# Business Case Discussion – Session 6A

- Identity and Access Management (IDAM)

- Industry Data Exchange (IDX)

- Portal Consolidation (PC)

22 January 2024

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

**We pay respect to their Elders**
**Past and present.**

# Agenda

| # | Time | Topic |
|---|------|-------|
| 1 | 1:30 pm - 1:35 pm | Introduction |
| 2 | 1:35 pm - 3:30 pm | Business Case Summary<br>• Business Case will be taken as read by participants<br>• Videos addressing key Business Case points available [here](#)<br>• Summary will highlight key aspects of Business Case - Options Assessment and Recommendation<br>• Presentation will highlight areas we are seeking particular focus/input from participants |
| 3 | 3:30 pm - 4:15 pm | Questions and Discussion |
| 4 | 4:15 pm- 4:30 pm | Next Steps and Meeting Close |

**Supporting materials:**
• Appendix A: Competition law meeting protocol
• Appendix B:  AEMO Implementation costs approach
• Appendix C: Industry Implementation costs approach

# 1. Introduction
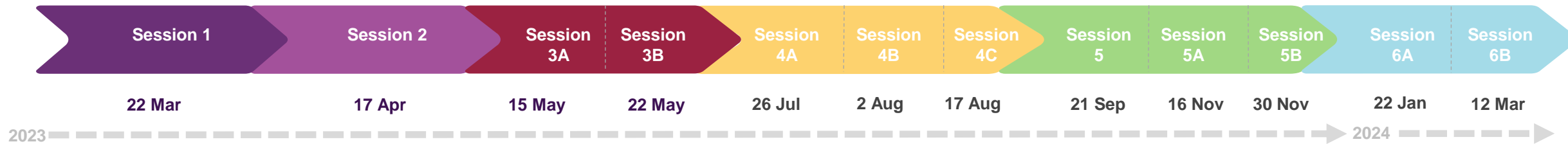
# Industry Consultation Update

**Preparation of business case continues.**

- AEMO has received thirteen stakeholder contributions to the costing exercise however two of those did not have sufficient information to be included in the cost extrapolation

- November industry workshops scheduled, allowing additional time and focus on cost and approach for AEMO and industry, reflecting the high level of interest in the topic.

**Published information and materials:**

- Focus Group webpage: https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/nem-reform-foundational-and-strategic-initiatives-focus-group

- Any queries can be directed to NEMReform@aemo.com.au

> Timing is indicative. Additional engagement with Executive forum members under assessment.

| Session 1 | Session 2 | Session 3A | Session 3B | Session 4A | Session 4B | Session 4C | Session 5 | Session 5A | Session 5B | Session 6A | Session 6B |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 Mar | 17 Apr | 15 May | 22 May | 26 Jul | 2 Aug | 17 Aug | 21 Sep | 16 Nov | 30 Nov | 22 Jan | 12 Mar |

2023 ————————————————→ 2024 ————————————→

| Session | Introduction | Discovery | Target State | Transition Strategy | Cost & Method | Business Case |
|---|---|---|---|---|---|---|
| **Agenda** | • Introduce initiatives<br>• Outline workshop plan | • Pain points and benefits<br>• Survey | • Concept walkthrough<br>• Survey | • Transition Strategy<br>• Impacts & Benefits<br>• Survey | • Industry and AEMO costs<br>• Assumptions, options and methodology | • Walkthrough of draft business case<br>• Assessment and completion |

# Objective of today's session

AEMO is working with the [FaSI Focus Group](#) to prepare a business case for implementing the Foundational and Strategic initiatives: IDAM, IDX and Portal Consolidation.

**This workshop aims to:**

- Provide an overview of the [draft working business case package](#) content:
  - Present content and structure
  - Present key content, including but not exclusive to the benefits, operational costs, assessment and recommendations
  - Resolve queries or raise actions for follow up to address questions raised
- Provide an opportunity to propose corrections and or amendments to the Business Case - assumptions, risks, costs, drivers, benefits etc.
- Enable Participants to take the draft working business case package back to organisations to finalise review and feedback

**The ask of participants:**

- Review the draft working business case package ahead of the session to identify any key areas requiring clarification, opportunities for improvement, or areas for discussion
- Watch the short 'bite-sized' videos posted on the FaSI Focus Group web page which present focussed material from the draft working business case package

# Actions

| ` | Topic | Action Description | Raised By | Owner | Status | Notes |
|---|-------|--------------------|-----------|-------|--------|-------|
| 1 | All | Detailed scope of Business Case Option1 | Multiple participants | AEMO | Closed | AEMO to present in this session |
| 2 | All | Provide a view of the mandatory cyber requirements | Adam Neilson | AEMO | Closed | Included in the draft business case package* |
| 3 | IDX | IDX Business Case Option 2b timeline | Rob Wilson | AEMO | Closed | Included in the draft business case package* |
| 4 | All | Benefits assessment of IDAM, IDX and PC | Yvonne Tuckett | AEMO | Closed | Included in the draft business case package* |
| 5 | IDX | Revise scope of IDX option 2 to address participants' concerns around reform roadmap congestion | Multiple participants | AEMO | Closed | Included in the draft business case package* |

*AEMO has published the draft business case package to the industry on 19th December 2023

Link to the draft business case package

# 2. Business Case Draft Package Summary

# 2.1 Background

**Subtitles**

\*Link attached

# Background Context

AEMO was established in 2009 and has since expanded its mandate and technology landscape to cover the NEM, WEM, and gas markets, leading to the use of diverse solutions by industry participants and AEMO in a fragmented technology environment. This has led to increased systems complexity and inefficiencies, and higher AEMO and Industry costs, exacerbated by a strong tendency of back-compatibility as new services are rolled out. As the energy transition rollout continues at pace, the market systems required a review to assess the ability to provide a foundation for future requirements.

Given the inflection point we are at as an industry, we believe that now is the time to assess whether strategic step-change investments in these foundational services is preferred over continuing to invest in tactical legacy software. This working draft business case aims to assess the benefits and costs of those different approaches.

## Key Drivers for Change

### Energy Industry Transformation

**Energy Transition** imposes the **most significant set of reforms** on the Australian energy industry since the creation of the NEM.

We are at a pivotal juncture: whether to allocate these resources **strategically** to provide a secure and fit-for-purpose technology foundation to deliver better consumer outcomes, or to take a **tactical, reactive and fragmented** approach, compounding complexity in AEMO and participant IT landscapes, increasing implementation and operational expenses and reducing agility to respond to change.

### Security Concerns

The interconnectivity of the energy sector and digitisation of the grid is **increasing the surface area** of potential vulnerabilities that can be exploited, and the impact if security is breached.

**Community expectations** and **government directives and legislation** impose additional accountabilities and responsibilities for AEMO and industry to safeguard the critical services we collectively operate and protect our customers from impact.

The presence of multiple routes for managing identities and access, coupled with non-standard data exchange protocols and patterns, existing alongside diverse entry points to AEMO services collectively represent an **unacceptably vulnerable landscape**.

### Industry Pain Points

The existing landscape of IDAM, IDX and PC requires industry participants to interact through different access points, using different protocols, formats and standards, and causing an inconsistent, fragmented and duplicated user experience when accessing AEMO's systems.

This leads to higher ongoing operational costs for AEMO in activities needed to support the performance of its functions. This has a cascading effect of administrative burden for the participants.

For example: current IDAM current services are disparate, requiring users to retain multiple sets of credentials, and AEMO's existing data exchange mechanisms use inconsistent standards, protocols and formats.
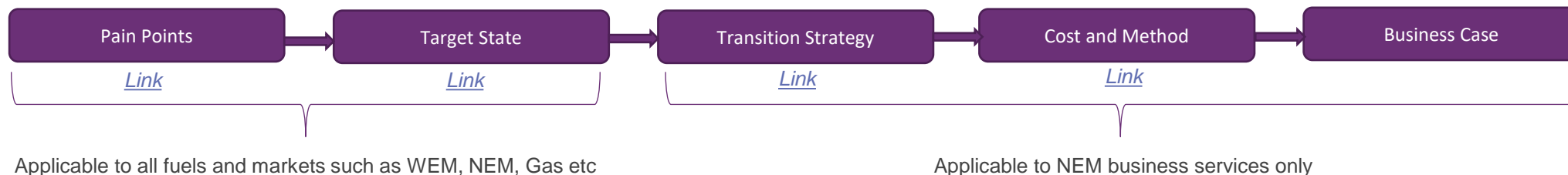
# Business Case Approach

**AEMO identified IDAM, IDX and Portal Consolidation as foundational initiatives that serve as prerequisites to the NEM Reform Implementation Program. These involve uplifting AEMO & participant systems to align capabilities with reform dependencies. The key outcome from these initiatives will be creating a fit for purpose, resilient and secure framework for existing market business services and provides the agility to support services for new NEM Reform Initiatives as well as an extensible framework for other energy markets.**

## Approach

AEMO has been collaborating with the industry participants (FaSI Focus Group) to develop a business case to assess the feasibility of implementing these three initiatives:  IDAM, IDX and Portal Consolidation.

This was completed over more than 6 months and more than 10 consultation workshops of on average 4 hours each:
1. Identification of current industry pain points relating to these domains
2. Development of conceptual target state solutions that would materially address those pain points, and refinement based on feedback
3. Transition Strategy covering guiding principles, sequencing and bundling of business services and prioritisation of tranches, including a flexible sunset period
4. Initial Implementation Cost Estimates and a methodology for assessing the business case
5. (This document) a working draft business case package

| Pain Points | Target State | Transition Strategy | Cost and Method | Business Case |
|---|---|---|---|---|
| Link | Link | Link | Link | Link |

Applicable to all fuels and markets such as WEM, NEM, Gas etc

Applicable to NEM business services only

# Identified Foundational Capability Gaps

**The absence of foundational capability to support new reforms was identified across three areas.**

## Identity and Access Management

**Problem Statement:**
AEMO's Identity and Access Management (IDAM) services are disparate, requiring 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) and are insufficient to meet new industry obligations introduced under the SOCI Act.

**What are we trying to achieve**
A unified mechanism to authenticate and authorise external identity when accessing AEMO services, consolidating and improving overall cyber security controls.

## Industry Data Exchange

**Problem Statement:**
AEMO's existing data exchange systems have been variously acquired over the last 10-15 years, and use inconsistent standards, protocols and formats. AEMO's markets are also undergoing significant transformation, resulting in new data exchange needs. AEMO introducing new data exchange patterns without a unified target state and roadmap is inhibiting participants from modernising their systems and quantifying the benefits of their investments.

**What are we trying to achieve**
A unified data exchange mechanism to support the secure and efficient exchange of data between energy stakeholders for new services required by NEM Reforms, existing legacy services and provide a framework extensible to other energy markets.

## Portal Consolidation

**Problem Statement**
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.
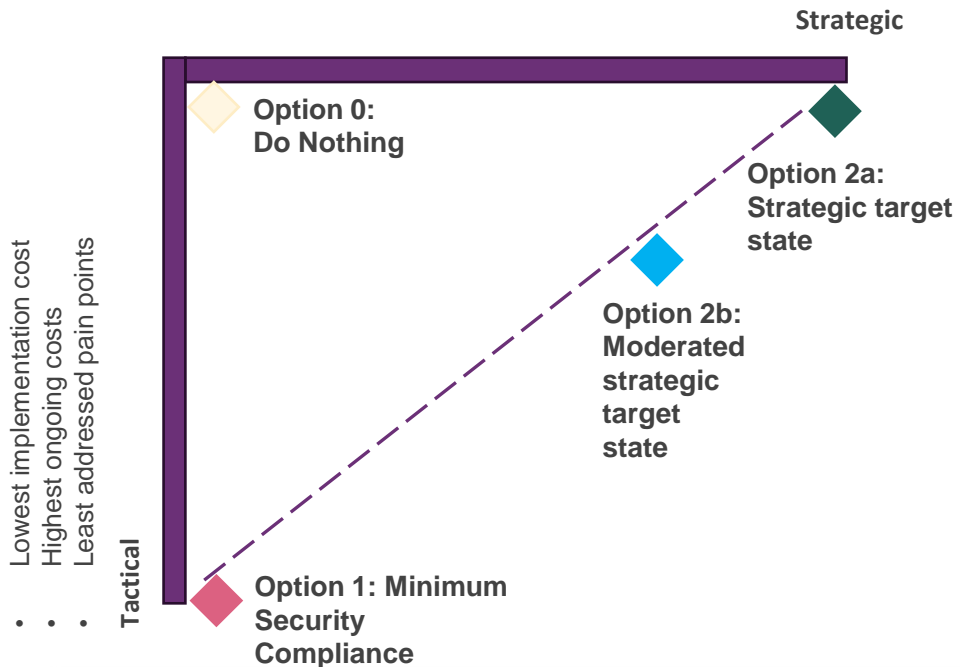
**What are we trying to achieve**
The aim of the Portal Consolidation project is to enable a unified stakeholder experience that hosts web applications. The portals framework is an enabling platform that supports energy market participants and other partners to consume AEMO browser services in a secure manner.

# Options Development

**We identified two main options which "bookend" the many possible options available: A tactical "minimum compliance" Option 1 and the target state solution Option 2a. Other available hybrid options could be finessed during Delivery.**

- Highest implementation cost
- Lowest ongoing costs
- Addresses pain points

**Strategic**

Option 0:
Do Nothing

Option 2a:
Strategic target state

Option 2b:
Moderated strategic target state

Lowest implementation cost
Highest ongoing costs
Least addressed pain points

**Tactical**

Option 1: Minimum Security Compliance

| Option | Description |
|---|---|
| Option 0 – Do Nothing | We conducted a risk assessment against current system landscape & found this option unacceptable – our SOCI compliance obligations **would not be met** & cyber risks are **unacceptably high.** This option has therefore been discounted from further analysis. |
| Option 1 – Minimum Security Compliance | This option addresses the most egregious security risks from Option 0 and puts in controls to address remaining risks. |
| Option 2b – Strategic target state moderated by IDX payload (retains asexml) | This option arose during industry consultation as a potential hybrid option that dilutes the full benefits of target state in order to reduce estimated costs. It does not address all industry pain points. |
| Option 2a – Strategic target state | This is the strategic target future state, as collaboratively designed with industry to address identified industry pain points, enable deliverability of future reforms and materially address security risks. |

While there are many hybrid options that could be considered reflecting different scope parameters, to simplify the analysis of the business case we considered options representing the minimum and maximum scope.

As the target state sets a 'high' bar in terms of cost, it is anticipated there is only upside should opportunities to rationalise or change scope be identified during Delivery, especially during the Design and Consultation phases.

# 2.2 Scope

*Link attached

# Scope of Option 1

As a market operator, AEMO is subject to security regulatory obligations under the Commonwealth Security of Critical Infrastructure Act (SOCI). **Option 1 aims** to build an MVP focussed on uplifting the security posture addressing legislative-driven requirements such as SOCI, AESCSF. Option 1 focuses on transitioning the services of the **NEM market only**.
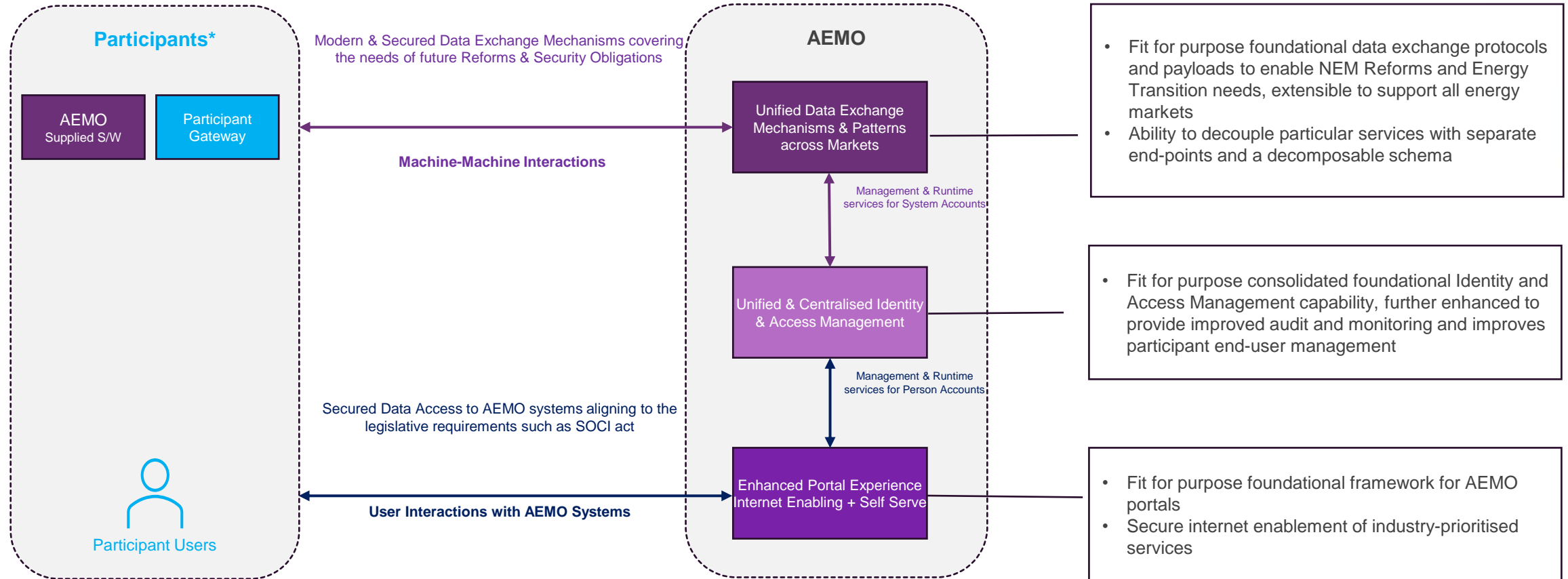
**Indicative\* Scope of Option 1**

| In Scope | Out of Scope |
|---|---|
| **IDAM** | **IDAM** |
| ✓ **Implement Multi-Factor Authentication** (MFA) to enable two-step authentication for the browser services | ✗ **Consolidation of identity and entitlement stores** within AEMO |
| ✓ Enhance self-certification management process | ✗ **De-duplication of user accounts** |
| | ✗ Support for **identity federation** |
| **IDX** | ✗ **Self-servic**e (for signup, password reset) |
| ✓ **Enhance the security of the data exchange**: | ✗ **Advanced data sharing** capabilities |
| a) Move from FTP to SFTP for file-based transfer | |
| b) Move to OAuth for API interactions | **IDX** |
| • Basic Auth to OAuth | ✗ Standing up **foundational capabilities** for upcoming reforms |
| • API keys to OAuth | ✗ Transition of the interfaces from other markets and fuels |
| • Cert-based to OAuth | |
| c) Deliver **secure solution for large file transfer** e.g. MSATS snapshot reports | **PC** |
| | ✗ Browser services will not be internet-enabled |
| **PC:** | |
| ✓ Enhance **existing browser services to integrate with IDAM** to address legislative requirements | |
| ✓ **Retire standalone MSATS browser** URL, now available in Markets Portal | |

*\*Currently, **AEMO is undertaking a risk assessment as a part of cyber strategy development to identify the risk related to inadequate security governance and cyber security posture**. Option 1 scope is an indicative scope and will be finalised once the risk assessment is completed*

# Strategic Target State (Option 2)

**Target state was developed in collaboration with industry, and provides a strategic, "secure by design" foundation for identity management, data exchange and portal access services to AEMO and the industry. It delivers a 'step-change' capability uplift and addresses current industry pain points .**



## Participants*

| AEMO Supplied S/W | Participant Gateway |
|---|---|

Modern & Secured Data Exchange Mechanisms covering the needs of future Reforms & Security Obligations

**Machine-Machine Interactions**

Participant Users

Secured Data Access to AEMO systems aligning to the legislative requirements such as SOCI act

**User Interactions with AEMO Systems**

\* Includes Participants, Service Providers, 3rd parties, non-Participants etc

## AEMO

**Unified Data Exchange Mechanisms & Patterns across Markets**

Management & Runtime services for System Accounts

**Unified & Centralised Identity & Access Management**

Management & Runtime services for Person Accounts

**Enhanced Portal Experience Internet Enabling + Self Serve**

- Fit for purpose foundational data exchange protocols and payloads to enable NEM Reforms and Energy Transition needs, extensible to support all energy markets
- Ability to decouple particular services with separate end-points and a decomposable schema

- Fit for purpose consolidated foundational Identity and Access Management capability, further enhanced to provide improved audit and monitoring and improves participant end-user management

- Fit for purpose foundational framework for AEMO portals
- Secure internet enablement of industry-prioritised services

# Full Scope of Option 2: IDAM, IDX and PC

AEMO has received an industry-wide agreement to unify Identity and Access Management platforms, as well as Data Exchange patterns and protocols across all jurisdictions, markets, and fuels. However, it is important to note that the transition to the target state will only pertain to the NEM services. This business case outlines the costs associated with developing the target state applicable to all fuels and markets, but the transition will only be for the NEM business services.

New upcoming initiatives leverage the target/transition state protocols and patterns. Migration of interfaces beyond the scope of NEM reform will be implemented via other business reforms.

| IDAM Scope Option 2a | IDX Scope Option 2 | PC Scope Option 2a |
|---|---|---|
| • Define & implement target state identity and access management solution<br>• Implement mandatory cybersecurity uplifts (such as SOCI) and advanced security capabilities such as identity federation, context-based authentication<br>• Unify the identity and entitlement management stores within the NEM and lay the foundation to extend this capability to other markets such as Gas and WEM through other market initiatives<br>• De-duplicate / consolidate the user accounts, providing the capability to use a single account to access business functions across multiple markets<br>• Build Organisation Hierarchy<br>• Enhance data-sharing capabilities to provide advanced data-sharing permissions<br>• Enhance Participant Admin experience e.g. Assign multiple PIDs to a role minimising creating duplicate roles at an organisation level when an organisation has multiple PIDs<br>• Basic and advanced Identity & Entitlement Management Governance & Assurance | • Enhance data exchange cyber controls implementing the legislative driven requirements and obligations such as SOCI, AESCSF<br>• Define and implement target state channels, protocols, patterns and payload standards<br>• Unify the data exchange mechanisms across markets and fuels. Define the unified data exchange mechanisms for future Reforms<br>• AEMO data exchange software is enhanced to provide data exchange mechanisms that are defined in the target state architecture; minimising the gateway development costs for the industry covering all the channels that are defined in the target state architecture<br>• Transition the current state NEM interfaces to target state; sunset after an industry agreed timeframe<br>• NEM Retail & Wholesale payload formats for the existing interfaces align to the target state payload standards i.e. JSON payload structure<br>• Future Reform initiatives leverage the target state patterns & standards including the payload formats i.e. implements JSON payload structure | • Enable a single pane of glass; providing a pathway for future unification across fuels and markets<br>• Implement the capabilities defined in target state architecture e.g. self-serve capabilities, personalised features<br>• Enable browser services to be accessible via the internet<br>• Single identity for various browser services/web apps<br>• Unify the user experience<br>• Enhance user documentation |

*NEM reform initiatives may change their timeline, could be removed or new reforms could be added. Where this occurs, an assessment will be made for impact to the roadmap for these 3 initiatives*

# Scope of IDX Option 2b

Option 2b is the IDX target state moderated by the retention of the Legacy payloads. This option arose during industry consultation as a potential hybrid option that dilutes the full benefits of the target state to reduce estimated costs

## IDX Option 2b

The scope of Option 2b is similar to that of Option 2a as it involves building a foundational framework. However, in Option 2b, the NEM Retail & Wholesale payload formats for the existing interfaces will not align with the target state payload standards. This means that the existing NEM Retail interfaces will continue to use aseXML, and the NEM Wholesale interfaces will continue to use AEMOCSV formats.

Future reform initiatives will leverage the target state patterns and standards, including the payload formats.

| Descriptions | Option 2A | Option 2B |
|---|---|---|
| **IDX:** Foundation Build | Identical Scope for Option 2A & 2B ||
| **IDX:** Target State Data Definitions | Identical Scope for Option 2A & 2B ||
| **IDX:** Data Exchange Mechanisms (e.g. Security, Channels, Protocols) for legacy interfaces | Identical Scope for Option 2A & 2B ||
| **IDX:** Payload Formats for legacy interfaces | Aligns to Target State Definitions | Retains Legacy Payload Formats |

# 2.3 Options Assessment

*Link attached

# Framework for Assessing Business Case Options

| Assessment Categories | Description | Assessment Metric |
|---|---|---|
| **Residual Security Risk** | This category assesses the risk that remains in the landscape even after meeting all the minimum legislative security controls and compliance. | **Maturity level**<br>• Level 1 – Reactive and inconsistent<br>• Level 2 – Minimum capability addressing only fundamental requirements applied to technologies and processes<br>• Level 3 –Defined and Proactive: Align to strategic target state for the new business services only. Current services are not transitioned.<br>• Level 4 – Strategic, current NEM landscape transition with some legacy footprints: to optimise the cost-benefit realisation<br>• Level 5 - Strategic, current NEM landscape fully transitioned to target state: aligned to the needs of the future reforms |
| **Deliverability of Future reforms** | The energy transition is rapidly transforming the system and markets. This category assesses the speed, scalability and flexibility to implement future reforms as new markets mature and continue to change the energy landscape. | |
| **Addressing Industry Pain points** | This category evaluates for addressing industry pain points for ongoing operational cost, unifying data exchange mechanisms across markets, security controls, improved efficiency, system reliability and user experience. | |
| **Cost to Deliver** | Immediate implementation cost and cost to deliver future reforms | **Immediate implementation cost** : $$ value<br><br>**Cost to deliver future reforms**<br>• Cost for confirmed initiatives: $$ value<br>• Cost for likely initiatives: % of total cost |
| **Operational Cost** | Ongoing operational cost for foundational and strategic initiatives. | **Delta Operational Cost for new capabilities and legacy services** |

# Assessing Options against key drivers

**AEMO's assessment is that Option 2 is superior to Option 1 in (i) addressing security requirements, (ii) enabling future reforms to be delivered and (iii) addressing identified industry pain points.**

Legend:
- Option 1
- Option 2a
- Option 2b

**Identity and Access Management**
- Option 1
- Option 2a

**Industry Data Exchange**
- Option 1
- Option 2a
- Option 2b

**Portal Consolidation**
- Option 1
- Option 2a

Chart columns: Addressing Residual Security Risk*, Deliverability of Future Reforms*, Addressing Industry Pain points*

(Portal Consolidation / Deliverability of Future Reforms cell marked: *NA*)
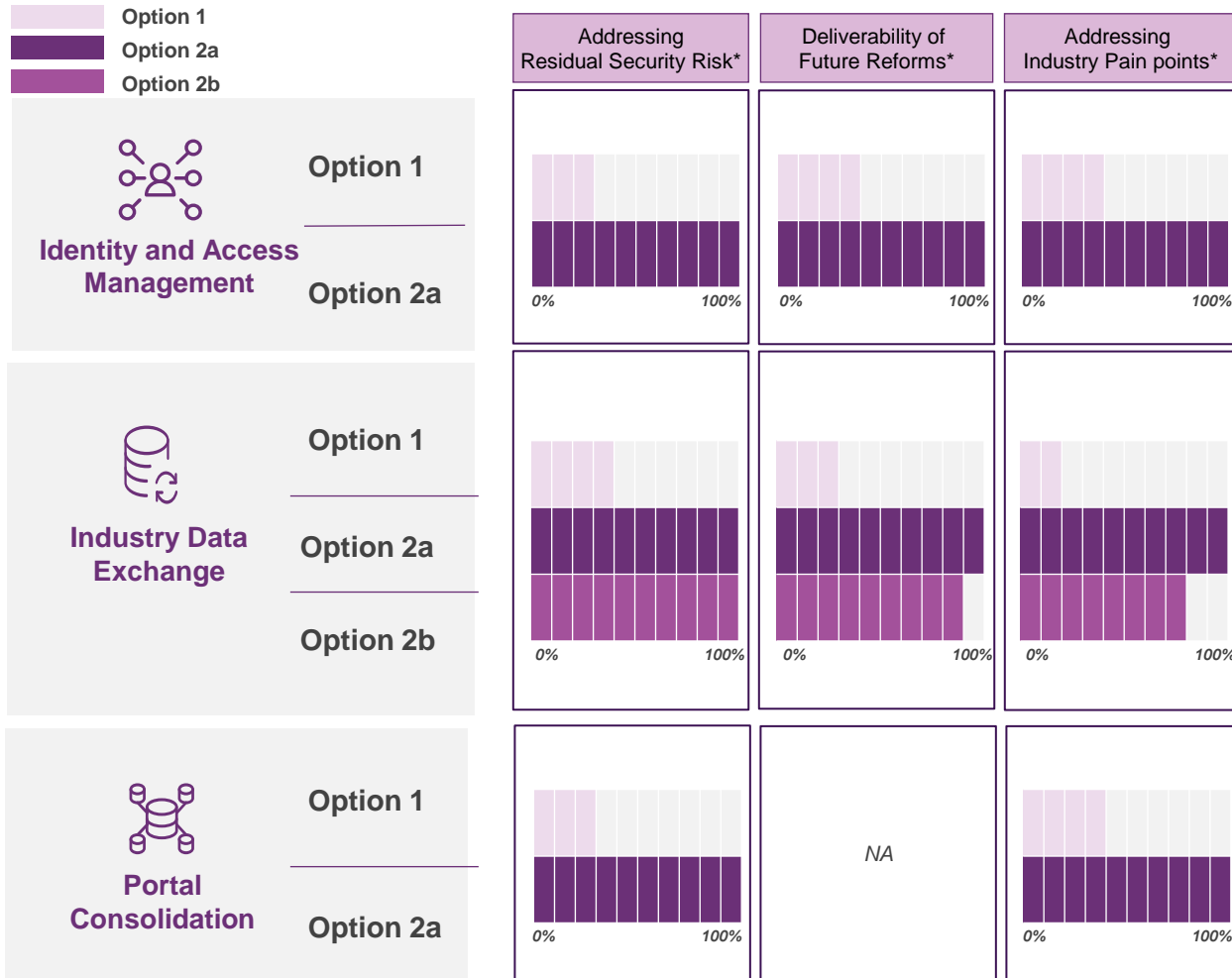
## Key Notes

**Addressing Residual Security Risk**
- Option 1 addresses security pain points from a minimum compliance perspective. It still retains a large surface area of multiple identity systems, multiple data exchange protocols and technologies, and multiple entry points to AEMO's web presence.
- Option 2 takes a strategic, *'secure by design'* view to identity management, data exchange and portal access needs. It *unifies* platforms and protocols, thereby reducing our attack surface area

**Deliverability of Future reforms**
- Option 1 does not provide a holistic platform to support upcoming NEM2025 Reforms with respect to identity management and data exchange. As immediate examples, DER Data Hub and the requirement for Power Quality data from the Metering Services Review would need to be developed independently under Option 1.
- Option 2 for IDAM and IDX is explicitly designed to provide this leverageable foundational capability
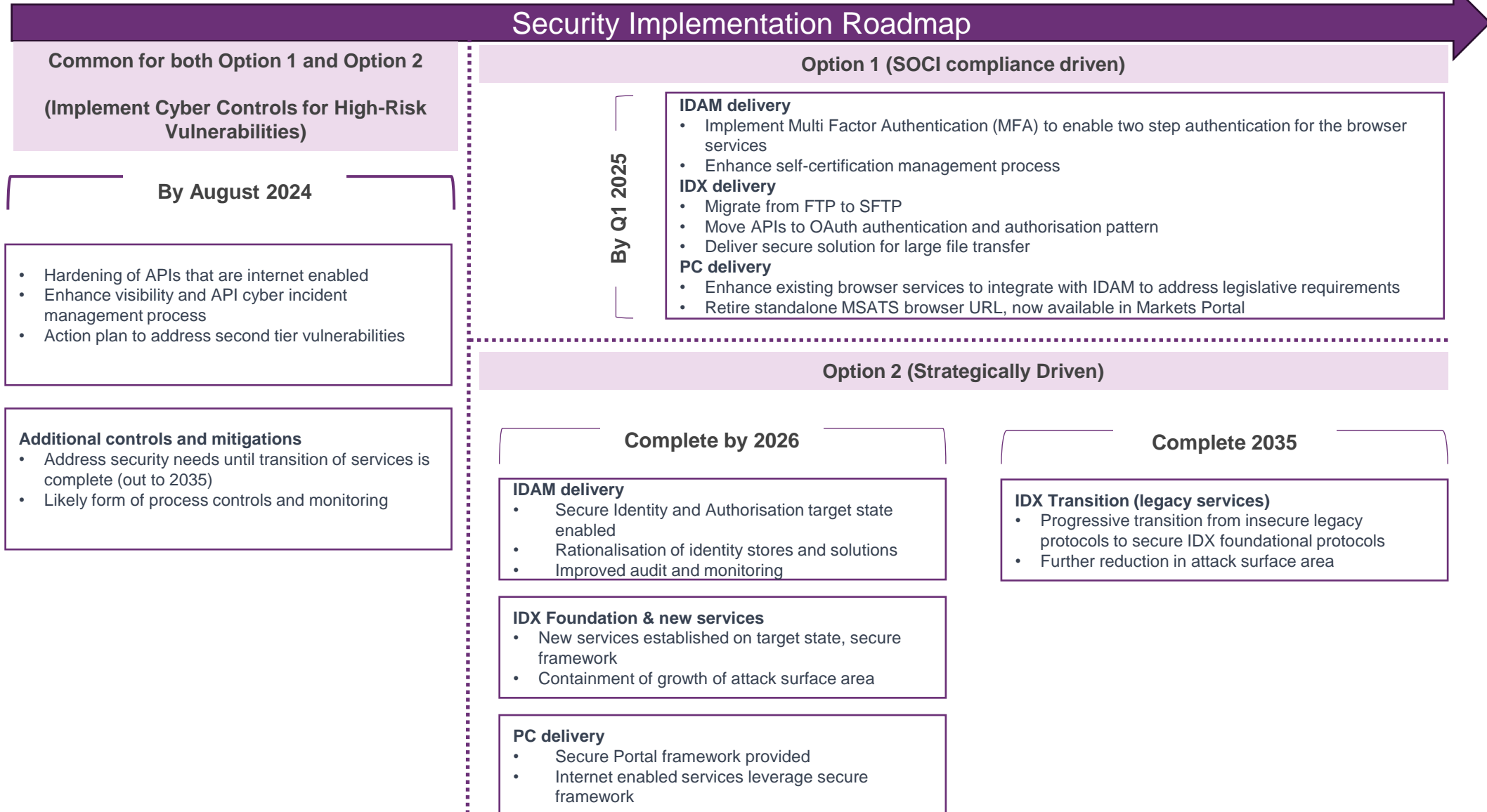
**Addressing Industry Pain Points**

- Option 2 was scoped in collaboration with industry to fully address identified industry pain points.
- Option 1 addresses a very limited number of pain points

*Percentages are derived from individual option ratings in relation to the overall score – please refer to 'option assessment' section for more details*

# Addressing residual security risks

**Both Option 1 and Option 2 address AEMO and industry's SOCI security compliance obligations, and both would need work to address immediate security risks by August 2024. Option 2 provides further reductions in residual security risk beyond bare minimum compliance.**

## Security Implementation Roadmap

### Common for both Option 1 and Option 2

**(Implement Cyber Controls for High-Risk Vulnerabilities)**

#### By August 2024

- Hardening of APIs that are internet enabled
- Enhance visibility and API cyber incident management process
- Action plan to address second tier vulnerabilities

**Additional controls and mitigations**
- Address security needs until transition of services is complete (out to 2035)
- Likely form of process controls and monitoring

### Option 1 (SOCI compliance driven)

#### By Q1 2025

**IDAM delivery**
- Implement Multi Factor Authentication (MFA) to enable two step authentication for the browser services
- Enhance self-certification management process

**IDX delivery**
- Migrate from FTP to SFTP
- Move APIs to OAuth authentication and authorisation pattern
- Deliver secure solution for large file transfer

**PC delivery**
- Enhance existing browser services to integrate with IDAM to address legislative requirements
- Retire standalone MSATS browser URL, now available in Markets Portal

### Option 2 (Strategically Driven)

#### Complete by 2026

**IDAM delivery**
- Secure Identity and Authorisation target state enabled
- Rationalisation of identity stores and solutions
- Improved audit and monitoring

**IDX Foundation & new services**
- New services established on target state, secure framework
- Containment of growth of attack surface area

**PC delivery**
- Secure Portal framework provided
- Internet enabled services leverage secure framework

#### Complete 2035

**IDX Transition (legacy services)**
- Progressive transition from insecure legacy protocols to secure IDX foundational protocols
- Further reduction in attack surface area

# Addressing Industry Pain Points

**Only Option 2 target state solution addresses all the industry pain points identified through workshops. Option 1 partially addresses security-related pain points but otherwise does not provide benefits to industry.**

**Identity and access management**

**Industry Data Exchange**

**Portal Consolidation**

### Industry Key Pain Points Addressed by Both Options 1 & 2

Need for Multi-factor authentication to enhance security

*Partially*

Inconsistent authentication and decentralised authorisation

### Industry Key Pain Points Addressed by Option 2 Only

| | | |
|---|---|---|
| Multiple credentials required to access different AEMO systems | Lack of reporting capabilities to conduct periodic assessments | Lack of Federation |
| Inadequate self-service capabilities e.g.: Password reset | Lack of pre-defined entity catalogue and role catalogue | Inability to automate user offboarding |
| Multiple patterns for the same regulated transactions | Lack of consistent standards across Systems / Fuels / Jurisdictions | Management of multiple patterns, most of which have had zero uptake |
| Mandatory aseXML schema updates are costly | Need for improved speed to market of business and regulatory changes | No option to configure message delivery orders |
| Inconsistent authentication and decentralised authorisation | Suboptimal reliability of service for automated market interfaces | |
| AEMO Browser services exposed over disparate range of portals | Inconsistent user experience | Maintenance of the disparate portals is costly |
| Inadequate self-service capabilities e.g.: password reset | Lack of cross-browser capability | Lack of personalisation features |

*Fully*

23

# Addressing Future Deliverability of Reforms

**Building foundational capability in a strategic way (Option 2) builds capability that we know can be significantly leveraged in two immediate reforms, and that we can reasonably assume will be utilised in future reforms. Option 1 does not deliver any of these benefits.**

## Known Related Upcoming reforms

**DER Data Hub**

The DER Data Hub is a *new* data exchange mechanism for DER-related transactions (e.g., DOEs, network constraints). Regardless of its exact form and timing, industry will need a modern and secure exchange mechanism for this

**Metering Services Framework**

The rollout of smart meters is to start in mid-2025 and end in 2030. Basic Power Quality data will need to be transacted between Metering Providers and Distributors. This represents significant volumes of data.

**IDX Option 2a will provide data exchange protocols that can securely and reliably handle the data exchange required in these reforms.**

**IDAM Option 2a provides a solution to store and manage identities of VPP's and others, required for DER Data Hub.**

## Likely Related Upcoming reforms

**Integrating Price Responsive Resources (Scheduled Lite)**

**Other reforms in the NEM2025 program**

**Unlocking CERs through flexible trading (FTA2)**

**We have ~$220M budgeted for AEMO to implement NEM2025 reforms over the next 5 years on the assumption that a strategic foundational capability is available.**

**We estimate an uplift of 10% associated with these new reforms relate to data exchange, and 5% with identity management that would be required if Option 2 does not proceed.**

## Unknown future reforms

**e.g., ICF's requesting modifications to retail transactions**

**Rule changes resulting in changes to EMMS**

**We estimate ~$100K of schema change related costs per year can be avoided if we can leverage foundational capabilities developed in Option 2a**

# Future Extensibility and "Upside"

**For all three initiatives of IDAM, PC and IDX Foundation, Option 1 has inherent uncertainty that could require further (unplanned) investment and constrained benefit opportunities while Option 2 target state has potential upside benefits. Foremost among these are the opportunities to extend to WEM and gas markets.**

| Dimension | Option 1 | Option 2 |
|---|---|---|
| **Risk of increased complexity identified during design / build** | In Option 1, the risk is inherent as a result of uplifting multiple legacy technology platforms – custom, legacy systems tend to have unidentified complexities | Option 2 target state architecture provides an agile, extensible framework that is 'secure by design', hence the risk to deliver new capability is contained |
| **SOCI requirements may increase as the vulnerability /risk assessments continue to be conducted** | Option 1 leverages legacy platforms and is likely to drive further investment due to the reactive design | Option 2 is 'Secure by design' and investment in new capability reduces risk of additional investment |
| **Implications for other energy markets** | Option 1 would require duplicated investment to uplift technology stacks in other markets | Option 2 provides a framework that can be leveraged by other markets at lower cost. As an example, we know that WEM is looking to develop DER data hub-related transactional capability. |
| **Scalability and Flexibility** | Option 1 has no provision to support increasing digitisation of the energy landscape. Future reforms would require uplifting the systems in silo and duplicating efforts and could also pose risks that current systems are not prepared to meet the rapid transformation. | The Framework in Option 2 is extensible to support non-market interactions and increasing digitisation of the energy landscape. The need for this will grow with the increasing digitization of the energy landscape (e.g., AER can leverage this when interacting with participant organisations) |

# 2.4 Financial Assessment and IDX Phased Investment

AEMO

*Link attached

# Financial Assessment: Full Scope Delivery (Industry-wide)

For IDAM and PC, Option 2 strategic target state compared to Option 1 addresses the key drivers at a delta TCO of $40M[1] and $17M respectively – this is a conservative (high watermark) estimate given industry cost impacts associated with IDAM Option 1 and industry cost savings (benefits) associated with IDAM and PC have not been quantified. IDX Option 2 compared to Option 1 has a delta TCO of $200M, due primarily to the costs associated with migrating legacy services.

| | | AEMO Costs | | Industry Costs | |
| --- | --- | --- | --- | --- | --- |
| | | Implementation | TCO | Implementation | TCO |
| **Identity and Access Management** | Option 1 | $4M | $20M | $2M | *Costs expected but unquantified* |
| | Option 2a | $21M | $27M | $35M | *Cost-savings expected but unquantified* |
| **Industry Data Exchange** | Option 1 | $10M | $45M | $73M | *Costs expected but unquantified* |
| | Option 2a | $51M | $69M | $249M | *Cost-savings expected but unquantified* |
| | Option 2b | $42M | $60M | $174M | |
| **Portal Consolidation** | Option 1 | < $1M | $2M | < $1M | *n/a* |
| | Option 2a | $6M | $7M | $13M | *Cost-savings expected but unquantified* |

## Recommendations

**PROCEED** with IDAM Strategic target state, conservative industry-wide delta TCO of $40M is justified by the reduction in residual security risk and industry pain point benefits.

**UNABLE TO RECOMMEND TO FULLY PROCEED AT THIS STAGE** – Industry cost impacts relating to transition reflect a high level of uncertainty, recommend a reconsideration of investment approach (see following slide)

**PROCEED** with PC strategic target state, conservative industry-wide delta TCO of $17M is justified by the reduction in residual security risk and industry pain point benefits.

1. All financial figures presented on this slide have a +/- of 40%

# IDX: addressing cost uncertainty & reform delivery congestion

**AEMO recognises that industry costs & associated work for IDX – specifically the migration of legacy services - are material in the context of a congested reform delivery agenda, particularly 2025. We conducted a scope re-assessment of IDX to differentiate between scope required to facilitate upcoming reforms (IDX Foundation), and the migration of legacy services (IDX Transition). We recommend a phased investment approach wherein IDX Foundation proceeds and the decision for transition of legacy services is deferred to Q4 2025.**
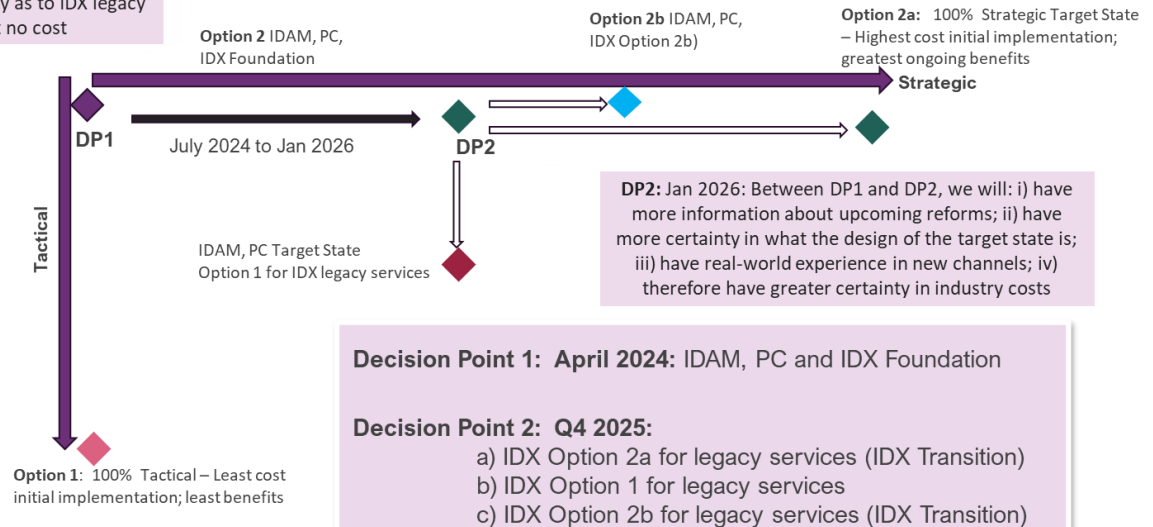
## Key Considerations

- Immediate term NEM Reforms (DER Data Hub and Metering Services Review) require new data exchange capability

- Industry participants have identified significant cost uncertainty in IDX Transition (migrating of legacy services), which represents the majority of IDX industry costs

- Substantial reform agenda over 5 years, particularly high delivery congestion in 2025.

- Historically, similar industry-wide changes addressing legacy services are difficult to justify without associated functional benefits for customers. E.g. Open Banking – linked technical uplifts with immediate functional customer benefits such as Osko fund transfers

Recommendation: Phase IDX investment decision and scope across **two decision points**:

- **DP1**: **IDX Foundational** – scope is to build capability that efficiently supports upcoming new reforms in a secure and extensible way. This does not impose an impact to the transition timeline under DP2.

- **DP2: IDX Transitional (New standalone business case in Q4 2025)** – scope addresses the migration of legacy services. Deferring until Q4 2025 will enable a business case to be developed and decision made with greater certainty of costs and knowledge of upcoming reforms to inform a transition strategy.



**DP1:** Q1 2024 (business case 1): still preserves optionality as to IDX legacy services at no cost

Option 2 IDAM, PC, IDX Foundation

Option 2b IDAM, PC, IDX Option 2b)

**Option 2a:** 100% Strategic Target State – Highest cost initial implementation; greatest ongoing benefits

**Strategic**

DP1

July 2024 to Jan 2026

DP2

Tactical

IDAM, PC Target State Option 1 for IDX legacy services

**DP2:** Jan 2026: Between DP1 and DP2, we will: i) have more information about upcoming reforms; ii) have more certainty in what the design of the target state is; iii) have real-world experience in new channels; iv) therefore have greater certainty in industry costs

**Option 1:** 100% Tactical – Least cost initial implementation; least benefits

**Decision Point 1: April 2024:** IDAM, PC and IDX Foundation

**Decision Point 2: Q4 2025:**
a) IDX Option 2a for legacy services (IDX Transition)
b) IDX Option 1 for legacy services
c) IDX Option 2b for legacy services (IDX Transition)
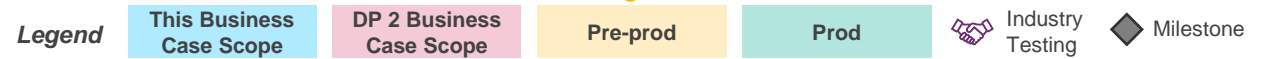
# Phased Investment Delivery Timeline

This timeline was developed in collaboration with industry. To facilitate a phased investment decision approach, we have modified the IDX timeline to divide activities into two decision points – Decision Point 1 (this business case, Q1 2024) for IDX Foundation and Decision Point 2 (a new business case, Q4 2025) for IDX Transition. This has involved a sharp reduction in scope for Tranche 0b to minimal activities only.



| Calendar years | 2023 | 2024 | | | | 2025 | | | | 2026 | | | | 2027 | | | | 2028 | | | | 2029 | 2030 | 2031 | 2032 | 2023 | 2034 | 2035 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Sunset Years | | | | | | |

**Portal Consolidation**

Tranche 0: PC Foundation phase

The Consolidated Portal utilises an IDAM solution for authentication.

Tranche 1: Advanced capabilities

Tranche 2: Internet Enabling

Tranche 3: Internet Enabling

Tranche 4: Internet Enabling

**IDAM**

Tranche 0: IDAM Foundation phase

New Service Account Credentials AuthN & AuthZ mechanisms for Data Exchange

Tranche 1a: Progressive migration

Tranche 1b: Enable Entitlement management capabilities

◆ Enable Identity and Entitlement Management

Tranche 2a: Advanced capabilities

Tranche 2b: Retire

**This Business Case** : Full scope of IDAM and PC, Foundation scope only of IDX

**IDX**

DP1

Tranche 0: IDX Core Foundation Phase

Tranche 0a: Build Base IDX + AEMO Gateway Software

Tranche 0b: Foundation consultation

Tranche 0b: Pilot Lite

**Decision Point 1:** This business case

DP2*

To facilitate a deferred IDX Transition decision point, we have divided what was previously Tranche 0b into two components – a minimum Tranche 0b and a Tranche 0c. Total scope has not changed, rather the scope has been divided to enable a clear DP2. The approach for the new minimum Tranche 0b is to target only minimum (1 per domain) business services for pilot, define minimal schema required for design to be understood in principle, and "AEMO-led" framing of strawman for discussion, in order to provide cost and effort efficiencies for participants.

Tranche0c: Wholesale Define schemas, business endpoints

Tranche0c: Retail Define schemas, business endpoints

Tranche 0c: Pilot - Build

Pre-Prod

Prod

Tranche 1: Wholesale

Pre-Prod

Prod

Wholesale Sunset Period (3 years)

Tranche 2: Retail

Pre-Prod

Prod

Retail Sunset Period (7 years)

Tranche 3: Non-Retail B2B

Pre-Prod
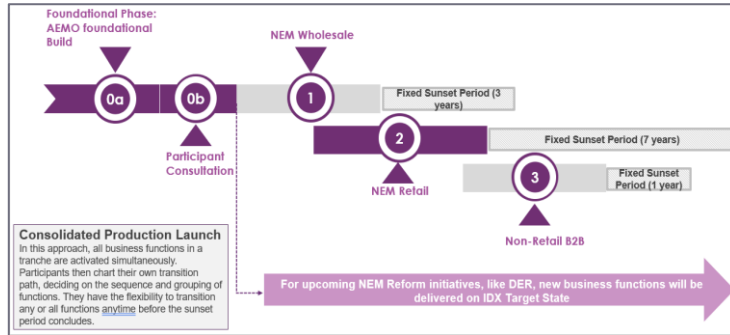
Prod

Sunset Period (1 year)

***Decision Point 2:** The timeline for activities listed within DP2 Business Case: IDX Transition would be finalised as part of the business case associated with DP2. Note that this revised timeline does not extend the previously socialised timeline in total.

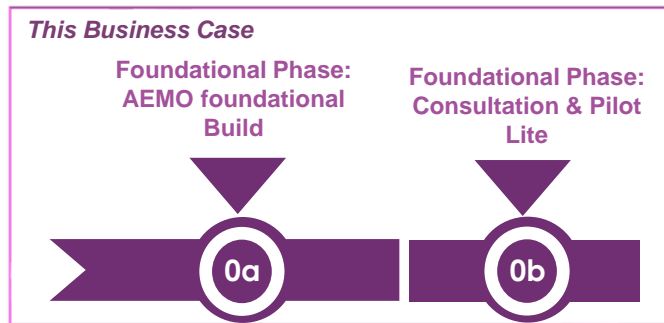**DP 2 Business Case**: IDX Transition scope only*

**Legend**

| This Business Case Scope | DP 2 Business Case Scope | Pre-prod | Prod | Industry Testing | Milestone |

# Phased Investment for IDX Option 2 Scope



*Initial View: IDX Transition Strategy*

**This Business Case**

**Foundational Phase: AEMO foundational Build** — **0a**

**Foundational Phase: Consultation & Pilot Lite** — **0b**

***IDX Phased Investment:*** To facilitate a deferred IDX Transition decision point, we have divided what was previously Tranche 0b into **two components** – a minimum **Tranche 0b** and a **Tranche 0c**. The total scope has not changed, rather the scope has been divided to enable a clear DP2. The approach for the new minimum Tranche 0b is to target only minimum (1 per domain) business services for pilot, define minimal schema required for the design to be understood in principle, and "AEMO-led" framing of strawman for discussion, in order to provide cost and effort efficiencies for participants.

*Decision Point (DP)*

*DP2 Business Case*

*NEM Wholesale*

**0c** — **1** — **Fixed Sunset Period (3 years)**

**Transition Consultation**

**2** — **Fixed Sunset Period (7 years)**

**NEM Retail**

**3** — **Fixed Sunset Period (1 year)**

**NEM Non-Retail B2B**
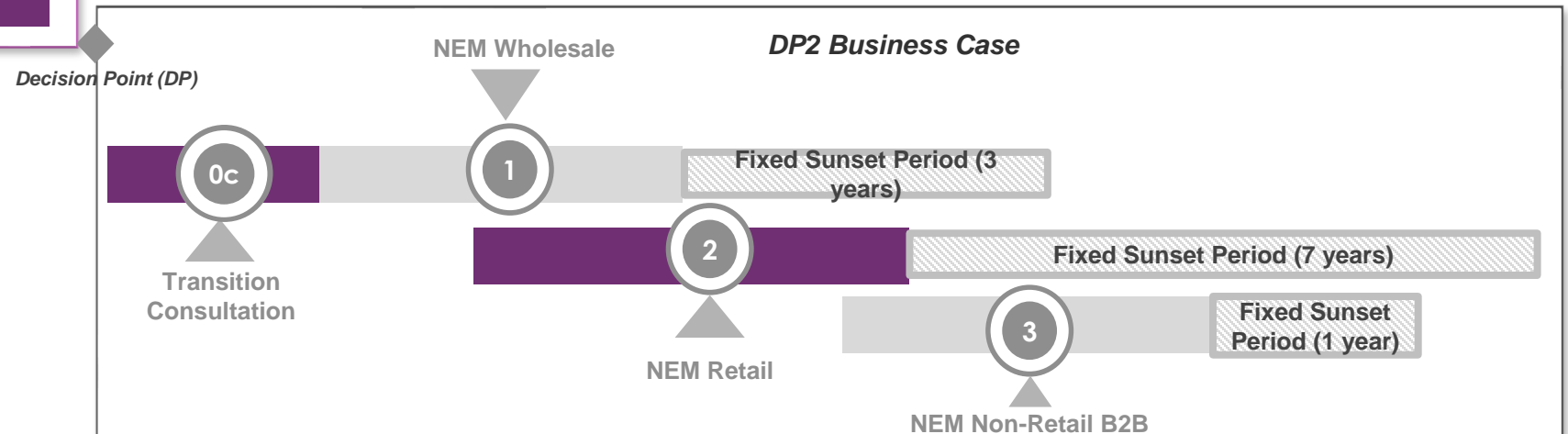
# Revised Scope IDX Option 2

To address participants' concerns around reform roadmap congestion, AEMO has split the scope of IDX option 2 into two components: **IDX Foundation** and IDX Transition. The total scope has not changed, rather the scope has been divided to enable a clear Decision Point 2.

## This Business Case — IDX Foundation

### Tranche 0a: AEMO foundational Build

1. In consultation with the industry, define target state channels, protocols, patterns for the upcoming reforms to leverage
2. Implement foundational infrastructure
3. Enhance data exchange cyber controls implementing the legislative driven requirements and obligations such as SOCI, AESCSF
4. Define and implement technical standards for the upcoming reforms to leverage (the actual business function schemas would be defined as part of the reforms that leverage IDX)

### What does the Industry need to do?

1. Contribute subject matter expertise to business and technical working group to build the foundation
2. Review and approve business requirements developed by IDX working groups
3. Engagement on readiness and testing approach

### Tranche 0b: Consultation & Pilot Lite

1. In consultation with the industry, define the scope of the pilot lite
2. AEMO data exchange software is enhanced to provide data exchange mechanisms that are defined in the target state architecture; minimising the gateway development costs for the industry covering all the channels that are defined in the target state architecture
3. Implement pilot lite

### What does the Industry need to do?

1. Agree on pilot lite business functions and success metrics
2. Choose if to implement/upgrade AEMO Gateway software
3. Set up participant pilot lite capability
4. Conduct pilot; share findings with IDX working group(s)

AEMO will propose a process and timeframe outside of this business case to progress a further investigation into the scope and timeline for transitioning existing business services for providing an input to DP2 Business Case

## DP2 Business Case — IDX Transition

### Tranche 0c: Transition Consultation

1. Define the IDX roadmap (timeline for transitioning existing business services, sunset timeframes, etc)
2. In consultation with the industry, define any extensions to target state channels, protocols, patterns to onboard the legacy services
3. Define the target state payload for legacy services (e.g., Option 2a vs Option 2b)
4. In consultation with the industry, define the scope of the pilot
5. Implement the pilot

### Tranche 1-3: Transition Existing Services

1. Extension of the IDX infrastructure capacity to support the onboarding of legacy business services
2. Transition the current state NEM interfaces to target state; sunset after an industry agreed timeframe

# Financial Assessment: IDX Foundation Revised Scope (Industry Wide)

**For AEMO, this division of scope and consideration of financial impacts based on *new services only* yields a clearly superior TCO for developing this capability holistically (Option 2 IDX Foundation) rather than initiative by initiative (Option 1). We do not currently have data points for industry costs under these scope scenarios and seek industry submissions. As a starting point for discussion, if we can take an assumption that industry cost impacts scale in a similar ratio to AEMO's cost impacts, Option 2 is a better TCO by $38M\* than Option 1 Industry-wide.**

## New Services Only

| | | AEMO Costs | | Industry Costs | |
|---|---|---|---|---|---|
| | | Implementation | TCO | Implementation | TCO |
| **Industry Data Exchange** | **Option 1 (new initiatives)** | n/a | $29M | n/a | ~$94M[3] *(strawman estimate based on scaling)* |
| | **Option 2 (IDX Foundation only)** | $20M[1] | $20M | ~$65M[2] *(strawman estimate based on scaling)* | ~$65M |

## Recommendation

**PROCEED** with IDX Strategic target state Foundation phase, AEMO investment of **$20M** over 2 years

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| Scope of Option 1 (new initiatives): | Scope of Option 2: IDX Foundation Only |
|---|---|
| **Implementation** — Nothing – no cross-initiative foundational capability is developed ahead of new NEM reform initiatives | Establish Foundational data exchange capability for energy transition and industry-driven priorities that can be used in upcoming reforms. Specifically, reduce Scope of Tranche 0b to limit the pilot, minimise consultation on legacy services schema to be 1-2 services per domain. |
| **Ongoing (new reforms)** — For each upcoming reform, data exchange requirements are assessed and solutioned for in independent consultations and design processes. | The data exchange component of new reforms has been budgeted on the basis of this framework already being developed and tested and consultations conducted. |

1. In assessing AEMO's cost impact for this revised (reduced) scope of Tranche 0b, we determined a cost split of the original $13M Tranche 0b cost into a revised scope Tranche 0b of $4M and a new Tranche 0c of $9M.

2. We have no data point from industry specifically for this revised scope. If we apply the same ratio of cost reduction from AEMO (4:9) to industry's Tranche 0b costs, we obtain a total of ~$65M, noting that we would expect industry apportioning for IDX Foundation to be less than AEMO's since we are proposing an AEMO-led approach.

3. We have no data point from industry on the expected cost of new reforms without a foundational capability in place. If we apply the same ratio of AEMO for foundational vs initiative by initiative (namely, $20M:$29M) then we obtain a total cost of ~$94M.

\* All financial figures have a +/- 40% uncertainty

# IDX Option 2a vs 2b

Option 2b is the IDX target state moderated by the retention of the Legacy payloads. This option arose during industry consultation as a potential hybrid option that dilutes the full benefits of the target state to reduce estimated costs

## IDX Option 2b

The scope of Option 2b is similar to that of Option 2a as it involves building a foundational framework. However, in Option 2b, the NEM Retail & Wholesale payload formats for the existing interfaces will not align with the target state payload standards. This means that the existing NEM Retail interfaces will continue to use aseXML, and the NEM Wholesale interfaces will continue to use AEMOCSV formats.

Future reform initiatives will leverage the target state patterns and standards, including the payload formats.

| Descriptions | Option 2A | Option 2B |
|---|---|---|
| **IDX:** Foundation Build | Identical Scope for Option 2A & 2B | |
| **IDX:** Target State Data Definitions | Identical Scope for Option 2A & 2B | |
| **IDX:** Data Exchange Mechanisms (e.g. Security, Channels, Protocols) for legacy interfaces | Identical Scope for Option 2A & 2B | |
| **IDX:** Payload Formats for legacy interfaces | Aligns to Target State Definitions | Retains Legacy Payload Formats |

## Option 2b: Key Call Out

The foundational tranches for both IDX Option 2a and Option 2b would remain the same, but IDX Transition would change. Legacy services however remain on the existing aseXML payload in Option 2b.

This option was costed in detail from AEMO's perspective to understand potential cost savings attributed to the reduced delivery scope. Very limited responses were received on reduction in industry costs.
We note further that this option does not address the full suite of Industry pain points reducing intangible benefits, note these further reference opportunities to reduce industry cost over time.

Decision on the transition of the legacy services is deferred to Decision point 2 **Q4 2025**

# 2.5 Recommendation

\*Link attached

# Recommendation Summary

Compelling drivers exist to develop new foundational capability across IDAM, IDX and PC areas. Given short term reform roadmap congestion & need for fiscal prudency, *AEMO recommends a phased investment approach for IDX* to address critical security needs, support near-term NEM reforms, provide flexibility for the future & address priority industry pain points.

## RECOMMENDATION

### Identity and Access Management

**PROCEED** with a Strategic target state, AEMO investment of **$21M** over 2 years

### Industry Data Exchange

**PROCEED** with a Strategic target state Foundation phase, AEMO investment of **$20M** over 2 years

**DEFER** decision on Transition phase to Q4 2025.

### Portal Consolidation

**PROCEED** with a strategic target state, AEMO investment of **$6M** over 2 years

## RATIONALE

- Address key security vulnerabilities and reduce attack surface area – identity management is the most impactful "weak link" in the cyber security chain
- Manage expected increase in identities for management: DERs, small generators
- AEMO TCO cost differential of **$7M**, & total Industry costs of **$35M** are smaller than the potential cost and customer impact of security breaches

- As the grid becomes digitised, data exchanged is increasing in volume, frequency and requires lower latency
- IDX Foundation phase represents an efficient and unified implementation of data exchange capabilities across multiple reforms requiring it (AEMO costs are **$20M** compared to **$29M** if done initiative by initiative, and if participant cost ratios are similar, then total industry costs would be **~$65M** compared to **~$94M** if done piece-meal)
- Migrating legacy services is difficult to assess at this stage given the cost uncertainty and value uncertainty. Deferring the decision point on migrating legacy services – IDX Transition phase – allows for more certainty on cost and value estimates and more information to guide optimising the transition approach.

- Portal Consolidation Strategic target state delivers benefits to address identified industry pain points for a cost of **$6M** for AEMO and **$13M** for industry
- Reduces AEMO's attack surface area in the most common 'entry point' for bad actors

# Summary: This Business Case

| | | IDAM | | IDX | | PC | | This Business Case | |
|---|---|---|---|---|---|---|---|---|---|
| | | Option 1 | Option 2a | Option 1 | Option 2a/2b (Foundation) | Option 1 | Option 2a | Option1 | Option 2a |
| **AEMO** | Implementation cost | $4M | $21M | n/a | $20M | <1M | $6M | $5M | $47M |
| | Cost[2] impact to support DER, PQ Data (No foundation) | $3M | $0 | $7M | $0 | n/a | n/a | $10M | $0 |
| | Cost[3] impact to future NEM reforms in absence of foundation | $11M | $0 | $22M | $0 | n/a | n/a | $33M | $0 |
| | Delta operational cost[1] to support new capabilities and legacy services | $2M | $6M | n/a[4] | n/a[4] | $1M | $1M | $3M | $7M |
| | **Total cost of ownership (7 years for IDX, IDAM & PC)[1]** | **$20M** | **$27M** | **$29M** | **$20M** | **$2M** | **$7M** | **$51M** | **$54M** |

| | | IDAM | | IDX | | PC | | This Business Case | |
|---|---|---|---|---|---|---|---|---|---|
| **Industry** | Implementation cost | $2M | $35M | n/a | ~$65M[6] *(seeking feedback)* | <$1M | $13M | $3M | ~$113M |
| | Cost[2] impact to support DER, PQ Data (No foundation) Cost[3] to support new reforms other upcoming NEM Reform initiatives (in absence of foundation) | Costs expected but unquantified | $0 | ~$94M[2,3] | $0 | n/a | n/a | > ~$94M[2,3] | $0 |
| | Delta operational cost[5] to support new capabilities and legacy services | *unquantified* | *unquantified* | n/a | n/a | *unquantified* | *unquantified* | *unquantified* | *unquantified* |

*All estimates have an uncertainty range of +/- 40%*

1. *All estimates are incremental cost to the projected current baseline*
2. Whilst the cost of implementing DER Data Hub and PQ data are covered in those reforms, there is an assumption in those costs that foundational capability would be in place. This cost impact category relates to the cost impacts incurred in the event that foundational capability would not be in place
3. The energy transition will require an increasing volume, diversity and frequency of data exchange between a wider cohort of energy stakeholders to sustain new market processes. Leveraging the estimated impacts for the upcoming reforms, we anticipate a cost impact on the future budgeted NEM program if the foundational capability was not available, estimated at 10% for data exchange, and 5% for identity management.
4. *IDX foundation does not result in a net delta to operational cost noting that new NEM reforms will be responsible for assessing any uplift requirements for their own projects and the uplift to legacy services will be assessed at* **Decision Point 2**
5. *Industry submissions haven't quantified savings for Delta operational cost*
6. *Based on industry participant cost breakdown received on an earlier scope statement, 1:1 interactions, and AEMO's ratio of Foundation to Transition, noting that AEMO has the bulk of work in Foundation. AEMO welcomes industry feedback*

# Summary: Full Investment (including DP2 Transition)



| | | This Business Case (IDAM, PC, IDX Foundation) | | DP2 Business Case: IDX Transition of the legacy services | | | Full Investment | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Option 1 | Option 2a | Option 1 | Option 2a | Option 2b | Option1 | Option 2a | Option 2b |
| **AEMO** | Implementation cost | $5M | $47M | $10M | $31M | $22M | $15M | $78M | $69M |
| | Cost[2] impact to support DER, PQ Data (No foundation) | $10M | $0 | n/a | n/a | n/a | $10M | $0 | $0 |
| | Cost[3] impact to future NEM reforms in absence of foundation | $33M | $0 | n/a | n/a | n/a | $33M | $0 | $0 |
| | Delta operational cost[1] to support new capabilities and legacy services | $3M | $7M | $6M | $18M | $18M | $9M | $25M | $25M |
| | **Total cost of ownership (12 years for IDX, 7 years for IDAM & PC)[1]** | **$51M** | **$54M** | **$16M** | **$49M** | **$40M** | **$67M** | **$103M** | **$94M** |
| **Industry** | Implementation cost | $3M | ~$113M *(seeking feedback)[5]* | $73M | $184M | $109M | $76M | $297M | $222M |
| | Cost[2] impact to support DER, PQ Data (No foundation) Cost[3] to support new reforms other upcoming NEM Reform initiatives (in absence of foundation) | ~$94M[2,3] | $0 | n/a | n/a | n/a | > ~$94M[2,3] | $0 | $0 |
| | Delta operational cost[4] to support new capabilities and legacy services | *unquantified* | *unquantified* | *unquantified* | *unquantified* | *unquantified* | *unquantified* | *unquantified* | *unquantified* |

*All estimates have an uncertainty range of +/- 40%;*

1. *All estimates are incremental cost to the projected current baseline*
2. Whilst the cost of implementing DER Data Hub and PQ data are covered in those reforms, there is an assumption in those costs that foundational capability would be in place. This cost impact relates to the costs estimated in the event that foundational capability would not be in place
3. The energy transition will require an increasing volume, diversity and frequency of data exchange between a wider cohort of energy stakeholders to sustain new market processes. Leveraging the estimated impacts for the upcoming reforms, we anticipate a cost impact on the future budgeted NEM program if the foundational capability was not available, estimated at 10% for data exchange, and 5% for identity management.
4. *Industry submissions haven't quantified savings for Delta operational cost*
5. *Based on industry participant cost breakdown received on an earlier scope statement, 1:1 interactions, and AEMO's ratio of Foundation to Transition, noting that AEMO has the bulk of work in Foundation. AEMO welcomes industry feedback*

# 3. Questions and Discussion

# Questions

- Open session for additional questions and discussion.

# 4. Next steps & close

# Next Steps: Key Milestones

| Date | Key Milestones |
|---|---|
| **Tuesday 19 December 2023** | Release of draft business case package |
| **Monday 22 January 2024** | Draft business plan walk through session with stakeholders |
| **Tuesday 23 January to Thursday 8 February 2024** | Additional 1 on 1 meetings with stakeholders – contact NEMReform@aemo.com.au to arrange |
| **Friday 9 February 2024** | Stakeholder submissions due on draft business case package NEMReform@aemo.com.au |
| **Wednesday 14 February 2024** | Program Consultative Forum (PCF) meeting update |
| **Monday 26 February 2024 (TBC)** | Publish "Business Case – Draft" |
| **Tuesday 12 March 2024** | Second and final stakeholder session – walk through of updates, next steps, closure of working group |
| **Thursday 28 March 2024** | Present at NEM Reform Executive Forum "Business Case – Draft" |
| **End April 2024 (TBC)** | "Business Case – Draft" wrap up |

# Next Steps: Ask of FaSI Focus Group

## Ask of FaSI Focus Group

- Work with your organisation to ensure the right people are involved to review the draft business case package, including your Executive Forum representatives.

- Consider any feedback on package of materials, particularly AEMO recommendations.

- Provide formal submissions to Draft Business Case Package by **Friday 9 February 2024** to NEMReform@aemo.com.au

- Contact AEMO to participate in one-on-one sessions in January/February 2024 – NEMReform@aemo.com.au

- Attend second and final stakeholder session on **Tuesday 12 March 2024.**

# Please reach out

NEMReform@aemo.com.au

AEMO | NEM Reform Foundational & Strategic Initiatives Focus Group

43

For more information visit

**aemo.com.au**

# Appendix A

AEMO Competition Law - Meeting Protocol

# AEMO Competition Law - Meeting Protocol

AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO, all participants agree to adhere to the CCA at all times and to comply with appropriate protocols where required to do so.

AEMO has developed meeting protocols to support compliance with the CCA in working groups and other forums with energy stakeholders. Before attending, participants should confirm the application of the appropriate meeting protocol.

Please visit: https://aemo.com.au/en/consultations/industry-forums-and-working-groups
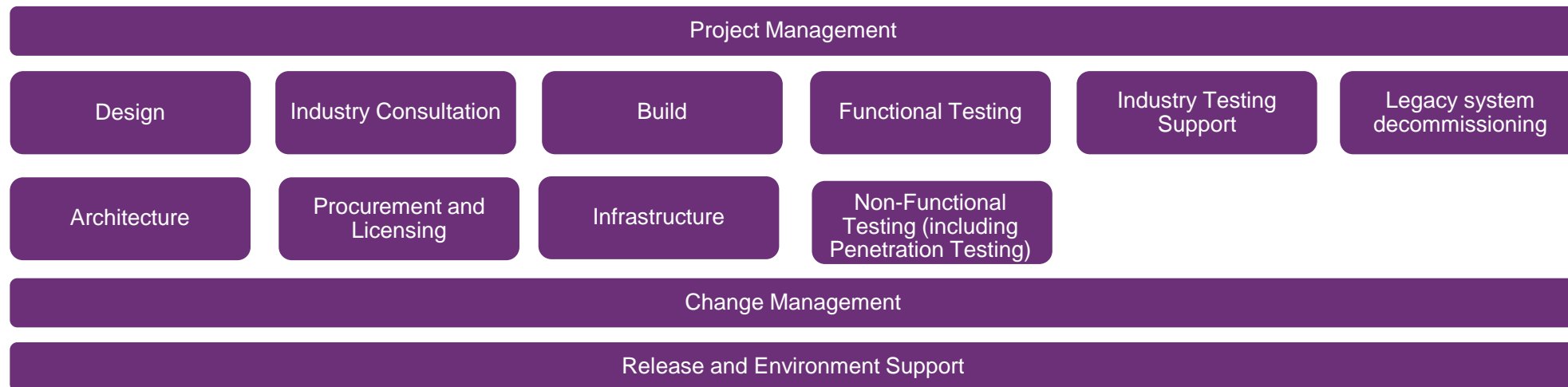
# Appendix B

AEMO Implementation Costs Approach

# AEMO Cost Estimation Approach: Option 2a

The **AEMO Implementation Costs** (Investment Costs) for the IDX, PC and IDAM initiatives are based on the agreed scope for Option 2a. We completed a bottom-up estimate for each component and validated against (where available) comparable internal and international projects.

**Scope of implementation estimate**

| Project Management | | | | | |
|---|---|---|---|---|---|
| Design | Industry Consultation | Build | Functional Testing | Industry Testing Support | Legacy system decommissioning |
| Architecture | Procurement and Licensing | Infrastructure | Non-Functional Testing (including Penetration Testing) | | |
| Change Management | | | | | |
| Release and Environment Support | | | | | |

# Updated AEMO Cost Estimation Approach: Option 1

For Option 1, the **AEMO Implementation costs** (Investment Costs) for the IDX, IDAM and PC initiatives have been estimated using a scaling of the Option 2a estimate based on the following assumptions:

### IDAM

| | Cost scaling | Assumption |
|---|---|---|
| Tranche 0 | 30% | • Definition of patterns and potential build/license of capability of existing products |
| Tranche 1a | 0% | • User accounts remain in existing identity stores |
| Tranche 1b | 0% | • No new entitlement capabilities deployed |
| Tranche 2a | 0% | • No advanced capabilities deployed |
| Tranche 2b | 0% | • No decommission |

### IDX

| | Cost scaling | Assumption |
|---|---|---|
| Tranche 0a | • 20% (of AEMO Gateway cost)<br>• 50% of Option 2a IC<br>• $3M stand alone cost | • To enhance existing PdrBatcher/ Participant batcher to enable SFTP capability.<br>• To define deployable OAUTH and sFTP patterns<br>• To build MFT and OAUTH capabilities |
| Tranche 0b | 10% | • Security design and transition planning and consultations |
| Tranche 1 | 15% | • Move to sFTP and Oauth, regression and industry testing |
| Tranche 2 | 20% | • Move to sFTP<br>• Basic Auth, API keys and cert based to Oauth<br>• Regression and industry testing |
| Tranche 3 | 0% | • No change |

### PC

| | Cost scaling | Assumption |
|---|---|---|
| Tranche 0 | 20% | • Security updates only |
| Tranche 1 | 0% | • No change |
| Tranche 2 | 0% | • No change |

# Appendix C

Industry Implementation Costs Approach

# Participant Implementation Cost – Updated extrapolation methodology for Option 2a

**Step 1:**
Allocate organisations to "participant types"

**Step 2:**
Take the median implementation cost of each participant type

**Step 3:**
Allocate a number of active organisations per participant type

**Step 4:**
Multiply by the number of active participants of that type
+
Discrete participant costs

| Type | Definition |
|---|---|
| Distributor | Has an LNSP role in the NEM, does not provide Contestable Metering Services |
| Contestable Metering Service Provider | Has an MDP, MPB, MPC role in the NEM, does not have an LNSP role. |
| Large Gentailer | >1.3 M NMIs |
| Medium Gentailer | 100K to 1.3M NMIs |
| Small Retailer / Gentailer | < 100K NMIs |
| Distributor and Contestable metering service Provider | Has an LNSP role in the NEM and operates a contestable metering services business |
| Independent Generators | Independent generator, does not have a Retail market role |

Median Implementation Cost = Midpoint (or the average of two midpoints if number of submissions are even) of the implementation costs submitted by participants*

*Following updated submissions and one-on-one sessions a move to the median from average has been proposed as more cost-reflective, allowing outlier submissions to be included in the total industry cost however not factored into the median calculation for their respective participant type

| Type | Total No |
|---|---|
| Distributor | - |
| Metering Services | - |
| Large Gentailer | - |
| Medium Gentailer | - |
| Small Retailer / Gentailer | - |
| Distributors and Contestable metering services** | - |
| Generators** | - |

Total Implementation Cost for a participant type =
Median Implementation cost ×
# of active organisations * +
Discrete participant submission costs

*Noting the revised approach to determining a median cost, the median will be applied to participants who fit within the median profile or who have not provided an individual submission. Participants with discrete submissions will have their submitted costs included.*

# Updated Participant Cost Estimation Approach - Option 1

## Option 1 Scaling Methodology

| | | Cost scaling | Assumption |
|---|---|---|---|
| **IDAM** | Tranche 0 | 20% | Industry Consultation for defining patterns and protocols. Agree on the transition strategy for MFA |
| | Tranche 1a | 5% | User accounts enrolment for MFA |
| | Tranche 1b | 0% | No new entitlement capabilities deployed |
| | Tranche 2a | 0% | No advanced capabilities deployed |
| | Tranche 2b | 0% | No decommission |

| | | Cost scaling | Assumption |
|---|---|---|---|
| **IDX** | Tranche 0a | 20% | Industry Consultation for move to SFTP and OAuth Establish updates for data exchange capability such as implementing OAuth Provider, OAuth client capability and SFTP Pilot testing |
| | Tranche 0b | | |
| | Tranche 1 | 40% | Move to SFTP and OAuth, regression and industry testing |
| | Tranche 2 | 40% | Move to SFTP and OAuth, regression and industry testing |
| | Tranche 3 | 0% | No change |

| | | Cost scaling | Assumption |
|---|---|---|---|
| **PC** | Tranche 0 | 15% | Security updates only |
| | Tranche 1 | 0% | No Portal movement |
| | Tranche 2 | 0% | No Portal movement |

## Option 2b Scaling Methodology

**Step 1: Calculate Scaling factor**

$$Scaling\ factor = \Sigma(Response\ to\ 2b) \div \Sigma(Response\ to\ 2a)$$

**Step 2: Calculate Scaling factor**

$$Total\ 2b\ Cost = \Sigma\ (total\ 2a) * Scaling\ factor$$

### Assumptions

- Based on participant feedback and detailed option 1 scope related to implementing OAuth provider, there has been an increase in the IDX scaling factor for Tranche 0a and 0b

- Based on participant feedback, the increase in cost scaling for IDX Tranche 1 and Tranche 2 is due to participants identifying regression and bilateral industry testing as key activities.

- Option 1 broadly reflects implementation on the agreed effective change date, without the extended sunset approach of Option 2, reducing the opportunity to leverage market or internal changes.