INFORMATION AND COMMUNICATIONS TECHNOLOGY

AEMO NEM REFORMS

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1. Overview

The Energy Security Board (ESB), in collaboration with the Australian Energy Market Operator (AEMO), the Australian Energy Market Commission (AEMC) and the Australian Energy Regulator (AER) has set a reform pathway to transition the National Electricity Market (NEM) into a modern energy system. This business case relates to two rule changes, including:[1]

• unlocking consumer energy resources (CER) through flexible trading arrangements (FTA); and

• market interface technology enhancements (MITE).

The FTA rule change and MITE reform are transformational changes in how network businesses operate, communicate with the market, and share, store, and process data. Both rule changes will require material upgrades of certain IT systems to enable compliance.

FTA implementation will be conducted in the current regulatory period[2], with only testing and support activities being conducted in 2026–31. Conversely, MITE implementation is expected to be wholly implemented in the 2026–31 regulatory period.

Table 1 presents the costs for enabling compliance with FTA and MITE. Further detail on the split between capital and operating expenditure is provided in this document.

TABLE 1   SUMMARY OF COSTS ($M, 2026)

PROJECT	FY27	FY28	FY29	FY30	FY31	TOTAL
Flexible trading arrangements	2.2	-	-	-	-	2.2
Market interface technology enhancements	0.1	6.6	2.2	1.4	0.3	10.6
TOTAL	**2.3**	**6.6**	**2.2**	**1.4**	**0.3**	**12.8**

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[1] AEMO has also commenced industry consultation to develop a national CER data exchange, however, at the time of submitting our regulatory proposal we do not have sufficient information to develop expenditure related to this reform. We will review and update our proposed investments as part of our revised regulatory proposal.

[2] A pass-through through application will be submitted for FTA during 2025, in line with the AER's granted extension

2. Background

2.1 Flexible trading arrangements

In August 2024, the AEMC released its final determination on unlocking CER benefits through FTA. The rule change enables three key arrangements across large business customers, small to medium customers and unmetered supply, as summarised below. It is proposed these arrangements will better allow energy service providers to offer products and services to households, businesses, and the public sector, to unlock the value of flexible CER.

The AEMC also proposes that the new in-built metering arrangements will make it easier for market participants to deploy public EV chargers and smart streetlights. The AEMC cites that the rule change could deliver up to $100m of benefits over 20 years[3], derived from reduced metering installation costs, reduced maintenance costs, reduced wholesale costs due to more efficient energy consumption and reduced emissions.

2.1.1 Large business customers (type 8A)

Currently large business can only engage multiple energy service providers by using the embedded network framework or by establishing two connection points to the distribution network to obtain a second national metering identifier (NMI). Under FTA, large customers will be able to engage multiple energy service providers at their premises more easily with the introduction of a new meter (type 8A).

2.1.2 Small to medium customers (type 8B)

Currently consumers in households and small businesses have limited opportunity in separating and measuring flexible loads. The rule change introduces:

- the establishment of secondary settlement points at a small customer premises, removing the need to establish a second physical connection to the distribution network. The secondary settlement point will require a new type 8B metering installation
- in-built measurement capability in technology such as batteries and electric vehicles (EV) chargers to be used, removing the need to install a separate meter to the device.

2.1.3 Unmetered supply (type 9)

For energy supplies which are currently unmetered, such as streetlights, EV chargers and other street furniture, direct measurement of energy usage is not possible. Metering data must be calculated in line with the AEMO Metrology procedure so that it can be included in settlement processes.

The rule change will allow market participants to utilise in-built measurement capability in technology such as EV chargers and smart streetlights. A new meter (type 9) will be introduced to enable this with energy throughput needing to be less than 750 MWh.

2.1.4 Compliance timeframes

Figure 1 outlines the compliance timeline, including the go-live dates for the new meter types. Arrangements related to in-built metering at primary connection points in technology such as streetlights and EV chargers must be implemented by 31 May 2026. The remaining system and process changes associated with supporting type 8A and 8B meters must be implemented by 1 November 2026. While the FTA rule change has been finalised, both AEMO procedures and AER

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[3]   AEMC rule determination, National Electricity Amendment (Unlocking CER benefits through flexible trading) Rule 2024,
      page 8

guidelines are still being updated which will bring further clarity to the rule change requirements once completed.

FIGURE 1   FTA RULE CHANGE TIMELINE
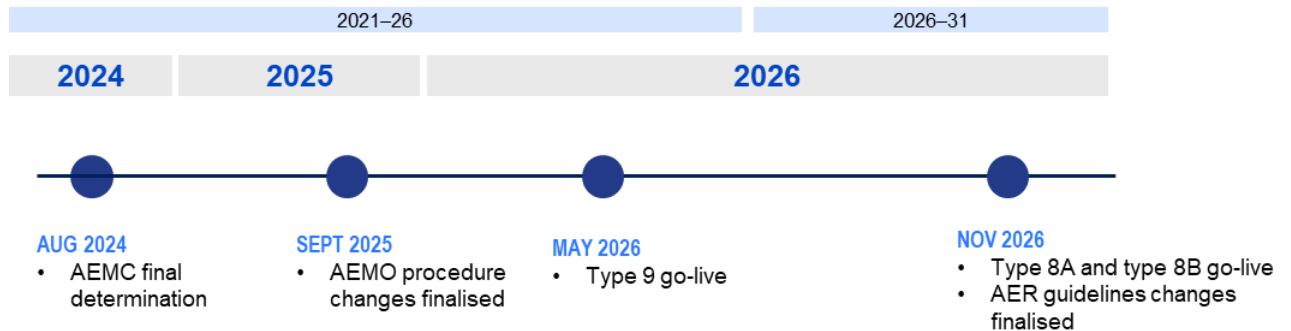
2.2 Market interface technology enhancements

In 2022, AEMO identified the MITE that are required as a prerequisite to the wider NEM Reform implementation program. The reform requires an uplift of all market systems including improved data management systems, improved data security and modernisation of industry data exchange protocols. The reform has three core components including identity and access management (IDAM), industry data exchange (IDX), and portal consolidation (PC), which are summarised below.

2.2.1 Identity and access management

AEMO's current identity and access services require users to retain multiple sets of credentials in order to access AEMO business services. The legacy IDAM services do not implement best practices in cyber security controls (e.g. multifactor authentication).

AEMOs introduction of a unified IDAM framework aims to address key security vulnerabilities and reduce attack surface area as this perceived by AEMO as a weak link in the cyber security chain. Other benefits identified by AEMO include greater scalability and adaptability, improved user experience, enhanced security and compliance, effective auditing and reporting, improved resilience, and speed. The unified IDAM will enable:

• support for industry standard modern authentication and authorisation protocols facilitating compliance to Security of Critical Infrastructure (SOCI) requirements

• a single source of truth for person and non-person identities

• centralised identity and access management.

2.2.2 Industry data exchange

AEMO's existing data exchange systems have been variously acquired over the last 10-15 years, and use inconsistent standards, protocols, and formats. As the grid becomes digitised, data exchanged is increasing in volume, frequency and requires lower latency. AEMO has identified that existing data exchange mechanisms will not meet market needs nor will comply with new industry obligations around cyber security such as the SOCI Act.

The IDX will provide industry with standardised channels, protocols, and capabilities to provide integration of data exchange. This is a foundational investment required to enable future expected reform. Other benefits identified by AEMO include the provision of a lower barrier to market entry, improved speed to market and a framework for enhanced and consistent data security exchange.

2.2.3 Portal consolidation

AEMO browser services are exposed over a disparate range of end points and require multiple sets of credentials to consume these services. This results in a suboptimal user experience for energy stakeholders. The requirement to access browser services via private networks creates technical barriers to consuming these services.

The introduction of AEMO's proposed PC solution will provide a consistent and unified user experience and empower self-service. The portal framework is an enabling platform that supports energy market participants and other partners to consume AEMO browser services in a secure manner. Benefits include a unified portal experience, integration with IDAM, enhanced security, alignment, and improved self-service capabilities.

2.2.4 Compliance timeframes

The implementation timeline has not been finalised and AEMO has stated further consultation through the MITE working group is still required. The most recent NEM Reform Roadmap (v5.0) has removed indicative milestones. Given this, we have considered AEMO's original timelines along with the expected sunset arrangements to inform our proposed delivery timeline, which is presented in figure 2 below.

FIGURE 2   MITE COMPLIANCE TIMEFRAME

3.   Identified need

As a participant in the NEM we are required to ensure compliance with the National Electricity Rules (NER). Non-compliance with the rule changes could result in:

- financial penalties, loss of our license to operate in the market and reputational damage

- material adverse impacts on wholesale market settlement process

- loss of the customer benefits sought by AEMC and AEMO through the rule changes.

In addition, regular audits of our data, processes and systems are performed by AEMO to ensure compliance with market rules and procedures. The penalties associated with non-compliance have been classified as civil penalty provisions in order to encourage compliance by the relevant parties.

Our identified need, therefore, is to ensure timely compliance with the FTA rule change and MITE reform, to ensure continued compliance with our regulatory requirements.

4. Options analysis

To address the identified need we considered three options, which are outlined in table 2.

Option one and option two were deemed unviable as both options would not enable compliance with the FTA and MITE reform.

Option two involves implementing additional labour and process 'work arounds' to avoid changes to our underlying technical infrastructure such as our core market and meter data management systems. Given the complexity and volume of the data we manage, it is considered that the modification of business processes and incremental labour will not offer a viable solution to meet the NEM reform changes.

Therefore, our preferred option is option three: compliance through process and technical change.

TABLE 2   SUMMARY OF OPTIONS ($M, 2026)

OPTION		COST
1	Maintain status quo: do not comply with regulatory change	N/A
2	Compliance through process change	N/A
3	Compliance through process and technical change	12.8

4.1   Preferred option

Option three includes capital and operating expenditure to meet our regulatory obligations to comply with both the FTA rule change and MITE reform. The costs and detail of the impact to meet compliance is outlined below.

Our current cost and impact assessments are based on the best available information. These may evolve once the remaining regulatory guidance documents (including updated AEMO procedures) have been finalised and published.

4.1.1   Flexible trading arrangements

Table 3 presents the costs for the FTA rule change for the 2026–31 regulatory period. The majority of FTA costs to meet compliance will be incurred during the current regulatory period.

Further detail on these costs is provided in our attached cost model. [4]

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[4]   CP MOD 6.06 - FTA cost - Jan2025 - Public

TABLE 3   SUMMARY OF COSTS ($M, 2026)

OPTION THREE	FY27	FY28	FY29	FY30	FY31	TOTAL
Capital expenditure	2.2	-	-	-	-	2.2
Operating expenditure	-	-	-	-	-	-
Total	**2.2**	**-**	**-**	**-**	**-**	**2.2**

The FTA rule change introduces a broad range of changes to NEM processes. New functionality will be required in our market and back-end systems to facilitate compliance, including, but not limited to:

- supporting new meter types, 8A, 8B, 9 in our systems
- supporting the primary and secondary NMI structure (new NMI number ranges)
- meter data receipt, retrieval, storage, and publishing
- supporting new participant roles, responsibilities, and accreditation
- new MSATS data attributes and change request process
- increased transaction volumes.

These functional changes have impacts on our IT systems. An impact analysis has been conducted, using the criteria outlined in figure 3.

FIGURE 3   IMPACT ASSESSMENT FRAMEWORK

RATING	DESCRIPTION
Low	• Impact: low but noticeable • Effort: requires some effort but remains manageable • Examples: small feature enhancements, routine updates, or training a few individuals
Medium	• Impact: moderate impact on processes, systems, or users • Effort: requires more time and coordination but doesn't significantly disrupt operations • Examples: introducing a new tool for a single team or minor process changes, minor software version release
High	• Impact: significant, with widespread influence • Effort: demands substantial resources, planning, and possibly cross-functional collaboration and significant testing and training • Examples: migrating a system component, implementing a major new feature
Very high	• Impact: affecting multiple teams, departments, or systems • Effort: requires significant investment in terms of time, resources, and careful management, training, and extensive internal and bi-lateral testing • Examples: overhauling an IT system or major code re-write or re-structure, a major version release of software, new technology platform, introducing new capability

The FTA rule change impacts seven core domains. Table 4 outlines the domains and systems that require updates to enable type 8A, type 8B and type 9 meters. For information on the ICT system functionality please see Appendix A.

TABLE 4   FTA IMPACT ASSESSMENT

DOMAIN	SYSTEM	ENABLNIG TYPE 8A	ENABLING TYPE 8B	ENABLING TYPE 9
Market	CISOV (vendor changes)	Very High	Very High	Medium
	CISOV (internal)	High	Very High	High
	IEE (vendor changes)	Low	High	Medium
	IEE (internal)	Low	High	Medium
	MTS (internal)	High	High	Medium
	MTS (vendor changes)	High	Very High	High
	UIQ	N/A	N/A	Medium
	Streetlight vision	N/A	N/A	High
Network	MapInsights	Low	Low	Medium
	SNAP	Medium	Medium	Medium
	GIS/SWEG	Medium	Medium	N/A
	NDP	Medium	Medium	Medium
	DER management system	N/A	Very High	N/A
	New capability/system required	N/A	Very High	N/A

Integration	USB (ESB corp)	High	Very high	High
	API Gateway	N/A	Medium	High
	GlobalScape	N/A	N/A	Medium
Customer	eConnect	High	Very High	High
	MyEnergy	High	High	Low
Corporate	MAMS	N/A	High	Medium
Field services	SFS	Low	Low	High
Reporting	BI/BW	High	High	Medium

4.1.2 Market interface technology enhancements

Table 5 presents the costs for the MITE reform. Based on the available information and our expectation of sunset arrangements, we are forecasting all costs to be incurred in the 2026–31 regulatory period.

Further detail on these costs is provided in our attached cost model.[5]

TABLE 5   SUMMARY OF COSTS ($M, 2026)

OPTION THREE	FY27	FY28	FY29	FY30	FY31	TOTAL
Capital expenditure	0.1	6.6	1.9	1.1	-	9.7
Operating expenditure			0.3	0.3	0.3	0.9
Total	**0.1**	**6.6**	**2.2**	**1.4**	**0.3**	**10.6**

The MITE reform requires an uplift of market systems including data management systems, improved data security and modernisation of industry data exchange protocols. Changes will include, but not limited to:

- implementation of new data-interchange format as an alternative/replacement of the current format for all business-to-business (B2B) and business-to-market (B2M) interfaces

- upscale of API Gateway (intermediary between clients and backend services)

- consolidating platforms and harmonising data exchange processes to streamline market operations and reduce localization costs.

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5   CP MOD 6.05 - MITE cost - Jan2025 - Public

- transitioning to modular and scalable systems, integrating identity management, and enhancing security to align with evolving standards.

The MITE rule change impacts two core domains. Table 4 outlines the domains and systems that require updates to enable the IDX, IDAM and PC reform. For information on the ICT system functionality please see Appendix A.

TABLE 6   MITE IMPACT ASSESSMENT

| DOMAIN	SYSTEM	IDAM	IDX	PC
Integration	API Gateway	N/A	Very high	N/A
	USB (ESB corp)	N/A	Very high	High
	Firewall	N/A	High	Medium
	Azure	Medium	High	Medium
	Transport Layer Security protocol	N/A	N/A	High
Market	Transport Gateway due to MSATS	N/A	N/A	High
	API Gateway due to DERR	N/A	N/A	High
	MTS/IEE	Very high	Very high	N/A

5. Implementation timeline

5.1 Flexible trading arrangements

We must commence work in the current regulatory period to ensure we meet the compliance timeframes as determined by the AEMC.

Work this period will be significant and include application upgrades and infrastructure builds. The project will continue into the next regulatory period with the remaining testing and application support activities. Our timeline to ensure project delivery is presented in figure 4.

FIGURE 4   FTA PROJECT IMPLEMENTATION
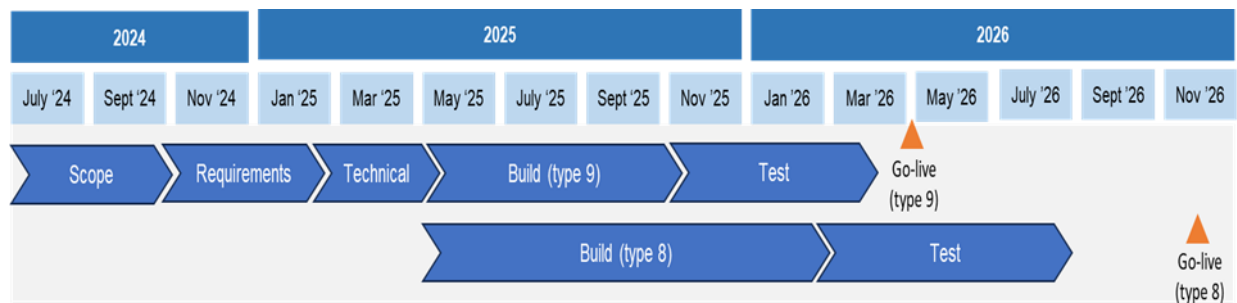
Our FTA implementation plan is split up into the following categories:

- scope: identifying the system and process changes required to achieve compliance or meet the project's objectives. It defines what is included and excluded from the project

- requirements: gathering and documenting the specific needs and expectations of stakeholders that the project must fulfill

- technical: this category covers the technical aspects of the project, including the architecture, design, and technical specifications needed to build the solution

- build: this is the phase where the actual development and construction of the project deliverables take place

- test: this involves verifying and validating that the project deliverables meet the specified requirements and are free of defect.

5.2 Market interface technology enhancements

We will commence work in the next regulatory period to ensure we meet compliance timeframes. Our timeline to ensure project delivery is presented in figure 5.

FIGURE 5   MITE INDICATVIE TIMEFRAMES
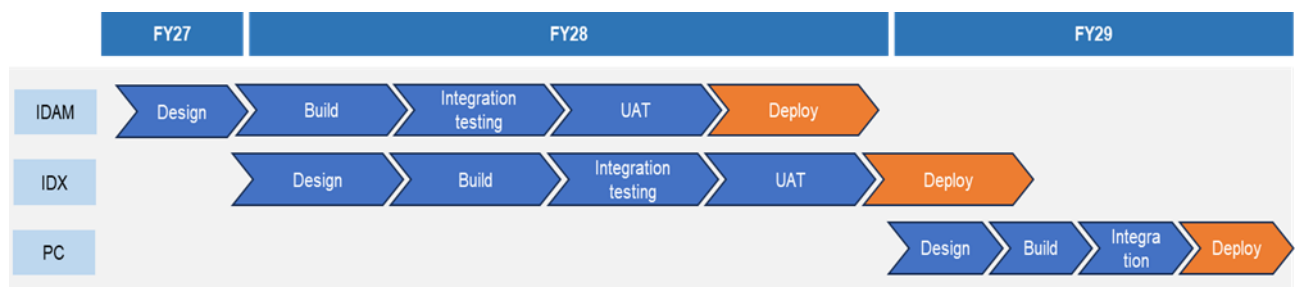
The implementation timeline is split up into the following categories:

- design: this phase involves creating the architecture and detailed specifications of the system, including identifying user requirements, defining the system's structure, and planning the technical solutions

- build: this is the phase where the actual development and construction of the project deliverables take place

- integration Testing: this process checks how different modules or components of the software work together, ensuring that they interact correctly and function as a unified system

- user acceptance testing (UAT): this is the final phase of testing where real users validate that the software meets their requirements and is ready for deployment. It involves executing test cases that reflect real-world scenarios

- deploy: this phase involves installing and configuring the software in the production environment, ensuring it is ready for use by end-users. It includes steps like planning, testing, and monitoring to ensure a smooth transition.

A   System overviews

DOMAIN	SYSTEM	DESCRIPTION
Market	CISOV (vendor changes)	Customer Information System, maintaining address, billing, creation of service Point, service order management, Meter Read schedules for Manually Read meters, Upload/Download to FCS, including substitution for basic meters (vendor remit)
	CISOV (internal)	Customer Information System, maintaining address, billing, creation of service Point, service order management, Meter Read schedules for Manually Read meters, Upload/Download to FCS, including substitution for basic meters (internal remit)
	IEE (vendor changes)	Meter data store for all meter types, managing validation/estimation/substitution, sends meter data to MTS. Note: Substitution for basic meters is done in CIS OV (internal remit)
	IEE (internal)	Meter data store for all meter types, managing validation/estimation/substitution, sends meter data to MTS. Note: Substitution for basic meters is done in CIS OV (vendor remit)
	MTS (internal)	System responsible for interacting with market (B2B/B2M), provides a gateway for market transactions and handles service orders, change requests and meter data provision (internal remit)
	MTS (vendor changes)	System responsible for interacting with market (B2B/B2M), provides a gateway for market transactions and handles service orders, change requests and meter data provision (vendor remit)
	UIQ	System responsible for communicating with Smart meters via Mesh network, provides remote control and retrieval of consumption/generation meter data
	Streetlight vision	Vendor (Itron), hosted Central Management System for managing smart streetlights
Network	MapInsights	Visualisation tool working in conjunction with GIS

	SNAP	Strategic Network Analytics Platform, providing real-time analytics from various network systems
	GIS/SWEG	Geographical Information System and SmallWorld Enterprise Gateway interface for GIS data
	NDP	Network Data Platform, hosted in AWS cloud
	DER management system	manage and control the stability of the network at low demand by controlling the amount consumer generation.
	New capability/ system required	Mechanism required to read meter data from behind the meter devices with built in meteorology (e.g. EV chargers)
Integration	USB (ESB corp)	Utility Service Bus integration platform enabling data exchange between internal systems
	API Gateway	Server that acts as an intermediary between clients and backend services, performs routing, authentication, rate limiting, and logging, provides interfaces to external systems (e.g. DERR, Salesforce Cloud]
	GlobalScape	Provides secure file transfer capability (FTP)
Customer	eConnect	Online platform for managing electrical work requests
	MyEnergy	Online Customer energy portal to view energy usage
Corporate	MAMS	Meter Asset Management System (Asset Accounting) in SAP ERP
Field services	SFS	Mobile Field work management platform
Reporting	BI/BW	Business Intelligence/Business Warehouse. Reporting and analytics tool.

TABLE 8   MITE SYSTEM DESCRIPTIONS

DOMAIN	SYSTEM	DESCRIPTION
Integration	API Gateway USB (ESB corp) Firewall Azure Transport Layer Security protocol	Our integration domain refers to the process of connecting different systems, applications, and software to work together as a unified system. This ensures communication and data exchange between various components. These integration systems are used to enable our internal systems to interact and ensure information that we need to send externally is in the right protocol and meets all the security requirements. Functionality changes might involve updating the API Gateway to ensure secure and efficient communication between different applications
Market	Transport Gateway due to MSATS API Gateway due to DERR MTS/IEE	In this context, the market refers to the NEM and how our business systems interact with AEMO and other market participants. The systems mentioned either send messages to the market (e.g., webMethods gateway, MTS/IEE) or are systems we access (e.g., MSATS, DERR). Market systems such as MTS, IEE, webMethods Gateway, API Gateway (to access MSATS and DERR) hold critical information and enable business functions to support and ensure compliance for our roles and responsibilities within the NEM. Functionality changes might include updates to information we need to hold, how we share this information and business functions we undertake across various applications.