Jemena Electricity Networks (Vic) Ltd

IT Investment Brief – Market Interface Technology Enhancements (MITE)

Non-recurrent – Compliance

Jemena
bringing energy to life

Page intentionally blank

Glossary

AEMO	Australian Energy Market Operator
Capex	Capital Expenditure
Current regulatory period	The period covering 1 July 2021 to 30 June 2026
ICT	Information and Communications Technology
IDAM	Identity Access Management
IDX	Industry Data Exchange
Jemena	Refers to the parent company of Jemena Electricity Network
JEN	Jemena Electricity Network Vic Ltd.
MITE	Market Interface Technology Enhancement
MITEWG	Market Interface Technology Enhancement Working Group
NEM	National Energy Market
Next regulatory period	The period covering 1 July 2026 to 30 June 2031
NPV	Net Present Value
Opex	Operating Expenditure
RYxx	Regulatory year covering the 12 months to 30 June of year 20xx for years in the Next Regulatory Period. For example, RY25 covers 1 July 2024 to 30 June 2025
SOCI	Security of Critical Infrastructure
Totex	Total Expenditure

Market Interface Technology Enhancements

Objective	The objective of this initiative is to implement Identity and Access Management (IDAM), Industry Data Exchange (IDX), and Portal Consolidation, which have been identified as initiatives within the National Energy Market (NEM) reform implementation program to provide foundational and strategic frameworks that the upcoming reform initiatives can leverage. These initiatives are collectively referred to as Market Interface Technology Enhancement (MITE).		
Non-recurrent ICT sub-categorisation	☐ Maintaining existing services, functionalities, capability, and/or market benefits	☒ Complying with new/altered regulatory obligations/requirements	☐ New or expanded ICT capability, functions, and services
Background	**The NEM Reform Program** The Energy Security Board (ESB)'s post-2025 electricity market design set out a pathway to transition the NEM into a modern energy system fit to meet the community's evolving wants and needs and move towards a net-zero future for Australia. The designs sought to address essential change as ageing coal-fired generators are retired and replaced by an expanding array of new technologies, including large-scale renewable energy generation and storage systems, complemented by rapid growth in consumer energy options, including rooftop solar. The NEM Reform Program ('the Program') [1] was established by the Australian Energy Market Operator (AEMO) to collaborate with energy industry participants to deliver many of the ESB's post-2025 reforms along with various other energy market reforms impacting national electricity and gas markets across the east coast of Australia. The Program is a large-scale, complex, industry-wide program that aims to address essential change in a world of expanding consumer choices, new technologies, and large-scale capital replacement as ageing thermal power stations leave the market.[2] With all the reforms in place, the NEM will: • 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 that 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. **Market Interface Technology Enhancement (MITE)** Currently, when accessing AEMO's systems, JEN must interact through different access points, causing an inconsistent, fragmented and duplicated user experience. Furthermore, there are mandatory cybersecurity uplifts that have been identified by AEMO, such as identity federation and context-based authentication, that are required to meet SOCI Act industry obligations. The MITE initiatives (previously referred to as Foundational and Strategic Initiatives, 'FASI') are foundational initiatives which will enable the broader NEM Reform Implementation Program, including the development of new services such as power quality data sharing, Dynamic Operating Envelopes (DOEs), and unification of data exchange mechanisms across markets and fuels. Key initiatives under the MITE program that Jemena Electricity Networks Vic Ltd. (JEN) must adhere to include the following as outlined in Figure 1: • IDX (Industry Data Exchange)		

[1] AEMO | NEM Reform Program | https://aemo.com.au/initiatives/major-programs/nem-reform-program
[2] AEMO | NEM Reform Program Scope | https://aemo.com.au/-/media/files/initiatives/regulatory-implementation-roadmap/tiles/nem-reform-program-scope.pdf?la=en&hash=121CC0B0C323F9C3744B425F265B8551

- A new data exchange system will be built to provide improved customer data security and standards across protocols, payloads, connectivity, and authentication.

- IDAM (Identity and Access Management)
  - A modern identity management system will be introduced which reduces the need for participants to have multiple credentials and improves cyber security controls.
- Portal Consolidation
  - Enable stakeholders with the ability to self-manage their user experience by delivering a new web and mobile user portal that provides personalised, secure, single pane of glass access to data and services.

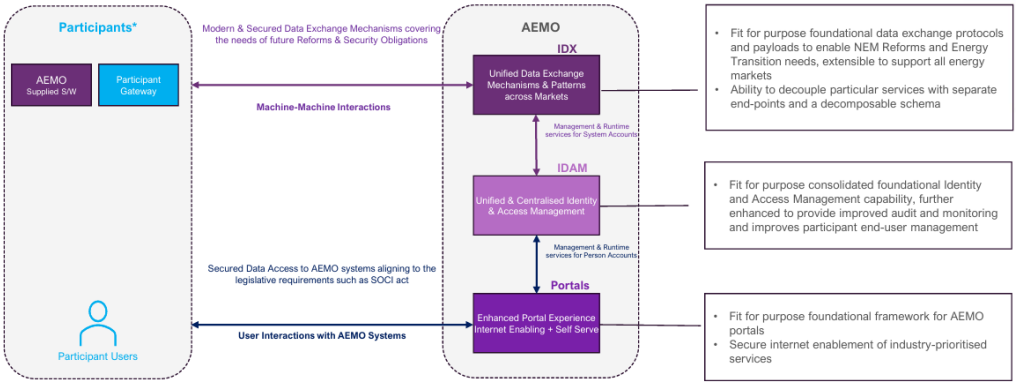


Figure 1: AEMO's MITE strategic target state[3]

JEN must comply

We note that implementing the MITE changes is necessary for JEN to comply with various Rule obligations including, but not limited to:

- S7.3.3 – Capabilities of metering data providers
- 7.13.2 – Disclosure of NMI information
- 7.16 – Market Settlement and Transfer Solution
- 7.17 – Business to Business Arrangements

Not implementing these system changes (Change) would render JEN unable to continue complying with the above-noted obligations once MITE is in effect. JEN is considering a cost pass-through application for expenditures incurred in the Current Regulatory Period and will also seek to include expenditures for the next Regulatory Period in the 2026-31 Regulatory Proposal.

Customer Importance	The MITE vision stipulated in AEMO's Business Case[3] is to create "extensible, resilient and secure enabling technology frameworks…that underpin AEMO's services to and between NEM market participants…". Whilst the MITE changes to IDAM, IDX, and the portal consolidation are predominantly laying the groundwork for future reform and increased digitisation, the changes will benefit customers more specifically by: • Enabling JEN's interaction with the operation of the wholesale market, which is crucial for customers to access competitive pricing options offered by electricity retailers • Reducing customer impact of security breaches. • Facilitating the increase in customer identity management associated with DERs.

[3] AEMO | MITE Business case, https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/other_meetings/nem-reform-foundational-and-strategic-initiatives-focus-group/fs-final-business-case.pdf?la=en

- Empowering customers to leverage new power system technologies and benefit from flexible demand and distributed energy resources.

Key considerations

Future AEMO NEM reforms

The MITE initiative has not followed the traditional rule change process, and AEMO continues to work with industry participants to scope the required changes. Figure 2 depicts AEMO's draft timeline.[4] The majority of IDAM, portal consolidation and the foundation phase for IDX are planned for the current period. At this stage, we are working on the understanding that the IDX transition phase will be the next period; however, AEMO has deferred the decision on the Transition phase to late 2025.

In addition, AEMO's Procedure changes are not expected to be completed until March 2025, which means until then, we will not know the full impact of all three streams on JEN systems and processes; however, to meet the delivery timeline, we have commenced planning and design.

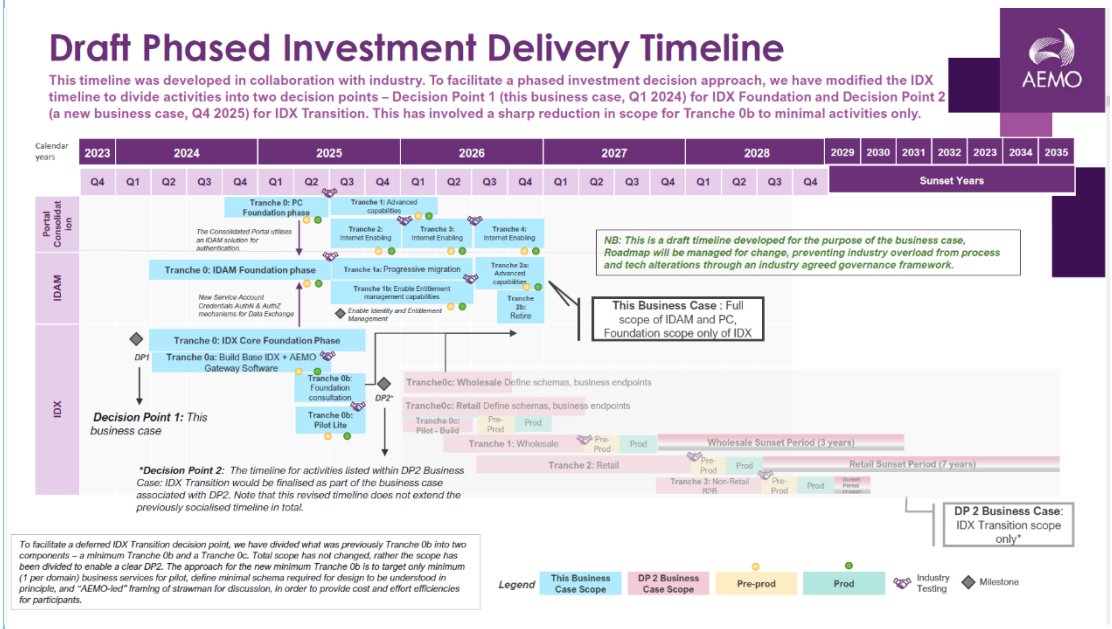
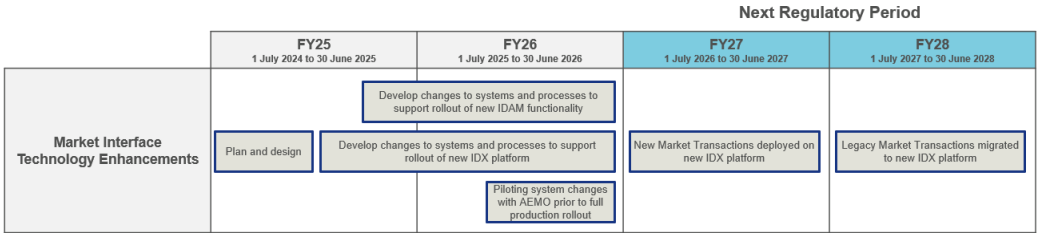


Figure 2: Draft Phased Investment Delivery Timeline

Based on AEMO's indicative timeline, effective change dates and our current understanding of impacts, JEN has assumed the following high-level implementation timing:



Together, these impacts and timing have formed the basis of our early cost estimates presented herewith. Note that a high-level, initial assessment of system and process impacts and assumptions is referenced in Attachment B of this document.

[4] AEMO | MITE Business case, https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/other_meetings/nem-reform-foundational-and-strategic-initiatives-focus-group/fs-final-business-case.pdf?la=en

	MITE working group AEMO has established the MITE Working Group (MITEWG). The objective of this working group is to enable collaboration with the industry to progress the planning and implementation of key deliverables that relate to IDAM, IDX and portal consolidation. Participation in the MITEWG is open to all impacted stakeholders e.g. market participants, solution providers/vendors. For JEN, participation provides ongoing visibility during these early stages of program scope, data sharing requirements, target state design and impacted processes, transition planning, decommissioning strategies and technical specifications. JEN is participating in the AEMO MITE feedback and pilot programs and has mobilised a team to commence design of new JEN interfaces and platforms to work with new MITE interfaces. The opportunity is to build the new JEN system to integrate to the new interfaces as well as the old, which would allow JEN to migrate to the new security compliant platforms. **How costs were derived** When project requirements are less developed and there are many unknowns as is the case here, proxy-based estimation is used to provide a best-fit cost approximation. By applying the costs from a similar past project, 5 Minute Settlement (5MS), with comparable complexity, duration, and scope, this method yields an efficient and reasonably accurate estimate without the need for granular project build-up. This allows for cost estimation based on historical benchmarks and reduces risk. We have assumed capex as the related systems are on-premises and anticipate we will use a mix of internal resources and external subject matter experts. JEN is closely monitoring developments and if necessary, will include a revised forecast in our Revised Regulatory Proposal to reflect any changes as further information becomes available.
Options	JEN has considered three alternatives to deliver the capability articulated above: (1) Do nothing – A non-credible option – not recommended. (2) Option 2 – System and process changes - recommended (3) Option 3 – Process changes, tactical work arounds – not recommended. **Option 1: Do nothing – do not comply with the Change** **Description** Failure to address this Change would result in non-compliance when the new Market obligations come in effect. This would create extreme risk for JEN and our customers, therefore the option of not implementing MITE initiatives has not been considered. **Benefits** By doing nothing, JEN would avoid incurring the costs outlined in the recommended option. **Risks** In the absence of necessary investment to support JEN's implementation of the MITE changes, JEN would be non-compliant and would not have the foundation capability in place to support the future NEM roadmap. Furthermore, associated customer benefits and mitigation of security risks identified by AEMO would not be realised. **Costs** This option would not allow JEN to comply with MITE changes. By doing nothing, JEN would avoid incurring the investment costs associated with this change.

Summary

This option is not a credible option and is not recommended as the risks associated with non-compliance and customer harm as outlined in the Background section above are not acceptable to JEN.

Option 2: System and process changes - recommended

Description

This option requires a one-off investment to update existing systems and processes for the proposed MITE changes as outlined in Attachment B of this document.

Benefits

This option will ensure JEN is compliant with the MITE changes and customers can continue to realise the benefits of JEN transacting with the market systems.

Risks

One of the key risks for MITE is uncertainty, particularly with the IDX transition phase currently planned for the next regulatory period. The industry working groups are only now being formed, and work is in its infancy. Further, the scoping work for the required changes is not expected to be completed until March 2025.

We are mitigating the risk associated with this by participating in the IDX Foundation phase where participants will be provided the opportunity to test the replacement systems with AEMO prior to go-live. Details of this Foundation phase are yet to be finalised and will be made available in 2025. We are also participating in the MITE working group as outlined in the Key Considerations section above.

Another risk is the impact on JEN of other, additional Reform initiatives that JEN may be required to implement concurrently based on what is proposed by AEMO and as outlined in AEMO's roadmap. Whilst this feedback has been shared with AEMO by industry participants, JEN will continue to work closely with AEMO to discuss and mitigate this risk.

Costs

Costs are based on the information and scope shared to date by AEMO;[5] this is our best estimate of what the changes are and the impact to JEN to deliver these. JEN is closely monitoring developments and will provide a revised forecast for the Revised Regulatory Proposal to reflect any changes in AEMO's requirements, scope and timing.

JEN's forecast costs for this option is outlined in the table below.

	Current Regulatory Period		Next Regulatory Period				
$2024	RY25	RY26	RY27	RY28	RY29	RY30	RY31
Total Capex	$1,641,640	$2,707,640	$7,894,000	$7,894,000			
Non-recurrent Opex		$584,000	$170,000	$170,000			
Recurrent -step Opex							
Total Opex							

Totex	**$1,641,640**	**$3,291,640**	**$8,064,000**	**$8,064,000**			

As noted in the table above, the MITE implementation spans current and next regulatory periods.

The forecast non-recurrent capex for **next regulatory period** is $15,788,000 and non-recurrent opex is $340,000. The total expenditure to deliver this capability over the 2026-31 period is $16,128,000.

The capex will be used to implement process and system changes associated with the IDX 'transition phase'. i.e. new and legacy market transactions deployed on the new IDX platform. The non-recurrent opex will be used for associated change management and training.

Summary

This option is recommended as it is the most cost efficient and prudent means by which JEN can comply with the MITE changes outlined in the background section. JEN considers that it best reflects good industry practice.

Option 3 – Process changes, tactical work arounds

Description

This option would involve implementing physical process change and 'work arounds' (likely requiring additional resources) to avoid changes to impacted systems.

Benefits

The only advantage with this option is that there would be minimal system changes and JEN would avoid incurring the system-related investment costs.

Risks

A unified mechanism to authenticate and authorise external identity will not be possible and associated cybersecurity risks when accessing AEMO services will not be addressed. Furthermore, MITE is intended to implement foundation system and security changes required for future Reform initiatives and this option does not implement these changes.

Costs

This option would create material risks with regards to complying with MITE related obligations and so has not been costed.

Summary

In the absence of system changes to support JEN's implementation of the MITE changes, JEN would most likely be non-compliant and the core objectives AEMO is looking to achieve would not be met. This option is not recommended as the risks associated with non-compliance are not acceptable to JEN.

[5] AEMO | FASI Business case, https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/other_meetings/nem-reform-foundational-and-strategic-initiatives-focus-group/fs-final-business-case.pdf?la=en

<table>
<tr><td>Options Summary</td><td>The table below summarises the quantitative and qualitative differences between the analysed options over the 2026-31 period.
<table>
<tr><th>$2024</th><th>Capex</th><th>Opex</th><th>Totex</th><th>NPV</th><th>Residual Risk</th></tr>
<tr><td>Option 1</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Extreme</td></tr>
<tr><td>Option 2</td><td>$15,788,000</td><td>$340,000</td><td>$16,128,000</td><td>Not applicable</td><td>Low</td></tr>
<tr><td>Option 3</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Extreme</td></tr>
</table></td></tr>
<tr><td>What We Are Recommending</td><td>JEN recommends Option 2 as it considers that it best reflects good industry practice, is based on a reasonable estimation process and provides the lowest sustainable costs, with low residual risk.
This option comprises system and process changes required to implement the necessary modifications to accommodate for the IDAM, IDX and portal consolidation requirements.</td></tr>
<tr><td>Dependencies on other Investment Briefs</td><td>Not applicable.</td></tr>
<tr><td>Relationship to ICT Capital Forecast</td><td>The supporting modelling for this investment brief is contained in the following model: JEN – IT Investment Brief – Market Interface Technology Enhancements – Costs and Benefits Analysis Model</td></tr>
</table>

Attachment A – AEMO announcement to implement Changes

From: NEM Reform <NEMReform@aemo.com.au>
Sent: Thursday, July 11, 2024 3:51 PM
Cc: NEM Reform <NEMReform@aemo.com.au>
Subject: RE IDentity and Access Management (IDAM), Industry Data eXchange (IDX) and Portal Consolidation (PC) initiatives

Dear stakeholders,

Thank you for your ongoing support in the consideration of the IDentity and Access Management (IDAM), Industry Data eXchange (IDX) and Portal Consolidation (PC) initiatives.

As communicated recently by AEMO, the final business case has now received support from the NEM Reform Executive Forum, on 28 March, and has now been approved through AEMO's internal governance processes. No changes to the recommendations occurred during this process.

The release of the final business case completes this phase of the engagement. AEMO is in the currently in the process of having the attached final business case published to our website, for your ongoing reference.

Regarding next steps, AEMO has been progressing its planning activities to support the delivery of the approved business case, noting that a second decision point associated to IDX 'Transition' continues to be forecast for Q4 2025. These activities include the development of an implementation roadmap which will be presented at upcoming PCFs, which takes its intent from the business case's strawman roadmap but is updated for currency and detail.

These planning activities have also included preparation for the next phase of engagement with impacted parties. Technical consideration of these initiatives will now occur through a new working group, called the 'Market Interface Technology Enhancements Working Group (MITEWG)'. Call for nominations to the WG is expected to be sent out as early as tomorrow, with the initial session to occur in August.

AEMO looks forward to continuing to work with stakeholders in ensuring the successful delivery of these strategic initiatives.

Regards,

NEM Reform Program

AEMO

Australian Energy Market Operator
E NEMReform@aemo.com.au

Attachment B - High level system and process impacts

Impact on JEN - IDX

JEN's IT landscape which interfaces with AEMO's data exchange will need to be redesigned and rebuilt to support continued data exchange in the National Electricity Market, which includes JEN's:

- Gateway software
- API Gateway
- Market Transactions
- Updated schemas
- Updated integrations/interfaces and rules engine
- Procure new environments and licences
- Market reporting

Impact on JEN – IDAM

In summary, changes required to support AEMO's IDAM model are:

- additional SSO Licensing
- federation expansion
- introduction of entitlement assurance
- Audit Trail of user NEM user activities
- Multi Factor Authentication
- Automated Offboarding
- NEM system user identity
- NEM system entitlements
- organisational hierarchy
- Context Based Authentication rules
- Active Directory Users in Groups
- password resets
- auditing
- consent management

Impact on JEN – Portal consolidation

To continue participating in the National Electricity Market, JEN need to start using a single AEMO entry point to access the NEM systems, as AEMO reduces their "attack" surface area to lower the risk of cyberattack. This will provide more secure access to participate in the NEM. Key changes JEN must make include:

- JEN must access AEMO's MSATS via their Portal, which consolidates AEMO browser services
- JEN must consume AEMO's self-service functions related to MSATS access, which will be accessible via their consolidated Portal which consolidates AEMO browser services.
- JEN users of AEMO's consolidated Portal supporting the NEM will be able to personalise their view if they choose (for instance, to create shortcuts to web-applications).
- JEN users accessing the MSATS will access the tool from the internet using AEMO's preferred URL
- JEN must align with AEMO's rationalised authentication solution, where each user has a single account to access multiple browser services
- JEN must access MSATS using the range of browsers and device types AEMO has made to be compatible with their consolidated Portal.
- JEN must use AEMO's consolidated portal to access MSATS, as AEMO is rationalising its range of portals.