



SCOPE OF WORK AND FORWARD PROJECT PLAN

DESIGN OF A CONGESTION MANAGEMENT MODEL FOR THE NATIONAL ELECTRICITY MARKET (NEM)

The Energy Security Board's Post 2025 Market Design Review final advice¹ recommended a congestion management model adapted for renewable energy zones (or CMM-REZ, referred to hereafter as CMM for convenience).

The ESB has been asked to progress detailed design work on the CMM and to bring back a proposed rule change to Energy Ministers by the end of 2022. The design process should include a comprehensive consultation process and should take into consideration value for money, providing locational signals, and ensuring sufficient flexibility for jurisdictional differences. A congestion management solution is to build on the interim REZ framework developed by the ESB which has been agreed to Energy Ministers.

This paper provides an overview of the issues described in more detail in the ESB's project initiation paper.

Context

The CMM is intended to overcome a number of distinct, but related, problems that arise because of the design of the NEM's access regime. The NEM has an open access regime; that is, parties may connect to the grid at any point subject to meeting technical requirements and funding only the cost of the assets required to connect to the shared grid. Generators are not required to contribute towards the cost of the shared transmission or distribution network, and they receive no assurance that the network will be capable of transporting their output to load centres.

The NEM's access regime has been contentious ever since the market started in 1998. Over the past 20 years, various bodies responsible for the design of the NEM² have expressed concern about the lack of locational signals and the imbalance between those who benefit from, and those who pay for, the transmission network. Generators, on the other hand, have defended the current open access regime. It gives them flexibility to connect where they want, and they don't need to pay to access the transmission network.

More recently, the downsides of the NEM's access regime have become more apparent. The energy transition can be delivered more cheaply and quickly if generators connect in places where we can get the full benefit of all the renewables coming into the national power system. An investment boom in renewable energy has meant that new generation investment exceeds the capacity of the transmission network to host it.

In some cases, generators are connecting in locations where, a lot of the time, they are not adding new renewable energy to the power system; instead, they are displacing the renewable generators that were already there. This is resulting in overall system costs being unnecessarily high: unnecessary capital expenditure in generators that are poorly located to be dispatched, additional transmission

¹ ESB, Post 2025 Market Design Final Advice to Energy Ministers, Parts A, B and C, July 2021. Available at: <https://esb-post2025-market-design.aemc.gov.au/reports-and-documents#esb-reports>

² These include the Australian Competition and Consumer Commission, the National Electricity Code Administrator, the Australian Energy Market Commission and the Energy Security Board.



expenditure to accommodate these poorly located generators, and storage not being incentivised to locate where it can most add value. In operational timeframes, we end up with more expensive combinations of generation and storage being used in real time to meet demand than is necessary.

As a result, investors are facing unpredictability and delays during the connections process, volatile marginal loss factors and the unexpected curtailment of operational projects. Ultimately, customers bear additional costs if investing in the NEM is riskier than it needs to be, particularly if poor generator location decisions result in transmission investment that would not be needed if the generators had located elsewhere.

Recent enhancements to the planning regime in the NEM include the development of the Integrated System Plan (ISP) and changes to support transmission investment in accordance with the ISP (the actionable ISP reforms). Among other things, the ISP identifies renewable energy zones (REZs) as part of the optimal development path. These seek to provide the most efficient means to connect the additional renewable energy capacity required as the power system transitions away from fossil fuels.

Several State governments have initiated schemes to expedite the development of REZs. In an interconnected power system, developments in one location can have significant flow on consequences elsewhere, including in other jurisdictions. To promote coordinated development, the ESB has recently completed a two-stage process to develop an interim REZ framework. The REZ Planning Rules and the Interim REZ Recommendations build on the ESB's rules to action the ISP:

1. **REZ Planning Rules.**³ The ESB developed an improved REZ planning framework that among other things, provides for greater alignment of the needs of developers and communities, while ensuring REZs leverage and contribute to the efficient development of the broader power system provided for in the ISP. These new rules have now been implemented.
2. **Interim REZ Recommendations.**⁴ Ministers have adopted the ESB's recommendations for a set of overarching principles for the development of REZs, together with practical guidance on how to implement these principles. These principles relate to planning a REZ, connecting to a REZ, funding, and access within a REZ.

The REZ principles will help jurisdictions looking to resolve urgent issues in the short term to do so in a way that builds towards long term improvements the national framework.

A key finding from the ESB's process to develop an interim REZ framework is that REZs need whole-of-system access reform to be viable in the long term, particularly if governments want generators to contribute to the cost of REZ transmission infrastructure. The CMM supports and strengthens State REZ schemes by:

- Strengthening incentives for new entrants to locate and participate in REZ investments,
- Giving REZ participants confidence that their investment case will not be undermined by subsequent inefficient investment decisions outside the REZ,
- Removing opportunities for subsequent connecting generators to free ride on REZ investments without contributing to them, and

³ ESB, Renewable Energy Zone Planning Final Recommendations, February 2021. Available at: <https://prod-energycouncil.energy.slicedtech.com.au/sites/prod.energycouncil/files/ESB%20final%20recommendations%20REZ%20Planning%20Rules.pdf>

⁴ ESB, Interim Framework for Renewable Energy Zones – Final Recommendations, June 2021. Available at: [datocms-assets.com/32572/1631503418-esb-decision-document-renewable-energy-zones-recommendations-final-1-june-2021-to-enrcr.pdf](https://assets.com/32572/1631503418-esb-decision-document-renewable-energy-zones-recommendations-final-1-june-2021-to-enrcr.pdf)



- Promoting the efficient use of REZ infrastructure by creating a market design that rewards storage providers for alleviating transmission congestion and providing firming services for renewable generators.

If the current access regime is retained, there is a risk that parties outside the REZ may degrade the level of access available to generators within a REZ. As electricity flows consistent with the laws of physics, generators outside of the REZ physically utilise the REZ infrastructure and non-REZ infrastructure required for a REZ generator to get to load. Consequently it is not feasible to physically honour the access rights of a REZ generator without changes to the access rights of generators elsewhere.

In this context, the CMM detailed design process is focussed on transmission access, namely, designing a market that encourages market participants to connect to the grid and utilise the system in a way that minimises total system costs.

The REZ schemes, together with the ISP reforms, aim to provide efficient overall development of the power system. However, there should also be viable opportunities for market participants to develop projects outside the planned framework, so long as the investment does not detract from the efficient development of the power system. The consultation process will seek to design a framework that retains the dynamism and innovation of the competitive market, while addressing the anomalies in the current market design that cause sub-optimal outcomes.

Scope and objective of the CMM detailed design process

Transmission access reform is concerned with designing a market that encourage generators, storage providers and demand response providers to connect to the grid and utilise the system in a way that minimises total system costs. The objective of the CMM design process is to develop solutions for each of the four challenges set out in Box 1.

Box 1 Challenges to be solved by CMM – the transmission access reform objectives

1. Better signals for generators to locate in areas where there is available generation capacity – including, but not limited to, in the REZs that are being delivered through the ISP and state government policies,
2. Better use of the network in operational timeframes, resulting in more efficient dispatch outcomes and lower costs for consumers,
3. Establishing a framework that rewards storage and demand side resources for locating where they are needed most and operating in ways that benefit the broader system, and
4. Measures to give investors confidence that their investments will not be undermined by inefficient subsequent connections.

Each of these challenges are substantial issues in their own right. What they have in common is that they are all closely connected to transmission access regime.

When assessing alternative solutions put forward by stakeholders, the ESB will have regard to each of the four transmission access reform objectives. It is also critical that the final design is able to integrate with State government REZ policies and accommodate jurisdictional differences.

The ESB's work program will address issues raised by stakeholders during the Post 2025 Market Design review. In particular, the detailed design process will develop the model in sufficient detail to allow market participants and other stakeholders to assess how the reforms are likely to affect



them. It will also ensure that efficient projects outside REZs are not disadvantaged and provide greater certainty around the future costs of congestion for investors.

Jurisdictions are progressing with a range of initiatives to support the transition to a lower emissions system including arrangements for the development of REZs. The ESB work program will include close consultation with each jurisdiction to ensure the alignment between schemes they are developing with the national arrangements. This may require both the detailed arrangements being established by states to adapt to national arrangements and the national arrangements to provide a level of flexibility to accommodate jurisdictional schemes. The ESB's recommendations need to maintain both the long-term benefits to consumers through greater efficiency and the benefits to market participants of national consistency.

There are critical interdependencies with other parts of the regulatory framework, particularly transmission planning and investment. While transmission investment is important, it is not a substitute for measures to encourage generators, storage and demand response providers to connect to and use the network in a way that promotes efficient outcomes for consumers. The CMM review is focussed on how to get supply-side investment that aligns with the efficient development of the power system as a whole. Issues related to transmission investment will be addressed via the AEMC's Transmission Planning and Investment Review. An overview of the related work programs set out in Attachment D of the project initiation paper.

Stakeholder consultation and project governance

Effective stakeholder engagement will be critical to the detailed design process. To this end, this project will be informed by an expert advisory panel and a technical working group, each comprised of a diverse set of stakeholders with appropriate experience and expertise. Participation in these groups will be by invitation only.

The Senior Officials Reference Group established for the Post 2025 project, comprised of senior officials from each of the NEM jurisdictions, will continue to provide the focal point for feedback from jurisdictions throughout the process.

The ESB will also undertake a formal public stakeholder consultation process, consisting of submissions on consultation documents, stakeholder workshops and public forums as appropriate. An overview of the panels and working groups as they relate for all ESB projects progressing P2025 reforms can be found on the [ESB's post 2025 market design website](#).

Timing and deliverables

National Cabinet has instructed the ESB to prepare a proposed rule change setting out the design of a congestion management model and necessary regulatory changes to Energy Ministers by December 2022. The ESB's proposed forward work program is set out below. It includes meetings with Energy Ministers to seek guidance on the progression of the congestion management model. These meetings have been given indicative dates for planning purposes.



Table 1 CMM forward project plan – key milestones

Milestone	Indicative timing
Project initiation paper	18 November 2021
Public webinar on project initiation paper	26 November 2021
Submissions due on project initiation paper	28 January 2022
(Indicative) Ministerial meeting: CMM update	March 2022
Detailed design consultation paper	March 2022
Public webinar on consultation paper	March 2022
Submissions due on consultation paper	April 2022
(Indicative) Ministerial meeting: Draft recommendations for detailed design	August 2022
Draft recommendations for detailed design	August 2022
Public webinar on Draft recommendations	August 2022
Submissions due	September 2022
Submit proposed rule change to Energy Ministers	Early December 2022
Ministers consider proposed rule change	December 2022