13 January 2022

Ms Anna Collyer
Chair
Energy Security Board

Lodged via the ESB website

Dear Ms Collyer,

Submission to Transmission access reform Project initiation paper

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in renewable energy and energy storage along with more than 7,000 solar and battery installers. We are 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.

In particular, we are focussed on developing regulatory frameworks to support efficient investment in the large number of new renewable generation and storage projects that are needed to deliver secure, reliable and zero emissions energy for consumers.

The CEC welcomes the opportunity to comment on the ESB's Project Initiation paper for the next stage of the transmission access reform project.

Any changes to the current frameworks for transmission access must be assessed in light of how they impact efficient investment in renewable generation and storage. The scale of the investment challenge in the NEM is extraordinary; under the most likely Step Change scenario, AEMO is forecasting a ninefold increase in required capacity, with 170,000MW of renewables and storage to be connected to the NEM by 2050. These numbers are even larger if the more ambitious hydrogen superpower scenario eventuates.

Any change to the regulatory frameworks must be assessed in terms of how it will help or hinder the investment needed to deliver this transition. The effectiveness and efficiency of this investment process will be central to delivering a reliable supply of low cost, low carbon energy to customers.

Implementation of the Congestion Management Model (CMM), in any of its forms, will hinder efficient investment. The CMM creates uncertainty and makes it extremely difficult for efficient investment to occur across the power system. By fundamentally weakening the dynamism and openness of the national electricity market, the CMM will stymie investment and ultimately drive up costs for consumers.

The CEC considers that an alternative model, developed by CEC member Edify Energy, represents a preferable solution to the CMM. The 'Congestion Relief Market' (CRM) model maintains market dynamism, while providing clear signals to improve operational and investment efficiency. By doing so, it will help deliver the significant investment needed to decarbonise the NEM.

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More generally, we welcome the ESB's openness to consider different approaches to the CMM. While we have proposed that the Edify model form the basis of a workable and effective alternative to CMM, we encourage the ESB to give full consideration to any other models proposed by industry. Open and genuine collaboration with industry is critical to developing regulatory changes that will actually prove workable and deliver better outcomes for consumers.

Its also critical that the ESB consider these models in and off themselves, rather than merely as 'inputs' for a revised CMM. The ESBs Initiation paper seems to suggest that issues with the CMM raised through exploration of alternative models will be fed into a reimagined CMM. As discussed in this submission, we consider that the ESB should instead focus solely on Edify Energy's CongestioN Relief Market model - perhaps in combination with other models for access protection - while the CMM should not be progressed any further.

This submission sets out our thinking as follows:

- The nature of the problem definition set out by the ESB should be re-examined in light of actual likely outcomes on the future power system. This will demonstrate that solutions other than the CMM are more likely to drive efficient outcomes in the future power system.
- The CMM is likely to hinder efficient investment in renewables and storage. It creates material uncertainty for new investors and will prevent overall efficient investment in the power system. We consider these fundamental problems cannot be addressed through reforms to the model.
- We consider that the Congestion Relief Model (CRM) proposed by CEC member Edify Energy represents a better solution. The CRM creates an open and effective market for congestion relief, and enables development of secondary contracting markets to underpin efficient investment.
- The CEC acknowledges that further work may be needed in relation to access, particularly as this relates to protecting access of generators once they have connected. While we consider that the CMM will not deliver this, other models may warrant further exploration. At this stage, the CEC does not have a firm alternative model for this objective. However, we have proposed some principles and assessment criteria to explore the need for and potential design of such a mechanism. We look forward to working with the ESB, and state jurisdictions, to further progress this work.

Reassessment of problem definition / objectives of transmission access reform

In its paper, the ESB sets out several objectives of access reform. These can also be viewed in terms of the 'problem statements' that any new mechanism must address. Below, we step through each of these problem definitions, to assess their materiality and determine whether or not the CMM represents a sensible solution.

Better signals for generators to locate in areas where there is available transmission capacity

The ESB's first stated objective of transmission access reform is to provide better signals for generators to locate where there is available transmission capacity.

We consider there are already strong 'push' and 'pull' signals under existing arrangements that achieve this outcome. We don't consider a mechanism like the CMM will provide further benefit in terms of guiding generator locational decisions.

On the 'push' side, the existing NEM design includes powerful locational signals, such as the risk of poor marginal loss factors, stability limit curtailment (such as from a lack of 'system strength') and the threat of thermal congestion. Most sophisticated investors in the market have now developed tools to assess these risks and will make efficient decisions accordingly. In the event that an investor does not

effectively assess these risks, and makes a poor investment decision, it will then face the associated consequences. These costs are then borne by the investors themselves.[1]

On the 'pull' side, the development of REZ frameworks in the major regions of the NEM will also create very strong signals, encouraging investors with associated risk appetites to locate within REZs. We continue to work closely with the states to develop these frameworks, so that they offer sufficient value and support efficient investment.

In the context of these existing carrots and sticks, it's unclear why a further mechanism is needed. As discussed below, at its core the CMM does little else than make investment non-viable in many parts of the NEM. For any generator who elects to connect outside of a REZ, the CMM will simply replace one of the existing signals - congestion risk - with an even more opaque and un-hedgeable signal - an unpredictable and likely volatile local marginal price.

Better use of the network in operational timeframes, and *Establishing a framework that rewards storage and demand side resources for locating where they are needed most*

The ESB's second and third problem statements are linked, in that they relate to operational outcomes and efficient usage of the network. The locational decisions made by storage investors will be particularly important to how the system is used and operated.

In terms of operational outcomes, one of the original rationales for moving to a nodal pricing/LMP model (as opposed to the regional model currently used in the NEM) has been the risk of 'disorderly bidding'. The traditional argument here is well established: a binding thermal system limit creates a 'race to the bottom', with generators bidding in a way to maximise their volume exposure to the regional reference price (RRP). This in turn creates a risk of productive inefficiencies associated with an overall dispatch where more expensive assets are dispatched in preference to lower cost alternatives.

This argument holds in historic generation fleets, where there was a significant difference in the short run marginal cost (SRMC) between coal, gas and diesel generators. For example, displacement of the former by the latter could see very significant productive inefficiencies caused by a higher cost fuel generator displacing a lower cost fuel generator.

We consider that this traditional problem definition should be reassessed in light of the changing generation mix that will increasingly make up the bulk of the NEM. It's questionable whether the disorderly bidding problem is as material for generation fleets where bulk energy is produced by low SRMC renewable generation. For example, given the small to non-existent difference of the SRMCs of two wind farms behind a constraint, the productive inefficiencies associated with any disorderly bidding between the two are likely to be similarly small or nonexistent. Furthermore, if we assume that a high renewables fleet leads to an increased incidence of low wholesale prices, the incentive for disorderly bidding is also likely to reduce.

Of course, disorderly bidding can still occur in a high renewables fleet. However, the likely magnitude of associated inefficiencies are likely to be markedly less than they would be under a fossil fuel dominated fleet. In any case, as discussed in more detail below, we consider that less distortionary models than the CMM can reduce the incentives for disorderly bidding.

To be clear, while we question the overall materiality of any 'disorderly bidding' that may occur due to congestion on the power system, we nevertheless agree there is merit in exploring regulatory reform to reduce congestion in all its forms. For this reason we have supported constructive reform such as

[1] Its acknowledged that these poor decisions may also impact incumbents, which we address in the final part of this submission.

the recently completed system strength rules, development of the ISP frameworks and the various state based REZ schemes. We have also suggested that Edify Energy's proposed 'Congestion Relief Market' warrants examination as a sensible way to address congestion. However, these reforms are very different to the CMM, in that they all propose ways in which to actively address or reduce congestion, rather than simply penalise generators for producing energy.

The other argument raised by the ESB relates to the locational and operational incentives for storage and demand side resources. This is an important element of any future energy market design, particularly given the many ways that storage assets can support the power system.

While the CMM goes some way to creating incentives for storage to change its operational behaviours, the mechanism presented on page 29 of the paper appears overly convoluted. More to the point, a mechanism such as Edify Energy's proposed CRM model would far more effectively integrate the capabilities of storage, load and generation to relieve congestion, as it is a direct outworking of the dispatch process. It would also better enable the congestion relief value provided by these assets to be recognised, in terms of relieving all types of system limits, and would also support the development of secondary markets to support investment.

Similarly, efficient location of storage will go a long way to ensuring that network assets are utilised as efficiently as possible. For example, effectively situated storage can allow for the optimal utilisation of network assets in combination with variable renewables. This is particularly important for the efficient utilisation of a REZ.

The CRM cam deliver these outcomes more effectively than the CMM. This is explored in more detail later in this submission.

Measures to give investors confidence that their investments will not be undermined by inefficient subsequent connections

Existing generators may be negatively impacted by subsequent connections. This could suggest the introduction of mechanism to protect the access of existing connections. However, this must be carefully balanced against the impact that any such mechanism would have on new connections – a mechanism that acts to protect incumbents, could very well make it much harder for new generators to invest.

Generally, it appears unlikely the CMM will do much to protect the access of existing generators, other than to award rebates to those generators who happen to have connected at an arbitrarily determined point in time – including the entirety of the coal and gas generating fleet, and whatever renewable generators and storage assets have connected in time.

This grandfathering was introduced to neuter opposition from parties who own and operate existing assets. However it fails to recognise the magnitude of new investment that will be occurring in coming decades. This approach may not provide effective protection for the majority of generators that will ultimately be connected to the NEM.

Having said this, consideration of any mechanism to protect access of already connected generators (not just those who happen to have connected by an arbitrarily determined date) must be very carefully designed. We have set out some principles as to how such a mechanism might be designed in the final part of this submission and look forward to working with the ESB to progress this thinking.

Problems with the CMM

The CEC considers that the CMM, in all its variations, should be abandoned at this point in time. A multitude of problems have been identified with the general design of the mechanism, and it is almost universally opposed by industry participants.

The most obvious problem with the CMM is that it creates unhedgeable and unmanageable basis risk for anyone who connects outside of a REZ, which will make it untenable for most investments to get off the ground.

The CMM is designed to force investors to build renewables only in the 'right' area, by introducing un-forecastable, un-hedgeable basis risk for any generator connecting in the 'wrong' area.[2] We are opposed to this approach on two fronts.

Firstly, we are opposed to the idea of hardwiring into the national electricity rules a centralised approach to directing where new generation and storage investment can occur. Forcing generators to locate only in the 'right' parts of the system represents a fundamental departure from the concept of an open, dynamic and competitive NEM. This market dynamism is what drives long run efficiency, as investors learn and iterate their behaviours, to deliver an overall lower cost solution. It is a fallacy to believe that a central planner will be able to replicate or better this outcome, by determining the most efficient locations where generators invest, and where they cannot.

We recognise that reforms such as actioning the ISP rules, as well as the state based REZ schemes, do represent a more centralised approach to generation investment. However, these mechanisms represent a sensible amalgam of centralised planning with competitive market processes, to deliver efficient investment. It's also worth noting that many of these schemes purposefully strike a balance between more 'centralised' investment in the REZ, while allowing room for efficient investment in other parts of the power system.[3] In contrast, the most recent iteration of the CMM as proposed by the ESB serves solely to force generation to locate in a REZ. This is an imbalanced approach that will not deliver overall efficient investment outcomes.

Secondly, new connecting generators and storage can themselves turn a 'wrong' area into the 'right area' to connect. This can (and does) occur because there are likely to be areas on the network where sophisticated generators and storage proponents will be able to work with AEMO and the relevant NSP, to bring real benefits to the system as well as managing their own risk of congestion.[4]

By precluding investment outside of the nominated 'right areas' in this way, the CMM brings with it greater investment inefficiencies than those it was designed to address. By imposing an unpredictable, unhedgeable congestion charge on any party who connects outside the 'right' areas, the CMM will ultimately reduce investment efficiency. The sheer scale of new generation investment required in coming decades means that precluding investment from occurring across the entire system represents a massive wasted opportunity, which could very well make it harder, and more expensive, to deliver low cost and reliable energy into the future.

The CEC recognises comments from the ESB that the CMM might be modified to allow parties to connect not only in a REZ but also in other nominated areas of the power system. We do not consider that any related tweaks to the CMM to address this are likely to lead to better outcomes. Any such changes would not avoid the fundamental problem of exactly who will be defining these other acceptable areas, and on what grounds. Implicit in any such a mechanism is significant uncertainty for

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[2] The term ''right' area' is referred to here as it was used by the ESB in its initiation paper.

[3] For example, the NSW Roadmap purposefully allows for long term energy service agreements to be awarded to projects outside of the REZ, where those projects can be demonstrated to provide clear value. Similarly, the recently released NSW access issues paper allows for parties to connect outside of the REZ, and limits 'access protection' to specific nominated REZ supporting assets. Both of these developments represent a sensible balance between a centralized approach to REZ development, while allowing for decentralized market decision making to continue in other parts of the system.

[4] For example, there are already examples in the NEM where new connecting generators and storage have installed equipment to stabilize voltage and provide system strength, which has helped relieve stability related congestion – this benefits the connecting proponent, as well as subsequent connecting parties. Under the CMM as proposed by the ESB, these kinds of innovative and highly valuable outcomes would be prevented, reducing the efficient utilization of the network.

investors as to what areas will be deemed 'right' to invest in; given the significant lead times associated with developing new renewable generation and storage sites, any such uncertainty is likely to be a project killer.

As noted above, any such tweaks would also likely fail to account for the ability of sophisticated generators and storage proponents to work collaboratively with NSPs and AEMO to themselves relieve congestion, given that these other 'right' areas are centrally determined.

As discussed in further detail below, we consider that the Congestion Relief Market, as proposed by Edify Energy, is better placed than the CMM to address many of the underlying issues originally identified by the ESB. Beyond this, if and when there is a need to provide access protection to existing generators, whether within the REZ or outside of it, the ESB should consider less distortionary models that the CMM to deliver desired outcomes, while allowing efficient investment to occur anywhere in the NEM power system.

Congestion relief market is a superior model to the CMM

The details of Edify Energy's "Congestion Relief Market' model were set out in that organisations submission to the June ESB paper.

The core elements of this model include:

- The CRM is a dispatch based mechanism which recognises the ability of various assets (including storage, loads and generators) to assist in the alleviation of congestion in operational timeframe.
- The CRM effectively creates a 'side market' that allows for parties to trade congestion relief behind a constraint, supporting the development of secondary contracting markets. For example, a battery could enter into a contract with a wind generator to consume that wind generator's energy for an agreed strike price. This allows the generator to sell its otherwise curtailed export direct to the battery
- The CRM is also optional, with parties participating in an opt in basis
- It is open to relieving all forms of congestion that can be written into constraint formulations, including congestion associated with stability and voltage limits

We consider that the CRM represents a far superior model to the CMM, which should be capable of delivering on several of the objectives described by the ESB on page 3 of the Initiation paper.

At its core, however, the CRM model is preferable because it is a market. Like all markets, it allocates specific risks to those parties who can most appropriately bear it. Further, unlike the CMM, it also provides investors with a choice as to whether they manage that risk by hedging through the side market, or not. It also offers transparent and predictable price discovery, a critical characteristic that is missing from the CMM, and which is central to efficient investment.

The CRM supports better operational outcomes, both in terms of use of the network as well as of existing generation and storage assets. Coordinating generation and charging behaviours means the CRM can facilitate better overall use of these assets to supply energy to consumers, over time. This also helps to get the most out of network assets. For example, it will incentivise a battery to coordinate and consume excess energy produced by a solar generator when a constraint is binding, rather than competing against the generator to export power over the network to the RRN. This energy can then be exported to the network in the evening, when the solar generator is not operating, driving more efficient overall utilisation of the network.

It's acknowledged the CMM might deliver similar outcomes to this. However, a key difference is that the CRM will support much more effective coordination, by enabling secondary contract markets. As the CRM is a dispatch based mechanism, volumes and prices are directly discoverable through

NEMDE. This means that parties can trade not only through the direct 'spot' mechanism of the congestion relief side market but can also enter into secondary contracts to firm up revenues. This allows for much more effective value / price discovery, and will ultimately lead to far more efficient investment decisions by both storage and generation providers.

This final point also goes some way to providing efficient locational signals, for both generators and loads. The clear price discovery enabled by the CMM will send clear signals to both types of asset to locate where there are opportunities for management of transmission congestion. Further, given the capability to strike contracts around the CRM, these signals can be translated into the firm, predictable contracts that are critical to underpin investment.

The CRM may go some way to providing investors with confidence that their investments will not be undermined by subsequent connections. For example, if a generator and storage provider connect the same time in a location, and strike an underpinning CRM secondary contract, both will have the confidence of a defined price, which will be unaffected by subsequent connections. Of course, this is not perfect – it does not address the risk of congestion between the generator and the RRN, and its also not clear how any subsequent changes to the first generator's coefficient might affect things. However, it would certainly go some way to relieving the original risk.

Finally, by providing clear price signals for the relief of specific constraints, the CRM helps investors to understand exactly what system services are needed at that location. Similar to the proposal put forward by another CEC member, HydroTasmania, this approach to identifying and valuing the relief of binding system limits is central to supporting efficient investment in system service provision. It's unclear how the CMM could deliver similar outcomes. The CEC therefore suggests the ESB consider development of the CRM in light of the work being undertaken through the *Synchronous Services Market* rule change.

We consider the CRM can form a viable and superior alternative to the CMM. The CEC stands ready to work with the ESB to adapt and expand on this model, subject to maintaining its core qualities of being an open and transparent market process.

Protection of existing access to give investors confidence

The CEC acknowledges that further work may be needed in relation to access, particularly as this relates to protecting access of generators once they have connected. While we consider that the CMM fails to deliver this, other models may exist that warrant further exploration.

However, extreme care must be taken in the development of these models, as poor design choices have the potential to actually weaken overall investment efficiency.

The CEC does not have a proposed model for access protection. Instead, we have provided some initial considerations of the ability of the CMM to provide this protection, as well as an outline of key design concepts that should inform an alternative access protection mechanism, if the ESB decides to pursue it.

From the outset, it's hard to see how the CMM provides much in the way of meaningful protection for existing generators' access. As previously noted, it will offer only partial protection to those generators who have already connected before some arbitrary date, or to those who have connected in the 'right' parts of the system. Beyond that date, and outside of those locations, no protection will be offered. This means that whatever investment confidence is offered by the CMM is limited in terms of both time and space, as well as by the uncertainty of the amount of the available rebate itself.

Furthermore, its likely that the limited investment confidence provided by any such protection will be significantly outweighed by the overall uncertainty created by the CMM. By creating unhedgeable and unmanageable basis risk for any party connecting outside of the 'right' area, the CMM markedly

increases uncertainty and risk for investors. Given the sheer volume of new generation and storage investment required, the investment impact of this uncertainty will outweigh any limited benefits of access protection provided by time based grandfathering and to those who locate within REZs.

Aside from these issues with the CMM, the ESB should carefully consider whether an access protection mechanism is in fact necessary, and in what circumstances it is warranted. This assessment should take into account where in the overall investment 'pipeline' is the bulk of new NEM generation. As described above, awareness of context is central to figuring out what any such mechanism should look like – this is a balance between providing established generators with firmness around their access to the RRP, against the ability of new generators to connect and also gain access. Skewing too far one way or the other could increase overall investment costs over time.

Noting the above, the CEC considers there are some key principles that should be considered in the development of any mechanism to protect access rights, if the ESB decides to progress such a reform.

Any potential mechanisms for access protection should be as open and transparent as possible. This means that where they are implemented, new and existing participants have a clear understanding of how the mechanism will work. For example, if a mechanism was introduced to preference established generators over new in terms of curtailment, then this would ideally be done through changes to NEMDE.

Relatedly, the ESB should consider whether such a mechanism would act as a 'stop sign' and simply prevent any new connections from occurring at a specific location, or whether it should instead function in more a gradated manner, such as imposing a preferential order of dispatch for different generators based on time of connection. The ESB should also consider whether there is benefit in applying any such mechanism in a targeted or more general manner. For example, access protection could be provided in a targeted manner, if the intent was to protect the access rights of parties who have connected within a REZ – this is the approach that appears to be taken through the NSW Roadmap.

Its also important that investors have a clear sense of when and where any such mechanism will be implemented. This is important as the timeline for development of new projects can often include several years to allow for initial scoping, land acquisition, financing, planning approvals, initial GPS modelling and EPC engagement. Its therefore important that investors have a clear line of sight as to when any such mechanisms may come into effect, to avoid wasting time and resources undertaking all of above activities for a project that may ultimately be non-viable.

Lastly, the ESB must carefully consider any incentives that such a mechanism might create for queuing, or speed of connection.

As noted, the CEC does not yet have a firm position on this issue. We look forward to working with the ESB to explore the materiality of the underlying issues and to explore potential solutions.

If you would like to discuss any of the issues raised in this submission, please contact me at czuur@cleanenergycouncil.org.au.

Yours sincerely,

Christiaan Zuur
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