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Interim REZ framework Stage 2 consultation paper

Dear Ms Schott,

Thank you for the opportunity to provide feedback on the Energy Security Board's (ESB) renewable energy zone (REZ) framework stage 2 consultation paper.

RWE is a global renewable energy company with 9.5GW of installed renewable energy capacity across our core technologies and markets. Its global renewable energy development pipeline exceeds 20GW. RWE operates across core markets including the Americas, Europe and Asia Pacific with operations in 18 countries.

RWE's first Australian project is the 249 MW Limondale solar farm in Balranald, south-west NSW.

Introduction

We support the intent to reform access arrangements in the National Electricity Market (NEM) and establish a REZ framework, but diverge from the ESB's initial views on how that best be done. We disagree with the ESB's stated preference to move to locational marginal pricing and financial transmission rights (COGATI) in the longer term. And given the ESB's views on the shorter-term REZ framework have been framed with that ultimate end goal in mind, we have addressed our views on wider access reform as well as the proposed REZ framework in this response. We believe there are modifications to the ESB's REZ framework that could be adopted to better address the key problems with the current open access model and which could set the NEM on a more sustainable long-term reform path than would otherwise be achieved through COGATI. The "REZ+" options we outline later in this paper would require substantial amendments to the National Electricity Rules, but not much beyond what the ESB is already contemplating with its REZ model.

The ESB has consulted well to understand many of the problems that access reform, including the REZ framework, should seek to address

As a starting point, we agree with some of the ESB's framing of the problems that need to be addressed through access reform and the REZ framework:

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The Post-2025 focus on transmission, access and REZs is focused on providing the mechanisms to transform the national network to meet future needs, to change the access regime to coordinate generation and transmission build, to lower the cost of connecting to new generators and to ensure that the augmented transmission system is efficiently used to maximise the benefits to customers.[1]

There are a number of areas in the NEM where uncoordinated renewable energy development is leading to network congestion, low marginal loss factors and technical difficulties. As more renewable generation connects, these issues are becoming increasingly widespread. Generators are exposed to lower revenues until remedies can be devised, approved and implemented.[2]

Forecasting uncertainty will always remain under an open access framework

The inability of a generation investor, at the time of their investment decision, to accurately predict subsequent market entrants' locational decisions has led in the past few years to many assets' business cases being significantly impacted by congestion, losses and grid connection and commissioning delays at levels never before seen in the NEM.

We note that the ESB, as part of its wider transmission and access reform work, is looking at enhancing and supplementing publicly available congestion information. More information is always helpful, and we already find AEMO's Congestion Information Resource to be valuable, at least for assessing the current status of parts of the network. However the forecasting aspect which is already grappled with by any generator seeking to predict it's MLF and curtailment over a 25-30 year project life will always be fraught with uncertainty, unless there are changes to access policy. So we suggest that AEMO and the ESB don't spend too much resourcing on trying to improve forecasting of generation investment under the current access policy and instead the focus is on improving the current access policy.

The transmission approval process has improved but there is still work to do to align transmission and generation build

The ESB's focus through 2018-19 on actioning the Integrated System Plan (ISP) was the right first step, an acknowledgement that system-wide central planning was needed to deliver the grid for the future in the context of an energy transformation. We also agree with the ESB that the ISP, on its own, will not provide the investment environment that can deliver the predicted 26-50 GW of new utility-scale wind and solar capacity that the NEM will need by 2040.[3]

Even if the expected halving of the timeline for large transmission project development from 14 years to 7 years plays out, that is still too long from a constrained generator's risk perspective. As an example, new system stability constraints in south-west NSW that were first identified in 2020 will not be resolved before 2025 at the earliest. That is a weaker

[1] *Post-2025 Market Design Directions Paper* – January 2021, Energy Security Board, p90
[2] *Renewable Energy Zones Consultation Paper*, January 2021, Energy Security Board, p17
[3] *Integrated System Plan*, 2020, AEMO

part of the grid than where REZs would be expected to connect into, but the principle is the same – outside of the actionable ISP framework, the RIT-T process is reactive and generators can face years of heavy curtailment between a RIT-T trigger event and a solution.

We agree that the ESB's proposed REZ framework may mitigate this issue for future projects but would not solve it, given REZ investors would still be subject to the vagaries of the open access shared network, where any subsequent market entrant could undermine the economics of the original REZ investments. Under the ESB's proposal, generation investors in a REZ could still face at least 5-7 years of potentially significant project impacts before constraints on the shared network could be built out.

The issue of REZ investor uncertainty could be solved, or at least mitigated, for REZs by a modified, more comprehensive access policy which protects foundation investors from the impacts of subsequent entrants (options on this discussed further below). But even with a comprehensive access policy, uptake of REZs will be slow if the main pathway is under the current actionable ISP framework.

The REZ consultation paper has focussed only on the RIT-T pathway for REZs and notes that REZs may be developed via different routes. But it is hard to see REZs being developed at scale solely with government or generator funding – consumers will still be relied upon for at least part-funding of the large transmission infrastructure needed for REZs.

Given the scale of the transmission build-out needed over the next 20 years, consumers are justified in wanting to ensure that they only foot the bill for grid build that provides a net benefit to the system. But to ensure REZ build-out at the pace needed to ensure reliability of supply through coal retirements, we recommend the ESB look at ways to better balance the cost and reliability risks.

The States of NSW and Victoria understand this problem of the lack of alignment of transmission and generation investment timeframes, both passing their own legislation[4] to provide a further streamlining of processes to get new transmission or virtual transmission augmentations. We note the Australian Energy Regulator's ongoing work in this area too[5] and suggest that further streamlining of transmission approval pathways must remain a key part of transmission and access reform.

Another model the ESB could investigate is where governments and generators take some up-front risk on transmission in the shared network, with consumers paying back some portion where net benefit is subsequently proven.

[4] *National Electricity (Victoria) Amendment Act 2020 (Vic)* and *Electricity Infrastructure Investment Act 2020 (NSW)*
[5] https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/regulation-of-large-transmission-projects

The open access regime needs to change

Even with more streamlining of the grid approval process, without some ability to restrict subsequent generators from undermining the grid access of existing assets, the NEM will continue to see grid built out to relieve existing constraints in a reactive manner that is unlikely to be the lowest cost outcome for consumers.

The ESB REZ model recognises that we need to move away from the open access regime to a more centrally-planned restricted-access model, still leaving a role for the market to find efficiencies. We support that general intent, although with some modifications described below.

The ESB REZ model will be limited in application for as long as it doesn't tackle the shared network grid risks

A REZ that connects into any area of the grid that is located far from load is likely to see deterioration in loss factors and curtailments over time, given the amount of generation that is needed to connect over the next 20-30 years to replace the retiring coal fleet. We have seen modelling of MLF and curtailment impacts for a project connecting into a proposed REZ. Despite an assumption of no curtailments within the REZ, and despite the REZ connecting into a relatively strong backbone of the shared network, the MLF and curtailment figures forecast for project life deteriorated significantly enough to make the project uneconomic.

There may be some project developers, particularly those that intend to sell prior to construction, who are prepared to take on more of the MLF and curtailment risk when bidding for capacity, believing the risk in relation to MLF and curtailment lies with the final owner/investor if the central forecasts ultimately play out. That will either mean those projects win capacity at auction but never get built because they cannot find debt or equity financiers, meaning more capacity needs to be sourced from the market to fill the REZ's potential, and meaning delays in the generator contributions to reduced TUOS for customers. Or, it will mean more injudicious generation investors entering the market, subsequently facing revenue impacts they did not take into account, and then putting pressure on policymakers and TNSPs to build out the constraints that central forecasts had always predicted. And if the constraints are built out, customers and/or taxpayers will foot the entire bill.

Cheaper and faster connections would be welcome, but it cannot be taken for granted under a REZ model

The other benefit that the ESB hopes to eventuate from its REZ model - cheaper, faster connections – is, in our view, insufficiently proven at this point to justify implementation of the model. Generator Performance Standards (GPS) will not be any weaker under a REZ model, and each plant will still need to ensure compliance with their GPS through commissioning and operation. As we understand it, many of the connection delays faced by proponents to date have been caused by changes in proponents' own designs between application and registration and there is nothing to say that practice will not continue with REZs. If anything, the unprecedented amount of variable renewable generation

concentrated within a REZ (and likely far from load), could present new difficulties for the connections process.

While we welcome the ambition to improve the connections process, and in theory economies of scale in a REZ may result in cheaper solutions for grid stability, the efficiencies are unproven and should not be taken for granted. Consideration should be given to the Transgrid rule change request centralising the procurement of system strength in lieu of the current "do no harm" system strength requirements on generators. Assuming that rule change is approved (as we and much of the CEC and CEIG membership hope it will be), the zoning of system strength needs to align with REZ geographies. Other assumed improved efficiencies in grid connection within REZs will only eventuate if there are clear obligations in the rules on the respective parties that can best manage the risk at each stage of the connection process.

Generators are prepared to pay more transmission costs upfront to lower their risk profile

An access policy that kept foundation REZ investors protected from the majority of subsequent generators that would otherwise impact REZ investments, would incentivize generators to locate within a REZ rather than the shared network.

The greater the safeguards provided around grid capacity and stability between the REZ and major load centres, the deeper the pool of investors would be, and the more easily the REZ transmission capacity would be filled to its potential. The increased competition would also increase the REZ auction revenue, as investors bid higher with a lower risk profile.

There are options to explore which would increase REZ investor certainty and reduce consumer funding of transmission

REZs could be defined geographically to cover the concentrated generation zone plus at least part of the transmission arteries that connect the REZ close to significant load and strong shared transmission. The access policy would put restrictions, either physical or financial, on new generation that wanted to connect both within the generation part of the REZ and along the artery. ESB appears open in its consultation paper to apply the "do no harm" obligation to generators "within the vicinity" of the REZ and not just generators within the REZ. If you took a wide view of "vicinity" or if you defined the REZ to include the grid arteries connecting the REZ to load which were most susceptible to future downgrading if not managed, then this model could offer significant protection for foundation REZ generators.

Alternatively, there could be some portion of REZ auction revenue that is set aside for shared network augmentation over time so that the transmission backbone that connects the REZ to the regional reference node can be maintained. The RIT-T process would need to be able to take that portion of auction revenue as additional cost reductions and not wealth transfers for the purposes of assessing future transmission augmentation (perhaps possible if an independent body is receiving auction revenue anyway). Overall auction revenue would likely increase to fund the shared network contributions because

investors would get some further comfort about grid stability over the longer term. This option would rely heavily still on further streamlining of the RIT-T process, or by moving to the sorts of legislative powers enacted in Victoria and New South Wales to bypass the RIT-T process.

The ESB, in its post-2025 January directions paper discusses the deep connection charge model, where a new generator pays for both the cost of physical connection to the grid along with the costs of any transmission network reinforcement, over that already committed, required to maintain access for all existing network users. If such a model was applied over parts of the shared network that could affect foundation REZ investments, the incentives to locate within (and contribute to) the REZ would be further strengthened.

In these "REZ+" models, larger and more experienced generation investors would be prepared to pay more to win capacity at auction, knowing there were lower constraint and MLF risks over project life, resulting in reductions in TUOS charges for customers. This contrasts with the ESB REZ model, where more volatility in MLFs and curtailments could be expected, and with COGATI, where congestion could effectively be hedged but at an unknown cost at the time of investment decision and where losses could not be hedged at all.

The point is not for generators to be free of future constraint and push risk onto consumers, but for generators to have more certainty in the range of losses and curtailments they could see over project life and pay upfront for that certainty, lowering the amount consumers pay for transmission.

A REZ+ model could allow a steady transition of the NEM away from the open access model without major investor shocks

A REZ+ model would avoid the grandfathering issues that have plagued the optional firm access and COGATI proposals, as existing generators are already connected to the network and so would not face additional grid charges. New generation would be incentivized to locate in each new REZ as it is developed, and the shared network would gradually shrink over time as more REZs were built out and more of the previously shared network had deep connection charges or restricted access applied to it. Projects currently at early development stages across the NEM and outside planned REZs, would get a sense of when grid access rules might change in their area, based on the proposed timing of any adjacent REZs and so could plan accordingly.

Those non-REZ transmission projects currently going through the RIT-T which are aimed at alleviating existing constraints could also have a capacity auction and access policy attached to them. Generators currently facing constraints could bid for firm access rights on the new transmission with a second auction round for new projects that want to connect to the new line. In this way, projects like Energy Connect or VNI West that are still facing significant consumer concern about cost, could get some funding contribution from existing generators that want to remove themselves from a constraint and prospective generators that want greater assurance about future grid capacity before they invest.

With much of the shared network in areas of good zero emissions resource already at capacity, a REZ+ framework which gives generation investors the certainty about future constraints to de-risk their projects will be able to provide a strong locational signal as soon as the first REZ is implemented. Under the ESB's proposed REZ model, the locational signalling would be weaker, and in our view would not eventuate at the investment timescale under a move to COGATI, as COGATI does not give generators greater certainty about grid costs and impacts at the time of investment decision.

COGATI does not solve the major issues faced by generators, consumers or networks

The vast majority of stakeholders across the generation, grid and consumer sectors have rejected COGATI.[6] Consumers want generators to share the cost of grid build-out. Generation investors want greater certainty about future grid capacity to support their investments and are prepared to pay upfront for that. Existing generators want their sunk costs protected. Grid companies want to build the grid of the future but without taking on additional risk themselves and without risking their social licence by lumping all cost on consumers. A REZ+ model does all this. COGATI, on the other hand, pleases few.

We would welcome further discussion on this submission, and wish the ESB well in its endeavours to find a suitable reform path for the NEM.

Yours sincerely,

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[6] See submissions at https://www.aemc.gov.au/market-reviews-advice/coordination-generation-and-transmission-investment-implementation-access-and