AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

CER Data Exchange Industry Co-Design

April 2025

Attachment A:

High-Level Design

The functional framework and technical capabilities through three priority use cases to establish a national CER Data Exchange.

Important notice

Purpose

This paper sets out the high-level design for the CER Data Exchange, shaped through stakeholder consultation. It establishes a foundational framework by detailing governance structures, operational considerations, and implementation timelines. The report informs the cost assessment and future planning, providing the basis for detailed design development. Ultimately, it aims to present the proposed solution that best meets industry requirements while supporting scalability and efficient deployment.

Acknowledgements

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We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations. AEMO Group is proud to have launched its first Reconciliation Action Plan in May 2024 (scan QR code to read).

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Glossary and Abbreviations

Term	Definition
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
API	Application Programming Interface
ARENA	Australian Renewable Energy Agency
CBA	Cost Benefit Analysis
CDR	Consumer Data Right
CER	Consumer Energy Resources
CIM	Common Infrastructure Model
DER	Distributed Energy Resources
DERMS	Distributed Energy Resource Management System
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Envelope
DSO	Distribution System Operator
ENTSO-E	European Network of Transmission System Operators for Electricity
EWG	Expert Working Group
EY	Ernst & Young
FCAS	Frequency Control Ancillary Services
FFR	Fast Frequency Response
FTE	Full Time Equivalent
GDPR	General Data Protection Regulation
IDAM	Identity and Access Management
IDSP	Integrated Distribution System Planning
IDX	Industry Data Exchange
IEC	Information Exchange Committee
IPRR	Integrating Price Responsive Resources
ISP	Integrated System Plan
LNSS	Local Network Support Services
MITE	Market Interface Technology Enhancements
MVP	Minimum Viable Product
NEM	National Energy Market

Term	Definition
NEO	National Electricity Objective
NER	National Electricity Rules
NETP	National Energy Transformation Partnership
NMI	National Metering Identifier
NSP	Network Service Provider
OEM	Original Equipment Manufacturer
PC	Portal Consolidation
PII	Personally Identifiable Information
PM	Project Management
RBAC	Role-Based Access Control
RERT	Reliability and Emergency Reserve Trader
SOCI	Security of Critical Infrastructure
SWIFT	Society for Worldwide Interbank Financial Telecommunication
SWIS	South West Interconnected System
UI	User Interface
VPP	Virtual Power Plant

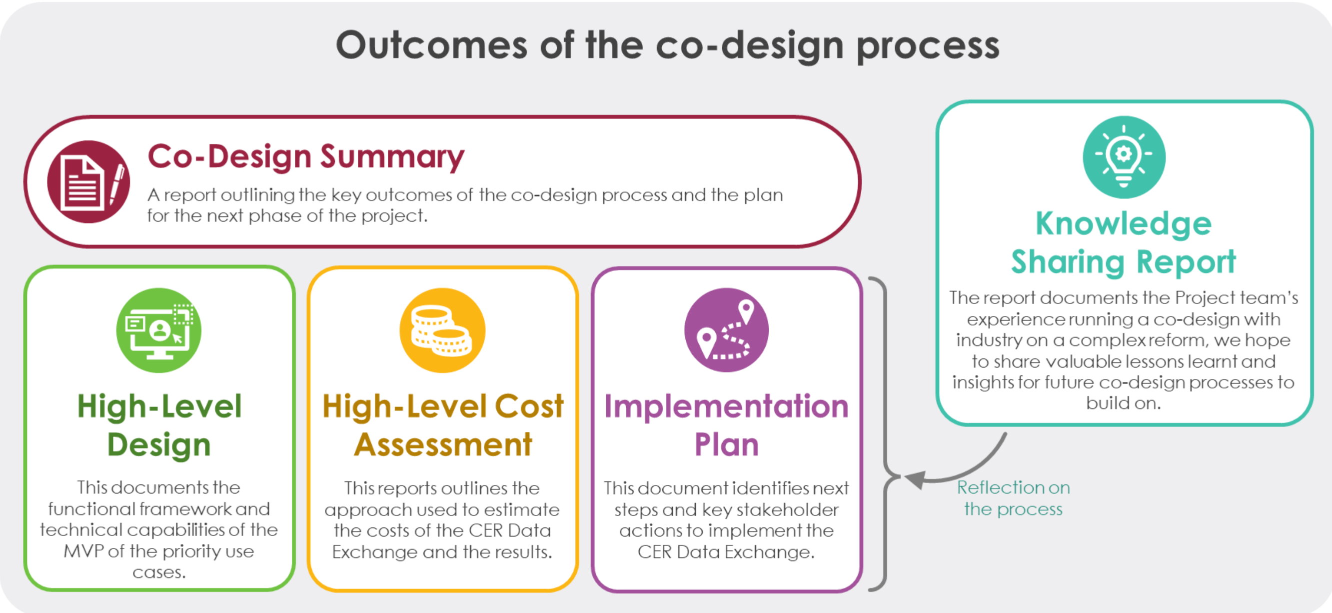
1 Introduction

1.1 The CER Data Exchange Industry Co-Design initiative

The Consumer Energy Resources Data Exchange (CER Data Exchange) Industry Co-design is a joint initiative between the Australian Energy Market Operator (AEMO) and AusNet with support from the Australian Renewables Energy Agency (ARENA) to work collaboratively with industry to co-design a national CER Data Exchange. It is part of a long-term, multistage process to build the digital foundation that will support the efficient integration of CER into the energy system in Australia. This phase of the CER Data Exchange will conclude with a final public webinar in late **April 2025** to present the findings and recommendations on next steps.

This document is part of a series of reports marking the conclusion of the high-level design phase of this project. This report should be read in conjunction with the reports depicted in Figure 1 below. AEMO will also publish a knowledge sharing report to outline the project team's journey of applying a co-design framework to progress customer outcomes and key learnings from the process.

Figure 1: Reports for the CER Data Exchange Industry Co-design project



1.2 This High-Level Design Report

This High-Level Design document outlines the functional framework and technical capabilities through three priority use cases to establish a national CER Data Exchange. The design synthesises insights from extensive industry consultation, international best practices, and emerging technology trends to leverage a data exchange that is secure, scalable, and capable of supporting Australia's evolving energy landscape.

2 High Level Design Overview

2.1 Co-design Feedback

The High-Level Design is based on feedback provided by the Expert Working Group (EWG) members, numerous individual discussions, webinars and industry-wide stakeholder workshops (see Figure 3). At a high-level, the co-design process and the stakeholder feedback received to date has led to the industry preferred option of a CER Data Exchange.

Figure 2: Stakeholder Preferred Option for a CER Data Exchange

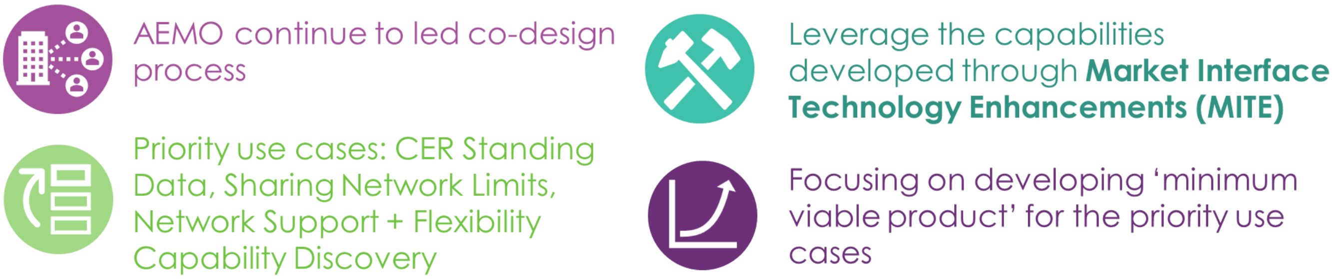
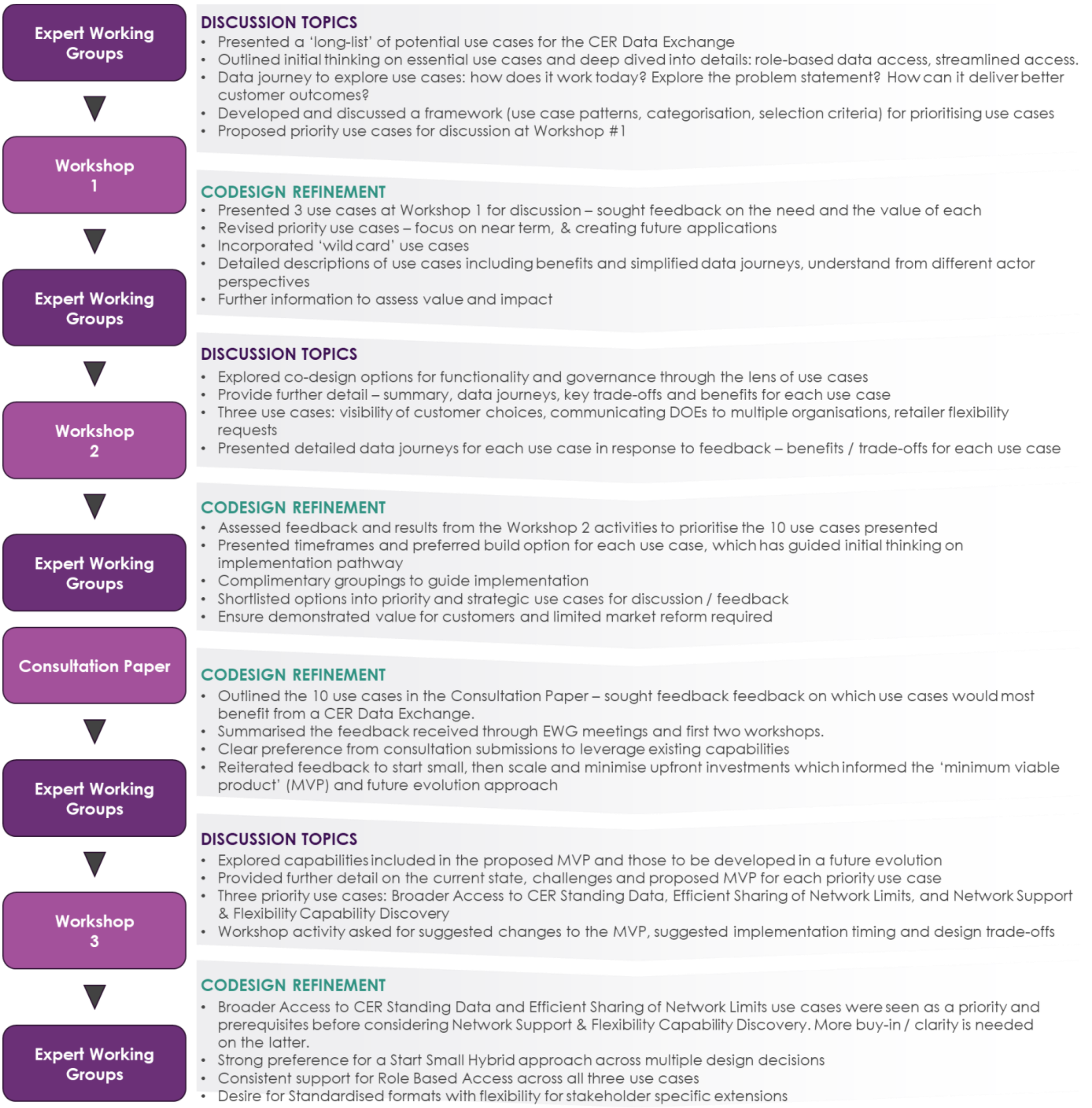


Figure 3: Co-design refinement stages



An initial long list of use cases was developed using learnings from Australian pilots and international initiatives. Workshop 1[1] focused on the scope of the design and presented use case options to determine functionality. Four use cases were discussed with the inclusion of "forecasts sharing and visibility" informed by EWG feedback, and stakeholder suggested use cases were encouraged. Following Workshop 1, the project team and EWG explored data journeys, functionality and data governance to take forward three priority use cases. The trade-off implications of a basic compared with full-service exchange was also discussed.

[1] CER Data Exchange Workshop 1 – Summary Report

Workshop 2[2] focused on co-defining the value of use cases in alternative futures, with each table assigned three out of the ten proposed use cases and asked to work through prioritisation, timing and preferred build option. Sharing Network Limits and Network Support & Flexibility Discovery Services (formerly named Supporting Local Network Services) emerged as priority use cases with consistent CER Standing Data deemed immediately necessary, and high value to industry. This list of ten use cases was outlined in the Consultation Paper for further feedback as these use cases are intended to address both immediate needs and future opportunities – laying the groundwork for an efficient, consumer-focused energy landscape.

Submissions received to the Consultation Paper[3] reiterated a clear preference to leverage existing capabilities which led to building on MITE foundations. Feedback also highlighted the preference to minimise upfront cost, learn from the implementation of use cases and remain adaptable which informed the 'Create the MVP and evolve overtime' approach. Stakeholders supported the priority use cases of Sharing Network Limits, Supporting Local Network Services and CER Standing Data, which was seen as an immediate priority.

The third industry workshop[4] confirmed support for the priority use cases. Stakeholders considered the key trade-offs had been identified, and there was broad agreement on the preferred MVP for each use case. However, there were mixed preferences on implementation timing. Further, workshop participants highlighted key issues, challenges and questions that require further consideration at the detailed design stage. We have summarised these considerations in Section 3 of Attachment C: Implementation Plan and outlined upcoming AEMO processes that will address the issues in the Implementation Roadmap.

Overall, the ideal future state features are expected to improve access to high value CER or DER impacted dataset and equitable benefit distribution among all consumers. Nevertheless, stakeholders also highlighted important trade-offs to consider, including the balance between control and flexibility, cost versus MVP features, efficiency against practicality, and the speed of implementation versus reliability. Additionally, importance was given to ensuring consideration be given to data quality management, security measures, and avoiding a "big bang" approach in favour of incremental implementation whilst considering consumer benefits.

2.2 Priority Use Cases

The CER Data Exchange has been structured to evolve over time, beginning with an initial set of priority use cases that lay the foundation for broader capabilities. These first-generation use cases enable secure data-sharing infrastructure, access management frameworks, and data standardisation, supporting the long-term vision of an integrated, efficient, and consumer-centric energy system. As the Exchange grows, its functionalities are intended to expand to address emerging industry needs, regulatory requirements, and technological advancements.

The three-priority use cases are:

[2] CER Data Exchange Workshop 2 – Summary Report

[3] CER Data Exchange Industry Co-Design Consultation Paper

[4] CER Data Exchange Workshop 3 – Summary Report

1 Broader Access to CER Standing Data

Objective: Establish trusted, standardised, and dynamic access of CER data.

Challenge: Lack of accurate, consistent, and accessible CER standing data which hinders grid planning, market participation, and regulatory compliance.

Outcome: Improved CER data accuracy and consistency, reducing administrative burden, supports interoperability and increasing value for customers.

2 Efficient Sharing of Network Limits

Objective: Facilitate the sharing of network limits from DNSPs to other actors who need the information.

Challenge: Access to network limits is typically limited to agents (e.g. OEMs), Aggregators and Retailers.

Outcome: Reduced integration, registration and compliance challenges, improved operational awareness, and grid performance optimisation.

3 Network Support & Flex Capability Discovery

Objective: Enable secure, standardised data exchange between industry and flex service providers.

Challenge: Limited visibility into flexibility capability and the value of elevating network constraints restricts efficient CER participation in flexibility markets.

Outcome: Improved coordination and activation of flexible resources whilst reducing barriers to entry for new market participants

The proposed sequencing order of the priority use cases follows a logical progression of having access to CER Standing Data as a foundational piece, with further value unlocked with the efficient sharing of network limits to improve the value of CER flexibility in the market.

The priority use cases have been selected for their immediate benefits to industry and for their ability to establish core capabilities that would support future use cases. The foundational elements of the CER Data Exchange all build upon a combination of Industry Data Exchange (IDX) Identity and Access Management (IDAM) from the MITE Project and additional capability under development by AEMO. Specifically, the three foundational elements include:

- a **secure data exchange infrastructure** that establishes standardised sharing patterns,
- an **access management framework** supporting authentication and authorisation for various market participants, and
- data **standardisation** that enables consistent data structures and validation protocols.

Together, these capabilities form a scalable foundation that would reduce both complexity and cost when implementing future energy market use cases.

2.3 Create an MVP and evolve over time

Proposed by stakeholders through the co-design process, the approach begins with an MVP and gradually expands the CER Data Exchange's functionality. This phased approach aims to deliver immediate value while setting the stage for future enhancements by focusing on core functionalities and high priority use cases. By concentrating on these essential elements, the MVP balances complexity and risk, while enabling early adoption by stakeholders.

It is expected that as the CER Data Exchange evolves, these foundational elements would support continuous improvement, allowing the platform to address emerging needs, comply with regulatory changes, and incorporate technological advancements. Expanding capabilities in a phased and incremental manner ensures the Exchange would remain relevant, effective, and aligned with the long-term vision of an integrated, efficient, and consumer-centric energy system.

By starting small and building a solid foundation, the Exchange could adapt to changes and grow in a way that maximises benefits for all stakeholders. This approach not only ensures initial success but also provides a clear pathway for future development, ensuring that the CER Data Exchange remains a vital tool in Australia's energy market landscape as intended.

2.4 Design Principles

A core component of the CER Data Exchange is its ability to facilitate secure, standardised, and efficient data-sharing between organisations. Our consultation identified several data sharing capabilities for the CER Data Exchange, these include:

- Information security
- Platform interoperability
- Format standardisation
- Advance data validation
- Data governance
- Customer data format
- Access management
- Batch vs real time processing

Capabilities such as information security, format standardisation, access management and platform interoperability are considered fundamental to the Exchange providing secure, consistent and reliable services. Functionalities such as advanced data validation and custom data format could be optional features that offer adaptability for specialised requirements and less critical functions.

The high-level design of the CER Data Exchange builds on several key design principles to ensure future use cases are effective, scalable, and adaptable to the evolving needs of Australia's energy market. Each objective is reinforced by practical implementation measures, aligning with stakeholder expectations and industry best practices. Co-designing these principles was a key focus of Workshop 1, where participants were asked to consider, comment, change or refine the overarching guiding principles of "prudent, efficient & effective", "adaptable & scalable", and "secure & resilient", and communicate preferences at a high-level on governance, functionality, standardisation, interoperability, security and access. These have since been refined iteratively throughout the project, with stakeholder feedback shaping the design principles outlined in Table 1.

Table 1: Design Principles

Objective	Implementation Measures
SEAMLESS AND SECURE DATA EXCHANGE Facilitate secure, standardised, and automated data flows between stakeholders to enhance	– Establish role-based access control (RBAC) and end-to-end encryption to safeguard data transmission and prevent unauthorised access. – Implement audit logging and compliance tracking to ensure transparency, trust, and regulatory oversight across all transactions.

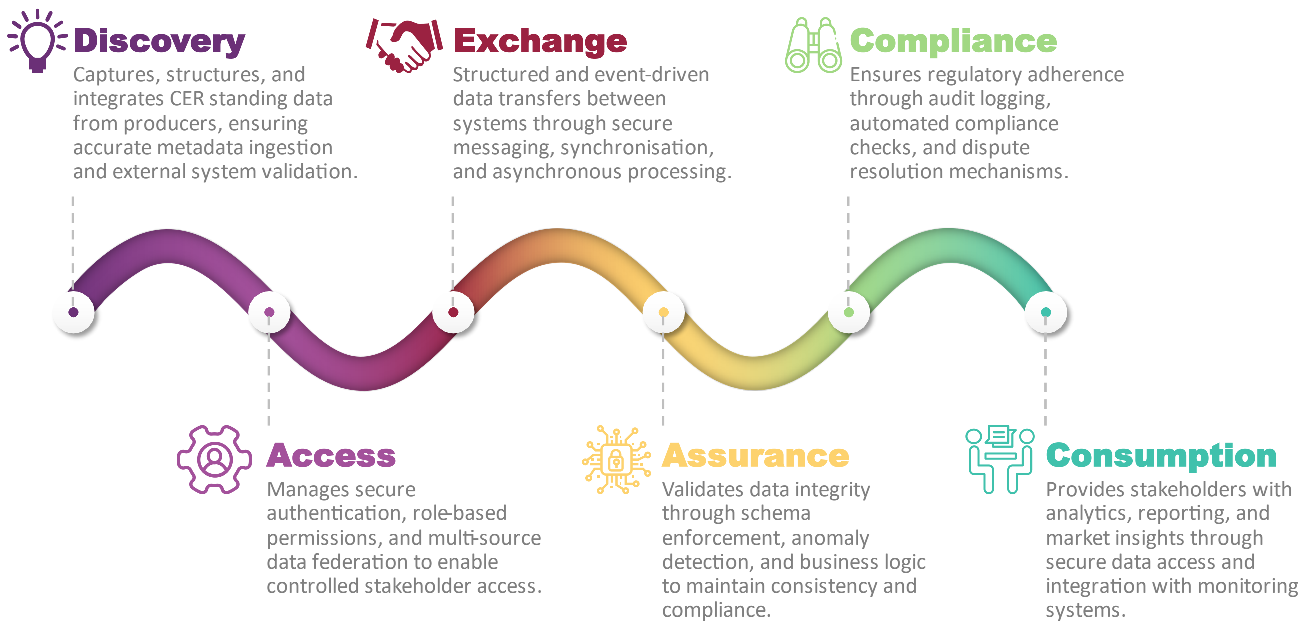
Objective	Implementation Measures
operational efficiency and decision-making while ensuring robust security and privacy protections.	– Develop structured API gateways that support both real-time and batch data exchange, ensuring smooth interoperability across different market platforms.
REDUCED INTEGRATION COSTS Lower system integration costs by having common data models, schema alignment, and standardised APIs, making it easier for new participants to connect and interact with the CER Data Exchange.	– Adopt international data exchange standards (e.g. IEEE, IEC, CIM) to promote seamless compatibility with existing energy systems and global best practices. – Provide schema validation and automated data processing to reduce errors, ensuring high-quality, reliable data exchanges. – Implement plug-and-play API integration that reduces development overhead for businesses, supporting easy onboarding and reducing the complexity of integrating legacy systems.
SUPPORTING MARKET INNOVATION Enable new business models, future energy solutions, and advanced grid services while maintaining system reliability and stability through enhanced data-driven decision-making.	– Establish flexible data access and permission structures to support aggregators, DNSPs, retailers, and new market entrants, fostering innovation and market participation. – Implement data-sharing mechanisms that provide insights into network conditions, allowing proactive management of grid stability, distributed energy interoperability and energy distribution.
SCALABLE AND FUTURE-READY PLATFORM Develop a modular and extensible platform capable of expanding to support emerging market needs, new regulations, and technological advancements.	– Deploy a batch and event-driven architecture that dynamically scales with increasing transfer volumes and evolving industry demands. – Ensure backward and forward compatibility by supporting interoperability with both legacy systems and next-generation digital platforms. – Provide version-controlled updates that enable incremental system enhancements without disrupting existing functionalities, ensuring ongoing platform stability and adaptability.
COMPLIANCE AND REPORTING Ensure that the Exchange complies with national energy regulations, cybersecurity frameworks, and compliance reporting requirements to provide a trusted and transparent data-sharing environment.	– Automate regulatory reporting, validation, and compliance checks, reducing administrative burden while improving regulatory adherence. – Maintain secure and immutable data logs, ensuring traceability, legal accountability, and end-to-end data integrity. – Align with cybersecurity standards and regulatory structures, ensuring that the Exchange meets national security and data protection obligations while fostering regulatory confidence.

These principles and implementation measures serve as the foundation for the CER Data Exchange, helping to ensure it works towards enhancing transparency, market efficiency, and industry innovation. As new technologies, policies, and market structures emerge, the CER Data Exchange it intended to remain a foundational cornerstone of a modern, data-driven decentralised energy ecosystem.

2.5 Data Journey

The data journey represents the end-to-end flow of data within the CER Data Exchange, ensuring secure, standardised, and efficient management of data. It follows a structured data journey process from data discovery and access to exchange, assurance, compliance, and consumption, enabling seamless integration, regulatory adherence, and informed decision-making information for stakeholders (Figure 4).

Figure 4: Data Journey



The successful functioning of the CER Data Exchange is intended to rely on the collaborative efforts of various stakeholders, each with their own responsibilities in the data journey. While AEMO expect to own and operate the Exchange, it does not mean they will necessarily fulfill assurance or compliance functions. Drawing on international best practices, including the UK's Digital Spine feasibility studies, the detailed design phase must ensure a robust framework for secure, efficient, and compliant data exchange is established. This framework would include specific measures such as regular data audits, stringent access controls, real-time monitoring of data flows, and a clear protocol for addressing data breaches. These steps would help to foster regulatory confidence and enhance market efficiency.

This data journey aligns with international best practice by embracing several proven principles seen in successful data exchanges globally. The separation of authentication from data transfer mirrors approaches in European energy data hubs like Elhub (Norway) and ENTSO-E (EU-wide). The emphasis on schema enforcement and anomaly detection reflects lessons from financial sector exchanges like SWIFT and the UK's Open Banking Implementation Entity. Additionally, the architecture's attention to both synchronous and asynchronous processing accommodates varying stakeholder technical capabilities, similar to Singapore's MyInfo and Estonia's X-Road frameworks.

What distinguishes the CER Data Exchange approach is its balanced consideration of both operational governance and technical requirements, which is a hallmark of mature data exchange implementations worldwide. It is intended that the CER Data Exchange would establish a complete data lifecycle approach rather than focusing solely on the data transmission mechanics.

2.6 Exchange Services

Key services to support the Data Journey outlined above are expected to be established both to prioritise MVP implementation of the CER Data Exchange, and enable future enhancements required for foundational capability and additional use cases. An establishment phase is envisioned to develop core data management MVP functions, secure data access, and essential compliance mechanisms.

Many of these services build upon the foundational capabilities under development in the MITE business case, specifically through IDAM and IDX[5] [6]. These foundational capabilities provide authentication, role-based access, security controls, and structured data exchange mechanisms essential for the transmission of data between data producers and data consumers. However, additional capabilities will need to be built beyond what is provided in MITE to support broader functionality required for the CER Data Exchange (Figure 5).

Figure 5: CER Data Exchange Services

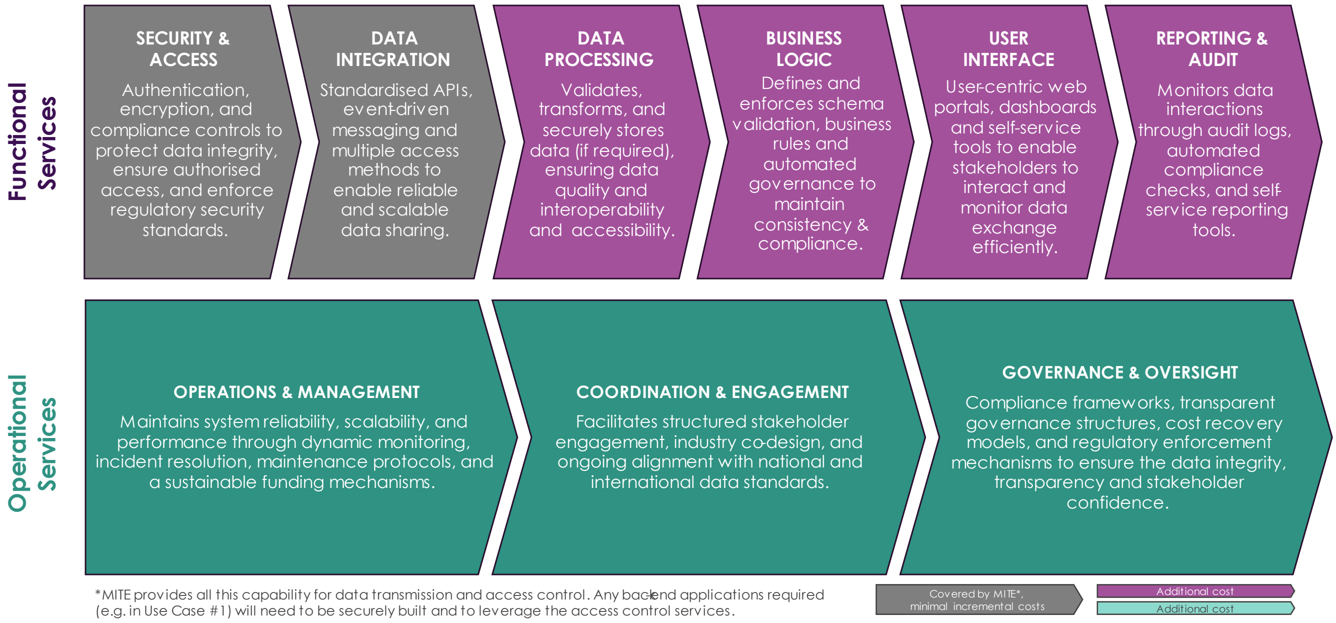


Table 2 and Table 3 below contextualises how each service category within the CER Data Exchange aligns with MITE's foundational capabilities, clarifying which elements are already provided versus those that require additional development. In summary, MITE program provides all capabilities for data transmission and access control across the identified functional areas. Any backend applications required (e.g. for Broader Access to CER Standing Data) for the CER Data Exchange would need to be securely built and leverage the existing access control services.

Each of the services are broken down into two categories:

- **Functional Services** form the core digital infrastructure that enables secure data exchange, processing and accessibility. These services collectively handle the technical mechanics of data movement, validation and presentation to users.
- **Operational Services** provide the organisational framework that ensures the exchange functions effectively within industry contexts. These services focus on maintaining ongoing management, facilitating stakeholder engagement and implementing governance structures that build trust in the CER Data Exchange.

[5] AEMO Market Interface Technology Enhancements

[6] Market Interface Technology Enhancements Business Case

Together these services ensure data security, accessibility, validation, and automation while enabling compliance with regulatory frameworks.

To elaborate, the MITE foundational capabilities provide authentication, role-based access, security controls, and structured data exchange mechanisms essential for the transmission of data between data producers and data consumers. Additional capabilities would need to be built beyond what is provided in MITE to support broader functionality required for the CER Data Exchange. However, utilising the MITE infrastructure provides a cost benefit and a program of work that is highly complementary. For further information, please refer to Attachment B: High-Level Cost Assessment and the further background on the MITE business case in the Consultation Paper [7].

Table 2: Functional Services

Functional Services
LEGEND: ☑ Full Covered by MITE; ➲ Partially Covered by MITE; ❖ New Build
1. SECURITY & ACCESS **Authentication, encryption, and compliance controls to protect data integrity, restrict authorised access, and enforce regulatory security standards.** ☑ **Authentication & Role-Based Access Control (RBAC):** Identity verification with structured permission controls based on key roles. ☑ **Encryption & Key Management:** Robust data protection utilising automated security credential rotation protocols. ☑ **Application-layer role enforcement**: Embedded access restrictions integrated within CER Data Exchange functionality. ➲ **Audit Logging & Monitoring:** Security event tracking with configurable notification thresholds for suspicious activities. ➲ **Cybersecurity & Compliance**: Multi-tiered protection architecture aligned with recognised security standards.
2. DATA INTEGRATION **Standardised APIs, event-driven messaging and multiple access methods to enable reliable and scalable data sharing.** ☑ **Standardised APIs & Custom Endpoints:** Consistent connection frameworks with options for distinct use case requirements. ☑ **Multiple Access Patterns:** Diverse data exchange methodologies supporting varied integration scenarios. ☑ **Message Handling & Event Triggers:** Framework where business events automatically initiate appropriate processes. ☑ **Flow Control & Connectivity:** Traffic management mechanisms preventing system overload with regulated data exchange. ☑ **Interoperability Standards:** Adherence to established protocols enabling data exchange with external systems.
3. DATA PROCESSING **Validates, transforms, and securely stores data (if required), ensuring data quality, interoperability, and accessibility.** ☑ **Data Format / Structure Validation:** Ensures data conforms to schemas and technical standards, reducing formatting errors. ❖ **Content-level validation:** Implements validation beyond schema checks to enforce business rules and market compliance. ❖ **Data Transformation:** Converts diverse formats into standardised structures to support interoperability across different platforms. ❖ **Data Re-Sends & Recovery:** Enables retransmission of data to ensure integrity and completeness in case of failures.
4. BUSINESS LOGIC **Defines and enforces schema validation, business rules and automated governance to maintain consistency & compliance.** ❖ **Business Rule Enforcement:** Implements automated decision logic to validate transactions against regulatory and market frameworks. ❖ **Automated Data Governance:** Compliance enforcement mechanisms to ensure all exchanged data meets governance requirements. ❖ **Incremental Data Management:** State-aware data processing to efficiently manage partial updates and track system changes.
5. REPORT & AUDITING **Monitors data interactions through audit logs, automated compliance checks, and self service reporting tools.** ❖ **Audit Logging:** Captures system-level activities to ensure compliance with security and regulatory requirements.

[7] AEMO CER Data Exchange Industry Co-Design - Consultation Paper

- ❖ **Self-Service Reporting:** Tools enabling stakeholders to generate and retrieve reports for operational insights and regulatory filings.
- ❖ **Analytics:** Authorised stakeholders to run queries, generate reports, and analyse data within regulatory limits.

6. USER INTERFACE

User-centric web portals, dashboards and self-service tools to enable stakeholders to interact and monitor data exchange efficiently.

- ❖ **Web Portal & Dashboards:** Provides a user-friendly interface for stakeholders to monitor data exchange interactions.
- ❖ **Self-Service Tools:** Allows participants to configure data queries and access reports without system administrator intervention.
- ❖ **Customised Dashboards:** Provides role-based data insights tailored to different market participants.

Table 3: Operational Services

Operational Services

LEGEND: ☑ Full Covered by MITE | ➲ Partially Covered by MITE | ❖ New Build

1. EXCHANGE OPERATIONS

Maintains system reliability, scalability, and performance through CER Data Exchange management, monitoring, incident resolution, maintenance, which is supported by sustainable cost and platform governance.

- ☑ **Support:** Provides technical support functions (Tier 3 helpdesk) for participants
- ☑ **Dynamic Monitoring & Incident Response:** Provides system-level performance monitoring of the platform for proactive availability, reliability and performance against service level agreements, and provides the ability to detect and resolve issues
- ☑ **System Maintenance & Upgrades:** Enables ongoing improvements to the platform's security, scalability, and efficiency.
- ➲ **Service Level Agreements (SLAs):** Defines measurable performance benchmarks and commitments for exchange services.
- ❖ **Cost Management:** Develops governance models to sustain efficient long-term exchange cost management.

2. COORDINATION & ENGAGEMENT

Facilitates structured stakeholder engagement, industry co-design, and ongoing alignment with national and international data standards.

- ❖ **Co-Design & Engagement:** Facilitates consultations with various stakeholders.
- ❖ **Data Standards & Schema Management:** Ensures exchange-wide adherence to national and international best practices.
- ❖ **Continuous Improvement:** Establishes iterative refinement processes to enhance exchange functionality.
- ❖ **Implementation & Change Management Framework:** Structured onboarding and transition strategies for new stakeholders.

3. GOVERNANCE & OVERSIGHT

Compliance frameworks, transparent governance structures, cost recovery models, and regulatory enforcement mechanisms to ensure the data integrity, transparency and stakeholder confidence.

- ❖ **Regulatory Compliance:** Foundational role-based access controls for enforcing security and regulatory compliance.
- ❖ **Market Governance & Oversight:** Transparent decision-making structures for governing the exchange.
- ❖ **Audit Monitoring & Compliance:** Enforcement mechanisms & permanent records to ensure compliance accountability.
- ❖ **Cost Recovery & Funding:** Equitable financial structures to support continued development and maintenance of the Exchange.
- ❖ **Industry & Regulatory Alignment:** Ongoing dialogue with market stakeholders to adapt to evolving regulatory frameworks.

3 Priority Use Cases High Level Designs

This chapter outlines the three priority use cases identified for the CER Data Exchange. These use cases address immediate needs for improved data-sharing capabilities and align with the broader objectives of Australia's energy transition. Each use case is designed to deliver tangible benefits for all of industry in terms of efficiency, innovation, and grid stability.

AEMO will focus its efforts on delivering priority use case 1 and 2 by May 2027, as they received the strongest stakeholder support, which aligns with Workshop 3 feedback, interlinkages with other initiatives, and interdependencies and with the MITE implementation plan[8].These priority use cases are intended to be key enablers for other parallel workstreams including the Integrating Price Responsive Resources (IPRR) final rule and the National CER Roadmap.

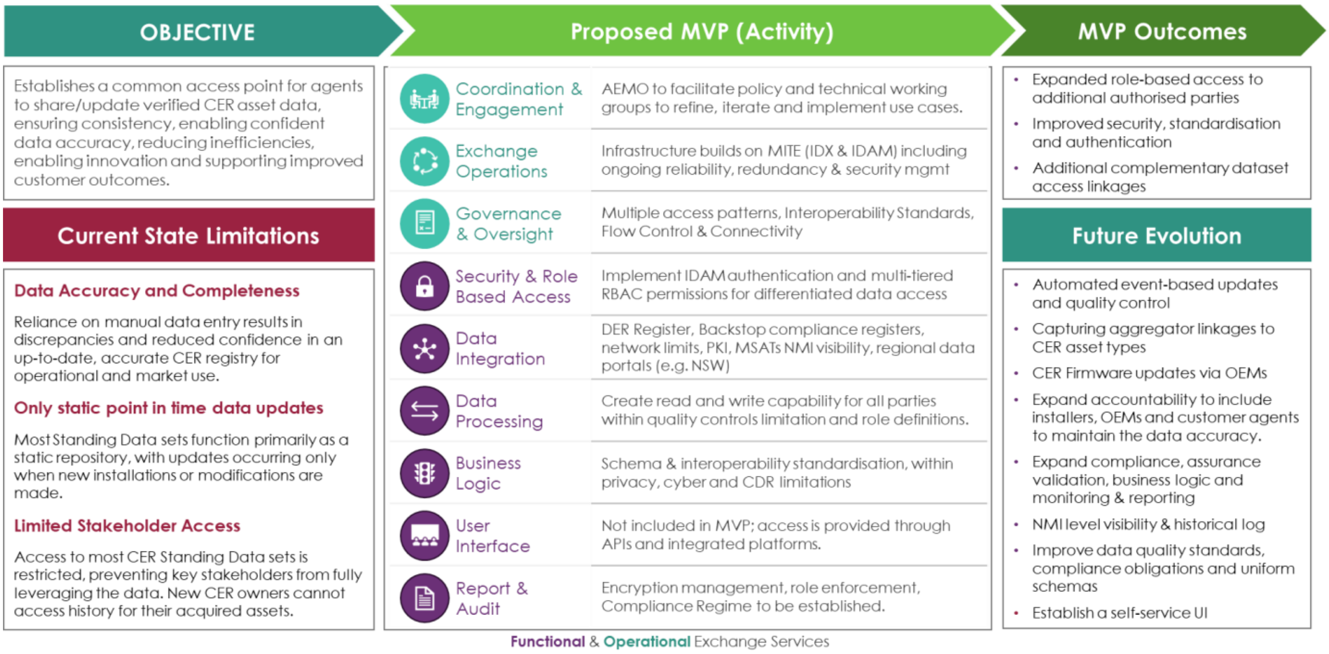
3.1 Use Case: Broader Access to CER Standing Data

3.1.1 Use Case Overview

The *Broader Access to CER Standing Data* initiative primarily aims to rectify the challenge of limited access to CER/DER data within Australia's energy market ecosystem. Currently, the restricted access to accurate, consistent and accessible CER standing data hinders grid planning, market participation and regulatory compliance efforts. Ensuring greater controlled access to this data is crucial outcome of this use case.

[8] MITE Webpage, including Business Case & Implementation Plan

Figure 6: Broader Access to CER Standing Data overview [9]



This use case aims to establish trusted, standardised and dynamic access to CER data, creating a unified data exchange capability that ensures information integrity and interoperability. Building on access to the established DER Register and leveraging advancements from the MITE program, this initiative adopts industry-leading data governance practices, including SOCI (Security of Critical Infrastructure) compliance and ISO 27001 standards for information security management.

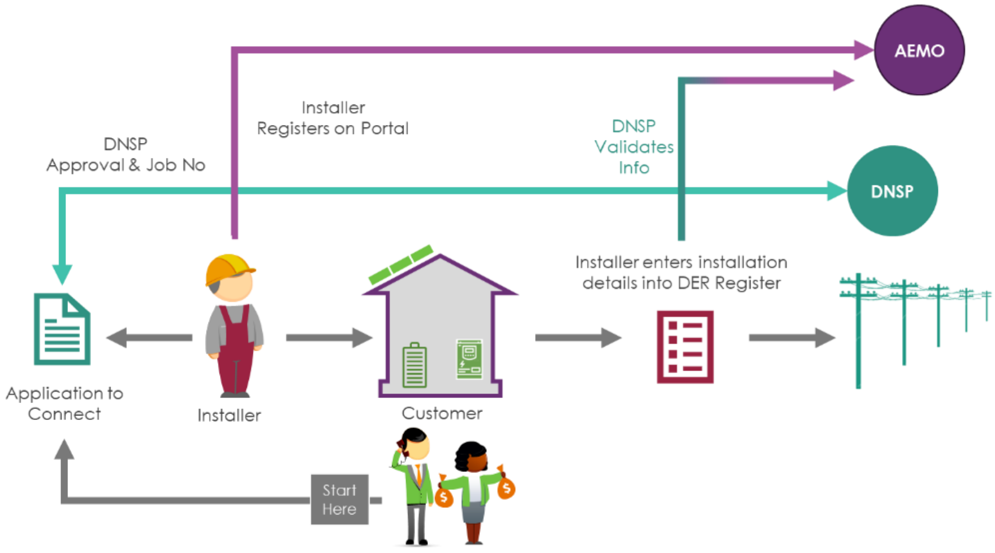
3.1.2 Current Challenges

The foundation to a highly decentralised energy system is a trusted understanding of where the distributed energy infrastructure is installed and what functional capability it has. By broadening CER Standing Data access, stakeholders can make more informed decisions based on accurate information.

The diagram below illustrates the current workflow for capturing data into the DER Register. The process begins with customers initiating an application to connect their energy resources. From this starting point, installers submit the connection application typically on behalf of the customer which the DNSP review, approve and provide a job number. The installer registers on the portal and proceeds to install DER equipment at the customer's premises and uploads detailed installation information into the DER Register. This data undergoes validation by the DNSP, with the validated information subsequently flowing to both the DNSP systems and AEMO.

[9] CER Data Exchange Workshop #3 Presentation, link: https://aemo.com.au/-/media/files/electricity/der/2025/cer-data-exchange-workshop-3-presentation.pdf?la=en

Figure 7: DER Register Data Capture Process



The existing frameworks for CER data management present several challenges that require resolution to support Australia's evolving energy ecosystem:

- **Fragmented and Manual Data Entry:** The DER Register currently relies on manual data entry by installers and Network Service Providers (NSPs), which introduces errors, delays, and inconsistencies. As the volume of CER installations continues to grow exponentially, this manual approach is increasingly unsustainable. Automated systems, as seen in international models[10], could significantly enhance data reliability and reduce operational inefficiencies.
- **Limited Access and Visibility:** Access to DER Register is restricted under current frameworks[11], with stakeholders such as retailers and aggregators unable to fully leverage the benefits for customers. This limited access impedes innovation and fails to mirror the open-data policies adopted internationally[12] in energy market transition.
- **Data Quality and Compliance Gaps:** The DER Register lacks the advanced validation mechanisms and compliance enforcement seen in leading jurisdictions. Without automated anomaly detection or schema validation, data inaccuracies persist, undermining the reliability of the register and its ability to support regulatory compliance.
- **Absence of Streamlined Updates**: The DER Register currently functions primarily as a static database, with updates occurring on an infrequent basis tied to installation changes. This structure does not align with the needs of a modern grid, which requires both real-time updates and robust multi-party read and write capabilities. Real-time data updates are crucial for functions such as load

[10] European Union's Clean Energy for All Europeans package, includes mechanisms such as the use of the Common Information Model (CIM) for standardised data sharing and the implementation of data hubs like Denmark's Energinet, which streamline information exchange between market participants.

[11] The existing access restriction relate to a few factors, some data is considered Personally Identifiable Information (PII) or linked to critical infrastructure which is limited by the Privacy Act 1988 (Cth), AEMO's Privacy Policies and the NER. The National Electricity Rules (specifically, Clause 3.7E) mandate the establishment of the DER Register but only authorise access to a defined list of parties, which includes: AEMO, NSPs, Market Participants (to the extent required for their operations). Third parties such as OEMs, aggregators, research institutions, or energy service providers are not automatically authorised to access the DER Register data, unless acting under an explicit arrangement or authorised exemption. Lastly there is a no defined consent and access framework for third parties.

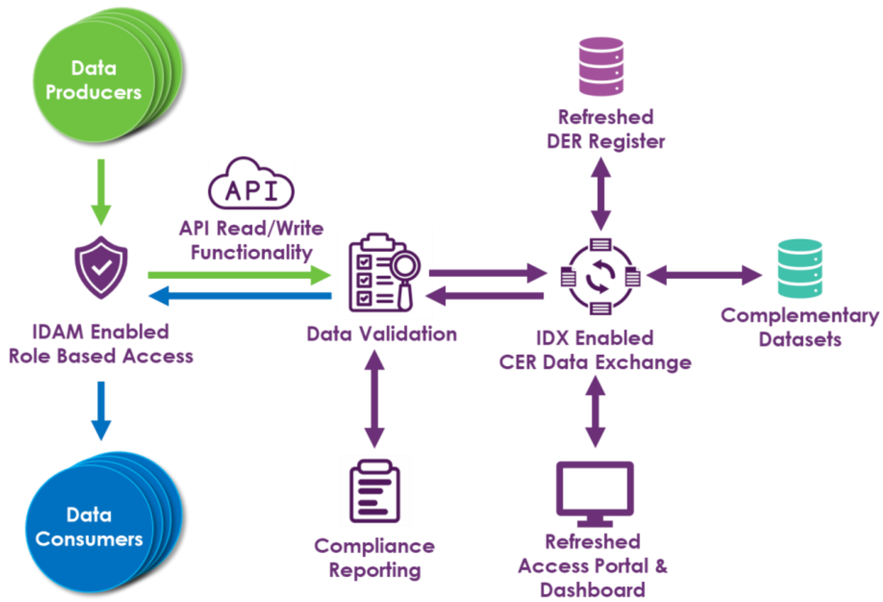
[12] UK's Midata initiative and the European Union's General Data Protection Regulation (GDPR)-aligned energy data frameworks.

management, fault detection, and distributed energy optimisation, as they allow grid operators to respond dynamically to fluctuating grid conditions. In addition, the absence of multi-party read and write capabilities limits collaboration among stakeholders such as retailers, aggregators, and NSPs.

3.1.3 Proposed Minimum Viable Product & Future Evolution

The use case seeks to broaden access to CER Standing Data, addressing the limitations in current data availability experienced by various market participants and customer agents. By leveraging IDX and IDAM, the initiative aims to enhance accessibility, security, scalability, and interoperability, thereby facilitating comprehensive and reliable access to the data. Additionally, the DER Register could be extended to capture high-value CER data sets, such as associations with aggregator platforms, software updates, or emergency backstop registration and compliance details, either directly or through data linkage with complementary data sets.

Figure 8: MVP - Broader Access to CER Standing Data illustration



The above diagram illustrates the use case architecture. It shows data flowing from Data Producers through an API with read/write functionality to a central Data Validation component. This component connects to an IDX-enabled CER Data Exchange, which can link to multiple endpoints. Data Consumers access information through IDAM-enabled RBAC protocols, ensuring secure and appropriate data utilisation. The bidirectional arrows indicate the flow of information between parties, creating an interconnected ecosystem that enables structured data validation, exchange, and access for authorised participants while maintaining compliance and data integrity.

The *Broader Access to CER Standing Data* use case aims to address limited access to CER/DER data. Restricted access to accurate, consistent, and accessible CER data hampers grid planning, market participation, and regulatory compliance. Ensuring controlled access to this data is a crucial outcome. The aim is to also improve data integration efficiency and accuracy of updates to CER Standing Data. The proposed MVP introduces foundational capabilities that could transition to advanced functionalities, focusing on data reliability, access, and integration with market participants.

- **Data Access**: The MVP would incorporate Role-Based Access Control (RBAC), ensuring that only authorised parties can access specific data based on their roles. This tiered access control would specifically differentiate permissions for customer agents and retailers, based on regulatory requirements, enhancing both data security and operational efficiency.
- **Data Type:** The MVP could support static attributes such as device make, model, and capacity, ensuring fundamental data accuracy and consistency while following with existing DER Register processes. Future enhancements could expand to operational parameters and firmware details, offering deeper insights into asset performance and enabling more advanced market interactions.
- **Data Frequency**: The MVP is intended to introduce the ability to include structured data updates, triggered by annual schedules or key events such as ownership transfers or system modifications, ensuring data accuracy and reliability. Over time, updates could evolve to include event-driven updates, enhancing responsiveness and automation.
- **Data Integration**: The proposed MVP supports structured static and periodic updates, enabling automated data transfers enabling seamless integration with existing data processes where feasible. Future developments will introduce automated event-driven updates, incorporating operational telemetry and customer preferences to optimise customer outcomes, grid management and market integration. These advancements will be complemented by additional dataset access linkages, expanded role-based access for authorised parties, and improved security measures through enhanced standardisation and authentication protocols, creating a more comprehensive and secure data ecosystem.

This use case ensures an efficient and secure exchange of accurate CER Standing Data via the CER Data Exchange, facilitated by the MITE infrastructure. The framework distinguishes two key components: the DER Register as the system of record, and the CER Data Exchange for data linkage and data transfer infrastructure. Foundational capabilities from IDAM and IDX support core functionalities, which enable standardised data sharing, authorised access, flexible exchange methods, and data validation. The CER Data Exchange would act as an upload pipeline for data producers while distributing notifications and updated information to participants through push/pull mechanisms.

It is crucial to note that while MITE provides foundational capabilities, additional data sharing capability and operational frameworks would need to be developed to achieve the desired outcomes of this and other use cases. The table below highlights the additional capability required for each proposed design characteristic.

Table 4: High Level Design – Broader Access to CER Standing Data

LEGEND		
☑ Full Covered by MITE or other systems		
➲ Partially Covered by MITE or other systems		
❖ New Build		
Services	Minimum Viable Product (MVP)	Future Functionality
Functional Services		
Security & Access Protects data integrity,	☑ **RBAC Authentication:** Implement identity verification with multi-tiered RBAC permissions for differentiated access using IDAM capability.	❖ **Expanded Access:** Extend limited/full access and controls to include additional authorised parties.

LEGEND

☑ **Full Covered by MITE or other systems**

➲ **Partially Covered by MITE or other systems**

❖ **New Build**

confidentiality, and availability.	☑ **Tiered Access Control:** Enable role-based access for customer agents and retailers based on regulatory requirements. ☑ **Zero-Trust Security:** Enforce continuous verification security for all data access events. ☑ **Encryption Management:** Apply data encryption protection controls aligned to the compliance requirements.	
Data Integration Enables seamless sharing of CER data through standardised APIs.	☑ **API Capability:** Leverage IDX and IDAM infrastructure to enable read/write functionality with quality controls for authorised parties. ➲ **System Integration:** Connect with the DER Register, compliance registers and regional data portals. Where feasibility overcome manual entry through automated data ingestion. ☑ **Interoperability Standards:** Implement consistent protocols and common connection patterns. ☑ **Periodical updates:** Enable post installation updates, particularly as they may affect the CER operational characteristics, to ensure device information is up to date and remains accurate.	❖ **Event-Based Updates:** Automatically send updated data when changes occur, using assurance checkpoints to ensure quality. ❖ **Aggregator Connections:** Establish customer agent operational linkages to CER asset types via aggregator systems.
Data Processing Ensures standing data accuracy, consistency, and accessibility.	☑ **Schema Validation:** Enforce schema-based automated validation for all standing data entries. ➲ **Data Lineage:** Data lineage tracking to maintain an audit trail record and verify changes to the CER Standing Data.	❖ **NMI Visibility:** Implement detailed NMI tracking with comprehensive historical logs. ❖ **Consistency Verification:** Develop system-wide validation across data platform (e.g. Backstop certification could help verify quality of CER Standing Data sets).
Business Logic Defines and enforces rules for standing data governance.	☑ **Core Rules:** Core business rules for managing, updating, and validating CER Standing Data within the limitation of legal and regulatory frameworks. ➲ **Compliance Validation:** Automate compliance validation for standing data based on predefined regulatory requirements. ➲ **Anomaly Detection:** Anomaly detection to flag discrepancies in submitted data and implement data integrity measures through rule-based write access. ➲ **Standard Schema Formats:** Use extensible schemas with flexibility to include network, OEM or customer agent specific fields.	❖ **Compliance Detection:** Enable anomaly detection for automated standing data compliance enforcement. ❖ **Flexible Rule Engines:** Flexible rule engines to support evolving regulatory requirements. ❖ **Cross-Platform Policies:** Cross-platform policy enforcement to ensure alignment with market and regulatory frameworks.
User Interface Provides dashboards and tools for managing standing data.	☑ **User Interface:** API access only for system-to-system standing data integration and no user interface proposed for the MVP. ➲ **NEM DER Dashboards:** Improve the existing AEMO DER Dashboard. ➲ **CER Data Portal:** Adapt the DER Register Portal to include the updated schema and to enable additional functionality.	❖ **Custom UI:** Customisable user interfaces for enhanced data reporting & analytics. ❖ **Multi-Device Support:** Multi-device accessibility, including web and mobile portals for standing data management. ❖ **Workflow Tools:** Interactive workflow tools for managing data discrepancies and updates.
Reporting & Audit Ensures compliance and transparency in standing data management.	❖ **Audit Logs:** Implement compliance tracking, encryption, and audit logging. ❖ **Compliance Reporting:** Establish foundational compliance reporting. ❖ **Historical Access:** Role-based access to historical standing data logs for investigation and compliance review.	❖ **Predictive Compliance:** Proactively detect data or compliance inconsistencies. ❖ **Self-Service Logs:** Backlog trails for stakeholders to track data modifications at a device and NMI level. ❖ **Anomaly Resolution:** Automated anomaly resolution workflows to correct standing data errors in real time.

LEGEND		
☑ Full Covered by MITE or other systems		
➲ Partially Covered by MITE or other systems		
❖ New Build		
Operational Services		
Exchange Operations Ensures standing data reliability, scalability, and resilience.	❖ **Service Management:** Operational support to enable efficient sharing of CER Standing Data, including incident tracking, uptime monitoring and workflow support. ❖ **Incident Management:** Protocols to resolve network limit data discrepancies. ❖ **Scalability:** Enable scalability linked to CER market growth, customer switching and additional technology types, with the capability to make periodical data accuracy updates.	❖ **Performance Monitoring:** Implement proactive service quality measurement and reporting. ❖ **Business Continuity:** Develop robust processes for ensuring uninterrupted service. ❖ **Operational Maturity:** Create pathway for advancing service capabilities.
Coordination & Engagement Supports structured collaboration for standing data governance.	❖ **Stakeholder Coordination:** Facilitate working groups to align data-sharing practices and schema standardisation. ❖ **Change Management:** Manage transition and onboarding of participants joining the exchange. ❖ **Industry Communications:** Develop frameworks for consistent information sharing.	❖ **Participant Onboarding:** Create streamlined processes for new data providers and consumers. ❖ **Feedback Integration:** Establish mechanisms to incorporate stakeholder insights. ❖ **Relationship Management:** Develop structured approach to ongoing engagement.
Governance & Oversight Ensures regulatory compliance and enforcement for standing data.	❖ **Operating Model:** Establish CER Data Exchange governance structures and decision frameworks. ❖ **Compliance Monitoring:** Create processes for assessing adherence to regulatory requirements. ❖ **Performance Reporting:** Develop regular reporting on operational metrics and service levels. ❖ **Regulatory Reform:** Identification of any regulatory changes required to enable the efficient operation of the CER Data Exchange. This may result in the preparation of rule changes.	❖ **Dynamic Compliance:** Introduce dynamic regulatory compliance monitoring to identify standing data inaccuracies. ❖ **Dispute Resolution:** Deploy automated dispute resolution frameworks for standing data discrepancies. ❖ **Adaptive Policies:** Develop adaptive governance policies that align with evolving regulatory requirements.

3.1.4 Implementation Considerations

The implementation of the *Broader Access to CER Standing Data* use case is intended to deliver significant advancements in data accuracy, market efficiency, and grid reliability. By leveraging a structured, secure, and interoperable MITE data-sharing infrastructure, stakeholders could benefit from greater transparency, security, and access to CER Standing Data. This use case would establish a robust foundation for future energy market evolution, ensuring seamless integration with emerging CER technologies and evolving regulatory requirements.

- **Challenge and Purpose:** The *Broader Access to CER Standing Data* use case is designed to address the critical challenge of inaccessible and inconsistent CER data.
- **Core Architecture:** The framework establishes two distinct components:
    1. an exchange layer connecting diverse stakeholders through secure and standardised interfaces.
    2. A system that retrieves information from the source of truth and exchanges data with authorised parties
- **Key Capabilities:** Leveraging the MITE functionality, the use case would deliver standardised data sharing, authorised access controls, robust validation mechanisms and flexible distribution methods.

- **Implementation Approach:** The proposed MVP follows a staged delivery model with comprehensive risk management strategies addressing data migration challenges, stakeholder adoption, security considerations, technical complexity, and resource constraints.
- **Strategic Alignment:** By leveraging MITE infrastructure and conforming to global data standards, this initiative intends to position Australia's energy sector to better manage decentralised energy while reducing administrative burden and delivering greater customer value.

3.1.5 Key Risks and Mitigations

Table 5: Risks and Mitigations

Risk	Details	Proposed Mitigation
Data Migration and Integration Challenges	• The transition from current systems to the new framework involves data migration processes. • Legacy data structures may contain inconsistencies, gaps, or non-standardised formats that could compromise data integrity during transfer. Integration with existing. • DER Register processes requires careful planning to maintain operational continuity while implementing new capabilities.	• Implement rigorous data profiling, cleansing routines and staged migration with comprehensive validation gates before full transition.
Stakeholder Adoption and Change Management	• Success depends heavily on stakeholder adoption across the energy ecosystem. Resistance to change from installers, DNSPs, retailers, and other participants availability and ability to support will impact implementation. Varying levels of technical capability among participants may create adoption barriers, particularly for smaller organisations with limited resources.	• Develop tailored engagement strategies, provide technical support resources, build in longer lead times for stakeholders to gain access and demonstrate early value through pilot programs with key stakeholders.
Security and Privacy Considerations	✓ Enhanced data sharing introduces potential vulnerabilities. Expanded access points create additional attack surfaces for cyber threats, while more comprehensive data collection raises privacy concerns regarding customer information. Compliance with evolving regulatory requirements adds complexity to implementation.	• Apply zero-trust architecture principles, conduct regular security assessments, and embed privacy-by-design approaches with continuous compliance monitoring.
Technical Complexity and Interoperability	• Achieving true interoperability across diverse systems requires overcoming significant technical challenges. Varying data schemas, communication protocols, and system architectures among participants may create compatibility issues. Establishing robust validation mechanisms without introducing excessive operational friction represents a difficult balance.	✓ Develop reference implementations, establish robust conformance testing procedures, and implement flexible adapters with clear migration pathways.
Resource and Timeline Constraints	• Implementation requires resources across multiple organisations. Competing priorities, resource limitations, and coordination challenges could lead to delays or incomplete adoption. A phased approach introduces dependency risks, where delays in foundational components impact subsequent capabilities.	• Create realistic delivery roadmaps with appropriate contingencies, prioritise capabilities by value, and establish clear governance for resource allocation decisions.

3.1.6 Use Case Outcomes

The *Broader Access to CER Standing Data* use case aims to enhance the accessibility of CER Standing Data across the energy market. It has been designed to deliver five primary outcomes:

- **Access to Data:** Provide expanded access to CER Standing Data for participants who currently do not have access but need it to effectively perform their roles and make informed decisions.
- **Improved Data Integrity**: Significantly enhance the integrity and accuracy of data, ensuring that all stakeholders have access to reliable and precise information.

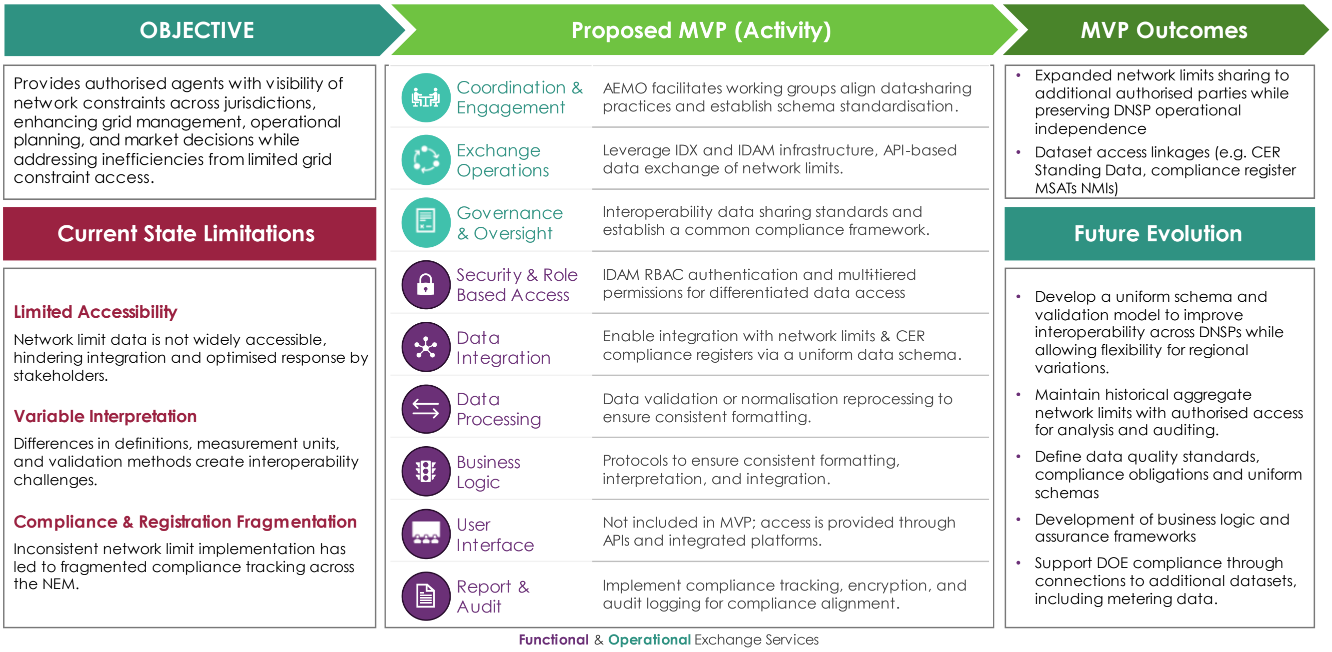
- **Expanded Market Efficiency**: Considerably improve market efficiency through better access to CER Standing Data, facilitating smoother transactions and more effective market operations.
- **Enhanced Grid Reliability**: Strengthen and maintain grid reliability and operational efficiency, ensuring that the grid can meet current and future demands effectively and sustainably.
- **Regulatory Compliance**: Ensure strengthened and improved regulatory compliance, helping all participants adhere to the necessary standards and regulations more effectively.

3.2 Use Case: Efficient Sharing Network Limits

3.2.1 Use Case Overview

The *Efficient Sharing of Network Limits* use case addresses the challenge of limited accessibility and inconsistent interpretation of network constraint data across the energy market. Currently, network limit information is not widely accessible, hindering integration and optimised response by stakeholders who need the information. This fragmentation creates operational inefficiencies and impedes effective grid management, planning, and market decision-making.

Figure 9: Efficient Sharing Network Limits use case overview



This use case aims to provide authorised agents with visibility of network constraints across jurisdictions through a standardised, secure data exchange framework. By leveraging the MITE infrastructure, the initiative establishes API-based data exchange capabilities that ensure consistent formatting, interpretation, and integration of network limits. The use case seeks to balances standardisation with flexibility, accommodating existing DNSP systems while implementing automated data transformation where necessary.

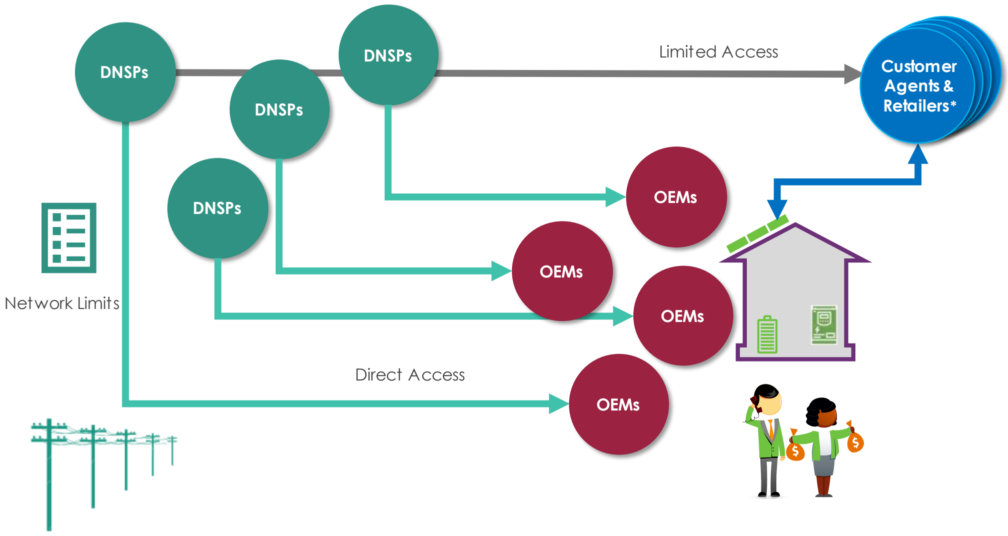
The anticipated outcomes include expanded sharing of network limits to additional authorised parties while preserving DNSP operational independence, improved dataset access linkages (e.g., connections to CER Standing Data, compliance registers, and MSATs NMIs), and enhanced interoperability across DNSPs.

3.2.2 Current Challenges

Currently, DNSPs rely on bespoke integrations between utility servers and customer devices, which is manageable for their own operations. However, the real challenge lies in providing adequate visibility for other parties. This lack of accessibility undermines efficiency outcomes, which this use case aims to address through a standardised and secure data exchange framework.

The diagram below seeks to illustrate the current network limit data sharing frameworks. DNSPs are the primary generators of network limit information generated by their inhouse utility servers. The data sharing is typically via non-standardised pathways using varying protocols, data formats, and authentication methods. Most DNSP target direct data sharing to OEMs for operational purposes, which limits the access to network limit data by customer agents (i.e. site controllers, home energy management systems, aggregators, retailers and embedded network operators), creating an information gap that hinders their ability to also optimise their operations within the network limits. This use case is seeking to expand the accessibility of the network limit data in a standardised format.

Figure 10: Sharing Network Limits Data Capture



* Note: Customer agents are assumed to include site controllers (i.e. HEMs), aggregators, embedded network operators etc and may include some OEMs.

The existing frameworks for sharing network limit data present several significant challenges that impede efficient grid management and market efficiency, these include:

- **Integration Complexity**: The reliance on bespoke integrations between entities and each DNSP increases technical investment and operational costs for data users. Varying authentication methods and the lack of standardised onboarding processes create significant barriers for smaller aggregators and new entrants.
- **Inconsistent Formatting:** Differences exist in how network limits are formatted and shared across DNSPs. This lack of standardisation creates interoperability challenges when attempting to integrate data from multiple sources. Variations in units of measurement, constraint definitions, and calculation methodologies make it difficult for stakeholders to develop consistent approaches to network limit management, particularly when operating across different distribution networks areas.
- **Limited Visibility and Data Accessibility**: Network limit data is not widely accessible to relevant stakeholders, creating information asymmetry in the market. This restricted access prevents key stakeholders, including Retailers, Aggregators, and Virtual Power Plant operators, from effectively

planning and optimising their operations based on actual network constraints, resulting in suboptimal resource allocation and potentially missed opportunities for grid support services.

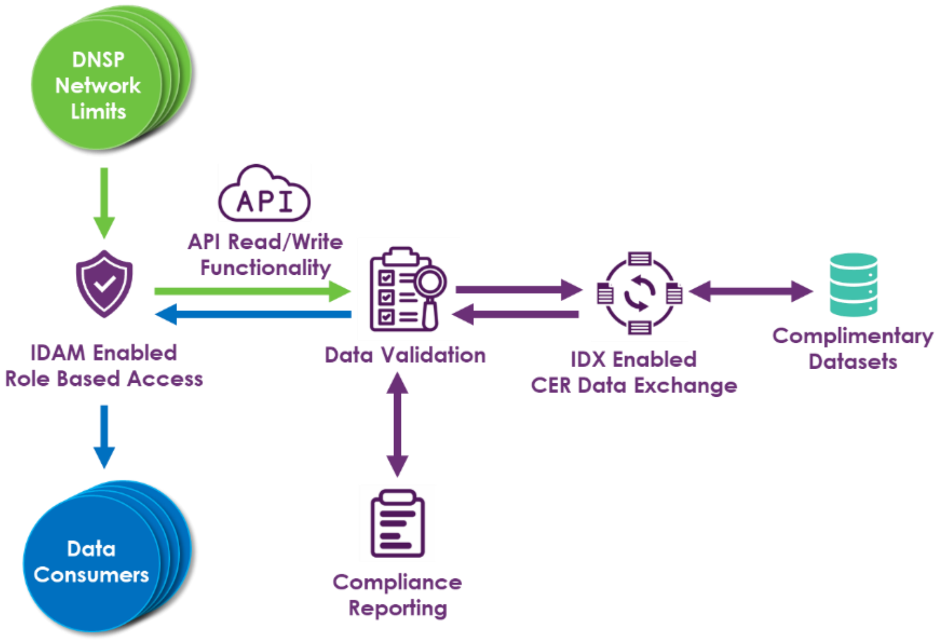
- **Scalability Challenges**: As CER adoption continues to rise, the fragmented framework risks amplifying operational inefficiencies, creating bottlenecks, and hindering the development of advanced grid management strategies such as Dynamic Operating Envelopes (DOEs) and Flexible Export Limits (FELs).

These challenges collectively hamper the market's ability to efficiently navigate network constraints, potentially resulting in suboptimal utilisation of the existing grid infrastructure, higher costs for consumers, and barriers to the integration of renewable energy resources. This use case proposes to address these issues through a balanced approach that improves data accessibility, while respecting operational boundaries and ensuring appropriate security and governance frameworks.

3.2.3 Proposed Minimum Viable Product & Future Evolution

This use case seeks to establish a standardised approach for sharing network limits, implementing a solution that balances immediate operational needs with strategic future capabilities using the MITE infrastructure.

Figure 11: MVP - Efficient Sharing of Network Limits illustration



The above diagram illustrates the proposed use case architecture. DNSPs, as data producers, share network limits through the CER Data Exchange via an API in a standardised format. IDAM enables secure, role-based access for authorised data consumers, while connections to other datasets provide complementary information and context. A refreshed dashboard provides greater aggregated data visibility and insights. This architecture creates an integrated ecosystem that enables validation, secure exchange, and appropriate access to network limit data while connecting with related systems and maintaining compliance.

The objective is to share network limits which will improve the efficiency and accuracy of grid management, planning, and market decision-making. These foundational capabilities of the MVP would evolve across four dimensions.

- **Data Access:** Ensuring that relevant stakeholders have secure access to network limit data is essential to the success of this use case. The proposed MVP seeks to implement robust access control mechanisms, including role-based access controls (RBAC) facilitated by IDAM, to ensure that only authorised parties can access the network limit data. Future iterations could enhance these access controls, incorporating more advanced authentication protocols and potentially integrating with other data security frameworks to further safeguard the information and streamline access for authorised users. These improvements have been designed to support the evolving needs of the energy market and enable more sophisticated data management capabilities.
- **Data Type:** The proposed MVP supports static network constraint data ensuring format consistency while integrating with existing DNSP systems. Future enhancements could expand to dynamic constraint data including real-time operational limits, forecasted constraints, and temporal variations, enabling more sophisticated grid management and responsive market mechanisms.
- **Data Frequency:** The MVP would implement a batch-based approach with scheduled updates for routine constraints and optional real-time updates for critical constraints, ensuring data sharing value while managing implementation complexity. Over time, updates could evolve toward more comprehensive real-time data exchange capabilities, enhancing responsiveness and supporting dynamic constraint management.
- **Data Integration:** The proposed MVP would support standardised API interfaces for network limits with consistent schemas co-designed with DNSPs, enabling automated data transformation where necessary to accommodate existing systems. Future developments could establish connections to additional operational datasets, including metering data and DOEs frameworks, and enhanced compliance mechanisms. These advancements would be complemented by expanded dataset access linkages, additional role-based access for authorised parties, and improved security measures through enhanced standardisation and authentication protocols.

This use case would ensure structured, secure, and standardised management of network limit data via the IDX-enabled CER Data Exchange. It distinguishes between two separate components: the existing DNSP systems that serve as the source of truth for network constraints, and an exchange layer that links these systems with authorised parties. Foundational capabilities from MITE support core functionalities, such as standardised data sharing, authorised access, flexible exchange methods, data validation and API integration. Additionally, the Exchange is intended to function as both a data validation pipeline for network limit producers and a distribution mechanism for sending notifications and updated constraint information to participants through push/pull mechanisms. These capabilities would ensure automation, scalability, and regulatory alignment, creating a data journey that keeps network limit information accurate, accessible, and standardised, while preserving DNSP operational independence and serving as a reliable foundation for future energy market evolution.

Table 6: High Level Design – Efficient sharing of Network Limits

LEGEND

☑ **Full Covered by MITE or other systems**

➲ **Partially Covered by MITE or other systems**

❖ **New Build**

Services	Minimum Viable Product (MVP)	Future Functionality

LEGEND		
☑ Full Covered by MITE or other systems ➲ Partially Covered by MITE or other systems ❖ New Build		
Functional Services		
Security & Access Protects data integrity, confidentiality, and availability.	☑ **RBAC Authentication:** Implement identity verification with multi-tiered RBAC permissions for differentiated access using IDAM capability. ☑ **Tiered Access Control:** Enable role-based access for customer agents and retailers based on regulatory requirements. ☑ **Zero-Trust Security:** Enforce continuous verification security model for all data access. ☑ **Encryption Management:** Apply data encryption protection controls aligned to the compliance requirements.	❖ **Expanded Access:** Extend limited/full access and controls to include additional authorised parties while preserving DNSP operational independence and security.
Data Integration Enables seamless sharing of network limits through standardised APIs.	☑ **API Capability:** Leverage IDX and IDAM infrastructure, API-based data exchange of network limits. ➲ **System Integration:** Enable integration into a common network limit data schema and linkage to various compliance registers. ☑ **Interoperability Standards:** Implement consistent protocols and connection patterns.	❖ **Schema Governance:** Develop assurance checkpoints to enable interoperability across DNSPs, while allowing regional variations. ❖ **Aggregator Connections:** Establish linkages to aggregator platforms. ❖ **DOE Compliance:** Support compliance validation through linkages to complimentary datasets, including metering data.
Data Processing Ensures standing data accuracy, consistency, and accessibility.	☑ **Data Validation:** Enforce schema-based automated validation for all network limit data entries. ➲ **Data Transformation:** Implement automated transformation into a common network limit data schema, accommodating existing DNSP systems.	➲ **Anomaly Detection:** Flag discrepancies in network limit data. ➲ **Historical Data:** Maintain historical aggregate network limits with authorised access for analysis and auditing. ➲ **Quality Standards:** Define data quality standards, compliance obligations and uniform schemas.
Business Logic Defines and enforces rules for network limit data governance.	❖ **Core Rules:** Protocols to ensure consistent formatting, interpretation, and integration. ❖ **Compliance Validation:** Automate compliance validation based on regulatory requirements. ❖ **Standard Schema Formats:** Co-design with DNSPs to create a balanced common network limit schema format.	❖ **Assurance Frameworks:** Development of business logic and assurance frameworks. ❖ **Flexible Rule Engines:** Support evolving regulatory requirements (e.g. IPRR) ❖ **Cross-Platform Policies:** Ensure alignment with market and regulatory frameworks.
User Interface Provides dashboards and tools for managing network limit data.	☑ **User Interface:** API access only for system-to-system data sharing and no user interface proposed for the MVP. ❖ **Batch Data Exchange:** Share network limits in batch-based approach with optional real-time updates for critical constraints.	❖ **Custom UI:** User interfaces for network limit data reporting & analytics. ❖ **Multi-Device Support:** Web and mobile portals for network limit data. ❖ **Dashboard Visualisations:** Visualisation tools for critical constraint monitoring.
Reporting & Audit Ensures compliance and transparency in network limit data management.	❖ **Audit Logs:** Implement compliance tracking, encryption, and audit logging. ❖ **Compliance Reporting:** Establish foundational compliance reporting. ❖ **Historical Data Access:** Consider role-based access to historical network limit data logs.	❖ **Predictive Compliance:** Proactively detect data or compliance inconsistencies. ❖ **Self-Service Logs:** Backlog trails for tracking network limit data modifications. ❖ **Anomaly Resolution:** Automated workflows to correct network limit data errors.
Operational Services		
Operations & Management Ensures network limit data reliability,	❖ **Service Management:** Operational support to enable efficient sharing of network limits, including incident tracking, uptime monitoring and workflow support.	❖ **Performance Monitoring:** Implement proactive service quality measurement and reporting. ❖ **Business Continuity:** Develop robust processes for ensuring uninterrupted service.

LEGEND

☑ **Full Covered by MITE or other systems**

➲ **Partially Covered by MITE or other systems**

❖ **New Build**

scalability, and resilience.	❖ **Incident Management:** Protocols to resolve network limit data discrepancies. ➲ **Scalability:** Assumed batched weekly network limit data flows, with the option for high priority real-time pushed updates for critical constraints impacting network limits.	❖ **Operational Maturity:** Create pathway for advancing service capabilities.
Coordination & Engagement Supports structured collaboration for network limit governance.	❖ **Stakeholder Coordination:** Facilitate working groups to align data-sharing practices and schema standardisation. Assumed to start with voluntary adoption by DNSPs, transitioning to include obligations outlined in the regulatory framework. ❖ **Change Management:** Manage transition and onboarding of participants joining the exchange. ❖ **Industry Communications:** Develop frameworks for consistent information sharing.	❖ **Participant Onboarding:** Create streamlined processes for new data providers and consumers. ❖ **Feedback Integration:** Establish mechanisms to incorporate stakeholder insights. ❖ **Relationship Management:** Develop structured approach to ongoing engagement.
Governance & Oversight Ensures regulatory compliance and enforcement of network limits.	❖ **Operating Model:** Establish CER Data Exchange governance structures and decision frameworks. ❖ **Compliance Monitoring:** Create processes for assessing adherence to regulatory requirements. ❖ **Publish Limits Only:** Preserve DNSP operational independence by only publishing network limits and not enabling any control functionality. ❖ **Regulatory Reform:** Identification of any regulatory changes required to enable the efficient operation of the CER Data Exchange. This may result in the preparation of rule changes.	❖ **Dynamic Compliance:** Introduce dynamic regulatory compliance monitoring to identify data inconsistencies. ❖ **Dispute Resolution:** Deploy automated dispute resolution frameworks for data inconsistencies. ❖ **Adaptive Policies:** Develop adaptive governance policies that align with evolving regulatory requirements.

3.2.4 Implementation Considerations

The implementation of the *Efficient Sharing of Network Limits* use case is intended to deliver significant advancements in network constraint data visibility, market efficiency, and grid reliability. By leveraging a structured, secure, and interoperable MITE data-sharing infrastructure, stakeholders would benefit from greater transparency, security, and access to network constraint information. This use case has been designed to establish a robust foundation for future energy market evolution, ensuring seamless integration with advanced grid management approaches and evolving regulatory requirements.

- **Challenge and Purpose:** The *Efficient Sharing of Network Limits* use case seeks to address the critical challenge of fragmented integrations, inconsistent data sharing formats, and limited accessibility of network constraint information.
- **Core Architecture:** The framework establishes two distinct components:
    1. existing DNSP systems serving as the authoritative source of truth for network limits, and
    2. an exchange layer connecting diverse stakeholders through secure and standardised interfaces while preserving DNSP operational independence.
- **Key Capabilities:** Leveraging the MITE functionality, the use case aims to deliver standardised network limit data sharing, authorised access controls, robust validation mechanisms and flexible distribution methods.
- **Implementation Approach:** The proposed MVP follows a staged delivery model beginning with voluntary adoption by DNSPs while transitioning to regulatory framework obligations. Comprehensive risk management strategies address data transformation challenges, stakeholder adoption, security considerations, technical complexity, and resource constraints.
- **Strategic Alignment:** By leveraging MITE infrastructure and implementing consistent data sharing standards, this use case seeks to better position Australia's energy sector to manage network constraints in an increasingly decentralised energy landscape while reducing integration overhead and enabling more efficient market operations.

3.2.5 Key Risks and Mitigations

Table 7: Risks and Mitigations

Risk	Details	Proposed Mitigation
Data Transformation and Schema Standardisation	• Network limit data formats vary significantly across DNSPs, with inconsistent definitions, units, and granularity. • Creating a uniform schema while accommodating regional variations requires balancing standardisation with flexibility. • Automated transformation processes may introduce errors if not properly validated, potentially compromising operational decisions based on network constraint data.	• Implement collaborative schema development through industry working groups to ensure broad acceptance. • Develop robust data transformation patterns with comprehensive validation rules and anomaly detection. • Use a phased transformation approach with parallel validation against source systems before full transition.

Risk	Details	Proposed Mitigation
DNSP Operational Independence Concerns	• DNSPs may resist sharing detailed network limit data due to concerns about operational independence[13]. • Publication of constraint information may raise questions about decision-making authority. • Potential misalignment between constraint information and operational reality could create confusion about grid management responsibilities.	• Clearly delineate that the exchange only publishes limits without enabling control functionality. • Implement appropriate disclaimers and usage policies that clarify DNSP operational independence. • Develop governance frameworks that respect existing regulatory roles while enhancing information transparency.
Security and Access Control Complexity	• Network limit data has varying sensitivity levels requiring sophisticated access control mechanisms. • Multiple stakeholders with different access needs creates complex permission management requirements. • Integration with existing security frameworks across diverse organisations introduces compatibility challenges.	• Implement tiered RBAC with fine-grained permissions based on data sensitivity and stakeholder roles. • Adopt zero-trust security principles with continuous verification for all network limit data access. • Conduct regular security assessments with specific focus on network constraint data protection.
Scalability and Performance Constraints	• Growing CER penetration will dramatically increase the volume and frequency of network limit updates. • Real-time constraint data sharing creates significant performance demands on infrastructure. • Maintaining system responsiveness during peak constraint periods is critical for operational reliability.	• Design infrastructure with significant headroom for expected CER growth trajectories. • Implement progressive performance monitoring with early warning systems for capacity constraints. • Develop tiered data delivery approaches prioritising critical constraint information during high-demand periods.
Regulatory Alignment and Evolution	• Current regulatory frameworks may not fully support the obligation to share standardised network limit information. • Evolution toward Dynamic Operating Envelopes will require regulatory adaptation. • Balancing voluntary adoption with eventual mandatory compliance presents transition challenges.	• Engage proactively with regulatory bodies to align development with emerging frameworks. • Design flexible implementation approaches that can adapt to evolving regulatory requirements. • Create a staged compliance pathway with clear transition points from voluntary to mandatory participation.

3.2.6 Use Case Outcomes

The implementation of *Efficient Sharing of Network Limits* use case aims to deliver significant advantages through increased visibility and standardisation of data in a consistent and common way across the industry. It is intended to deliver four primary outcomes:

- **Improved Access**: Implementing a robust access framework, aligned with role-based access controls, and secured through strong authentication mechanisms, ensures that only authorised users can access critical network constraint information.
- **Sharing of Network Limits:** Expanded sharing of network limits ensures this critical information reaches those who benefit from it which empowers organisation to make informed decisions and contributes to a more efficient energy market which ultimately benefit customers.

[13] Operational independence refers to the ability of networks to manage and control their own network operations without external interference, in accordance with their network license obligations.

- **Improved Consistency**: Standardisation of network limit data through a common schema co-designed with industry, promotes consistent and efficient communications. This development also facilitates better decision-making, bolstering market efficiency and strengthening grid reliability.
- **Enhanced Operational Planning**: The expanded access to shared network limit data will likely strengthen grid reliability and lead to improved operational planning, reducing the risk of disruptions and ensuring a stable decentralised energy system.

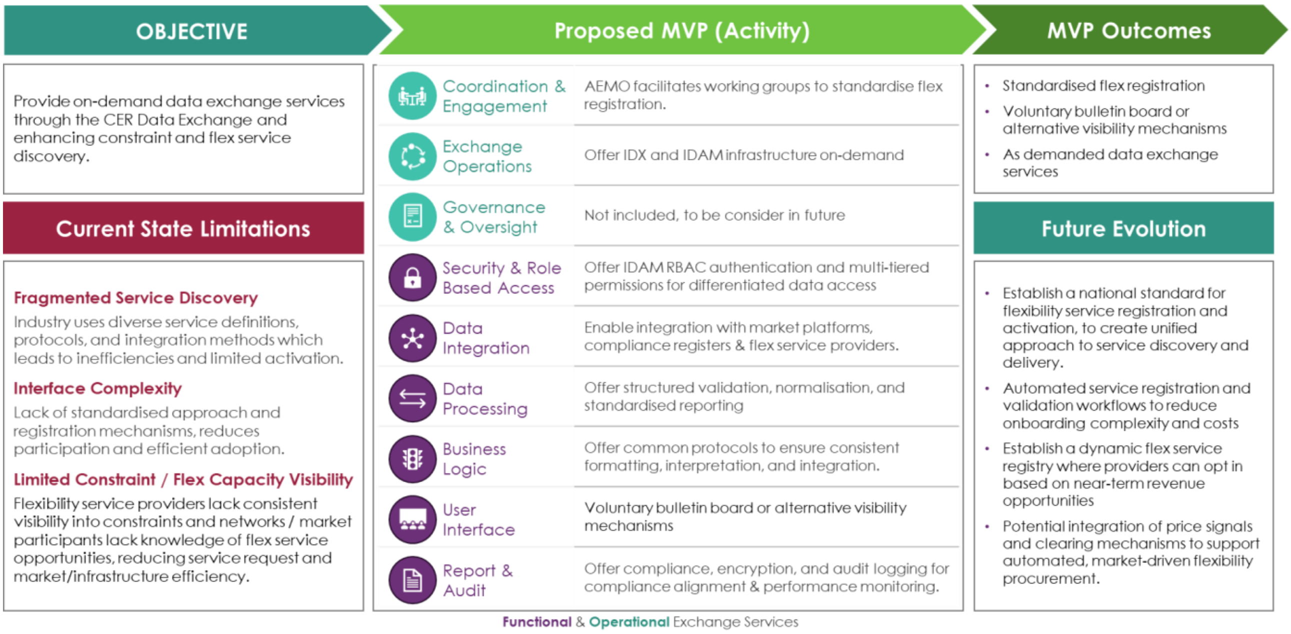
3.3 Use Case: Network Support & Flexibility Capability Discovery

3.3.1 Use Case Overview

The *Network Support & Flexibility Capability Discovery* use case seeks to address the need for standardised visibility of constraints and exchange of flexibility service capability data within the energy market. This use case would enable flex providers, constrained parties, and market participants to discover and share information about constraints and available flexibility resources through a secure, standardised framework.

Whilst use cases 1 & 2 were seen as priority and prerequisites by stakeholders, additional support and clarity around this use case is needed. It was unclear to Workshop 3 participants whether there is sufficient value in implementing this use case as a priority. Some stakeholders raised concerns that the data to enable this use case is not yet readily available. This stakeholder feedback has been reflected in the implementation roadmap, which shows a tentative deployment of this use case as a priority at this stage.

Figure 12: Network Support & Flexibility Capability Discovery use case overview



This use case aims to standardise the registration of flexibility services and improve the visibility of network constraints and available flexibility capacity. By utilising the MITE infrastructure, it seeks to establish a secure and voluntary data exchange framework that ensures the consistent formatting and validation of flexibility services, along with the creation of a common registration system and bulletin board for efficient service discovery.

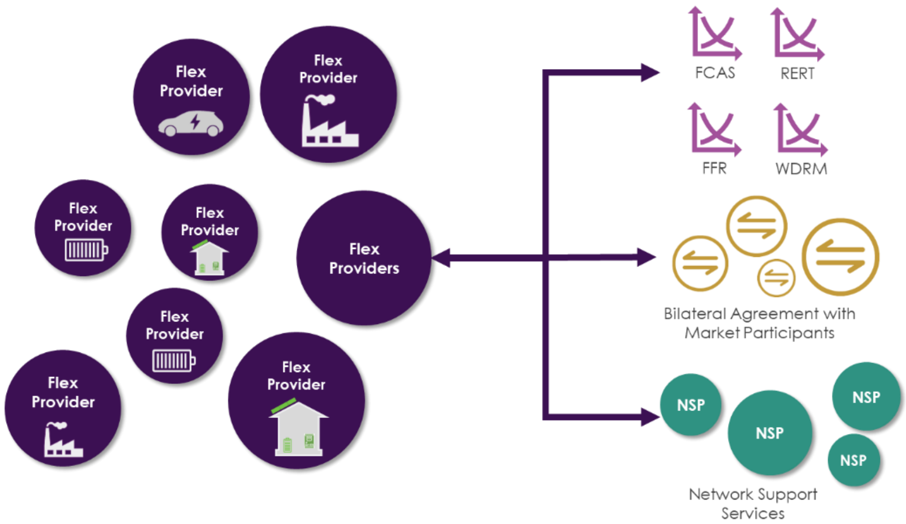
The anticipated outcomes include standardised flexibility service registration protocols, voluntary bulletin board mechanisms for constraint and capacity visibility, on-demand data exchange services, and improved data linkages between flexibility providers and constrained parties. These enhancements would create a foundation for future evolution toward a national standard for flexibility service registration and activation, automated workflows, and market-driven flexibility procurement.

3.3.2 Current Challenges

Flexibility service providers currently navigate multiple market frameworks and NSPs through disparate registration processes and inconsistent data exchange mechanisms. This fragmentation can affect individual assets, aggregated distributed energy via VPPs and demand-responsive providers differently, creating an inefficient ecosystem that constrains the discovery and utilisation of flexibility services. Furthermore, trials like Piclo's platform[14] may contribute to additional interfaces, adding to potentially additional layers of complexity for providers seeking seamless integration and optimal resource utilisation.

The diagram illustrates the current flexibility service discovery landscape. Various flexibility providers, from residential batteries and electric vehicles operating in VPPs to industrial loads and commercial buildings providing demand response, must navigate connections across multiple market frameworks (FCAS, RERT, FFR, WDRM), sometime via bilateral agreements with market participants, and NSPs for Local Network Support Services (LNSS). Each provider faces unique challenges based on their operational model, with VPP operators managing aggregated resources across multiple customer sites, while demand response providers focus on coordinated load reduction at specific locations.

Figure 13: Current Flexibility Service Discovery Landscape



The existing framework presents several key challenges impeding efficient market participation and grid optimisation:

- **Fragmented Service Discovery**: Disparate service definitions, protocols, and integration methods force flexibility service providers to manage multiple registration processes and technical requirements. This increases operational complexity and costs while limiting effective discovery and activation of flexibility services. The inconsistent approaches between regions further complicates participation for providers operating across multiple distribution network areas.
- **Interface Complexity**: Varying data formats, authentication methods, and registration procedures across NSPs and market frameworks create significant adoption barriers, particularly for smaller aggregators and new market entrants. These technical differences require custom integration solutions

[14] Australian networks CitiPower and Powercor and United Energy share network constraints on Piclo platform

that increase IT expenditure and operational overhead, delaying market entry and reducing participation.

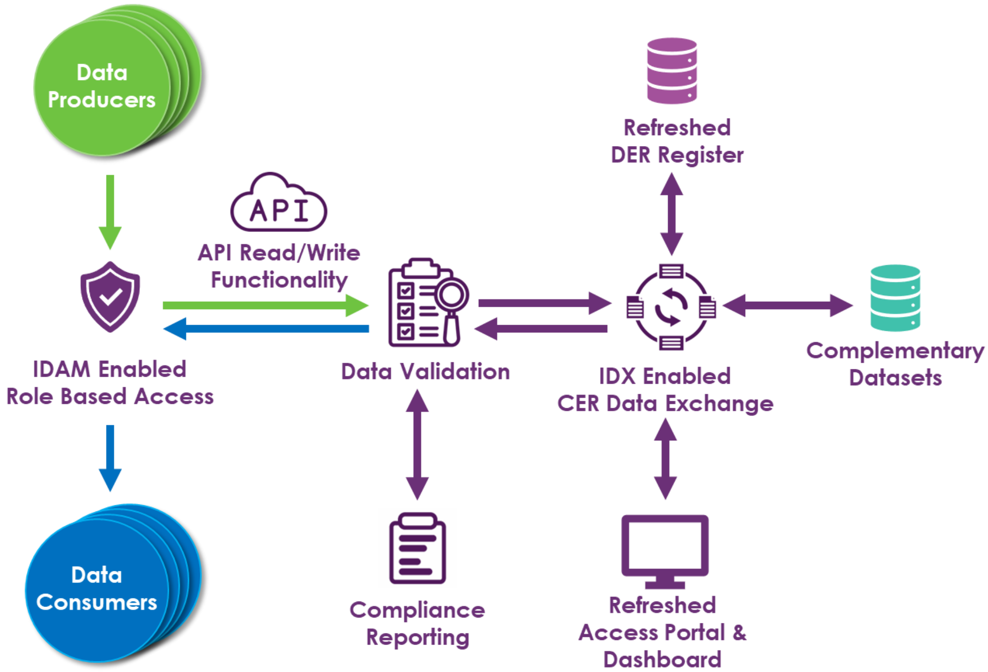
- **Limited Constraint and Capacity Visibility**: Flexibility providers lack consistent visibility of network constraints, while NSPs and market participants have limited visibility of available flexibility resources. This information asymmetry prevents effective matching of flexibility supply with constraint needs. The absence of standardised mechanisms or constraint visibility tools results in missed opportunities for both constraint mitigation and service provision.
- **Market Fragmentation**: Multiple pathways for flexibility services (wholesale markets, FCAS, network support) operate in isolation with minimal coordination. This fragmentation inhibits value stream stacking and cross-market optimisation, reducing the overall economic value of flexibility resources. Market siloes also lead to competing signals and potentially conflicting dispatch instructions, undermining efficient resource utilisation and system reliability.
- **Registration Burden**: Each market framework requires separate registration processes with different data requirements and verification protocols. This administrative burden disproportionately impacts smaller providers and creates inefficiencies across the industry through duplicated effort and inconsistent data quality.

These challenges collectively hinder efficient discovery, access and utilisation of flexibility services, resulting in suboptimal utilisation of decentralised and demand response resources, increased system costs, and barriers to renewable energy integration. Addressing these issues requires balancing improved service discovery with operational independence and appropriate security frameworks, while maintaining voluntary participation to encourage early adoption and industry collaboration.

3.3.3 Proposed Minimum Viable Product & Future Evolution

This use case seeks to establish a standardised approach for flexibility service discovery, balancing operational needs with strategic future capabilities using existing infrastructure. Unlike other use cases, this functionality would be developed and implemented on-demand, responding to stakeholder requirements as they arise rather than as a comprehensive initial build.

Figure 14: MVP - Network Support & Flexibility Capability Discovery illustration



The above diagram illustrates the proposed architecture. Flexibility providers and constrained parties share information through standardised APIs in consistent formats. IDAM enables secure, role-based access for authorised data consumers, while data validation ensures quality and compliance. An IDX-enabled CER Data Exchange would facilitate secure data sharing, with connections to complementary datasets providing context. A voluntary bulletin board would offer visibility of constraints and available flexibility capacity, creating an ecosystem that enables validation, secure exchange, and appropriate access while maintaining voluntary participation. This use case aims to improve efficiency and accessibility of flexibility service discovery through standardisation, recognising that adoption will depend on stakeholder value perception and participation levels.

The objective is to improve efficiency and accessibility of flexibility service discovery, with capabilities developed incrementally on-demand across three dimensions:

- **Registration Approach:** The solution would support standardised flex registration protocols co-designed with industry participants, implemented as requested. This approach ensures format consistency while accommodating different provider types without requiring comprehensive upfront investment.
- **Visibility Mechanisms:** When requested, voluntary bulletin board or alternative visibility mechanisms for network constraints and flex capacity could be implemented. This targeted approach seeks to allow stakeholders to request specific visibility tools based on identified pain points.
- **Data Exchange:** The solution has been designed to deliver as-demanded data exchange services focusing on discovery only when requested by participants. This prevents duplication of effort with existing point-to-point solutions and ensures investment occurs only where clear value exists.

This use case would ensure structured, secure, and standardised discovery while recognising industry readiness varies across stakeholder groups. It distinguishes between existing systems that serve as data sources of flexibility capability and constraint needs, and an exchange layer implemented incrementally as demand emerges. Core functionalities which are proposed for inclusion are standardised registration, authorised access, flexible exchange methods, and data validation, each implemented when requested.

The on-demand approach acknowledges that the full value proposition emerges through widespread adoption rather than through individual implementations. This wouldallow stakeholders to engage based on identified pain points and specific business needs, creating a pathway for organic growth without requiring simultaneous investment from all parties. This ensures interoperability and market alignment while preserving operational independence, allowing the solution to evolve based on actual market demands rather than predetermined functionality.

Table 8: High Level Design – Network Support & Flexibility Capability Discovery

LEGEND		
☑ Full Covered by MITE or other systems		
➲ Partially Covered by MITE or other systems		
❖ New Build		
Services	Minimum Viable Product (MVP)	Future Functionality
Functional Services		
Security & Access Protects data integrity, confidentiality, and availability for network support and flex services.	☑ **RBAC Authentication:** Implement identity verification with multi-tiered RBAC permissions for differentiated access using IDAM capability. ☑ **Tiered Access Control:** Enable role-based access for authorised stakeholders on a voluntary, as-demanded basis. ☑ **Zero-Trust Security:** Enforce continuous verification security model for data access. ☑ **Encryption Management:** Apply data encryption protection controls aligned to the compliance requirements.	❖ **Expanded Access:** Extend access controls to include additional stakeholders while maintaining voluntary participation.
Data Integration Enables seamless sharing of local network support and flex service data through standardised APIs.	☑ **API Capability:** Offer IDX and IDAM infrastructure on-demand for voluntary data exchange services. ➲ **System Integration:** Enable optional integration with external market platforms, compliance registers, including integrating NSP local network support services platforms & flex service provider systems. ☑ **Interoperability Standards:** Implement consistent protocols to facilitate voluntary participation.	❖ **Establish National Standard:** Create a unified approach to flexibility service registration and activation, supporting service discovery and delivery. ❖ **Aggregator Connections:** Establish linkages to flex service systems while preserving voluntary participation. ❖ **Price Signal Integration:** Support integration of price signals and clearing mechanisms for automated, market-driven flexibility procurement.
Data Processing Ensures data accuracy, consistency, and accessibility.	➲ **Market Facilitation:** Enable the efficient sharing of data based on third party marketplaces or platforms using a common registration frameworks and codesigned schemas. ➲ **Dynamic Registry:** Establish a dynamic flex service registry where providers can opt in based on near-term revenue opportunities.	❖ **Automated Service Registration:** Deploy automated flexibility service registration and validation workflows to reduce onboarding complexity and costs. ❖ **Quality Standards:** Define data quality standards for flex services while maintaining voluntary framework. ❖ **Dynamic Registry:** Develop a dynamic flex service registry where providers can opt in based on near-term revenue opportunities.
Business Logic Defines and enforces rules for network limit data governance.	❖ **Common Protocols:** Offer common protocols to ensure consistent formatting, interpretation, and integration for voluntary participants. ❖ **Compliance Validation:** Automate compliance validation based on regulatory requirements for participating providers.	❖ **Flexible Rule Engines:** Support evolving regulatory requirements and market structures. ❖ **Market Integration:** Integration with market mechanisms for flexibility services. ❖ **Cross-Platform Policies:** Ensure alignment with market and regulatory frameworks.

LEGEND

☑ **Full Covered by MITE or other systems**

➲ **Partially Covered by MITE or other systems**

❖ **New Build**

	❖ **Anomaly Detection:** Anomaly detection to flag discrepancies in submitted data and implement data integrity measures through rule-based write access. ❖ **Standard Schema Formats:** Co-design with NSPs, market participants and flex providers to establish a common framework while allowing flexible implementation. Implement a basic schema – option to extend as required.	
User Interface Provides dashboards and tools for managing network limit data.	❖ **Voluntary Bulletin Board:** Establish voluntary bulletin board or alternative visibility mechanisms for network constraints, local network support services, and flex capacity information. ❖ **As-Demanded Services:** Provide data exchange services on-demand integrated with third party marketplaces or platforms, assumed no transaction functionality would be included in the MVP. ❖ **Discovery Only:** MVP supports flexibility streamlined discovery.	❖ **Dynamic Service Registry:** Establish a dynamic flex service registry where providers can opt in based on near-term revenue opportunities. ❖ **Multi-Device Support:** Web and mobile portals for flexibility service data management. ❖ **Procurement Support:** Integration of price signals, flexibility capability discovery and clearing mechanisms to support automated, market-driven platforms.
Reporting & Audit Ensures compliance and transparency in standing data management.	❖ **Audit Logs:** Implement compliance, encryption, and audit logging for compliance alignment & performance monitoring for voluntary participants. ❖ **Compliance Reporting:** Establish foundational compliance reporting for participating providers. ❖ **Historical Data Access:** Role-based access to historical data logs on an as-demanded basis.	❖ **Predictive Compliance:** Proactively detect data or compliance inconsistencies. ❖ **Self-Service Logs:** Tracking mechanisms for data modifications. ❖ **Performance Analytics:** Enhanced monitoring of flexibility services performance while maintaining voluntary participation framework.
Operational Services		
Operations & Management Ensures network limit data reliability, scalability, and resilience.	❖ **Exchange Operations:** Offer IDX and IDAM infrastructure for as-demanded data exchange services. ❖ **Incident Management:** Support incident management protocols for voluntary participants ❖ **Scalability:** Framework to accommodate various flexibility market structures on an opt-in basis.	❖ **Performance Monitoring:** Implement proactive service quality measurement and reporting. ❖ **Business Continuity:** Develop robust processes for ensuring uninterrupted service. ❖ **Operational Maturity:** Create pathway for advancing service capabilities while preserving voluntary participation.
Coordination & Engagement Supports structured collaboration for standing data governance.	❖ **Stakeholder Coordination:** Facilitate working groups to align data-sharing practices and schema standardisation. Assumed to start with voluntary adoption by DNSPs whilst transitioning the regulatory framework obligations. ❖ **Change Management**: Manage transition approaches for participants joining the exchange. ❖ **Industry Communications:** Develop frameworks for consistent information sharing.	❖ **National Standard:** Establish a national standard for local network support and flexibility service registration and activation, creating unified approach to service discovery and delivery. ❖ **Automated Onboarding:** Automated service registration and validation workflows to reduce onboarding complexity and costs. ❖ **Market Maturity:** Develop structured approach to ongoing engagement as market matures.
Governance & Oversight Ensures regulatory compliance and enforcement for standing data.	❖ **Not included in MVP:** To be considered in future phases. ❖ **Voluntary Framework:** Assessment of pathways for alignment as the market matures, preserving voluntary participation. ❖ **Limited Scope:** Focus on standardised flex registration and voluntary visibility mechanisms provided on-demand.	❖ **Regulatory Reform:** Identification of any regulatory changes required to enable the efficient operation of the CER Data Exchange. This may result in the preparation of rule changes. ❖ **Operating Model:** Establish flex data exchange governance structures and decision frameworks that support voluntary participation. ❖

3.3.4 Implementation Considerations

Implementation of the *Network Support and Flexibility Capability Discovery* use case seeks to enhance visibility of flexibility services through standardised registration and discovery mechanisms. This on-demand infrastructure would reduce integration complexity while improving service visibility across stakeholder groups, creating a foundation for more coordinated flexibility markets without requiring extensive upfront investment.

- **Challenge and Purpose:** The proposed MVP would address fragmented service discovery, interface complexity, limited visibility, and market fragmentation that currently prevent efficient matching of flexibility resources with network needs. Existing bespoke integrations and inconsistent protocols create significant barriers especially for VPP operators and demand response providers navigating multiple markets simultaneously.
- **Core Architecture:** The framework establishes two distinct components:
    1. Existing systems as authoritative sources for flexibility services and constraints, including VPP management platforms, demand response systems, and network management tools, and
    2. On-demand data exchange layer connecting stakeholders through standardised interfaces while preserving operational independence and security boundaries, and
- **Key Capabilities:** Leveraging existing infrastructure, the proposed MVP would deliver standardised registration protocols accommodating both aggregated and direct participation models, a voluntary bulletin board for network constraints and flexibility capacity visibility, on-demand data exchange with standardised APIs focused on discovery functionality, role-based access control with tiered permissions for authorised stakeholders, and comprehensive data validation ensuring quality and consistent interpretation across flexibility service types.
- **Implementation Approach:** The MVP is intended to follow an on-demand delivery model where CER Data Exchange components are built or used in response to specific requests and demonstrated value. Implementation of the priority use cases is intended for 2027 to align with stakeholder preferences and parallel reforms, both enabling and enabled by the CER Data Exchange. This addresses the "network effect" challenge by targeting investment where immediate benefits exist while creating pathways for broader adoption. The coordination function of the Exchange could include creating clear standards with industry working groups, defining stakeholder-specific value propositions through journey mapping, and establishing governance frameworks ensuring sustainable operation as the market evolves.
- **Strategic Alignment:** This use case intends to support Australia's energy sector to better utilise distributed resources by creating standardised discovery mechanisms while acknowledging varied industry maturity. The on-demand approach would enable organic growth driven by market needs rather than requiring simultaneous commitment from all participants, creating a practical pathway toward a more integrated and efficient flexibility marketplace.

3.3.5 Key Risks and Mitigations

Table 9: Risk and Opportunity Assessment

Risk	Details	Proposed Mitigation
Stakeholder Adoption and Network Effect	• Voluntary participation creates adoption challenges and potential for limited network effect value. • Stakeholders may continue with existing point-to-point solutions rather than adopting standardised approaches. • Uneven adoption across participant types may reduce overall system value.	• Develop stakeholder-specific value propositions through detailed journey mapping. • Implement on-demand delivery model targeting initial development where clear pain points exist. • Create success metrics and case studies that demonstrate value to drive broader adoption. • Facilitate industry working groups to build consensus around standards and protocols.
Registration Standards Complexity	• Diverse flexibility service types require accommodating varying technical characteristics. • Existing systems use incompatible registration frameworks and data formats. • Balancing standardisation with flexibility creates potential for implementation complexity.	• Co-design registration protocols with representative stakeholders across service types. • Implement flexible schema standards that accommodate both aggregated and direct participation models. • Develop transformation patterns for mapping existing registration data to standardised formats. • Create comprehensive validation rules to ensure data quality and consistency.
Visibility Mechanism Effectiveness	• Bulletin board approaches must balance detail with usability. • Limited stakeholder participation may create incomplete visibility. • Inconsistent update frequencies could reduce reliability of information.	• Design intuitive user interfaces with stakeholder-focused filtering capabilities. • Implement clear data quality indicators showing freshness and completeness. • Develop automated alerting for significant constraint or capacity changes. • Create standardised visualisation tools to enhance understanding of complex data.
Security and Access Control	• Flexibility service data may be commercially sensitivity requiring robust protection. • Tiered access requirements introduce permission management complexity. • Cross-organisational authentication creates integration challenges.	• Implement role-based access control with fine-grained permissions. • Adopt secure API standards with comprehensive authentication protocols. • Conduct regular security assessments focusing on data protection. • Develop clear data usage policies and agreements.
Operational Sustainability	• On-demand approach risks fragmented development without cohesive roadmap. • Maintenance requirements increase with system complexity and adoption. • Funding models for ongoing operations may be challenging in voluntary framework.	• Establish clear governance structure for prioritising development requests. • Develop modular architecture enabling efficient maintenance and enhancement. • Create sustainable funding models aligned with stakeholder value realisation. • Implement comprehensive monitoring and operational support processes.

3.3.6 Use Case Outcomes

The *Network Support and Flexibility Capability Discovery* use case is intended to enhance visibility and standardisation of constraint management using decentralised energy. It would deliver three primary outcomes:

- **Reduced Market Entry Barriers**: Reduced market entry barriers through consistent registration mechanisms, lowering operational costs for flexibility providers.

- **Enhanced Visibility**: Enhanced visibility of available flexibility and network constraints across previously fragmented markets.
- **Improved Market Efficiency:** Enhanced market efficiency through coordinated visibility across wholesale, ancillary, and network support markets, enabling value stacking opportunities and increasing DER integration capacity through more efficient utilisation of existing flexibility resources.

4 Conclusion

The purpose of this document is to outline the High-Level Design of the CER Data Exchange, detailing how the three industry-agreed priority use cases will serve as the foundation for its technical and operational functionality. This document is intended to be read in conjunction with the documents outlined in Figure 1 which together summarise the co-design process, identify next steps to implement the CER Data Exchange and outline the approach used to estimate the cost. Notably, Attachment C: Implementation Plan outlines key implementation considerations, anticipated timing of use case development and foreseeable risks.

The High-Level Design outlined in this document draws on international insights, cross-industry best practices, and builds on the AEMO MITE program. Throughout the co-design process, industry input and stakeholder feedback has shaped what capabilities which should be included in the MVP and what could be implemented in a future evolution. In particular, participants who attended the third industry workshop considered that the key trade-offs had been identified, and there was broad agreement on the preferred MVP (outlined above).

Beyond the functionality of the CER Data Exchange, stakeholders raised concerns relating to data quality, collection processes and the need for complementary compliance frameworks and regulations. Stakeholders called for clearer roles and responsibilities, improved scalability and security measures and the need to address DOE policy variability. These issues will need to be addressed during detailed design phase. Feedback also highlighted the need to consider parallel reforms and integrate with existing systems, platforms and data sources. These considerations have been outlined in further detailed in Section 3 of Attachment C: Implementation Plan.