NEM Reform Program Scope

Statement of Scope

The Energy Security Board (ESB), in collaboration with the market bodies (AEMO, AEMC and AER), has set out a pathway to transition the national electricity market into a modern energy system fit to meet consumers' evolving wants and needs. The ESB's Post-2025 electricity market design addresses essential change in a world of expanding consumer choices, new technologies, and large-scale capital replacement as old thermal power stations leave the market.[1]

Background & Context

The ESB provided its final advice to the Energy National Cabinet Reform Committee (National Cabinet) on 27 July 2021 in a manner that set out a pathway of reforms and a timetable for their implementation, towards the year 2025 and beyond. National Cabinet approved the Post-2025 reform recommendations on 29 October 2021.

In presenting its final advice, the ESB divided the work into four interrelated reform pathways:

- ***Resource Adequacy Mechanisms (RAMS)***: Investment in the right mix of resources (generation, storage and demand response) is in place prior to anticipated plant closures, and plant exit does not cause significant price or reliability shocks to consumers through the transition
- ***Essential System Services (ESS) and Ahead Mechanisms***: Resources and services are available when needed to manage the complexity of dispatch and to deliver a secure supply to customers.
- ***Transmission and Access (TA)***: The network is capable of meeting the future demands of the power system, including providing for appropriate investment signals to support investment that can deliver the energy transition at lower cost.
- ***Integrating DER and Flexible Demand (DER & FD):*** New opportunities are created for consumers about how they receive and use energy and are rewarded for doing so flexibly.

The four pathways are complemented by a ***Data Strategy*** for the National Electricity Market (NEM), developed by the ESB, which recognises that digitalisation and data are critical to enabling each of the reform pathways.

With all the reforms in place, the NEM will[2]:

- allow consumers to benefit from rapidly changing technologies in our power system;

[1] Energy Security Board. Website. Last Accessed 13 May 2022. Available here https://esb-post2025-market-design.aemc.gov.au/

[2] Ibid.

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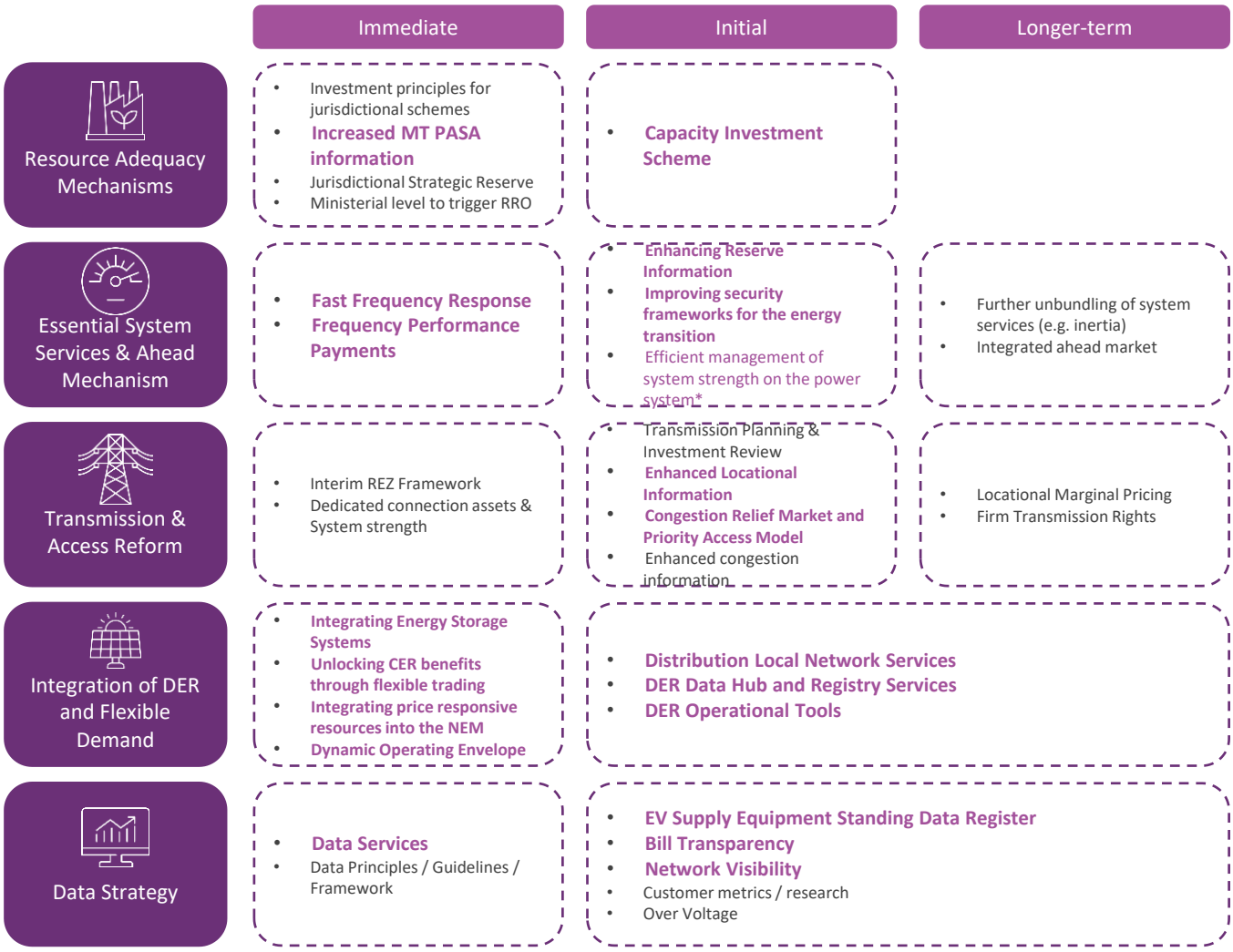
- unlock the value of flexible demand and distributed energy resources;
- work alongside government schemes which are delivering on their policy commitments including emissions reduction; and
- provide clear signals for timely and efficient investment to deliver reliable, secure, and affordable electricity for consumers.

The ESB had identified three different time horizons – immediate, initial and longer-term – to provide its view of when each recommended reform should be implemented.

Figure 1. Summary of ESB Post-2025 market design recommendations



Note: *Items in purple reflected in NEM Reform Program scope as further detailed below. * Efficient management of system strength on the power system is a TNSP led initiative.*

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NEM Reform Program: Post-2025 In-Scope Initiatives

One of the main enablers for many of the Post-2025 reforms is the development of supporting IT systems and business processes. An initial assessment of the impacts associated with the delivery of the reforms was prepared by AEMO and formed part of the ESB's final advice to Ministers.

AEMO has since undertaken a series of planning activities in conjunction with the Reform Delivery Committee[3] (RDC) to better understand the scope and scale of the ESB's reform initiatives that need to be delivered as part of the NEM Reform Program.

From these planning activities AEMO and the RDC determined those Post-2025 reform initiatives selected for inclusion in the NEM Reform Program to:

- have multi-participant implementation actions; and
- require investment in IT systems or business processes across AEMO and/or market participants.

From the full scope of the ESB's final recommendations, a number of reform initiatives were identified to be included in the NEM Reform Program.

Table 1 below provides a summary for each of the initiatives.

A NEM Reform Implementation Roadmap has been prepared in collaboration with the RDC which details an integrated timeline for implementing the reform initiatives that comprise the NEM Reform Program, as well as broader NEM and gas related reform initiatives.[4]

The scope of the initiatives is current as of September 2023 and the publication of the NEM Reform Implementation Roadmap. As policy and or rule changes evolve throughout the life of the program the scope of the initiatives will be revised and updated.

Figure 2. Determining the NEM Reform Program

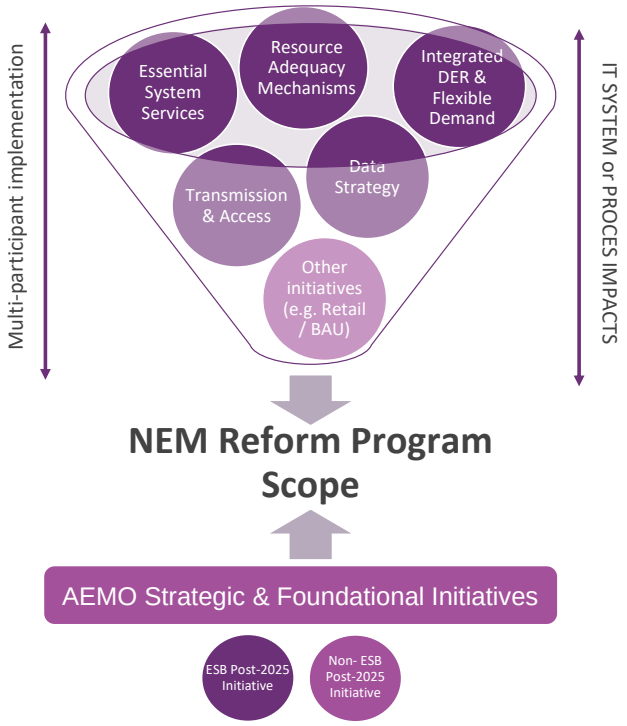

Table 1. NEM Reform Program Post-2025 In-Scope Initiatives

Pathway	Initiative Name	Description	Status
Resource Adequacy Mechanism	Increased MT PASA Information	• Establishing the reporting of a unit's status through reason codes via Medium Term Projected Assessment of System Adequacy (MT PASA) and reporting of recall times via MT PASA when triggered through a reason code.	Final Determination – Go Live 9 October 2023
	Capacity Investment Scheme	• Establish a national underwriting framework to drive investment in new renewable dispatchable capacity.	Under Policy Development

[3] The RDC brings together a strategic group of representatives from across the energy sector, including representatives from the AEMC and AER, to facilitate deep and effective collaboration to develop the NEM Reform Implementation Roadmap that appropriately prioritises and sequences reform implementation considering interdependencies with a least cost whole-of-system intent – ultimately for the benefit of the consumer. Further information on the RDC is available here.

[4] The NEM2025 Implementation Roadmap has been integrated with the Regulatory Implementation Roadmap and East Coast Gas Reform Implementation Roadmap to form the NEM Reform Implementation Roadmap available at the RDC section of AEMO's website here.

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Pathway	Initiative Name	Description	Status
Essential System Services	Enhancing Reserve Information (formerly Operating Reserve Market)	• Improvements to existing market arrangements including increased information provision and/or regional FCAS procurement. Note as of August 2023, the AEMC is recommending not to propose an Operating Reserve Market as per previous scope.	Open Rule Change
	Frequency Performance Payments	• To implement a new Frequency Performance Payment system for Regulation FCAS (to replace existing 'Causer Pays' system) to which will provide incentives for participants to support frequency stability	Final Determination – Go Live June 2025
	Fast Frequency Response	• Establish two new market ancillary services – very fast raise and very fast lower – to operate alongside the existing contingency FCAS markets.	Final determination – Go Live 9 October 2023
	Improving security frameworks for the energy transition	• Improvements to existing inertia, network support and control ancillary services (NSCAS) and non-market ancillary services (NMAS) frameworks as well as the directions process (transparency and compensation arrangements) to support procurement and scheduling of security services to support the energy transition. .	Open Rule Change
	Efficient management of system strength on the power system	• Evolve the framework to address the need for a more forward-looking, coordinated solution for the supply and demand of system strength in the NEM through key elements including TNSP led procurement of system strength, new access standards for relevant generators, loads and market network service providers, and enablement of a new charging mechanism providing for a price signal to connecting parties.	Initiative Implemented
Transmission and Access	Enhanced Locational Information	• Establish a model to better manage transmission access risk by enhancing information provision and accessibility to participants on locational characteristics of the power system to better inform regulatory, operational and network investment. decisions.	Final ESB recommendations – AEMO to deliver as part of BAU activities
	Congestion Relief Market & Priority Access Model	• Establish a model to better manage transmission access risk by incentivising efficient dispatch outcomes, in addition to those produced by the existing energy market, through explicitly addressing congestion issues in an operational timeframe, and through the introduction of a mechanism by which generators are assigned a priority level in the energy market during the investment time-period (given effect in dispatch during operational timeframes).	Under Policy Development
Integrating DER and Flexible Demand	Integrating Energy Storage Systems	• Establish an Integrated Resource Provider (IRP) registration category to better integrate and utilise energy storage and hybrid systems in the NEM and allow aggregators of small generators to provide ancillary services.	Final Determination – Go Live June 2024
	Unlocking Consumer Energy Resource (CER) benefits through flexible trading (formerly Flexible Trading Arrangements Model 2)	• Enable end users to establish a private metering arrangement (PMA) for controllable resource(s) within their electrical installation, and to have these resources managed by a separate financially responsible Market Participant (FRMP). • Establish a framework for 'minor energy flow' metering installations not currently considered in the NEM metering framework to reduce barriers further, create greater flexibility for the introduction of new technologies and enable access to retail competition for legacy connections in the NER.	Open Rule Change
	Integrating price responsive resources in the NEM (formerly Scheduled Lite)	• To establish an 'opt-in' framework through lowering barriers and providing incentives for flexible demand, aggregated portfolios of DER and small generation resources (between 5 MW and 30 MW) to either: ○ provide greater visibility to the market operator about intentions in the market, or ○ to participate in dispatch of energy and ancillary services	Open Rule Change
	Dynamic Operating Envelopes	• Establish DOE to better manage congestion on the distribution network and allow for more flexibility in exporting through various key reforms including: ○ Establishing new connection agreements with customers ○ Development of capacity allocation principles	Concept/Trial

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Pathway	Initiative Name	Description	Status
		○ Establishing new obligations on the retailer / aggregator to operate DER within these limits, where they are operating DER on behalf of customers and ○ Creating new standards for interoperability and cyber security	
	Distribution Local Network Services	• To identify ways to make it easier for DER aggregators to trade local network support services with DNSPs/Distribution System Operators (DSOs), through greater visibility of local network. constraints aligning the definitions of local services and how they are traded between regions.	Concept/Trial
	Turn-up Services	• Increase the capability and capacity of 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	Removed from the scope of the NEM Reform Program (March 2023)
	DER Data Hub and Registry Services	• Establish a DER Data Hub to provide efficient and scalable data exchange and registry services for DER between industry actors and potential augmentation of DER Register to enable more efficient and permission-based sharing and access to information.	Concept/Trial
	DER Operational Tools	• To identify and develop, in collaboration with DNSPs, new DER operational tools that may be required by each party, which can work together to maintain efficient and secure power system operations at times when up to 100% of system load can be met with DER.	Concept
Data Strategy	Data Services	• To establish a new Data Services unit within AEMO to facilitate safe, timely and appropriate access to and public-good benefits from data sets held by AEMO and other market bodies, supporting improved policy, planning and research.	Under Policy Development
	EV Supply Equipment Standing Data Register	• Ensure that agencies and market participants have sufficient visibility of emerging electric vehicle supply equipment (EVSE) for effective planning and management of the system through extension of the DER Register data collection and reporting framework to require DNSPs to collect and provide specified standing data for all hard-wired EVSE with a connection of 15A or greater.	Under Policy Development
	Bill Transparency	• Efficient arrangements to provide ongoing transparency of consumer bills and the impacts of different services and circumstances, to support better consumer protections and understanding of consumer needs in the market transition and streamline current inefficient retail reporting.	Under Policy Development
	Network Visibility	• Optimise benefits from DER and network assets for all stakeholders through access to datasets providing clear visibility of network capacity/constraints, DER and network performance, and related risks and opportunities.	Under Policy Development

In addition to the reform initiatives, AEMO has identified a subset of enabling initiatives. Each of these initiatives represents either a:

- **Foundational** investment in an AEMO legacy system to deliver an uplift to base capability on which reforms are dependent; or
- **Strategic** investment where system uplift is required at some time in the future and AEMO sees the opportunity for this life-cycle type investment to be brought forward and delivered in the same timeframes as the reforms for efficiency purposes.

The following table provides a summary of each foundational or strategic initiative considered within the scope of the NEM Reform Program.

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Table 2. AEMO Foundational / Strategic Initiatives

Pathway	Initiative Name	Description
Foundational	Identity Access Management	• A unified mechanism to authenticate participant users and applications when accessing AEMO services enabling a single pane of glass for participants accessing AEMO applications while consolidating and improving overall cyber security controls.
	Industry Data exchange	• Unified access to AEMO services across all markets using modern authentication and communication protocols providing for consolidation of data exchanges into a single industry-wide mechanism across wholesale and retail applications, lowering barriers to entry and reducing overall costs.
	SCADA Lite	• A low-cost mechanism to support telemetry services reducing barriers to entry for smaller generators and demand side resources and providing greater visibility to AEMO and market participants.
Strategic	Portal Consolidation	• A single pane of glass user experience for participants accessing all AEMO browser-based services.
	Consolidated Master Data Repository	• An internal master data management platform hosting information about power system asset data (e.g., NMI standing data, DER devices) used by AEMO market systems providing participants with a single source of truth and data quality management.
	FRC Target State	• Implement a consolidated Asset and Participant Relationship Management system (APRM); that enables unification of services onto a shared platform and simplification of Participants' and AEMO processes.
	Dispatch Target State	• A technology uplift of AEMO backend market platform services to replace legacy technology. In the case of bids/offers this could leverage 5MS deliverables.
	Bids / Offers Target State	
	Constraints Target State	

Finally, Table 3 highlights several enabling initiatives that are to be delivered by AEMO's Operational Technology Roadmap (OTR) Program or separately as an independent project by AEMO (e.g., ST PASA Replacement). In that respect, they become dependencies for the NEM Reform Program rather than being delivered by the program itself.

Table 3. AEMO Dependent Initiatives

Pathway	Initiative Name	Description
Dependent Initiatives	Operational Decision-Making Tools	• A refresh of the user interfaces and decision-making tools used by the AEMO control room operators to reflect the increasing demands of managing the grid. Multiple disparate User Interfaces converged into single user experience platform.
	Business Rules Engine	• An internal AEMO technology capability within which business rules and processes are defined. Core market platforms will leverage this capability as a foundation building block.
	Operational Data Store	• Establishing a capability for storing high volume of operational transactional data at near-real-time.
	Forecasting Platform Uplift	• A converged modelling platform that supports model development, interfaces for forecasting-as-a-service providers and layered blended models across several modelling domains e.g. demand and VRE.
	ST PASA Replacement	• Review of the Pre-dispatch (PD) and Short Term (ST) PASA methodology and supporting systems and processes.

Statement of Scope

NEM Reform Program: Delivery Scope

AEMO has delivered many large reform-driven programs of work. However, the NEM Reform Program represents the most comprehensive reform package sought to be implemented since the NEM's inception in 1998. As a result, it needs careful planning and high levels of industry engagement to be successful.

The key principles underpinning delivery of the NEM Reform Program are to:

- **Work collaboratively with industry**: While AEMO is ultimately responsible for delivering the NEM Reform Program, it will be supported by comprehensive engagement and collaboration with industry. In particular, the NEM Reform Program aims to provide industry with a clear forward view of the periodic deployments of capability aligned with the ESB's reform timelines via the NEM Reform Implementation Roadmap. This will assist industry with their own planning and delivery activities to be ready for each reform as it is operationalised.
- **Deliver effective solutions**: The NEM Reform Program will work closely with ESB and industry to ensure the solutions that are developed meet the ESB's reform objectives and are aligned with AEMO's target state architecture.[5]
- **Deliver as efficiently as possible**: The NEM Reform program will be structured to deliver as efficiently as possible leveraging opportunities to bundle, sequence and prioritise projects within the Program, and where possible identify and drive costs through solution design and implementation.

The NEM Reform Program will take a 'One Program' approach that provides for central governance and a structured methodology to assessing change impacts to AEMO, industry and stakeholders over the life of the Program. Further the 'One Program' approach ensures a level of consistency in delivery across all initiatives from their conception through to completion while still allowing for tailored implementation at an individual initiative level.

The implementation of IT systems and processes will form a significant component of the NEM Reform Program. However, the activities (and therefore resources) to successfully bring the individual initiatives into live operation is inevitably much broader as shown in Table 4.

These activities shown below are to be supported by a dedicated program structure and program management function. These have been developed in alignment with AEMO's Enterprise Portfolio Office (EPO). The EPO will provide standards, methodologies, processes and tools mandated across the enterprise, and these will be used by the NEM Reform Program.

The delivery scope for the NEM Reform Program excludes activities relating to the development of policy and/or rules or related change processes, market design, funding and cost recovery. These are managed outside the direct responsibility of the NEM Reform Program but are identified as dependencies with clear lines of communication to ensure a co-ordinated approach.

[5] AEMO has commenced detailed work to articulate its conceptual target state architecture. While this work is broader than the NEM Reform Program, it is critical that what the NEM Reform Program designs and delivers is in alignment with this target state architecture as the Program will be a key contributor towards achieving the desired future state.

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Further, the delivery scope is not intended to cover the implementation of changes (e.g. system, process or guideline related) by industry participants beyond those activities identified above, these are the responsibility of individual participants.

Table 4. NEM Reform Program Delivery Scope

Function	Description	Included Activities
Solution Assurance & Design	Provides the overarching alignment of business and technology strategic outcomes through roadmaps, architectures and transformational change impact management. Also provides the sequencing and integrated release planning of design and delivery; Supports the program in the procurement and ongoing management of vendors including performance and execution to contract.	• Technical Architecture • Business Architecture • Product Release Planning & Integrated Design • Contract Management / Performance • Vendor Engagement / Management
Delivery	Delivery of all business and technology changes as required to support the Post-2025 Reforms and in-scope projects; Supports the delivery streams in the delivery of quality outcomes and the alignment to program and AEMO standards and practices through testing and verification.	• Requirements Development & Design • Business Process, Procedure and Work Instruction Development • Delivery Management (Business and Technology) • Testing (Integration, E2E, Performance and UAT) • Industry Test / Market Trials • Environment Management
AEMO Operational Capability	Management of the change implementation within AEMO, including internal stakeholder engagement and communications, organisational and staff transition, business readiness, and staff training and coaching.	• Internal stakeholder management • Internal (AEMO) communications • AEMO organisation and staff transition • Business (AEMO) readiness • Training and coaching
External Stakeholder Engagement	Centrally lead and coordinate all communications and engagement with industry, government, media, and other external stakeholders to build awareness and understanding, and co-design, implement and embed the NEM Reform Program.	• Forums and working group facilitation • External stakeholder and industry support and engagement • External stakeholder and industry communications
Industry Readiness	Facilitation of the change implementation with industry including, representing the NEM Reform Program with industry stakeholders, and leading and coordinating all industry readiness, transition, and participant training activities.	• Program advocacy and industry engagement • Industry transition planning and co-ordination • Readiness planning and coordination • Participant training