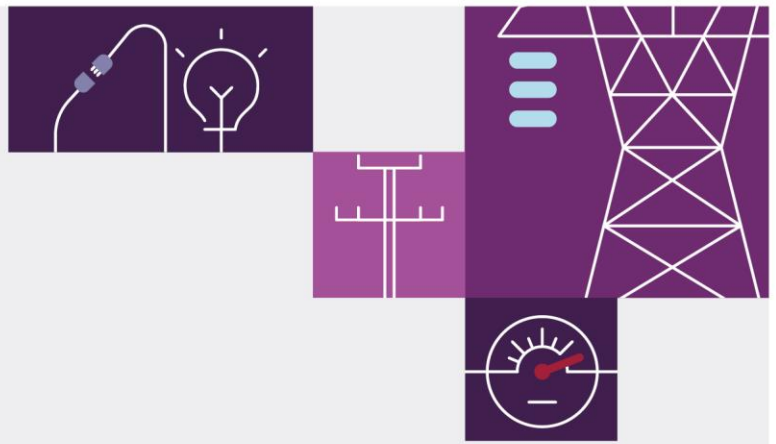


DECLARED NEM PROJECT – NEM 2025 REFORM PROGRAM

September 2022

Final Report and Determination





Important notice

Purpose

AEMO is consulting on the determination of the National Electricity Market (NEM) 2025 Reform Program as a declared NEM project in accordance with clause 2.11 and clause 8.9 of the National Electricity Rules (Rules).

This document has effect only for the purposes set out in the Rules, and the Rules and the National Electricity Law prevail over this document to the extent of any inconsistency.

This publication has been prepared by AEMO using information available at 29 September 2022.

Disclaimer

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Version control

Version	Release date	Changes
#1	29/09/2022	



Executive summary

The publication of this Final Report and Determination (Final Report) concludes the Rules consultation process conducted by AEMO to consider a determination of the National Electricity Market (NEM) 2025 Reform Program as a declared NEM project. The Rules allow for AEMO to determine a separate fee to recover the costs of specific projects during the term of a participant fee structure determination. Subject to meeting the requirements of the Rules, this is designed to ensure the costs associated with implementing the program is recovered from the appropriate parties in line with the fee principles outlined in clause 2.11 of the NER.

The NEM 2025 Reform Program has been established to coordinate delivery of a suite of reforms recommended by the Energy Security Board (ESB) and endorsed by the Energy Ministers to meet the needs of the energy transition. Since the release of these recommendations in mid-2021, AEMO has been engaging with the industry to define an integrated delivery plan for the NEM2025 Program that aims to bundle, sequence the reform program with the aim of cost-effective delivery across AEMO and the industry. The comprehensive output, which includes the NEM Reform Implementation Roadmap, was released in early September 2022 and is available to view at the Major Programs section of AEMO's website¹.

On 11 May 2022, AEMO published the Notice of First Stage Consultation and the Consultation Paper to consider a determination of the NEM 2025 Reform Program as a declared NEM project. AEMO received four submissions. One of the submissions supported a determination of the NEM 2025 Reform Program as a declared NEM project, another submission proposed determination of two or more declared NEM projects rather than one, while the other two submissions were opposed to a determination at this point in time. AEMO engaged with these parties together with the wider industry to understand the concerns raised, and appropriately design a framework to address the issues raised.

The submissions which had concerns with a determination now, raised matters relating to a number of initiatives within the NEM 2025 Reform Program only being in their early stages of development, therefore their full design and costs are unknown. These submissions also stated that the changes resulting from the NEM 2025 Reform Program on AEMO's responsibilities, obligations or functions, as well as changes to major computer systems and processes is not clear.

Having considered the submissions, a stage gate process has been established in consultation with industry to ensure there is alignment and commitment on when the initiatives move into execution. In light of these changes, AEMO's draft determination concluded the NEM 2025 Reform Program met the criteria to be a declared NEM project.

On 13 July 2022, AEMO published the Notice of Second Stage Consultation and Draft Determination. AEMO received one late stage two submission from Red Energy and Lumo Energy. Following this, AEMO met with Red Energy and Lumo Energy. AEMO's assessment of, and responses to their submission are set out in section 3.

In addition to the above, AEMO also recently received correspondence from the Hon Chris Bowen MP, as Chair of the Energy Ministers' Meeting (EMM), supporting the declaration of the NEM2025 reforms as a declared NEM project and the recovering of costs through participant fees in line with the rules framework. This acknowledged the significance of the Energy Ministers reforms in ensuring the NEM remains fit-for-purpose and capable of delivering an affordable, secure, reliable and low emissions electricity system for consumers.

¹ [AEMO | NEM Reform Implementation Roadmap](#)



Having considered stakeholder feedback, and the requirements of the Rules, AEMO has:

- In the material referenced above, better articulated the scope and nature of the changes, including impacts on AEMO roles, responsibilities and system and process implications. The assessment now captures the impacts on industry.
- Established in consultation with industry, a change management process and a stage gate process to ensure there is alignment and commitment on when the initiatives move into execution. AEMO at each of the stage gates will develop a business case in consultation with the industry. The case for reform for some initiatives will also be considered through appropriate policy and regulatory processes. The role of industry has been defined in this process and it will play an important role.
- Defined the internal and external governance and controls to be put in place for this program, recognising its size and impact. This has been shared with the industry.
- Assessed the program against the criteria outlined in the Rules, and considers the NEM 2025 Reform Program meets all three of the declared NEM project criteria.

Pursuant to clause 2.11.1(ba) of the National Electricity Rules AEMO has assessed that the NEM 2025 Reform Program meets all three of the declared NEM project criteria.

Stakeholders should note that this consultation relates only to determining whether the NEM 2025 Reform Program should be a declared NEM project. The structure for an additional Participant fee for recovery of the costs of the projects including the Registered Participants that will be charged the fee, as well as the start date for recovery and the period or periods over which recovery will occur, will be determined in a separate, subsequent consultation. Consultation for the subsequent process is expected to commence in late October. In undertaking this consultation, AEMO will consider where the reform is within the regulatory rule processes – in line with the stage gate process noted above.



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1 Stakeholder Consultation Process

As required by the NER, AEMO is consulting on whether to determine the NEM 2025 Reform Program as declared NEM project in accordance with the Rules consultation process in rule 8.9.

The NEM 2025 Reform Program has been established in order to coordinate delivery of a suite of reforms recommended by the Energy Security Board (ESB) and endorsed by the Energy Ministers in October 2021, to meet the needs of the energy transition.

AEMO's timeline for this consultation is outlined below.

Table 1 Consultation timeline

Deliverable	Indicative date
Consultation Paper published	Wednesday 11 May 2022
Submissions due on Consultation Paper	Wednesday 15 June 2022
Draft Report published	Wednesday 13 July 2022 ²
Submissions due on Draft Report	Wednesday 27 July 2022
Final Report published	Thursday 29 September 2022

Stakeholders should note that this consultation relates only to determining whether the NEM 2025 Reform Program should be a declared NEM project. The structure for an additional Participant fee for recovery of the costs of the project including the Registered Participants that will be charged the fee, as well as the start date for recovery and the period or periods over which recovery will occur, will be determined in a separate, subsequent consultation.

A separate consultation to determine the actual fee structure for recovery of the costs of the project including the Registered Participants that will be charged the fees and the effective date of those fees is expected to commence in late October 2022 and conclude by June 2023 in accordance with the Rules consultation procedures outlined in clause 8.9 of the NER. In undertaking this consultation, AEMO will take into account where the reform is within the regulatory rule processes, in line with the stage gate process described in this document.

Note that there is a glossary of terms used in this Final Report at Appendix A. References in this paper to 'clause x' is a reference to a clause in the NER.

² This assumes that AEMO concludes that it is not desirable or necessary to hold any meetings under clause 8.9(f) of the Rules (If meetings are held, meetings must be held within a further 25 business days after submissions close, and this will then impact the consultation dates following the meeting)

2 Background

2.1 NER requirements

AEMO recovers the costs of performing its functions from Registered Participants.

Pursuant to clause 2.11.1(a) of the NER, AEMO recovers costs from Registered Participants in accordance with the structure of Participant fees determined by AEMO.

The current Participant fee structure determined by AEMO for electricity markets applies from 1 July 2021 to 30 June 2026.

However, subject to consultation, the NER allows for AEMO to determine a separate fee to recover the costs of specific projects during the term of a Participant fee structure determination (declared NEM project).

Pursuant to clause 2.11.1(ba) of the NER, AEMO may determine any of the following projects to be a declared NEM project:

- a major reform or development (including an anticipated reform or development) of the market; or
- a major change (including an anticipated change) to a function, responsibility, obligation or power of AEMO under the Rules; or
- a major change (including an anticipated change) to any of the computer software or systems that AEMO uses in the performance of any of its functions, responsibilities, obligations or powers under the Rules.

When AEMO determines a project to be a declared NEM project under clause 2.11.1(ba), it must also determine the start date for recovery and the period or periods over which recovery will occur for the declared NEM project.

AEMO must also determine the structure of an additional Participant fee to be used in the recovery of costs associated with a declared NEM project until the next general determination of all Participant fees is made under clause 2.11.1(a) of the NER.

AEMO has prepared this Final Report to conclude the consultation to determine whether the NEM 2025 Reform Program meets the criteria to be a declared NEM project.

2.2 Context for this consultation

2.2.1 The ESB's Post 2025 Project

The ESB was tasked by the former Council of Australian Governments Energy Council (COAG EC), to advise on design changes required to transition the NEM into a modern energy system fit to meet consumers' evolving wants and needs.

The Post-2025 electricity market design work³ has been developed to address the change of expanding consumer choices, new technologies, and large-scale capital replacement as ageing thermal power stations exit the market.

³ [Energy Security Board | Post 2025 electricity market design project \(aemc.gov.au\)](https://www.aemc.gov.au/post-2025-electricity-market-design-project)



The speed of which the change is occurring requires immediate reform so that the benefits and opportunities from changes such as new technologies and renewables can be delivered to consumers.

In July 2021, the ESB recommended a range of reforms under four major pathways to ensure immediate problems are addressed and the future direction of the NEM's investment and operation is clear:

1. Resource adequacy mechanisms and ageing thermal retirement
2. Essential system services and scheduling and ahead mechanisms
3. Integration of distributed energy resources (DER) and flexible demand
4. Transmission and access

To complement the above four pathways, a Data Strategy pathway for the NEM is also required to ensure delivery and implementation of the NEM 2025 Reform Program is seamless.

The four pathways outlined above will enable the NEM to:

- Allow consumers to benefit from rapidly changing technologies in our power system;
- Unlock the value of flexible demand and distributed energy resources;
- Work alongside government schemes which are delivering on their policy commitments including emissions reduction; and
- Provide clear signals for timely and efficient investment to deliver reliable, secure, and affordable electricity for consumers.

In October 2021, National Cabinet agreed to proceed with implementation of the Post-2025 reform recommendations (see Appendix A1 for details on each National Cabinet decision). In making this decision, National Cabinet sought further advice from the ESB before agreeing to proceed with implementation of a capacity mechanism and congestion management mechanism. Ministers are currently considering the nature and form of the capacity mechanism. ESB advice on the congestion management mechanism is due early 2023.


An initial assessment of the impacts and implementation costs, associated with the delivery of the reforms was prepared by AEMO and formed part of the ESB's final advice to Ministers. The ESB similarly, completed a high-level, indicative evaluation of the benefits each reform pathway could be expected to deliver.⁴ The objective of doing this evaluation was to understand the general magnitude of benefits that could be expected from the Post-2025 Reform Program.⁵ As the benefits^{6,7}, estimated to be in the order of billions of dollars, far outweighed the costs, the ESB gained confidence for the case for change and for recommending the Post-2025 Reform Program.

⁴ Energy Security Board. Post-2025 Market Design Final advice to Energy Ministers. Part A. 27 July 2021. Available at: [1629944958-post-2025-market-design-final-advice-to-energy-ministers-part-a.pdf \(aemc.gov.au\)](https://www.aemc.gov.au/files/1629944958-post-2025-market-design-final-advice-to-energy-ministers-part-a.pdf)

⁵ Ibid.

⁶ Essential System Service Modelling – a report prepared by Cornwall Insight Australia. Available at: [1629945889-part-c-5-1-cornwall-insight-australia-essential-system-service-modelling.pdf \(datocms-assets.com\)](https://www.datocms-assets.com/files/1629945889-part-c-5-1-cornwall-insight-australia-essential-system-service-modelling.pdf) and [1629948047-addendum-essential-system-service-modelling-report-cornwellfinal.pdf \(datocms-assets.com\)](https://www.datocms-assets.com/files/1629948047-addendum-essential-system-service-modelling-report-cornwellfinal.pdf)

⁷ Valuing Load Flexibility and Resource Adequacy Mechanisms in the NEM – a report prepared by NERA Economic Consulting. Available at: [1629945921-part-c-5-2-nera-economic-consulting-valuing-load-flexibility-and-resource-adequacy-mechanisms-in-the-nem.pdf \(datocms-assets.com\)](https://www.datocms-assets.com/files/1629945921-part-c-5-2-nera-economic-consulting-valuing-load-flexibility-and-resource-adequacy-mechanisms-in-the-nem.pdf)



One of the main enablers for the Post-2025 reforms is the development of changes to IT systems and business processes run by AEMO. The ESB's final advice called for further consideration of how to deliver these changes together with industry stakeholders as part of an integrated roadmap approach for NEM regulatory and IT systems implementation.

2.2.2 The NEM 2025 Reform Program

AEMO has identified various initiatives required to deliver the ESB's policy reforms via the four pathways outlined above. The majority of these initiatives will be subject to the AEMC's rule change process or ESB regulatory change processes under the National Electricity Law. To implement these initiatives efficiently and transparently, AEMO, with the support of the AEMC and the AER, established a strategic group of representatives from across the energy sector, the Reform Delivery Committee⁸ (RDC, or the Committee). The role of the Committee is to facilitate deep and effective collaboration across the industry to develop an integrated regulatory and IT implementation roadmap, the 'NEM Reform Implementation Roadmap' (the Roadmap)⁹.

This Roadmap appropriately prioritises and sequences reform implementation considering interdependencies with a least-cost, whole-of-system intent for the benefit of the consumer, and includes those initiatives that require a significant implementation effort across multiple industry participants.

Two Roadmap pathways were developed in consultation with the RDC to deliver the NEM 2025 Reform Program initiatives. Both options have the same scope but differ in the bundling, sequencing and timing of delivery:

- Option 1: Regulatory-led: This option enables 'day 1' capabilities by delivering the core functional elements of the NEM2025 reforms built on top of existing systems. After the core reform elements are delivered, additional effort is required as and when AEMO progresses to new systems, so functionality deployed is enabled in those new systems; and
- Option 2: Strategic: This option sets the foundations for scalability and future-proofing of systems by undertaking a series of pre-requisite projects upfront on which reform capability is built. This ensures investments keep pace with rapid transition by delivering capabilities and support functions beyond 'day 1'.

The two Roadmap pathways were released for broader industry consultation in April 2022.

To aid in AEMO and the RDC's assessment of the alternative pathways, AEMO have completed a Gate 1 business case.¹⁰ The assessment provided for updated cost estimates of individual initiatives and a whole of life cycle comparison of the two alternative Roadmap pathways. This assessment was supported by a qualitative assessment of the impacts to AEMO and industry.

Having considered the feedback from stakeholders on the pathway options, as well as feedback from the RDC on a draft version of the business case, the NEM2025 Program proposes to adopt a hybrid pathway complemented by a stage gate process.

This approach commits to Option 1 (Regulatory-led pathway) to undertake mandatory and no regrets initiatives in a timely way. It also sets the NEM2025 budget envelope to allow for the full scope of Option 2 (Strategic pathway) but imposes both implementation and investment disciplines whereby draw-down is subject to a progressive commitment process informed by rule changes and the stage gate process.

⁸ Representatives of the Reform Delivery Committee can be viewed on AEMO's website: [AEMO | Reform Delivery Committee](#)

⁹ Further information on the consultation of the Roadmap can be viewed on AEMO's website: [AEMO | Reform Delivery Committee](#)

¹⁰ The business case can be viewed on AEMO's website: [AEMO | NEM Reform Implementation Roadmap](#)



In developing the Roadmap, AEMO and RDC members noted the significant challenges and risks associated with delivery of the NEM 2025 Program and the importance of an appropriate management and governance framework. As a result, a number of important governance and delivery elements will apply to the Program including:

- a change management process to manage and advise on impacts of new initiatives being added to the reform scope or changes in scope/timing of existing proposed initiatives,
- a stage gate process applicable to all initiatives which includes a cost/benefit analysis and industry consultation for AEMO strategic/foundation initiatives, and
- a progressive investment commitment process and draw down of funds that will be informed by regulatory determinations and the stage gate approach.

In publishing the Roadmap, AEMO has also published several supporting artifacts including the business case, participant impact assessments (drafted by the RDC members and used to inform development of the business case and roadmap), summaries of stakeholder feedback, an overview of the proposed governance and delivery approach, and an overview of the Program scope including briefs on each initiative that makes up the Program.

Each of the above-mentioned artifacts can be viewed on AEMO's website: [AEMO | NEM Reform Implementation Roadmap](#).

2.2.3 The NEM 2025 Reform Program Initiatives

Table 2 below provides a summary of the initiatives that make up the NEM 2025 Reform Program, and the scope of this consultation. Please note that the capacity mechanism and congestion management model has not been captured as part of this consultation and will be picked up separately in the event a policy decision is made to proceed with these reforms. All initiatives listed in Table 2 form part of the NEM 2025 Reform Program declared NEM project determination.

AEMO has also identified a subset of initiatives that are prerequisites to implementation of the NEM 2025 Reform Program initiatives (see Table 3) which were included in the ESB's final advice to Ministers¹¹. These initiatives have been categorised as either AEMO Foundational, initiatives required for functional and technical dependencies, or AEMO Strategic, investment required to uplift applications in the forecasting, operational and dispatch systems benefitting the delivery of the reforms. Indicative cost estimates by workstream were also provided in the ESB's final advice to Ministers for these two categories¹² and form part of the NEM 2025 Reform Program declared NEM project determination.

¹¹ Section 4 of the Post-2025 Market Design Final Advice to Energy Ministers Part C – Appendix. Available at: [1629945838-post-2025-market-design-final-advice-to-energy-ministers-part-c.pdf \(aemc.gov.au\)](#)

¹² Figure 13, Page 61 of the Post-2025 Market Design Final Advice to Energy Ministers Part C – Appendix. Available at: [1629945838-post-2025-market-design-final-advice-to-energy-ministers-part-c.pdf \(aemc.gov.au\)](#)

Table 2 Reform pathways and their NEM program scope

Pathway	Objective	This means	NEM 2025 Reform Program Scope ¹³
Resource Adequacy Mechanism¹⁴	<ul style="list-style-type: none"> Establish new market-based arrangements to explicitly value capacity to provide an ‘investable’ and enduring long-term signal Establish market arrangements that support efficient allocation of investment risk between participants, jurisdictions, and consumers Establish tools that provide jurisdictions sufficient confidence that reliability will be maintained in a way that preserves market signals 	We have investment in the right mix of resources (generation, storage and demand response) in place prior to anticipated plant closures, and that plant exit does not cause significant price or reliability shocks to consumers through the transition	<ul style="list-style-type: none"> MT PASA Enhancements (Note other reforms are being considered through ESB policy considerations)
Essential System Services	<ul style="list-style-type: none"> Establish new market-based arrangements to value the services needed to support the changing mix of resources in the NEM (frequency, inertia, system strength, and operating reserves) Establish new market mechanisms to support efficient scheduling and dispatch by AEMO Deliver a range of supply and demand-based technologies and resources with capabilities to deliver these essential services 	We have the resources and services when needed to manage the complexity of dispatch and to deliver a secure supply to customers	<ul style="list-style-type: none"> Fast Frequency Response Frequency Performance Payments (delivery of Primary Frequency Response Incentive Arrangements) Operating Reserve Market Operational Security Mechanism
Integration of DER & Flexible Demand	<ul style="list-style-type: none"> Establish frameworks that enable consumers to be rewarded for their flexible demand and generation, facilitate options for how they want to engage and remain protected by a fit-for-purpose consumer protections framework Establish wholesale market arrangements that support innovation, the integration of new business models and a more efficient supply and demand balance Establish networks with the ability to accommodate the continued update of DER, two-way energy flows, and manage the security of the network in a cost-effective way Provide AEMO with the visibility and tools it needs to continue to operate a safe, secure, and reliable system, including maintaining system security associated with low minimum system load conditions 	We create new opportunities for consumers about how they receive and use energy and are rewarded for doing so flexibly	<ul style="list-style-type: none"> Integrating Energy Storage Flexible Trading Arrangements Scheduled Lite Dynamic Operating Envelopes Distribution Local Network Services Turn-up Services DER Data Hub and Registry Services DER Market and System Operator integration

¹³ Further detail on the scope of the reform initiatives have been published on AEMO’s website: [AEMO | Reform Delivery Committee](#)

¹⁴ The Capacity Mechanism (CM) initiative is not included as part of this NEM 2025 Reform Program declared NEM project determination. If National Cabinet Energy Ministers approve a CM, a separate declared NEM project consultation may be undertaken.

Pathway	Objective	This means	NEM 2025 Reform Program Scope
Transmission & Access¹⁵	<ul style="list-style-type: none"> Establish better signals for generators to locate in areas where there is available generation capacity - namely in the REZs Reduced uncertainty for investors, through measures that give rise to more predictable future patterns of congestion, and a more orderly and predictable connections process Establish better use of the network, resulting in more efficient dispatch outcomes and lower costs for consumers Ensure batteries are locating where they are needed most and being paid to operate in ways that benefit the broader system 	We have a network to meet future needs, renewable energy zones, and a targeted set of investments that can deliver the energy transition at lower cost	<ul style="list-style-type: none"> N/A at this time (Note other reforms are being considered through ESB/AEMC policy/review considerations)
Data Strategy	<ul style="list-style-type: none"> A framework is established with new guiding policy principles, build capability, forward planning and adaptability and address priority data gaps 	Varied actors in the market have access to timely data to perform their functions	<ul style="list-style-type: none"> Data Services EV Charging Standing Data Register Bill transparency Network Transparency

¹⁵ The Congestion Management Model (CMM) initiative is not included as part of this NEM 2025 Reform Program declared NEM project determination. If National Cabinet Energy Ministers approve a CM, a separate declared NEM project consultation may be undertaken.

Table 3 Prerequisite reform pathways and their associated initiatives

Category	Description	Initiatives
AEMO Foundational	Foundational dependency work to deliver an uplift to base capability on which reforms are dependent	<ul style="list-style-type: none"> • Identity Access Management • Industry Data Exchange • SCADA Lite
AEMO Strategic	Strategic dependency work to effectively futureproof capabilities and scalability of systems thereby avoiding investment in systems that will become end-of-life shortly after the reforms take effect	<ul style="list-style-type: none"> • Portal Consolidation • Consolidated Master Data Repository • Dispatch Target State • Bids / Offers Target State • Constraints Target State • FRC Target State

3 Submissions

AEMO received one submission from Red Energy and Lumo Energy to the second stage of consultation. This submission did not support a determination at this point in time. A summary of issues raised together with AEMO’s response is provided below.

AEMO also recently received correspondence from the Hon Chris Bowen MP, as Chair of the Energy Ministers’ Meeting (EMM), supporting the declaration of the NEM2025 reforms as a declared NEM Project and the recovering of costs through participant fees in line with the rules framework. This acknowledged the significance of the Energy Ministers reforms in ensuring the NEM remains fit-for-purpose and capable of delivering an affordable, secure, reliable, and low emissions electricity system for consumers.

Key points	AEMO response
<p>Red/Lumo considers that the program does not satisfy the definition of a ‘declared NEM project’ under section 2.11(ba) of the Rules at this time. Recommend it would be best for AEMO to defer consideration of whether the NEM 2025 Reform Project satisfies the definition of a declared project under the Rules until the reform is finalised.</p>	<p>The Declaration process is designed to give parties clarity on who pays should the reforms eventuate through policy and regulatory processes, and ensure they are recovered from the right classes of market players rather than automatically assigned to existing fee structures. The NER allows an anticipated reform or development or anticipated change to be considered a declared NEM project, therefore even though some reforms are less progressed does not of itself mean the program cannot be a declared NEM project.</p> <p>Clause 2.11.1(ba) of the NER outlines the criteria for a project to be determined a declared NEM project – at least one of these criteria needs to be met. Section 4 of this Final Report explains the reasons AEMO believes all criteria are met.</p> <p>As discussed and designed with industry, for program delivery, a stage gate process has been established to ensure alignment on when projects move into execution following appropriate business case development. It is acknowledged the case for reform will be considered through appropriate policy and regulatory processes.</p> <p>As part of the second stage consultation (determining the structure for an additional Participant fee for recovery of the costs of the projects), AEMO will consider where the reform is within the regulatory rule processes – in line with the stage gate process noted above.</p>

Key points	AEMO response
<p>Red/Lumo notes that the NEM 2025 is a suite of energy reforms which have not yet been finalised making it impossible to understand how the reform will impact AEMO's functions and responsibilities.</p>	<p>See AEMO response to 1(a) above.</p> <p>Clause 2.11.1(ba)(2) of the NER states that this criteria would be met if there is a major change (or anticipated change) to either AEMO's function, responsibility, obligation or power. AEMO believes our responsibilities and obligations are likely to change with the implementation of a number of initiatives of the NEM 2025 Reform Program.</p> <p>New markets and products will be introduced into the NEM which will ultimately result in a major change to AEMO's responsibilities administering the market as well as maintaining system security and reliability.</p> <p>Section 4.1.2 of this Final Report outlines in more detail why our responsibilities or obligations are likely to change as a result from the NEM 2025 Reform Program.</p>
<p>If AEMO determines the NEM 2025 Reform Program to be a 'declared NEM project' at this point in time, the task of allocating the costs for specific initiatives to registered participants would be difficult because new registered participants will emerge going forward like Virtual Power Plants (VPPs), grid scale battery owners, wholesale aggregators and even smaller aggregators of solar PV aggregators that sell energy in aggregate through DER marketplaces that benefit more from the reform than incumbents.</p> <p>The pending rule change proposal by AEMO relating to Flexible Trading Arrangements is also noted.</p> <p>New registered participants together with any other new registered participants that emerge from a new business model should contribute to recovering the costs of the NEM 2025 Reform Program. However, the market classification of any new participant – and therefore, mechanism for them to contribute to AEMO's cost recovery – is unclear.</p>	<p>New registered participants that emerge during an existing participant fee period can be charged AEMO's participant fees if the rule change that introduces the new participant type includes transitional arrangements that allows for AEMO to re-open the current fee structure. Or a new participant category can be considered when determining the structure of an additional fee for the costs of a declared NEM project.</p> <p>AEMO notes that while there are a number of initiatives from the NEM 2025 Reform Program which are not yet finalised, the current participant fee period will end on 30 June 2026 which means consultation on the next participant fee period will be commencing in the next two years, by which stage many of the initiatives will be further developed and scoped to allow consideration of any new participant types entering the market.</p> <p>Further, as part of the Integrated Energy Storage Systems (IESS) rule change (one of the NEM 2025 Reform Program initiatives) which becomes effective from 3 June 2024, a new registered participant category called the Integrated Resource Provider (IRP) will be introduced. Under this new rule, VPPs, grid scale battery owners, wholesale aggregators and small aggregators will be captured under the IRP</p>

Key points	AEMO response
	<p>participant category. AEMO intends to consult on the approach for cost recovery from this new participant category in the second phase of the Declared NEM Project consultation that will determine the fee structure, including the participants that should be charged, for the NEM 2025 Reform Program.</p> <p>Additionally, as new markets (such as Fast Frequency Response (FFR)) are to be established before the next Participant fee period commences in 2026, costs of operating the new market will need to be allocated appropriately to Participants ahead of this time. Therefore, declaring the NEM 2025 Reform Program now will allow consideration of such costs.</p>

4 Discussion

4.1 Declared NEM project

Pursuant to clause 2.11.1(ba) of the NER, AEMO may determine any of the following projects to be a declared NEM project:

- a major reform or development (including an anticipated reform or development) of the market; or
- a major change (including an anticipated change) to a function, responsibility, obligation or power of AEMO under the Rules; or
- a major change (including an anticipated change) to any of the computer software or systems that AEMO uses in the performance of any of its functions, responsibilities, obligations or powers under the Rules.

AEMO may determine a project to be a declared NEM project if the project meets any of these requirements.

The NER does not define ‘major reform or development’ or a ‘major change’ for the purpose of clause 2.11.1(ba) of the NER.

This paper considers whether the NEM 2025 Reform Program would meet any of these requirements to be a declared NEM project, including consideration of the cost of the NEM 2025 Reform Program, the extent of the NEM 2025 Reform Program changes to the Rules, procedures, processes and systems and the impact on AEMO and participants.

This stage of the consultation is considering the NEM 2025 Reform Program as a whole (and not initiative-by-initiative) in meeting the criteria of a declared NEM project. If determined a declared NEM project, the next stage and consultation process will investigate the Participant fee structure of the NEM 2025 Reform Program. As noted above, this consultation does not consider the actual fee structure for recovery of the costs of the project or the Registered Participants that will be charged the fees and the effective date of those fees and therefore, AEMO has not considered matters that are relevant to determining those issues in this paper such as the participants that benefit from the NEM 2025 Reform Program.

If the NEM 2025 Reform Program is not determined to be a declared NEM project, the costs of the NEM 2025 Reform Program will not be recovered by an additional fee structure specifically for the NEM 2025 Reform Program but will be recovered by AEMO from participants in accordance with the current general Participant fee structure determined by AEMO for electricity markets from 1 July 2021 to 30 June 2026 and further general Participant fee structures determined by AEMO.

4.1.1 A major reform or development (including an anticipated reform or development) of the market

It has been evident the energy transition is driving changes to numerous factors of the NEM environment including:

- A system once dominated by centralised coal- and gas-fired thermal generation to a system comprised of a diverse portfolio of behind-the-meter and grid-scale inverter-based energy resources as well as a more flexible demand side.

- This is leading to a reduction in inertia which presents operational challenges associated with maintaining a secure power system and controlling system frequency following contingency events.
- Current system security and operational experience is also being tested as historically synchronous generators supplied essential system services as a by-product of energy, while new non-synchronous generators do not automatically provide these services.
- Higher proportion of loads, aggregated DER and small generators that are active and respond to wholesale market prices are not visible to the system operator and therefore reduce operational oversight.
- Plant operating regimes whereby owners of legacy thermal generation seek to reduce their overheads if low wholesale prices are expected.
 - This can include mothballing of units for prolonged periods of time and/or seasonal shutdowns or cyclical running regimes, for example, weekday/weekend, day/night.
- The need for a high aggregate level of frequency responsiveness (for optimal frequency control outcomes) as there is an increase in price-driven movement in both generation and load, and as the supply mix continues to become increasingly decentralised, inverter-based, and variable.
- Growing forecast uncertainty and variability in net demand over timescales of minutes to hours which results in an increase in lack-of-reserve occurrences as participant behaviour is not always responding to reduce system risk, thereby requiring AEMO intervention.
- Increased demand for system strength as coal- or gas-fired generators retire from the market or operate less frequently, combined with an increase in inverter-based resources such as wind, solar and batteries into the NEM.
 - The current frameworks have been reactive and slow to provide the necessary levels of system strength, leading to deficiencies in this essential service. This has required AEMO to intervene and displace inverter-based resources (IBR) by directing more expensive thermal generation which results in increased costs for consumers.
- An increasing role of energy storage as the shift to a net zero system with very high proportions of variable renewable energy occurs in order to firm up the expanding volume of renewable energy and deliver the growing need for critical system security services as thermal generators retire.
 - The current regulatory framework does not facilitate this shift.
- Increasing ability for customers to access competitive products and services for DER, and for DER to be more able to actively participate in the market.
 - Barriers that prevent customers obtaining additional retail arrangements for DER, enabling competition and active management of DER need to be removed or reduced so that customers can be rewarded for providing flexible demand and generation.
- Minimum system load and increased local congestion is driving the need for dynamic limits (rather than static limits) to better manage such issues across the power system.
- Large scale penetrations of DER require greater visibility of local network constraints so that they could be utilised by networks to defer or displace network augmentations, and assist them in actively managing power flows on their networks, or even trading local services between regions.

- The potential for the entire NEM demand to be met with distribution connected resources means that there is a greater need for AEMO, transmission networks operators and distribution system operators (DSOs) to be able to collaborate and communicate in a greater capacity to maintain power system security at such times.
- Lack of market-based measures or incentives for load to respond to low or negative price signals during times of abundant variable renewable energy, which is correlated to periods of minimum system load.

In order to adapt to the above changes occurring in the NEM environment, the regulatory and market frameworks must support the needs of the energy transition. The NEM 2025 Reform Program will enable the changes required to the systems and processes on an industry-wide basis that will give effect to the changes required to the regulatory and market frameworks.

Final decision


AEMO considers that the NEM 2025 Reform Program is a major reform or development of the NEM for the following reasons:

- There are a very large number of initiatives part of the NEM 2025 Reform Program that are required to be implemented in order to allow the NEM to accommodate the changes listed above resulting from the energy transition. The set of initiatives that encompass the NEM 2025 Reform Program are the most significant set of reforms since market start – as stated by the ESB on their website, “The future course of energy investment and operation is at a turning point. The shift to new technologies and renewables is happening at speed and the need for reform is urgent as we lay the foundations for Australia’s new energy future.” Consequently, the ESB proposed the suite of reforms highlighted in Section 2.2.2 to meet the needs of this transition.
- The NEM 2025 Reform Program will require significant changes to existing regulatory, operational and market frameworks, including the tools used, that introduce clear mechanisms or processes that are becoming more frequently applied in the NEM to maintain security and reliability due to the energy transition.
- Implementation of the initiatives that are part of the NEM 2025 Reform Program will impact the existing approach to investment in the NEM allowing for clearer investment signals so that efficient investment can occur in the long-term interests of consumers.
- The changes introduced to the NEM frameworks from the NEM 2025 Reform Program will impact AEMO and all Market Participants who will be required to adapt to alternative mechanisms or processes in a timely manner.

4.1.2 A major change (including an anticipated change) to a function, responsibility, obligation or power of AEMO under the Rules

AEMO’s primary role is to perform the functions and exercise the powers given to us under national and Western Australian electricity and gas laws. The functions seek to promote the efficient investment in, and efficient operation and use of, gas and electricity for the long-term interests of Australian consumers in relation to price, quality, safety, reliability and security, which translates to the following areas of responsibility:

- Maintain secure electricity and gas systems.

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- Manage electricity and gas markets.
 - Lead the design of Australia's future energy system.

The NEM 2025 Reform Program initiatives across the reforms are likely to lead to additional or extended functions and obligations for AEMO. For example:

- Essential System Services – AEMO will play a central role in managing new markets / mechanisms including Fast Frequency Response, and potentially Operating Reserves and Operational Security Mechanisms. These new markets / mechanisms will directly impact AEMO's business as usual activities in managing the operation of the power system and add to or extend AEMO's obligations in the NEM and require changes to or development of new systems and processes.
- Integrated DER and Flexible Demand – There are a number of reforms that will enable greater participation of aggregated DER and flexible demand in energy and ancillary service markets. The integration of DER will have a significant impact on AEMO's responsibilities for core market functions and obligations including registration, dispatch, retail market and settlement. While AEMO will not be at the centre of the operation of many DER reform initiatives, the outcomes (e.g. additional visibility in relation to operation of DER and their technical capabilities) may necessitate amendments to AEMO systems or processes (i.e. registration, ST PASA processes, demand forecasting systems/processes, control room displays and tools) as well as updates to corresponding procedures and guidelines to reflect AEMO's extended and additional obligations. These initiatives will all extend and add to AEMO's obligations by requiring greater collaboration between AEMO and DNSPs in order to maintain ongoing power system security, and increased engagement to retailers, aggregators and new business models.
- Data strategy – There are a number of initiatives that will extend AEMO's obligations and responsibilities in relation to data by either extending the data sets AEMO has access to in order to better operate the transitioning system and markets, or may require AEMO to provide access to data services by market participants and other actors in the electricity industry.

Final decision


AEMO considers that the NEM 2025 Reform Program is a major (or anticipated) change to AEMO's functions, responsibility, obligation or power under the NER for the following reasons:

- The NEM 2025 Reform Program will change the way AEMO performs its current responsibilities and obligations under the NER.
- AEMO will need to administer new markets and services deployed across the NEM which involves a different approach to carrying out our responsibilities, including:
 - Fast frequency response – this initiative will result in two new market ancillary services to be established which AEMO will be required to administer alongside the existing contingency FCAS markets.
 - Frequency Performance Payments (delivery of primary frequency response incentive arrangements) – this will maintain mandatory PFR requirements beyond the June 2023 sunset date and require design of a new cost allocation system for Regulation FCAS (i.e. Causer Pays) based on, and to support tight dead-band mandatory PFR.
 - DER related initiatives – many of these initiatives will require the establishment of new frameworks across the NEM which will impact existing AEMO responsibilities and obligations associated with metering, providing ancillary services, dispatch of energy, new standards for interoperability and cyber security, interactions with DNSPs and DER aggregators as well as maintaining system security and reliability during periods of minimum system load.
- AEMO anticipates it may need to administer new markets and services deployed across the NEM which involves a different approach to carrying out our responsibilities, for:
 - Operating reserve market – this will involve unbundling reserves from energy so that AEMO can enable flexible, responsible resources to be valued separately through one or more new markets.
 - Operational Security Mechanism – this will provide a new valuation, procurement and scheduling process for ESS that AEMO will need to manage for unit commitment and system security.

4.1.3 A major change (including an anticipated change) to any of the computer software or systems that AEMO uses in the performance of any of its functions, responsibilities, obligations or powers under the Rules

Changes to both business and IT systems are a critical enabler in the NEM 2025 Reform Program. AEMO has undertaken a preliminary impact assessment on its IT systems and business processes to understand where changes may be required in order to implement the reform initiatives effectively. This heatmap assessment¹⁶ concluded that a large number of AEMO business processes and systems will be impacted to implement the functional changes as a result of the various reform initiatives and also highlighted the critical touch points for AEMO and participant systems and aids in the consideration of alternative groupings and pathways. Specifically, the heatmap assessment identified:

¹⁶ See Appendix A2 for more detail

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- Functional relationships across NEM 2025 reform initiatives, that is those system, process, policy, trial and deadline relationships,
 - Significance of the functional impacts to AEMO from the NEM 2025 reform initiatives, and
 - Significance of the functional impacts from AEMO's own strategic and foundational initiatives.

Business processes and systems that will be impacted include:

- AEMO operational tools and interfaces including the PD/ST PASA system and models, MT PASA system and models including the Participant Markets Portal, Demand forecasting systems/processes, other control room displays and tools, including the development or update of at least 220 Application Programming Interfaces (APIs),
- AEMO and Participant ancillary services systems and models (such as FCAS, MASS and Causer Pays systems),
- Bidding interfaces and reports including NEMDE, EMMS, Metering and Settlement Systems (including billing and prudential systems), and
- AEMO Registrations process.

Details of the specific IT system and business process changes resulting from the NEM 2025 Reform Program will be identified as the NEM Reform Implementation Roadmap is developed and finalised with stakeholders, and also as initiatives progress through the various stages of their own design or development, for example through the AEMC's rule change request process. Current information on the changes required can be found in presentations published on AEMO's Reform Delivery Committee website¹⁷.

In consultation with the industry, AEMO has undertaken a business case, which shows the expected capital costs, based on current scope, is between \$250 million-\$350 million (excluding the capacity mechanism, congestion management model). The business case was published on AEMO's NEM Reform Implementation Roadmap website on 1 September 2022¹⁸.

¹⁷ [AEMO | Reform Delivery Committee](#)

¹⁸ [AEMO | NEM Reform Implementation Roadmap](#)

Final decision

AEMO considers that the NEM 2025 Reform Program is a major change to the computer software or systems that AEMO uses in the performance of AEMO's functions, responsibilities, obligations and powers under the NER for the following reasons:

- The system implementation and business process/procedure changes that are required from the NEM 2025 Reform Program initiatives are significant, resulting in the very high anticipated implementation costs outlined in Section 4.1.3 above.
- There are significant impacts on multiple IT systems and existing business processes as a result of the numerous initiatives in the NEM 2025 Reform Program. The heatmap assessment map in Appendix A2 highlights these results from AEMO's preliminary impact assessment on its IT systems and business processes.
- The extent of the changes required to IT systems and business processes from the NEM 2025 Reform Program are significant, and due to their complexity require a large amount of time for development and implementation. For example, longer lead times are necessary for system requirements to be developed and then applied to the process/procedure for implementation. Further detail on system impacts for each initiative has been published in the NEM Reform Implementation Roadmap Initiatives Briefs on AEMO's website (this document will be updated as a new version of the Roadmap is released periodically, for example, every six months or as a major change occurs).


5 Final Determination

Having considered the matters raised in the submissions to the Draft Report, AEMO's final decision is to determine the NEM 2025 Reform Program meets all criteria to be a declared NEM project pursuant to clause 2.11.1(ba) of the NER. The reasons for the criteria being satisfied have been outlined in Section 4 of this Final Report.

AEMO is also of the view that a determination for a declared NEM project is required now for the following reasons:

- Determining that the NEM 2025 Reform Program as a declared NEM project now does not lock in a particular approach for cost recovery of the program from existing Registered Participants. Rather, it will allow a proper assessment of the most appropriate participant categories and pricing metrics for recovery of costs ahead of implementation or 'go live' dates therefore providing industry with greater transparency, clarity and certainty for recovery of costs in advance.
 - It will allow the entrance of new Registered Participants to be considered in the existing structure for the remaining participant fees period.
 - It will allow assessment and avoidance of unintended adverse consequences that could follow from using the existing structure of participant fees to recover costs of the NEM 2025 Reform Program.
- The actual costs incurred by AEMO will still be monitored via a number of checkpoint-type processes incorporated throughout the design and implementation of each of the NEM 2025 Reform Program's initiatives, for example:
 - The NEM 2025 Reform Program will be subject to a stage gate process to manage such uncertainty and to provide for appropriate implementation and investment disciplines. The stage gate process will be different depending on whether the initiative is either a Post-2025 reform initiative or AEMO strategic or foundational enabling initiative. The stage gate process includes a cost/benefit analysis and industry consultation for AEMO strategic/foundation initiatives.
 - The AEMC rule change process provides for a cost-benefit assessment against the NEO prior to making a final determination and in certain instances the AEMC will review the outcomes from the reform against those assessed at the time of making a determination. AEMO will continue to work with market bodies to support this assessment and the rule change process as required.
 - The RDC has been established to support the bundling, sequencing and prioritisation of reform implementation, with a view to maximising efficiency in the industry implementation process that incorporates external assurance reviews. Development of a Business Case assessing the cost-benefit of the alternative pathways for implementing the NEM 2025 Reform Program initiatives has been included as part of this process and has since been finalised and published on AEMO's Reform Delivery Committee website¹⁹.

¹⁹ [AEMO | Reform Delivery Committee](#)

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- The suite of reforms under the NEM 2025 Reform Program has already been endorsed by the Energy Ministers, which means it is ‘an anticipated reform or development’ (satisfying the criteria for determination) and AEMO’s costs in relation to the reforms must be recovered in some way:
 - If the NEM 2025 Reform Program is not determined to be a declared NEM project then AEMO’s costs in relation to the NEM 2025 Reform Program will be recovered from participants through the existing core NEM fee category.
 - It is appropriate to make a determination now, rather than defer, as work on a number of initiatives, particularly the pre-requisite initiatives, has already commenced:
 - Based on the latest NEM Reform Implementation Roadmap developed with stakeholders through the Reform Delivery Committee (RDC) many committed ‘go live’ dates commence from late 2022.

Stakeholders should note that this consultation relates only to determining whether the NEM 2025 Reform Program should be a declared NEM project. The structure for an additional Participant fee for recovery of the costs of the project including the Registered Participants that will be charged the fee, as well as the start date for recovery and the period or periods over which recovery will occur, will be determined in a separate, subsequent consultation that will commence shortly.

A1. ESB recommendation and National Cabinet decision²⁰

Summary of ESB recommendation	National Cabinet decision
Resource adequacy and ageing generator retirement	
<p>Recommendation 1(a)(i) Instruct the ESB to prepare a rule change for submission to the Australian Energy Market Commission (AEMC) to implement a NEM-wide jurisdictional strategic reserve for the procurement of any required reserves that individual jurisdictions consider necessary beyond the market reliability standard.</p>	<p>Agreed the ESB’s recommendation, with the interim measures for reliability to continue to operate alongside the strategic reserve. Energy Ministers asked that the ESB prepare the rule change for submission to the AEMC in collaboration with Energy Senior Officials.</p>
<p>Recommendation 1(a)(ii) Instruct the ESB to prepare a rule change for submission to the AEMC to implement enhancements to existing generator exit mechanisms to provide greater transparency of generator availability.</p>	<p>Agreed the ESB’s recommendation, with the Australian Energy Market Operator (AEMO) to notify jurisdictions if a change in generator availability results in a breach of that jurisdiction’s adopted reliability standard. Energy Ministers asked that the ESB prepare the rule change for submission to the AEMC in collaboration with Energy Senior Officials.</p>
<p>Recommendation 1(b) Adopt a set of principles to guide the development of any future jurisdictional schemes to ensure a common approach that is consistent with current market signals for jurisdictions. Jurisdictions are encouraged to use currently available information on market needs and seek additional information from the market as necessary when considering jurisdictional schemes.</p>	<p>National Cabinet endorsed Energy Ministers’ decision to adopt, on a non-binding basis, an amended set of principles for jurisdictional investment schemes adapted from the ESB’s principles.</p>

²⁰ [Summary of the final reform package and corresponding Energy Security Board recommendations0.pdf](#)

Summary of ESB recommendation	National Cabinet decision
<p>Recommendation 1(c) Adopt a Ministerial lever to trigger the current Retailer Reliability Obligation as is currently in place in South Australia. This would give Ministers the ability to strengthen the RRO if they wish while further detailed design work is undertaken on a capacity mechanism.</p>	<p>Agreed the ESB's recommendation</p>
<p>Recommendation 2</p> <ul style="list-style-type: none"> a) Provide in-principle support for a capacity mechanism for the National Electricity Market (NEM) to ensure the competitive provision of the right mix of resources as the market transitions towards net zero emissions. b) Instruct the ESB to work with stakeholders and jurisdictions over the next 12–18 months to develop the detailed design of the capacity mechanism for the agreement of Ministers in mid-2023. c) Use a decentralised capacity mechanism (where the volume of required capacity is determined by liable entities, such as the Physical Retailer Reliability Obligation) as the starting point for the design work, with further consideration given to: <ul style="list-style-type: none"> i) whether it would be preferable to centrally determine the volume of required capacity; ii) whether using existing contracts between registered market participants would be preferable as the basis of the scheme (rather than creating a new certificate); iii) how to address the impacts of the proposed capacity mechanism on retail competition, commercial and industrial customers, market power concerns, transaction costs for market participants, and affordability; and iv) integrating a NEM-wide, common approach to jurisdiction investment schemes to work alongside the new mechanism. 	<p>National Cabinet agreed Energy Ministers' decision to progress detailed design work on a mechanism that specifically values capacity in the NEM.</p> <p>National Cabinet also endorsed Energy Ministers' decision to task the ESB with further work on orderly exit management arrangements for ageing thermal generators that are complementary to, or part of, a capacity mechanism. This includes arrangements for jurisdictions to recover appropriate electricity-related costs from consumers and relevant information disclosure arrangements.</p>
<p>Essential System Services and Scheduling and Ahead Mechanisms</p>	
<p>Recommendation 3 Note that AEMC rule change requests are underway:</p> <ul style="list-style-type: none"> a) Frequency control, including a new fast frequency response (FFR) service and enduring primary frequency response (PFR) arrangements 	<p>No decision required by National Cabinet. These rule changes are being progressed by the AEMC</p>

Summary of ESB recommendation	National Cabinet decision
<ul style="list-style-type: none"> b) Operating reserve services, to explicitly value reserve services separately to energy c) Unit commitment for security (UCS) and system security mechanism (SSM). These are operational and short-term procurement mechanisms allowing AEMO to value, procure and schedule specific services and resources to help keep the system secure d) Enhanced system strength frameworks, to make it simpler, faster and more predictable for new generation to connect to the grid and keep supply as secure as possible 	
<p>Recommendation 4 Instruct the ESB to monitor and provide advice about market conditions and the need for longer term reforms for essential system services, including the need for further unbundling of essential system services, an integrated ahead market or development of inertia spot market.</p>	<p>Agreed the ESB’s recommendation.</p>
<p>Transmission and Access²¹</p>	
<p>Recommendation 5(a) Adopt the REZ Planning Rules and the Principles for an Interim REZ framework to address the urgent planning implications for REZs.</p>	<p>National Cabinet endorsed Energy Ministers’ decision to agree the framework and adopted the ESB’s recommended principles. This follows ENCR agreement to the Stage I REZ Planning Rules, which came into effect on 13 May 2021</p>
<p>Recommendation 5(b) Instruct the ESB to prepare a rule change for submission to the AEMC to progress the congestion management model, adapted for integration with REZs. This model complements the Interim REZ framework and will address the emerging congestion management needs of the system. Comprehensive consultation, with a wide range of industry, consumer and government stakeholders on the detailed design of the model will be undertaken as part of the rule change process</p>	<p>National Cabinet agreed Energy Ministers’ decision to progress further work on a Congestion Management Model.</p>
<p>Recommendation 6 The ESB recommends Energy Ministers seek advice from the AEMC on what initial reforms are necessary to current regulatory frameworks to improve the timely and</p>	<p>Agreed the ESB’s recommendation.</p>

²¹ Note these initiatives have not been included in the NEM 2025 Reform Program scope however are included in this table for completeness

Summary of ESB recommendation	National Cabinet decision
efficient delivery of major transmission projects (including ISP projects). This advice will be prepared as part of the AEMC's current Transmission Investment and Planning Review	
Effective integration of DER and Flexible Demand	
<p>Recommendation 7</p> <p>The ESB recommended Ministers support the DER Implementation Plan, which will deliver the following outcomes:</p> <ul style="list-style-type: none"> a) Consumers are rewarded for their flexible demand and generation, have options for how they want to engage, and are protected by a fit-for-purpose consumer protections framework. b) The wholesale market supports innovation, the integration of new business models and has a more efficient supply and demand balance. c) Networks are able to accommodate the continued uptake of DER and two-way flows and are able to manage the security of the network in a cost-effective way. d) AEMO has the visibility and tools it needs to continue to operate a safe, secure and reliable system, including maintaining system security associated with minimum load conditions 	Agreed the ESB's recommendation.
<p>Recommendation 8</p> <p>Adopt a jurisdictional Ministerial lever for emergency backstop measures, as an immediate reform. Enduring measures to address system security challenges associated with low minimum system load are being prepared as part of the Plan.</p>	Agreed the ESB's recommendation.
<p>Recommendation 9</p> <p>Note the ESB has developed a Consumer Risk Assessment tool as an immediate reform. The tool will be used by the ESB and market bodies to consider consumer implications in policy development, including rule change requests and the maturity plan process</p>	Agreed the ESB's recommendation.
Implementation	
<p>Recommendation 10</p> <p>Instruct the ESB to monitor each of the reform pathways in light of changing market conditions and provide reports at least annually or more regularly if required.</p>	Agreed the ESB's recommendation.

Summary of ESB recommendation	National Cabinet decision
<p>Recommendation 11(a) and (b)</p> <p>The ESB recommends Ministers agree to:</p> <ul style="list-style-type: none"> a) Instruct AEMO to provide more detail of its required funding on a year-by-year basis (to 2025) by end August for the longer-term upgrade that is necessary for AEMO's existing systems and business processes to enable these reforms. b) Instruct the AER and the AEMC to provide proposals on a year-by-year basis (to 2025) by end August about additional resources they need to implement the Post-2025 reform pathways 	<p>National Cabinet noted the costs to market bodies associated with implementing the Post-2025 reforms.</p>

A2. AEMO's Functional Relationship Heatmap Assessment

A2.1 NEM 2025 Reform Initiatives

	MT PASA	FFR	IES	OSM	Mandatory PFR	Operating Reserves	FTA (M2)	Scheduled Lite	DOE	DLNS	Turn-up Services	DER Data Hub and Registry Services	DER Operational Tools
MT PASA													
FFR			SP, D	SP		SP							
IES		SP, D		SP		SP	SP, D	SP					
OSM		SP	SP			SP, P		SP, P					
Mandatory PFR													
Operating Reserves		SP	SP	SP, P				SP					
FTA (M2)													
Scheduled Lite			SP	SP, P		SP			SP, T	SP, T	SP, T	SP	SP, P
DOE							SP, P	SP, T		SP, T	SP	SP, P	SP, P
DLNS								SP, T	SP, T		SP	SP	SP, P
Turn-up Services								SP, T	SP, T	SP, T		SP	SP, P
DER Data Hub and Registry Services								SP	SP, P	SP	SP		SP, P
DER Operational Tools								SP, P	SP, P	SP, P	SP, P	SP, P	

Key: SP = System or Process, D = Deadline, T = Trials, P = Policy

Heatmap:

SP	SP, P	SP, T	SP, D	Same initiative
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	Registration	Offers	Dispatch	Constraints	PASA	Settlements, Billing, Prudentials	Causer Pays	Control Room Tools	CATS
MT PASA					Low impact				
FFR	Low impact	Low impact	Low impact	Low impact		Low impact		Low impact	
IES	Low impact		Low impact			Low impact		Low impact	
OSM			Low impact			Low impact		High impact	
PFR	Low impact					Low impact	Low impact		
Operating Reserves	Low impact	Low impact	Low impact			Low impact		Low impact	
FTA2									High impact
Scheduled Lite	Low impact	Low impact	Low impact			Low impact		Low impact	
DOE									
DLNS									
Turn-up Services	Low impact					Low impact			
DER Hub and Registry services	High impact								
DER Operational Controls								Low impact	

Key: No impact Low impact Medium impact High impact

A2.2 Foundational and Strategic Initiatives

	Registration	Offers	Dispatch	Constraints	PASA	Settlements Billing, Prudentials	Causer Pays	Control Room Tools	CATS
Portal Consolidation	Low impact	Low impact	Low impact	Low impact	Low impact	Low impact	Low impact	Low impact	Low impact
Consolidated Master Data Repository Expansion	Low impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	Low impact
Identify and Access Management	Digital Enabling Capability								
Industry Data Exchange	Digital Enabling Capability								
Business Rules Engine	High impact	Low impact	Low impact	Low impact	Low impact	Low impact	Low impact	High impact	High impact
SCADA Lite	Digital Enabling Capability								
Dispatch Target State	No impact	No impact	High impact	No impact	No impact	No impact	No impact	No impact	No impact
Bids/Offers Target State	No impact	Low impact	Low impact	No impact	No impact	No impact	No impact	No impact	No impact
Constraints Target State	No impact	No impact	Low impact	High impact	No impact	No impact	No impact	No impact	No impact
FRC	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	High impact

Key: No impact Low impact Medium impact High impact Significant impact

A3. Glossary

Term or acronym	Meaning
NEM 2025 Reform Program	The program developed and run by AEMO to implement initiatives required to deliver the ESB's policy reforms
AEMO	Australian Energy Market Operator
ESB	Energy Security Board
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
NEM	National Electricity Market
NER	National Electricity Rules
DER	Distributed Energy Resource
MT PASA	Medium Term Projected Assessment of System Adequacy
ST PASA	Short Term Projected Assessment of System Adequacy
PD PASA	Pre-dispatch Projected Assessment of System Adequacy
FCAS	Frequency Control Ancillary Service
MASS	Market Ancillary Service Specification
NEMDE	National Electricity Market Dispatch Engine
EMMS	Electricity Market Management System
RDC	Reform Delivery Committee