission access reform, the AEMC (and previously ESB) has failed to recognise the sophistication of developers and financiers in selecting projects that are unlikely to result in material levels of congestion for its own projects and those of others. As ACIL Allen acknowledges, it is now standard practice for project developers and financiers to conduct congestion assessments as part of their due diligence. Firms like ACIL Allen prepare reports providing detailed congestion assessments using proprietary market simulation software (which can produce generation and load projections at an hourly resolution taking into consideration network constraints). A single asset solar/wind project would not get financing if it were to locate in areas of the grid where there is already high levels of congestion.

Companies such as Global Roam also provide granular information about the extent individual generators have been curtailed at specific locations. Please note that the Global Roam published data²⁴ also indicates that overall curtailment figures are low and that high curtailment is primarily restricted to solar plants. With hybrid projects which include a battery becoming increasingly common, and with investors for the most part no longer financing single asset solar projects, there should be fewer incidents of projects with comparable high curtailment levels.

DigSILENT/ARENA are consulting on the development of a publicly available load flow (steady state) NEM model and a rule change to facilitate its development. The model will provide information to determine where a plant can be accommodated with least congestion and lowest investment cost.

11. National Electricity Objectives

The Hybrid Model is inconsistent with all of the National Electricity Objectives.

11.1. Emissions reduction

The Hybrid Model is inconsistent with the emissions reduction objective of the National Electricity Objectives as it:

- gives preferential treatment to incumbent, high emissions generators
- is likely to delay the exit of coal generation
- restricts new clean energy investment, rather than enabling it.

The AEMC should not progress any form of the Hybrid Model in its Consultation Paper as it includes the Priority Access Model which is inconsistent with the emissions reduction objective.

11.2. Consumers will be worse off

The Hybrid Model also is inconsistent with the long term interests of end users insofar as it will result in:

- higher energy prices (from the harm to competition and the increase in pricing power of prioritised generators): see paragraph 12.

²⁴ [Keeping Up with the Curtailment: 3.7TWh of semi-scheduled economic and network curtailment estimated in 2023 - WattClarity](#) ; [Keeping Up with the Curtailment Part 2: The what and the where - WattClarity](#)

- higher TUOS charges for consumers through the underutilisation of transmission networks with the result that more transmission networks need to be built, as demonstrated by Professor Paul Simshauser and Professor David Newbery (2023)²⁵: see paragraph 15.1.

11.3. Potential impacts on the reliability of the power system

Given industry's serious concerns about the transmission access reform models proposed in the Consultation Paper, and the barriers to entry created by the reform, a slow down in new investment can be expected should the Hybrid Model be adopted, with far reaching impacts on maintaining a secure and reliable power system.

12. Impacts on wholesale and retail competition

The reform will negatively impact competition at the wholesale and retail level for the reasons given below.

12.1. Priority access increases incumbent generator's pricing power

As noted in paragraph 2.1 above, priority access increases the generator's pricing power, and, as found in AEMO's testing of the Hybrid Model, would result in higher RRP's.

This is of concern as the pricing power is for sustained periods (including during the period of 'widespread' curtailment which can last months), and the reform will raise barriers to entry. As a result, the higher RRP's is likely to result in higher prices for consumers.

12.2. The Reform will deter new entry by increasing barriers to entry

The reform will increase entry barriers and deter entry:

(a) Preferential dispatch rights of incumbents over clean energy new entrants

The Reform will result in new entrants incurring greater curtailment and also greater curtailment risks. Simshauser and Newbery (2023) in their analysis showed that for similar levels of capacity, the marginal new entrant would incur significantly higher curtailment levels. This results in a doubling in the Levelized Cost of Energy costs for the same installed capacity and hence higher entry costs. As the NEM is a marginal pricing market, this is likely to result in higher wholesale prices and/or increase the costs of the Capacity Investment Scheme²⁶.

(b) Increased Cost of capital

The ESB considered that the Hybrid Model has the potential to reduce the cost of capital for generators.

CEC investor members do not agree and consider that these reforms are likely to increase the cost of capital²⁷ for new projects, as well as reduce the level of gearing projects are able to

²⁵ Paul Simshauser and David Newbery. *Non-Firm vs. Priority Access: on the Long Run Average and Marginal Cost of Renewables in Australia* December 2023.

²⁶ See discussion of Simshauser and Newbery (2023) in Iberdrola June 2024 [submission](#).

²⁷ This is consistent with previous surveys. The Baringa 2020 Report at page 15 refers to an AEMC-led survey of generation investors which showed a 150 basis point increase in the cost of capital was anticipated under the Transmission Access Reform at that time (which introduced locational marginal pricing).

obtain. Investors are required to consider new project risks introduced by the reform when assessing the credit profile of projects.

12.3. Reduced availability of hedging contracts

The AEMC acknowledges on page 69 of their Consultation Paper that reduced availability of hedging contracts for retailers could increase costs or leave them unable to hedge their risks, which would lead to reduced competition and increased retail prices. Ultimately, this would lead to increased costs for consumers.

12.4. Impact on financial markets is likely to result in increasing concentration at the wholesale and retail

As Baringa in their 2020 Report notes at pages 7-8 that concerns about the ability to manage risks through hedging and liquidity are likely to create incentives to integrate horizontally and vertically. This has implications for the extent and effectiveness of competition in both generation and retailing, and ultimately implications for consumer prices and affordability under the Reform case.

13. The AEMC's Hybrid Model will result in a disorderly transition

The AEMC's Hybrid Model will result in a disorderly transition as it:

- disincentivises the utilisation of existing transmission infrastructure connecting to coal plants ahead of their closures. A new renewable generator which is co-located at the site of a coal plant would be curtailed first. This undermines the QEJP's initiative²⁸ to transition existing coal generation sites into clean energy hubs by 2035. This involves building renewables at coal sites before their exit to provide critical system services to the grid, including new generation, storage and firming, or renewable hydrogen assets.
- generators will be incentivised to submit less developed projects for approval under clause 5.3.4A of the NER in order to secure a higher ranking in the priority queue. This will not only increase the burden on TNSPs and AEMO when assessing connection applications but can be expected to lengthen the R1 assessment. This will undermine the improvements to the connection process from the Connection Reform Initiative and the improvements to the R1 assessment process from the AEMC's Enhancing investment certainty in the R1 process rule change.

14. The Hybrid Model will undermine competition in contestable transmission connections

The AEMC's preferred Priority Access Model is grouping by time-window and proposes that the date for allocation of a queue position is when a project reaches final investment decision. This has the potential to undermine competition in the nascent market for contestable transmission connections (which include providing cut-in works, operation and maintenance services, and setting the functional specification, of an identified user shared asset). A developer is less likely to choose a third party to provide those contestable services because this will add time to obtaining a 5.3.4A letter needed to secure the applicant's 'queue' position.

For contestable transmission services that the Connection Applicant does not propose to obtain from the Transmission Network Service Provider, a developer must provide as part of their

²⁸ [Queensland Energy and Jobs Plan \(epw.qld.gov.au\)](http://epw.qld.gov.au) page 44

connection application to the TNSP the detailed design of those components or asset for their review and, where there is third party ownership, negotiate a network operating agreement for the TNSP to control, operate and maintain the asset prior to entering into a connection agreement: see clause 5.3.4(b)(3)(ii) and clause 5.3.7(a)(2) of the NER.

Developing the detailed design of the IUSA components and negotiating a network operating agreement can delay a project reaching financial close (we understand by several months), as discussed by the AEMC's [Final Rule Determination](#) on Expanding the transmission ring-fencing framework dated 16 May 2024 at page 16.

The AEMC introduced contestability into the market for contestable transmission connections because significant savings could be realised - connections costs can be ten per cent of an overall project's costs. The AEMC estimated that the savings from this reform to be a ten per cent reduction in these connection costs²⁹. The AEMC also has recently introduced ring fencing of negotiated transmission services to foster competition for contestable transmission connections. The AEMC's Hybrid Model is inconsistent with, and undermines, the AEMC's reforms and potential cost savings in this area.

15. The costs of the Hybrid Model outweigh its benefits

We note that the identified benefits only amount to around 161 million per annum³⁰. There is sufficient evidence to indicate that, if the costs and harms outlined below are fully accounted for, there would be significant **net costs** from implementing the reform (even if the benefits are not discounted).

15.1. Analysis of Professor Paul Simshauser and Professor David Newbery

In November 2023, Professor Paul Simshauser and Professor David Newbery modelled a REZ with ~1,500MW network hosting capacity and found that moving from an open access to priority access regime:

- reduced consumer welfare for the REZ by A\$169 million per annum: see page 23.

Please note that this figure alone is greater than the net benefit of access reform under the AEMC/NERA modelling.

- reduced solar and wind output by 27%

Under an open access regime, 2,300MW of wind and 860MW of solar with annual production of 8,400GWh pa or 14% of Queensland demand would under priority access fall to 1,650MW wind and 540MW of solar with annual production of ~6,100GWh pa or 10% of Queensland's aggregate final demand. Consequently, the productivity of the priority access REZ is materially (-27%) lower: see page 23.

- would require 2 more REZs to be built to achieve a renewable target of 70% by 2032 in Queensland

When this outcome is scaled across the power system, Simshauser and Newbery found that target of 70% renewables by 2032 in Queensland could be achieved with five fully subscribed

²⁹ See page 4, AEMC [draft rule determination](#), National Electricity Amendment (Transmission Connection and Planning Arrangements) Rule 2016

³⁰ AFMA June 2024 [submission](#).

REZs under the existing non-firm access regime, while under priority access, seven fully subscribed REZs would be required to achieve the same result: see page 24.

In conclusion, the analysis of Paul Simshauser and David Newbery indicates that there would be significant net costs if a priority access model were adopted.

We request that the AEMC and ECOM take into account Simshauser's and Newbery's observations that:

*“Care must be taken with access reform. Well intended intuitive policy prescriptions can produce the exact opposite effects to that intended, including **reduced REZ asset productivity, compounded entry complexity, higher market prices and lower VRE quantities** – all of which harm welfare and make achieving renewable targets harder...*

*Perhaps counterintuitively, the NEM's existing market design and forward market conventions mean a change to priority access would **constrain entry significantly below efficient levels, raise consumer prices, or both – in either case harming welfare.**”: see page 4*

*“A decision to change access rights from non-firm to priority for new entrant projects in Australia's NEM would guide renewable curtailment to marginal rates. This would have the effect of **underutilising a scarce resource (i.e. VRE transmission network hosting capacity), constraining entry across critical locations and raising prices**”: page 26.*

15.2. Baringa 2020 Report

In their October 2020 Report, Baringa reviewed the methodology and results of NERA's 2020 Report and estimated that that the net benefit of the reform over the 2026-2040 period would be **minus \$337 million** per annum. Baringa's analysis remains relevant to the ESB 2023 Cost Benefit Analysis in finding:

- the benefits of the reform are overstated and do not account for the locational signals that already exist
- the impacts of the reform on financial markets had not been accounted for
- the cost of capital is likely to increase
- the implementation costs of the reform had not been fully accounted for
- the reforms would negatively affect wholesale competition.

15.3. Deficiencies in ESB's Cost Benefit Analysis dated February 2023 (Cost Benefit Analysis)

(1) ESB/NERA's assumptions

The ESB and NERA incorrectly assume that generators do not take into account locational signals and information when siting new plants. This assumption does not reflect commercial realities, or the stringent due diligence undertaken by investors when financing a new project.

(2) Overstatement of benefits

The stated benefit of \$3.8 billion from more efficient location decisions should not be included at all or heavily discounted given there are already implemented policies and information that provide locational signals for new investment and as a result the reforms do not add any additional benefit.

The \$1.55 billion benefits attributed to reduced fuel costs from coal generators fulfilling their physical dispatch using cheaper renewables in the Congestion Relief Market (and the emissions reductions resulting from this) are likely to be overstated. This is because:

- coal generators are inflexible plants which have Minimum Stable Load (MSL) requirements³¹. Coal plants face high startup costs if they are fully shut down and they have 'must run' minimum stable load levels. As a result coal plants will not react to negative price signals of the wholesale markets, and cannot be expected to use cheaper renewables in the Congestion Relief Market, if it will increase wear and tear on their plant or if it requires the plant to drop below their technical limits.
- AEMO may direct coal generators to stay on to maintain grid stability.

In addition, Baringa in their 2024 Report point out that these benefits are overstated as:

- the share of coal of the total generation mix has declined significantly since 2020 when NERA undertook its modelling
- coal generators are likely to be located in strong areas of the grid and are therefore unlikely to be subject to network constraints.

(3) Further costs and harms need to be included

The ESB's 2023 Cost Benefit Analysis does not consider and account for the following costs or harms associated with the reform:

- the negative impact of the Hybrid Model on financial markets (including increased hedging costs and reduced liquidity in derivatives, which may result in the exit of retailers and the vertical integration between retailers and generators): see paragraph 6.2.
- higher levelized costs of capital for new projects – see paragraph 12.2(b)
- more transmission needing to be built as Priority Access will result in an underutilisation of this resource (with consumers incurring higher TUOS charges): see paragraph 15.1
- the reform's potential to undermine competition in the provision of contestable transmission connections: see paragraph 14, with the result that the potential cost savings from introducing contestability are unlikely to be realised
- delays to the energy transformation which may affect the reliability of the power system: see paragraph 11.3
- delays in AEMO implementing reforms in key areas such as connection and system strength as AEMO's finite resources are diverted towards the enormous challenge of implementing a new NEMDE as part of the proposed transmission access reform
- higher RRP's see paragraph 2.1 – Australian Energy Council in their [submission](#) estimates that even a small increase in the RRP (1 per cent of the 10 year load weighted price) would wipe out approximately half of the net benefits of the reform (excluding carbon reductions).
- higher energy prices for consumers as a result of retail and wholesale competition being negatively impacted: see paragraph 12.
- higher emissions from raising barriers to entry, and delaying new renewable investment: see paragraph 11.1.

15.4. Costs are underestimated

The Cost Benefit Analysis underestimates the costs arising from:

³¹ [A look into minimum generation levels at various coal plants, using the GSD2023 - WattClarity](#)

- renegotiating PPAs and LTESAs

The AEMC has chosen the “lower bound estimate” on the assumption that the CRM is voluntary (and participants would not participate in the CRM if it triggered the reopening of contracts) and many PPAs would have expired by 2028. Both of these assumptions are incorrect for the reasons given in paragraph 6.1. Given that most participants have PPAs which will be affected by the reform, we consider a higher figure should be assumed.

The costs of renegotiating LTESAs have not been included.

The AEMC should engage with industry to obtain a more realistic estimate for the widespread renegotiation of PPAs and for the renegotiations of LTESAs.

- modifications to AEMO's systems

This figure could be materially higher depending on the reform model/option chosen. One of AEMO's serious concerns with the co-optimised model is that it involves a fundamental redesign of the NEM dispatch engine and therefore would be much more costly to implement: see paragraph 2.2. The Dynamic Group Option for Priority Access is also more complex (involving an extra pre-dispatch run) and therefore is likely to be more expensive to implement: see paragraph 6.3.

16. No case for reform

We do not consider that there is a case for proceeding with transmission access reform. The Hybrid Model does not work as intended and there is substantial evidence that the reform will result in net costs.

The system has changed significantly since the AEMC and ESB first started looking at Transmission Access Reform in 2016. In particular, jurisdictions have taken the lead by addressing the fundamental cause of congestion: lack of transmission investment. Furthermore, given the significant investment required for NEM carbonisation - over 120 GW, plus hydrogen export - a modest amount of congestion will be efficient and can help guide where new transmission investment can be developed risk free.

As always, the CEC welcomes further engagement with the AEMC on this reform. Further queries can be directed to Diane Staats at the CEC on dstaats@cleanenergycouncil.org.au.

Kind regards

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