Smart Connect

Industry Workpaper

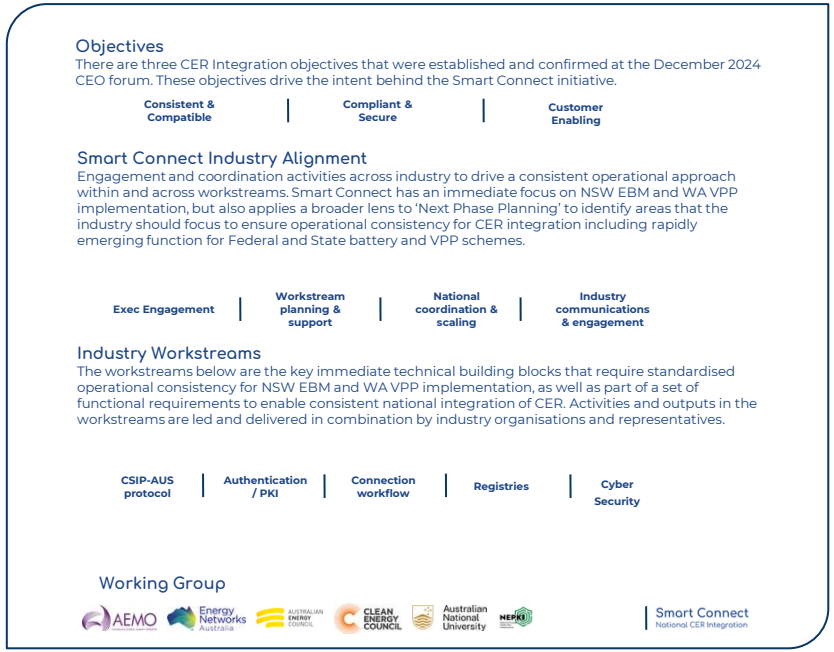
Industry Priorities 2026-2030

March 2026

AEMO
Energy Networks Australia
Australian Energy Council
Clean Energy Council
Australian National University
NEPKI

About Smart Connect

The Smart Connect initiative is facilitating stakeholder engagement to foster executive and c-suite alignment from key organisations across industry. Smart Connect has been coordinating delivery of a nationally consistent implementation of NSW Emergency Backstop Mechanism (EBM) and the WA Residential Battery Scheme for Consumer Energy Resources (CER) while aligning C-suite and executive stakeholders to provide the foundation for a compliant, secure and market-enabling national CER integration platform. The Smart Connect industry alignment activities have been funded by ARENA through to 31 March 2026.



About This Workpaper

This Workpaper is the third and final workpaper as part of the current project. Synthesises functional requirements (Workpaper #1) and stakeholder needs (Workpaper #2) into a consolidated view of indicators, programs, workstreams and milestones. It presents recommendations of Smart Connect Working Group members on the priority programs that require ongoing coordination as a critical enabler of customer outcomes and ecosystem target state that the National CER Roadmap plans to deliver.

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Acknowledgements

The Smart Connect PMO recognise the significant contribution and support from Working Group members and CEOs, key stakeholders and industry experts to deliver industry alignment and bring this Workpaper together.

Icons sourced from FlatIcon

Project Links

https://arena.gov.au/knowledge-innovation/smart-connect-initiative/

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Executive Summary

Industry Context

Australia's energy system is experiencing rapid growth in Consumer Energy Resources (CER), driven by widespread rooftop solar, accelerating battery uptake and emerging electric vehicle demand. Reflecting this growth, Australia has spent the last decade developing world-leading CER pilots and technical standards. Their implementation is presently being supported by the development of federal and state policies such as the National CER Roadmap. Despite this, deployment volume continues to outpace compliance and capability, and market participation by CER remains nascent. The challenge now is to integrate management approaches and compliance across jurisdictions and service providers, and scale investment and coordination on DER management.

Smart Connect

Smart Connect is an industry coordination initiative to foster executive and c-suite alignment from key organisations across industry to deliver a nationally consistent implementation of NSW Emergency Backstop Mechanism (EBM) and the WA Residential Battery Scheme for Consumer Energy Resources (CER).

Over the past 15 months, Smart Connect has convened AEMO, ENA, AEC, CEC, NEPKI, ANU/ISC and other participants to support industry collaboration and coordination to meet the NSW EBM soft deadline out to 31 March 2026. There is also a future focus to map functional requirements to operationalise CER integration and the early co-development of industry priorities in these areas.

Achievements to Date

Smart Connect has established a shared, technology-agnostic functional baseline for nationally consistent CER integration and translated this into customer and retailer requirements through structured industry consultation. This work identified key maturity gaps, coordination challenges and practical barriers to scale, providing a validated technical and customer-focused foundation for defining priority areas for industry coordination.

Development of this Workpaper

This workpaper brings together technical, retailer and customer inputs to identify priority areas where industry coordination and sequencing are most critical. Developed through Smart Connect Working Group sessions, it provides a practical framework for executive and c-suite audiences to support industry alignment as CER scales.

Workpaper – Industry Priorities

The Smart Connect Working Group has synthesised the operational requirements of the CER Roadmap into three key areas where industry alignment and support are critical to long term success:

① **Device Interoperability:**
Testing, listing, certification at scale, ongoing standard development
Customer value: Interoperable devices increases customer choice and lowers costs

② **Registration & Access:**
Universal workflows, registries uplift, secure access for authorised parties
Customer value: Secure registration gives customers control and simplifies switching

③ **Customer & Market Services:**
Standardisation of B2B interfaces for energy service delivery at scale
Customer value: Seamless customer participation in grid services and competitive retail offerings

To enable these outcomes, Smart Connect Working Group members actively support the establishment of ongoing industry coordination to ensure and where possible accelerate the delivery of the CER Roadmap.

④ **Integrated Coordination:**
Policy, Program and Technical industry coordination.
Customer value: Unlock more customer value sooner

Workpaper Methodology

Inclusive, transparent, iterative process to build shared understanding and consolidate industry priorities



Functional Requirements

Purpose

Establish a shared, technology-agnostic baseline of the functional capabilities required to enable nationally consistent CER integration.

Approach

- Existing technical frameworks, standards and prior industry work were reviewed, consolidated and updated to reflect current implementation maturity.
- Functional requirements were organised across core domains (hardware, communications, registration, data exchange and service enablement) to create a common reference framework.
- Gaps, dependencies and areas of fragmentation were identified to inform subsequent consultation.

Outcomes

- A consolidated functional framework defining what needs to work.
- A clear articulation of maturity gaps and coordination challenges.
- A stable baseline used to test customer, retailer and industry priorities in subsequent workpapers.

Industry Priorities

Purpose

Synthesise technical, customer and retailer inputs into a prioritised set of industry coordination needs and actionable focus areas.

Approach

- Synthesises functional requirements (#1) and stakeholder needs (#2) into a consolidated view of indicators, programs, workstreams and milestones.
- Priorities identified were mapped to key customer value and outcomes.
- Iterative engagement was used to test priorities and refine recommended focus areas and milestones.

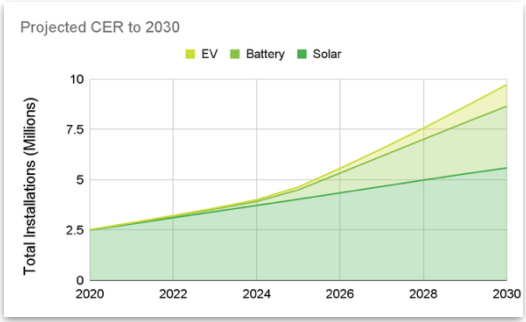
Outcomes

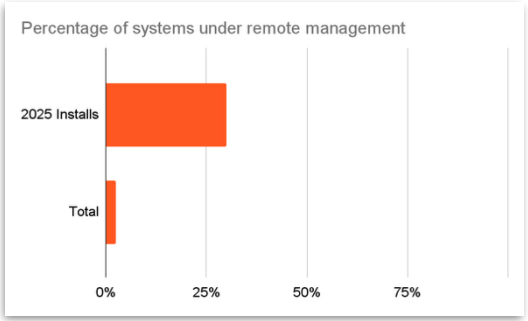
- Identification of critical coordination and sequencing needs.
- A set of actionable focus areas to support national CER integration.

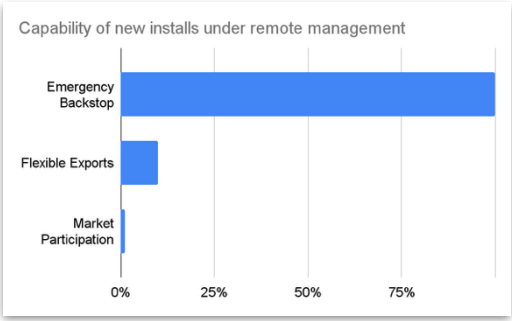
Section #1
Industry & Policy Context

CER State of Play

Deployment volume is outpacing compliance and capability







Volume

CER deployment is accelerating rapidly with 4+ million total solar installations, 200,000 batteries in the past 6 months, and current weekly rates of ~6,000 solar, ~9,000 battery, and ~1,500 EVSE installations.

AEMO's Integrated System Plan notes that integration and participation of this CER could avoid the need for an additional spend on utility scale storage.

Compliance

AS/NZS 4777 compliance has improved with industry focus but remote management approaches and compliance continue to mature across jurisdictions and service providers.

Step change uplift in remote management compliance and performance is necessary to operate networks at CER penetration and realise the opportunity identified in AEMO's Integrated System Plan.

Capability

Jurisdictions are phasing in emergency backstop and flexible exports capability as the minimum baseline, but market participation remains nascent with less than 1% of CER responding to market signals.

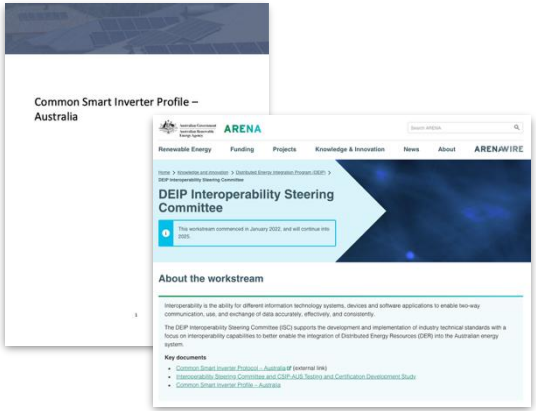
Common infrastructure and solutions are required to provide capability for customer switching, retailer visibility of asset standing data and Dynamic Operating Envelopes (DOEs), to maximise customer value. AEMO estimate (c55%) CER coordination enabling Market Participation would reduce total system costs by $7.2 billion.

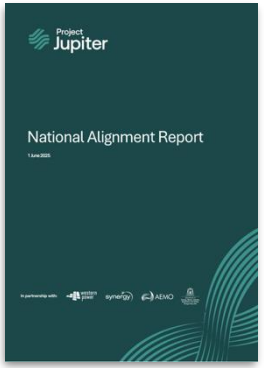
Note: In the absence of high quality data, these figures have been developed from publicly available data sources and inputs from industry insight.

Scaling CER Capabilities

Pilots and standards have established the foundations for scale programs







Pilot Programs

Industry pilots over the past 8 years have established the technology foundations and informed policy frameworks for CER integration at scale.

Key programs including GreenSync's deX platform, Project EDGE, Project Symphony, Project Edith and Market Active Solar have demonstrated market participation alongside Dynamic Operating Envelopes (DOEs).

ARENA funding has been instrumental in proving technical feasibility and building industry capability for coordinated CER management.

Standards/Interoperability

Australia has developed world-leading technical standards for CER integration through an industry-led approach.

This has delivered key technical foundations including creation of the CSIP-AUS implementation profile for IEEE 2030.5, and proposal and drafting of AS 5438 for interoperability with inverter energy systems.

Industry continues to consolidate and align on what needs to be done next in the standard ecosystem to drive target outcomes. This includes ongoing development of standards and the establishment of testing, certification and audit functions.

Scale Programs

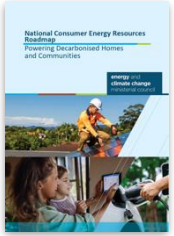
Larger programs are now transitioning from pilots to whole-of-system implementation, signalling the scale of investment and coordination required.

South Australia and Victoria now have requirements for almost all small scale DER to be registered to utility systems for remote management, and provide customer choice for participation in flexible export programs.

Project Jupiter in Western Australia seeks to establish a statewide CER integration program, with associated IT infrastructure to manage CER at scale.

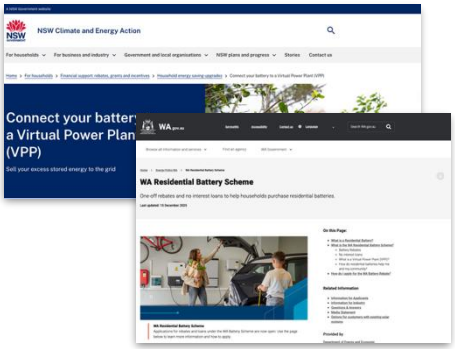
Policy and Regulatory Momentum

Policy ambition now needs ongoing functional, scalable integration to deliver on objectives









CER Roadmap & Taskforce

The National CER Roadmap endorsed by ECMC in December 2025 establishes national priorities including technical regulation, roles and responsibilities, and data sharing.

Key elements include Clean Energy Regulator as Technical Regulator, agreement on Technical Regulatory Framework needs, clarified distribution system responsibilities, and commitment to develop National CER Data Management Framework. Progressive implementation through 2030 requires secure data exchange infrastructure, standardised technical protocols, and consistent digital platforms.

Link:
Energy & Climate Change Ministerial Council

NEM Market Review

The Nelson Review establishes reform priorities for CER market participation with mandatory frameworks by December 2026 and full implementation by 2030.

Reform priorities include AEMO development of visibility framework by December 2026, mandatory participation thresholds for Price-Responsive Resources (PRR), and NEL/NER amendments enabling full participation. Implementation requires AEMO systems for CER visibility and access, integrated network-market coordination, and implementation of distributed access model across technology providers.

Link:
Nelson NEM Review

Federal & State Incentives

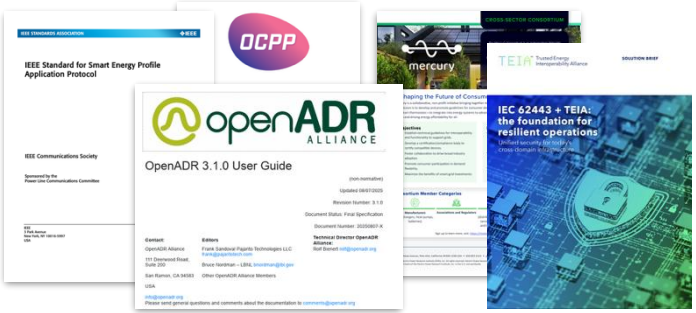
The Cheaper Home Batteries program, combined with State based VPP incentives are driving mass adoption with almost 200,000 installations in 6 months to December 2025.

The Federal Battery Scheme, WA VPP Battery Program, and NSW VPP Scheme each specify various VPP capability and interoperability requirements. Buildingsistent national functions, enabled by digital platforms, common workflows and standardised APIs are required to maximise benefits for both customers and the grid.

Links:
Federal Battery Scheme
WA VPP Battery Program
NSW VPP Scheme

Global Developments

The need for alignment across standards, industry and core infrastructure is recognised globally



Global Interoperability Standards

International standards have established the foundation for CER interoperability, with real-world implementations in Australia driving continuous refinement.

Production deployments have road-tested theoretical standards, identifying implementation gaps and practical requirements that inform ongoing standards development. This creates valuable feedback loops between deployed systems and evolving specifications, ensuring standards remain fit-for-purpose as technology and integration requirements advance. Active Australian participation in international forums ensures local implementation experience shapes global standards evolution.



Digital Infrastructure as Public Good

Governments globally recognise that shared digital infrastructure is essential for CER ecosystems to function at scale - similar to investments in roads, telecommunications, and payment systems that underpin other sectors.

The UK's National Energy System Operator (NESO) released its Digitalisation Plan in August 2025, setting out a national vision for energy data and IT infrastructure: standardised digital registers, trusted identity frameworks, and API-based data exchange platforms. The plan positions IT infrastructure as a public good, lowering costs, increasing competition, and enabling customer switching and flexibility services. Ongoing liaison with UK NESO and other European programs deploying similar digital infrastructure will be key to ensuring alignment.

Digitalisation underpins real-time system operability, enables the timely integration of low-carbon technologies, and creates the transparency and trust needed for consumer participation.

NESO Digitalisation Plan, August 2025

Section #2
The Coordination Challenge

Stakeholder Requirements

Coordination and collaboration is required to synthesise and balance stakeholder needs



Customer

"I want clean energy technology in my home that is easy to connect, secure, and delivers value for my investment. I don't want complexity — I just want it to work."



Installer

"I need straightforward, consistent processes to connect and register systems so I can spend less time on admin and more time serving customers."



OEM/Tech

"I want clear and consistent standards so I can design products once, ensure they are compliant and secure, and scale them across the Australian market."



DNSP

"I need visibility and secure control options to keep the lights on, integrate more CER safely, and maintain a stable and reliable grid."



Retailer

"I want to enrol and manage customer CER consistently, so I can offer new services like VPPs, demand response, and tariffs without duplicating effort."



Market/System Operator

"I need reliable, consistent data and secure interfaces to ensure CER integration supports system security, market efficiency, and future services."



Government

"I want nationally consistent and cyber-secure CER integration that builds trust with consumers, reduces costs, and supports the energy transition."

Functional Requirements

A scalable CER ecosystem requires a combination of functional requirements to be implemented

	Hardware Function	Communications	Registration	Data Exchange	Service Enablement
Functions	CER assets operate consistently inline with specified behaviour.	CER assets are able to communicate onsite and with remote systems in a standard and scalable manner.	CER assets can be simply registered centrally with a high level of quality and mechanisms for records to be maintained up to date.	CER data can be exchanged between actors to enable interoperability and access for customers to optimise their investment..	CER assets can be aggregated to provide network and market services where customers opt in.
Status	**Key Metrics** ✓ ~ 94% PV compliance since 2024 ? BTM Interop rapidly emerging	**Key Metrics** ✓ > 95% of existing inverters capable ✗ < 2.5% of inverters integrated	**Key Metrics** ✓ ~3M(75%) in AEMO's Register ? 10M to be registered by 2030	**Key Metrics** ✗ 0% retailer access to Register ✗ 1% retailer visibility of DoE	**Key Metrics** ✗ < 1% responding to price ? 3.7 GW CER Flex by 2030 in ISP
Existing Policy & Programs	**Policy and Project Links** CER Roadmap Technical Priorities (T1, T2) AS5438 Standard Energy Masters National Bidi Roadmap CERI 2030 Mercury Consortium Project CICCADA	**Policy and Project Links** CER Roadmap Technical Priorities (T1, T2) CERI 2030 CSIP-AUS and TS 5573 Mercury Consortium OCPP Project Edith	**Policy and Project Links** CER Roadmap Data Sharing Arrangements (M2) CER Roadmap Roles and Responsibilities (M3/P5) AEMO DER Register CER Data Exchange	**Policy and Project Links** CER Roadmap Data Sharing Arrangements (M2) CER Roadmap Roles and Responsibilities (M3/P5) Project Symphony Project EDGE CER Data Exchange	**Policy and Project Links** CER Roadmap Roles and Responsibilities (M3/P5) Nelson Review (rec #3) IPRR Rule Change Project Symphony, Project EDGE Project Jupiter CERI 2030 Market Active Solar Project Edith

Key

ARENA Funded Pilot
DCCEEW/Market Body Policy
Australian Standard
Global Development
Industry Pilot

Our Challenge

Complex needs and stakeholder diversity highlight the criticality of coordination to realise customer value

What

A nationally interoperable CER ecosystem where devices are registered seamlessly, compliant with network requirements, and customers are enabled to switch freely and earn value.



The Need

Scale + Policy + Complexity

12,500 per week and growing
10 Million CER by 2030
EV volume to surge in late 2020s

$7.2B system value unlocked by coordination



The Risks

Fragmentation costs everyone

15 DNSPs x 30+ retailers x 100s OEMs x 1000s installers

- → Duplication of design and build between jurisdictions
- → Customer confusion and reduced access
- → Installer complexity navigating disparate processes
- → Increased OEM development costs.
- → Not aligned with International developments



The Value

Coordination unlocks benefits for all

Lower system costs
→ Coordination lowers system costs for all customers, not just those with CER.

Common standards
→ Customers have choice with a range of interoperable products, lowering costs.

Maximise earnings
→ Customers with CER have freedom to move to different offers, allowing them to maximise the value of their investment.

Why

Increased utilisation of network, system and CER reduces costs for ALL customers while maintaining grid security and reliability and unlocking $7.2B in system value.

Indicators of Success

Industry target state and policy objectives have been translated into five indicators of success

A nationally interoperable CER ecosystem where devices are registered seamlessly, compliant with network requirements, and customers are enabled to switch freely and earn value.

Smart Connect Objectives

Consistent & Compatible

Consistent technical foundation enables nationwide scale without fragmentation

Compliant & Secure

Security and compliance build trust enabling customer participation at scale

Customer Enabling

Seamless market access and Customer Agent switching deliver customer value and grid flexibility

Indicators of Success

1. Registration
Indicator: Installed assets are registered centrally and digitally.
Customer outcome: Low friction onboarding to Customer Agent.

2. Customer Switching
Indicator: Installed assets can switch between Customer Agents in band.
Customer outcome: Maximise earnings from best offer.

3. Connection Compliance
Indicator: Installed assets are compliant with network requirements.
Customer outcome: Lower network costs for all customers.

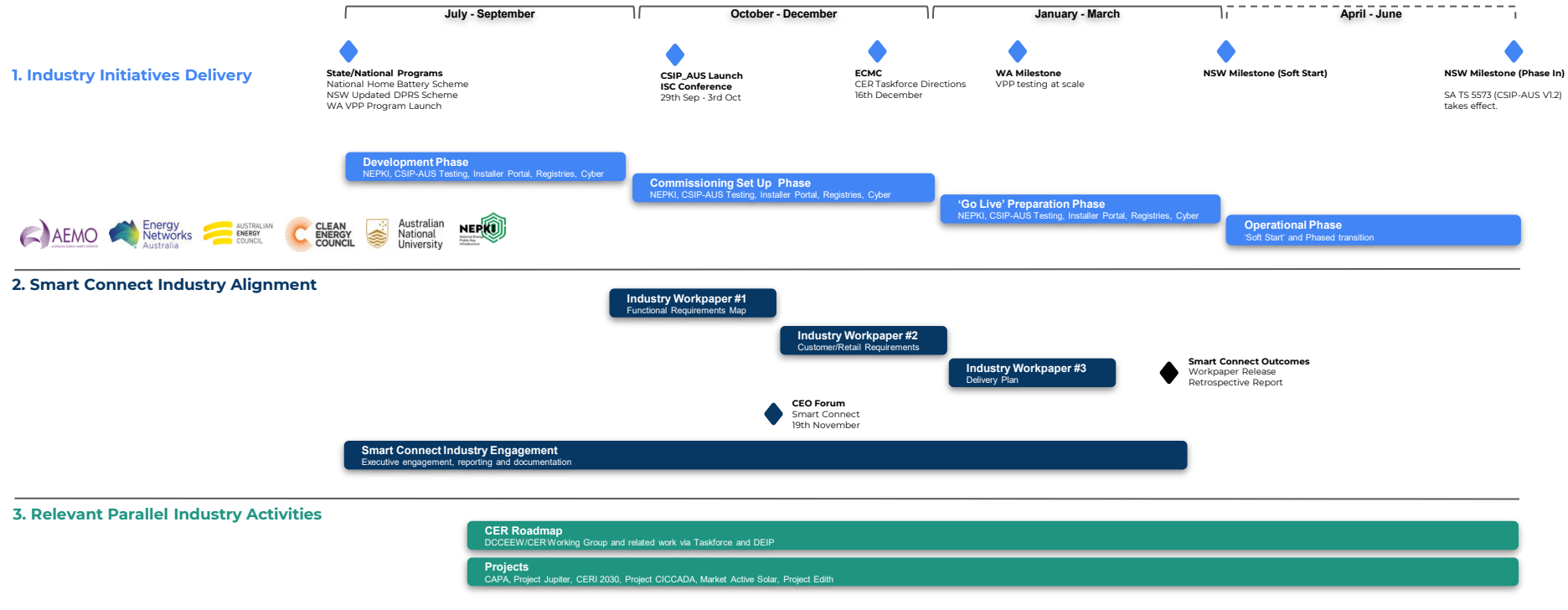
4. Asset Visibility
Indicator: Standing data and DOEs visible to Customer Agents.
Customer outcome: Tailored offers and efficient operations increase value available to customer.

5. Market Participation
Indicator: Assets operating in IPRR framework.
Customer outcome: Lower wholesale costs for all customers.

Section #3
What's Been Achieved

Smart Connect Timeline

July 2025 - March 2026



Smart Connect
National CER Integration

Industry Initiatives Delivery

Critical national workstreams accelerated to meet NSW/ACT Backstop and WA VPP delivery timelines

Functional Requirements

Hardware Function
CER assets operate consistently inline with specified behaviour.

Communications
CER assets are able to communicate onsite and with remote systems in a standard and scalable manner.

Registration
CER assets can be simply registered centrally with a high level of quality and mechanisms for records to be maintained up to date.

Data Exchange
CER data can be exchanged between actors to enable interoperability and access for customers to optimise their investment.

Service Enablement
CER assets can be aggregated to provide network and market services where customers opt in.

Industry Initiatives

- **CSIP-AUS Protocol** — V1.2,1.3 Client/Server Test Harness/ Listing
- **Connection Workflow** — Common workflows, NSW Installer Portal
- **Authentication/PKI** — NEPKI Establishment and service provision for NSW
- **Registries** — DER Register uplift, access
- **Cyber Security** — Design and connection processes

Smart Connect Coordination & Collaboration

Smart Connect
National CER Integration

December 2024 - March 2026

Smart Connect facilitated coordination and wider communications between industry initiatives
Incorporating weekly tracking, monthly reporting, quarterly planning/review

Achievements to Date

Combined achievements of Industry Initiatives from July 2025 - March 2026

Industry Initiatives

CSIP-AUS Protocol
V1.2,1.3 Client/Server Test Harness/ Listing

Authentication/PKI
NEPKI Establishment and service provision for NSW

Cyber Security
Design and connection processes

Connection Workflow
Common workflows, NSW Installer Portal

Registries
DER Register uplift, access

Leads

Australian National University | NEPKI | Energy Networks Australia | Energy Networks Australia, NSW Government | AEMO

Achievements

- ✓ v1.2 Standards (TS5573) published
- ✓ All DNSPs committed to national certification
- ✓ Client certification service launched
- ✓ Server harness technical build in-flight
- ✓ Certification transition plan from SAPN complete, CEC uplift in-flight
- ✓ ISC and DERAPITWG active
- ✓ Active OEM engagement with ENA
- ✓ Funding to March 2026 secured from ARENA

- ✓ NEPKI Incorporated and Board appointed
- ✓ DNSP funding and support secured
- ✓ Provider procurement on track to deliver for NSW/ACT Backstop
- ✓ DNSP, OEM engagement/planning
- ✓ ACCC Authorisation
- ✓ ARENA funding secured

- ✓ CSIP-AUS cyber threat assessment completed
- ✓ NSW common connection handbook in-flight
- ✓ NSW DNSP, OEM engagement/planning
- ✓ CER Taskforce has established additional workstream

- ✓ Process mapping inc SA, Vic, WA experience
- ✓ OEM/NSW DNSP/NSW Govt/AEMO codesign
- ✓ Provider procurement process near finalisation
- ✓ NSW DNSP, OEM engagement/planning
- ✓ NSW Govt Function
- ✓ NSW Govt Investment

- ✓ AEMO internal project funding
- ✓ AEMO CER Data Exchange Codesign complete
- ✓ AEMO/NSW Government codesign
- ✓ AEMO DER Register uplift mapping underway
- ✓ AEMO/NSW Govt integrated team

Smart Connect Coordination & Collaboration

AEMO | Energy Networks Australia | Australian Energy Council | Clean Energy Council | Australian National University | NEPKI

Smart Connect National CER Integration

December 2024 - March 2026

Smart Connect facilitated coordination and wider communications between industry initiatives
Incorporating weekly tracking, monthly reporting, quarterly planning/review

Smart Connect Coordination Model

Key factors for effective multi-stakeholder implementation



C-Suite Leadership

Executive support sets strategy

Active support from key industry CEOs for the objectives and outcomes from the start. Routine touchpoints ensure strategic alignment was tested and maintained, not assumed. CEO forums allowed stakeholders visibility of shared objectives, key timelines and resourcing requirements.

Action:

- ✓ CEO forums confirmed shared challenge and endorsed collective plan
- ✓ Direct CEO briefings ahead of key milestones and decisions built trust and insight
- ✓ Escalation pathway if risk of delivery delay or stakeholder misalignment



Continuity

Consistent participation and action

Sustained participation from key senior staff from AEMO, ENA, AEC, CEC, NEPKI, ANU/ISC built the institutional knowledge and trust that underpins effective collaboration. Continuity in membership, enabled shared ownership of decisions and outcomes. Context carried forward, decisions stuck, and the group developed genuine shared ownership of outcomes.

Action:

- ✓ Consistent Working Group membership across 15 months
- ✓ Shared documentation maintained across member organisations
- ✓ Accountabilities assigned and acknowledged for follow up and monitoring on issues, risks



Cadence

Tempo ensured results and lowered risk

A consistent weekly rhythm kept delivery on track and surfaced issues early. Regular touchpoints built team capability across organisations and created a reliable structure for shared decision-making and accountability.

Action:

- ✓ Weekly Monday ‘stand-up’ across all active workstreams
- ✓ Shared dashboard tracking milestones, dependencies and risks
- ✓ Continuous, transparent development of workpapers



Capacity

Capable & Trusted

Dedicated neutral coordination — with both executive and technical depth — provided what no single member organisation could sustain alone. Issues were owned and resolved rather than deferred, and workstreams received practical support and strategic guidance.

Action:

- ✓ Chair - Support CEO engagement and facilitate key forums and provide strategic advice
- ✓ Executive Director - Day to day stakeholder engagement, workstream tracking including dashboard reporting, roadblock resolution
- ✓ Technical Director - Expertise to support integrated technical design and planning, issue identification and stakeholder engagement and coordination

Smart Connect Collaboration Insights

Considerations for ongoing industry alignment, planning and implementation



Critical Path

Recognise urgency, realise milestones

Technical and operational elements across workstreams are interdependent — delay in one creates compounding risk across others. Maintaining a shared view of critical path and dependencies is essential to avoid interim workarounds that add cost and complexity.

Action:

- ✓ Maintain and update critical path mapping and inter-dependencies for each technical workstream and integrate tracking within weekly/monthly meetings and reporting.
- ✓ Establish planning cycle leveraging agile IT practices to ensure continuity beyond urgent program milestones.



Complexity

Synthesise into actionable activity

Many technical components require multiple organisations to contribute to design, development and operation simultaneously. Without active coordination, complexity becomes inertia.

Action:

- ✓ Maintain structured working group participation with regular reporting that keeps non-technical stakeholders genuinely informed and able to contribute to decisions.
- ✓ Ensure that stakeholder activities are clearly understood and documented.
- ✓ Identify dependencies between stakeholders and workstreams and work collaboratively to establish a plan to manage those dependencies.



Capability

Harness industry expertise, experience

A number of technical and operational components rely on availability of key expertise and experience to support design and implementation. Ongoing capacity, including supporting funding is required for capability to be maintained.

Action:

- ✓ Identify resourcing requirements for industry coordination and develop plan to address and fund leveraging existing forums and expertise.



Consensus

Collaboration is a contact sport

Within each key stakeholder group (OEMs, DNSPs, Retailers) there are a range of views, experience and approaches. Within each technical or operational component there are a range of options from opt-in, incentive schemes to regulatory mandates. Consensus doesn't emerge naturally; it requires a neutral space, consistent facilitation and documented positions that reduce re-litigation.

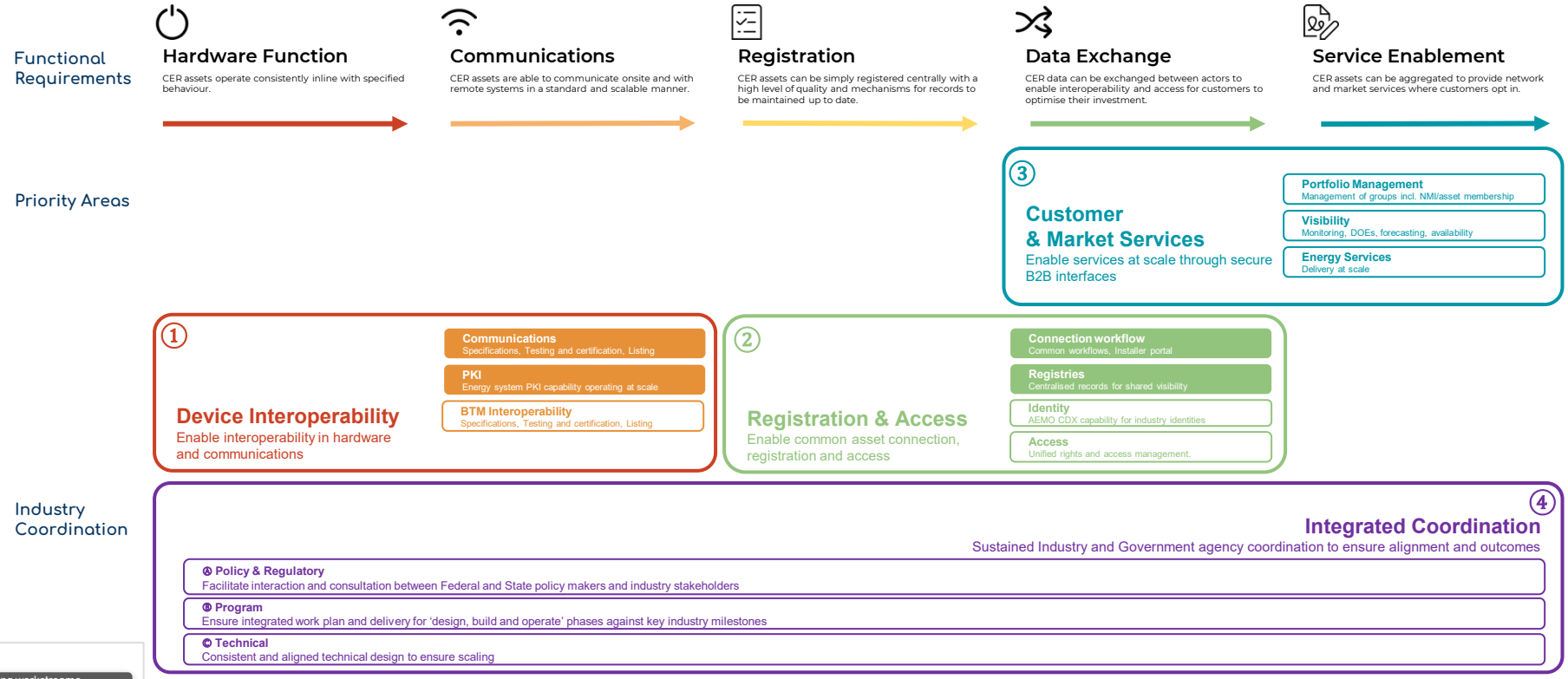
Action:

- ✓ Sustain the trust built within the Working Group members.
- ✓ Utilise the Smart Connect Coordination model to understand concerns and navigate to an outcome that represents a practical, actionable position.

Section #4
Industry Priorities

Industry Priorities

Priority areas identified by Smart Connect Working Group members to scale consistent digital CER integration



Smart Connect
National CER Integration

① - Device Interoperability

Interoperable devices increases customer choice and lowers costs

◆ Hardware Function
◆ Communication

Priority Overview

Device Interoperability establishes the technical foundation for national CER integration through consistent hardware behavior and standardised communications protocols. This ensures devices from any manufacturer can connect, communicate, and respond consistently across all Australian networks - reducing complexity and cost, and building ecosystem trust. By coordinating standards development, testing infrastructure, and certification processes, the program delivers capabilities required for a mature CER ecosystem.

Consistent & Compatible
Compliant & Secure
Customer Enabling

Policy Links

CER Roadmap Technical Priorities (T1, T2)
CER Roadmap Roles and Responsibilities (M3/P5)
CER Roadmap Data Sharing Arrangements (M2)



Key Stakeholders

AEMO, Energy Networks Australia, Australian Energy Council, Clean Energy Council, Smart Energy Council, Australian National University, NEPKI

Workstream	Critical Requirements	Impact	Customer Value
Communications Specifications, Testing and certification, Listing	Clearly defined requirements, testing and specifications for developers of management capabilities enabling consistent implementations of communications.	Tested and listed communications solutions are interoperable.	**Choice and optionality** - Increased product choice for customers in the Australian market by making Australia an easier place to do business for overseas manufacturers. **Lower installation costs** – Installers follow the same workflow across networks, retailers and OEMs, simplifying and lowering installation costs for customers. **Lower technology costs** - Technology Providers and OEMs implement to common requirements once, lowering costs for customers.
PKI Energy system PKI capability operating at scale	National, cyber secure and interoperable PKI is operational across Australia for energy system use cases.	Devices and systems in Australia can verify and trust each other with a single set of credentials.	
BTM Interoperability Specifications, Testing and certification, Listing	Clearly defined requirements, testing and specifications for developers of CER hardware and control solutions enable consistent and coordinated hardware behaviour.	Tested and listed CER products are interoperable for BTM interactions	

② - Registration & Access

- Registration
- Data Exchange

Secure registration gives customers control and simplifies switching

Priority Overview

Registration and Access establishes the foundational infrastructure for secure, trusted ecosystem participation through verified identity, quality asset data, and controlled access. This ensures that CER is connected consistently providing high quality inputs and centrally registered enabling authorised data consumers to retrieve records. Additionally, all participants - devices, systems, and organisations - can verify the identity of others with a high degree of confidence and data access requirements are clearly defined, implemented and managed to ensure that entities can access data for which they have rights and consent.

Consistent & Compatible
Compliant & Secure
Customer Enabling

Policy Links

CER Roadmap Technical Priorities (T1, T2)
CER Roadmap Roles and Responsibilities (M3/P5)
CER Roadmap Data Sharing Arrangements (M2)



Key Stakeholders

AEMO · Energy Networks Australia · Australian Energy Council · Clean Energy Council · Smart Energy Council · Australian National University · NEPKI

Workstream	Critical Requirements	Impact	Customer Value
Connection workflow Common workflows, Installer portal	Standardised connection processes and requirements enable consistent installer experience	Consistent connection processes nationally, drives high compliance nationally.	**Register once** – Customer assets are registered once, avoiding headaches when moving to new Customer Agent. **Protected participation** – Customers have control of who has access to their system and data. **Frictionless switching** – Customers can seamlessly move to a different Customer Agent, to get the best offer.
Registries Centralised records for shared visibility	Common data models, quality requirements, and governance frameworks.	Single reference for DER assets and high quality registries data builds trust in data consumers, unlocking value.	
Identity AEMO CDX capability for industry identities	Verified identities and cryptographic trust for devices, systems, and organisations.	Systems and organisations have a high degree of trust in the identity of others within the ecosystem.	
Access Unified rights and access management.	Common access frameworks, role definitions, and secure controls designed and implemented across ecosystem.	Organisations and systems can share data with authorised parties and access data for which they are authorised, with a high degree of trust.	

③ - Customer & Market Services

Seamless customer participation in grid services and competitive retail offerings

- Data Exchange
- Service Enablement

Priority Overview

Customer & Market Services establishes the operational capabilities for cross party interactions for services management, operational visibility, and energy service delivery. This ensures parties can dynamically establish, and manage groups of assets, share operational data, and deliver energy services using standardised language and processes, allowing for scaling of the delivery of network and system support services.

Consistent & Compatible
Compliant & Secure
Customer Enabling

Policy Links

Nelson NEM Review
CER Roadmap Roles and Responsibilities (M3/P5)
CER Roadmap Data Sharing Arrangements (M2)



Portfolio Management
Visibility
Energy Services

Key Stakeholders

AEMO, Energy Networks Australia, Australian Energy Council, Clean Energy Council, Smart Energy Council, Australian National University, NEPKI

Workstream	Critical Requirements	Impact	Customer Value
Portfolio Management Management of groups incl. NMI/asset membership	Common data models, protocols and workflows enable parties to create and manage services, including membership of assets.	Parties can establish and manage service agreements with other parties in a common way, reducing friction and allowing service delivery scaling.	**Increased provider competition** – Service compatibility increases competition, allowing more value to flow to customer. **Protected participation** - Customers have control over how their assets are utilised in VPP participation. **Efficiency through visibility** – Visibility of current projected behaviour enables efficiency in system and network operations, lowering costs for all consumers.
Visibility Monitoring, DOEs, forecasting, availability	Common data models and sharing protocols enable parties to exchange monitoring data, forecasts, dynamic operating envelopes and other relevant data for operational visibility.	Parties can share and receive operational visibility data allowing for shared understanding of availability, constraints, intended behaviour, actual behaviour.	
Energy Services Delivery at scale	Common service definitions, semantics, and workflows enable parties to request and deliver energy services in an operational context.	Parties can create a request for a service response, and counterparties can respond confirming ability to to deliver	

④ - Integrated Coordination

Navigate implementation challenges to unlock more customer value sooner

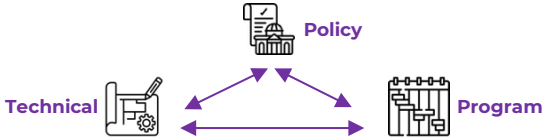
- Hardware Function
- Communication
- Registration
- Data Exchange
- Service Enablement

Priority Overview

Integrated Coordination establishes the sustained capacity required to maintain alignment across policy, program delivery, and technical design in CER integration. These coordination functions ensures that industry stakeholders remain connected through clear communication channels, that programs are sequenced and resourced effectively, and that the ecosystem evolves consistently with the target state in mind. By providing continuous and integrated Policy, Program, and Technical coordination, this function prevents fragmentation, maintains momentum toward 2030 objectives, and enables efficient delivery of shared infrastructure that no single organisation can provide alone.

Consistent & Compatible
Compliant & Secure
Customer Enabling

Policy Links
Energy & Climate Change Ministerial Council



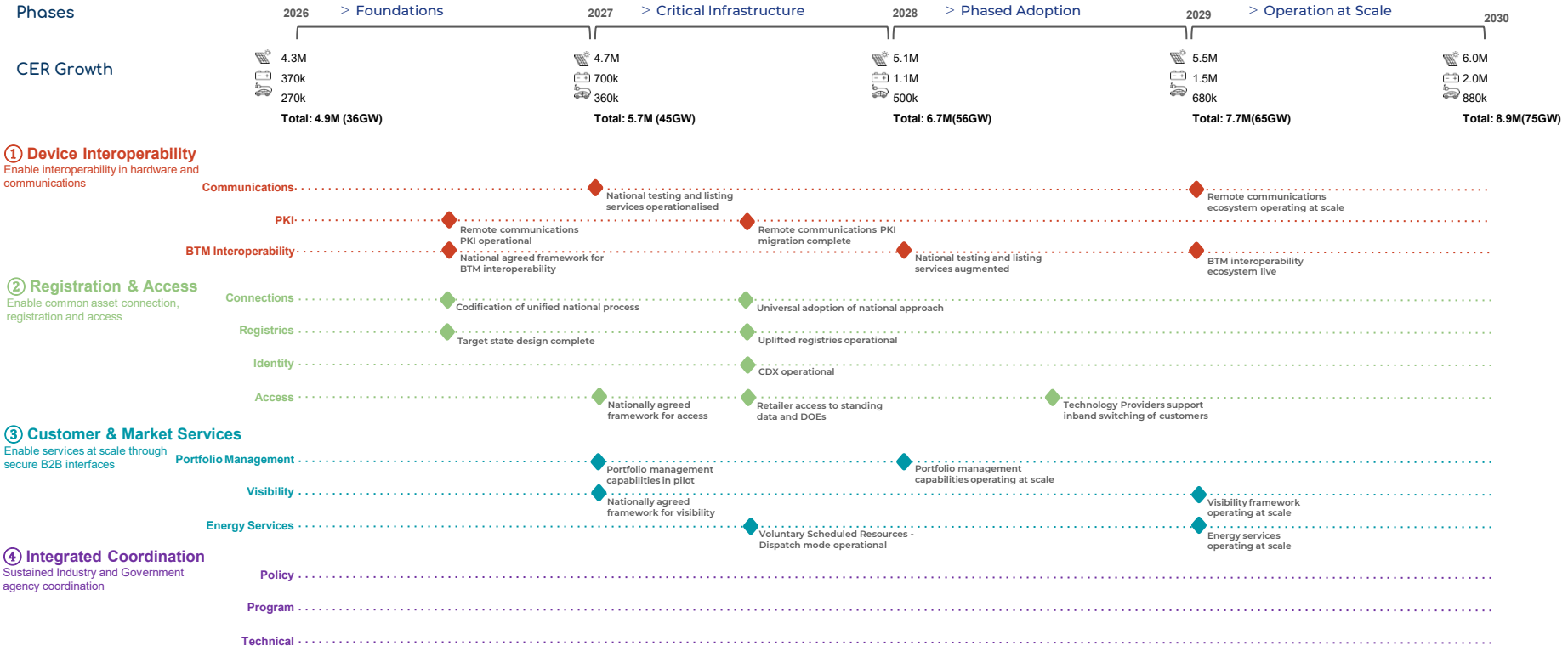
Key Stakeholders

AEMC, ARENA, Clean Energy Council, Smart Energy Council, Australian Energy Council, dcceew, Clean Energy Regulator, AER Australian Energy Regulator, Energy Consumers Australia, AEMO, Energy Networks Australia

Workstream	Critical Requirements	Impact	Customer Value
Ⓐ Policy & Regulatory Align Federal, State Govt & agencies	Facilitate Federal/State agency engagement, CER Roadmap coordination, regulatory alignment, and jurisdictional consistency.	Aligned policy settings, consistent timelines, effective industry-policy translation.	**Value unlocked sooner**- Policy, technical and program alignment removes implementation bottlenecks, bringing customer benefits online sooner than fragmented approaches. **Progressive value release** – Staged delivery releases value for customers as capabilities come online, rather than waiting for complete system build-out. **Benefits maximised** – National coordination ensures policy, technical and delivery programs reinforce rather than contradict, protecting customer investment and maximising participation value.
Ⓑ Program Integrated PMO function across programs	Integrated PMO for milestone and delivery tracking, risk management, resource coordination, stakeholder alignment and sequencing/ dependency mapping.	Efficient program delivery, integrated planning, avoided duplication and fragmentation.	
© Technical Consistent and aligned technical design	Technical coordination function for technology design, international standards alignment, interoperability specifications, cybersecurity coordination, testing framework.	Technical alignment between workstreams and programs, resulting in successful delivery against indicators of success.	

Timeline

Key milestones to unlock system and customer value linked to National CER Roadmap objectives



Appendix #1
Priority Area Requirements

This section aims to provide a set of requirements, indicators and milestones to guide the transition from Roadmap planning to industry implementation.

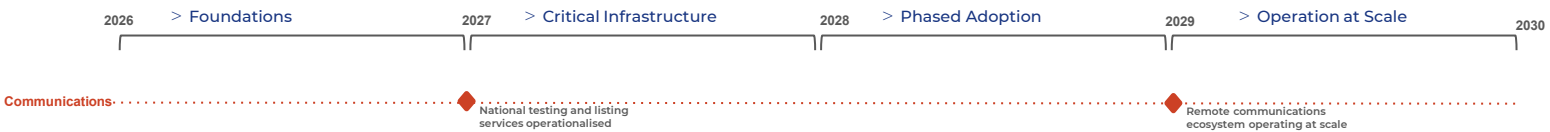
Device Interoperability

- Hardware Function
- Communication

Communications

Trusted communications ecosystem for remote interoperability

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Ongoing definition and publication of functional and technical specifications (incl. OCPP and CSIP-AUS), including test specifications	- Ongoing prioritised delivery of functionality to enable additional use cases.	**1. Registration** Installed assets are registered centrally. **2. Customer Switching** Installed assets can switch between Customer Agents in band. **3. Connection Compliance** Installed assets are compliant with network requirements.	**1. Policy** Ensure communications capability development is consistent with broader regulatory and policy activities and decisions (including international). **2. Program** Coordinate delivery across standards development, conformance testing, compliance verification, and implementation by DNSPs, retailers, OEMs and Technology Providers. **3. Technical** Ensure technical design is consistent and coherent with related workstreams and international development activities
Build	- Ongoing development of test procedures and testing capability.	- Robust and high quality testing capabilities are critical to an interoperable ecosystem.		
Operate	- Nationwide adoption of CACTUS Testing and Certification service. - Listing service fully integrated with testing services and aligned with NEPKI. - Conformance management capabilities live.	- Universal adoption increases support for and alignment to single central reference. - Listing service provides ability to understand support for functions. - Ongoing conformance critical to ecosystem quality and trust.		



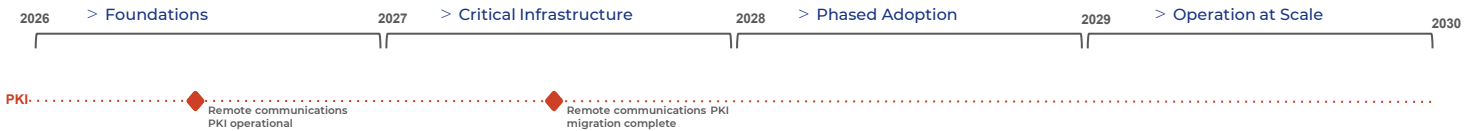
Device Interoperability

- Hardware Function
- Communication

PKI

Securing device and system communications across the ecosystem

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Remote communications PKI principles and design documentation developed.	- Designed inline with principles, to enable critical outcomes for the ecosystem.	**1. Registration** Installed assets are registered centrally. **3. Connection Compliance** Installed assets are compliant with network requirements.	**1. Policy** Provide coordination and visibility of PKI design activities, informing development of regulation. **2. Program** Facilitate coordination in NEPKI, CDX and industry delivery of identity and authentication. **3. Technical** Provide coordination in technical design between industry participants (including NEPKI, CDX) to ensure technical design aligned with target state.
Build	- Remote communications PKI built and tested with industry stakeholders ahead of production release at scale.	- Early testing ensures that solution is fit for purpose and meets stakeholder needs.		
Operate	- Remote communications certificates issued and actively managed across devices and systems. Technology providers authenticating with utility servers in production context.	- Provides ecosystem wide trust and identity verification.		



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National CER Integration

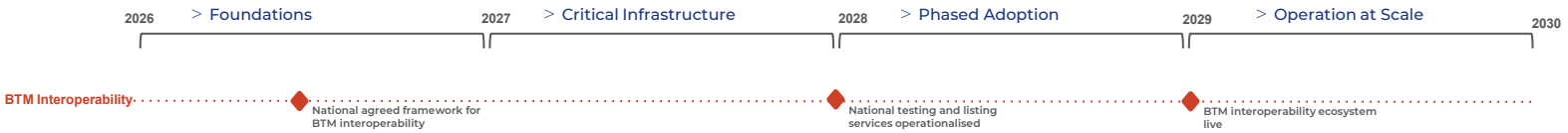
Device Interoperability

- Hardware Function
- Communication

BTM Interoperability

Trusted behind the meter interoperability to maximise customer choice and value

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Ongoing development and publication of internationally aligned BTM interoperability standards (including asset and HEMs), including test specifications.	- Defining a clear target state sets an expectation for industry on what to aim for.	**1. Registration** Installed assets are registered centrally. **3. Connection Compliance** Installed assets are compliant with network requirements.	**1. Policy** Ensure behind the meter capability development is consistent with broader regulatory and policy activities and decision (including international). **2. Program** Coordinate delivery across standards development, conformance testing, and implementation by OEMs and Technology Providers. **3. Technical** Ensure technical design is consistent and coherent with related workstreams and international development activities.
Build	- Testing services for BTM interoperability standards are built against a common test specification	- Standardised testing against common specifications critical for ecosystem-wide interoperability		
Operate	- Testing service providers approved and operational. - Listing services operational and integrated within ecosystem. - Conformance management live.	- Approved testing providers ensures consistency. - Listing service provides ability to understand support for functions. - Ongoing conformance critical to ecosystem quality and trust.		



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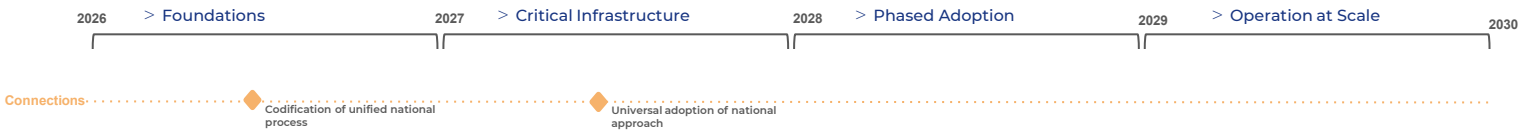
Connections Workflow

Streamlined, consistent connection process for installers and improved ecosystem compliance

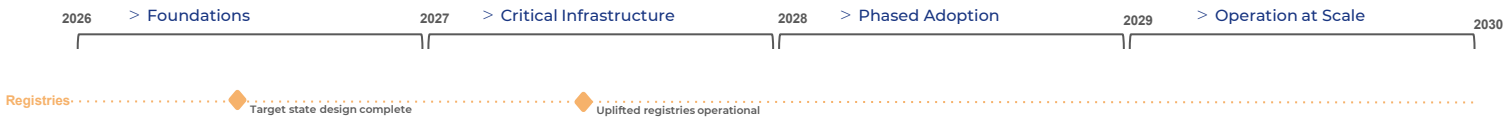
Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Standard connection workflow defined - evolving from process requirements to detailed data models, error codes, and API specifications	- Consistency in approach reduces friction between TPs and DNSPs, and improves installer experience, accelerating DER deployment and increasing compliance.	**1. Registration** Installed assets are registered centrally. **3. Connection Compliance** Installed assets are compliant with network requirements.	**1. Policy** Ensure that common connection requirements are aligned with complementary policy and regulation. **2. Program** Provide coordination for release of connections workflow across DNSPs, Technology Providers and OEMs. **3. Technical** Ensure connections workflow enables required outcomes in other critical work streams including Registries and Access and is aligned with international development activities.
Build	-DNSPs and technology providers implement standardised connection workflows			
Operate	- Connections capabilities operational in DNSP systems for all new CER. - Performance and compliance tracked and managed by nominated party.	- Performance management critical to ecosystem meeting target outcomes.		



Registries

Trusted registry providing single source of truth for DER assets

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Common data model, data quality requirements, and API specifications developed.	- Common model and APIs enable consistent data capture from multiple DNSPs into single registry. - Quality metrics ensures consistency and quality for data consumers.	**1. Registration** Installed assets are registered centrally. **2. Customer Switching** Installed assets can switch between Customer Agents in band. **3. Connection Compliance** Installed assets are compliant with network requirements. **4. Asset Visibility** Standing data and DOEs visible to Customer Agents.	**1. Policy** Ensure that Registries requirements are aligned with complementary policy and regulation. **2. Program** Facilitate program coordination between AEMO/CER and other industry bodies. **3. Technical** Provide coordination in technical design between industry participants to ensure technical design aligned with target state.
Build	- Central registry platform and systems built, including APIs. - Backwards compatibility with existing datasets and extensibility for future requirements.	- Centralised registry function provides path to retailer operations at scale. - Backwards compatibility preserves existing datasets while extensibility enables future evolution.		
Operate	- Registries operational and accepting data from DNSPs. - Registries accessed by authorised parties (including retailers) - Data quality and performance monitoring operational.	- Operational registries critical to realising ecosystem target state.		



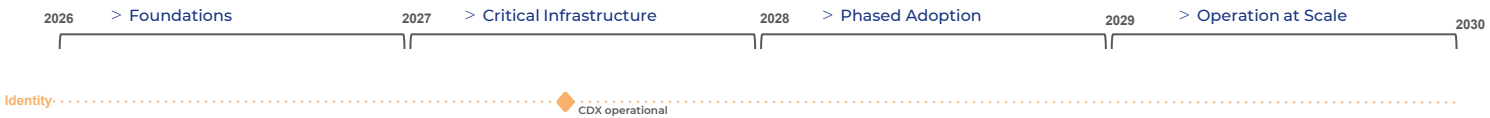
Registration & Access

- Registration
- Data Exchange

Identity

Verified identities and cryptographic trust across systems and organisations

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- CDX provides organisational identity and authentication.	- CDX identity management solution provides source of truth for identity for B2B interactions. - Foundations established for other workstreams requiring verified identity.	**1. Registration** Installed assets are registered centrally. **2. Customer Switching** Installed assets can switch between Customer Agents in band. **4. Asset Visibility** Standing data and DOEs visible to Customer Agents.	**1. Policy** Provide coordination and visibility of PKI design activities, informing development of regulation. **2. Program** Facilitate coordination in NEPKI, CDX and industry delivery of identity and authentication. **3. Technical** Provide coordination in technical design between industry participants (including NEPKI, CDX) to ensure technical design aligned with target state.
Build	- CDX infrastructure built and tested enabling organisational identity and authentication.			
Operate	- CDX operations established providing ecosystem wide identity management services.	- Trusted identity management services provide foundational trust for ecosystem operations - Value and benefits of these projects explicitly tied to take up and adoption across Australia.		



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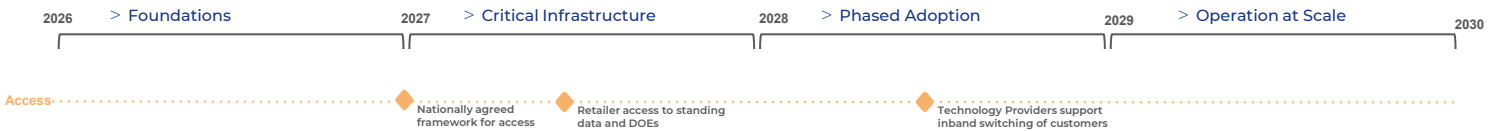
Access

Secure access enabling trusted coordination across the ecosystem

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Ongoing development of access framework, policy, and role definitions - evolving from principles to specifications	- Access framework sets expectations and capabilities for ecosystem participants.	**2. Customer Switching** Installed assets can switch between Customer Agents in band. **4. Asset Visibility** Standing data and DOEs visible to Customer Agents.	**1. Policy** Provide coordination for development of access framework and policy. **2. Program** Provide coordination of access capability development and delivery. **3. Technical** Provide coordination in technical design between industry participants to ensure technical design aligned with target state.
Build	- Central access management infrastructure (CER Data Exchange) built and tested. - Distributed access capabilities implemented by industry.	- Comprehensive ecosystem coverage ensures secure access for authorised parties. - Foundation enabling core retailer use cases (visibility of standing data and DOEs).		
Operate	- CER Data Exchange operational and processing access requests. - Market adoption of access frameworks across ecosystem parties. - Access governance and monitoring capabilities operational.	- Trusted coordination enabled through operational systems. - Secure, auditable access controls operational across the ecosystem.		



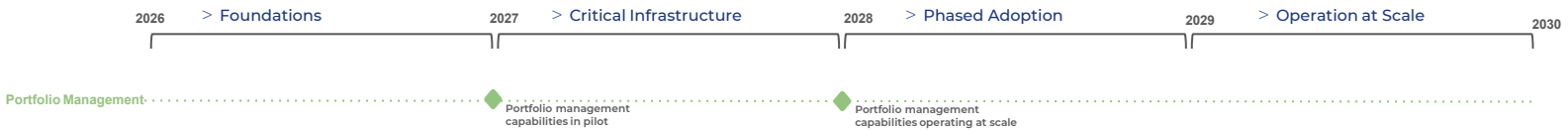
Customer & Market

- Data Exchange
- Service Enablement

Portfolio Management

Common framework enabling cross party coordination for energy services

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Common use cases documented and prioritised - Grouping protocols, data models, and role definitions established - Privacy and consent framework defined	- Common use cases and protocols prevent fragmentation and enable interoperable service coordination. - Clear framework establishes expectations for privacy and consent.	**2. Customer Switching** Installed assets can switch between Customer Agents in band. **4. Asset Visibility** Standing data and DOEs visible to Customer Agents. **5. Market Participation** Assets operating in IPRR framework.	**1. Policy** Provide coordination between industry to establish requirements and constraints. **2. Program** Provide coordination of development of related and aligned capabilities across industry. **3. Technical** Provide coordination in technical design between industry participants to ensure technical design aligned with target state.
Build	- Grouping capabilities implemented as distributed solution.	- Distributed implementation enable interoperability and competition and incremental adoption.		
Operate	- Parties forming and managing asset groups for service delivery. - Privacy and consent processes operational. - Dynamic group management capabilities supporting ongoing updates.	- Operational grouping enables parties to manage asset groups and deliver coordinated services. - Privacy and consent processes protect customer control while enabling service participation		

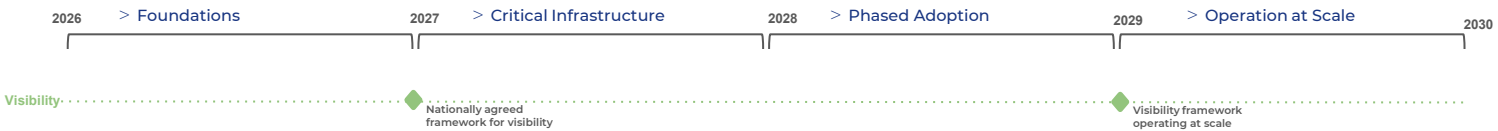


Smart Connect
National CER Integration

Visibility

Operational data sharing enabling coordinated resource management across parties

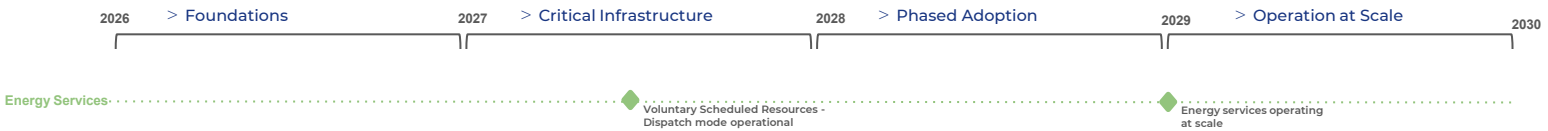
Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Data models and APIs for monitoring data, forecasts, and dynamic operating envelopes established - Data quality framework defined.	- Common data models and protocols enable interoperable data sharing across diverse parties - Common data quality metrics allow for clear expectations building ecosystem trust.	**4. Asset Visibility** Standing data and DOEs visible to Customer Agents.	**1. Policy** Provide coordination between industry to establish requirements and constraints. **2. Program** Provide coordination of development of related and aligned capabilities across industry. **3. Technical** Provide coordination in technical design between industry participants to ensure technical design aligned with target state.
Build	- Visibility capabilities and data sharing APIs implemented by parties in distributed systems.	- Distributed implementation enables flexible, scalable visibility across many parties.		
Operate	- Parties actively sharing monitoring data, availability, forecasts, and constraints - Data quality and latency requirements met for operational decision-making	- Real-time operational awareness enables coordinated resource management across parties - Ongoing monitoring of quality critical for building ecosystem trust.		



Energy Services

Common energy service definitions and processes enabling service delivery

Stage	Critical Requirements (What)	Impact (Why)	Indicators of Success	Coordination Requirements
Define	- Service catalogue established. - Common service definitions, semantics, and data models developed. - Service coordination protocols and processes specified.	- Common definitions eliminate confusion and enable mutual understanding across parties. - Foundation for interoperable service delivery while reducing integration complexity.	**5. Market Participation** Assets operating in IPRR framework.	**1. Policy** Provide coordination between industry to establish requirements and constraints. **2. Program** Provide coordination of development of related and aligned capabilities across industry. **3. Technical** Provide coordination in technical design between industry participants to ensure technical design aligned with target state.
Build	- Common service definitions adopted across ecosystem - Service coordination protocols implemented by distributed parties.	- Broad adoption is critical to realising energy service delivery at scale. - Distributed model enables flexibility and innovation in implementations.		
Operate	- Parties exchanging service requests using common definitions - Service catalogue maintained and evolved as new services emerge - Operational performance metrics	- Cross-party coordination enables service delivery across a range of parties. - Service catalogue updates allow for additional value to be unlocked over time.		



Appendix #2
Glossary

Glossary

Acronyms and abbreviations

ACCC	Australian Competition and Consumer Commission. Australia's national competition regulator responsible for enforcing competition, fair trading, and consumer protection laws.
AEC	Australian Energy Council. Peak industry body representing electricity and downstream natural gas businesses in Australia's National Electricity Market.
AEMO	Australian Energy Market Operator. Operates Australia's largest gas and electricity markets and power systems, responsible for managing the National Electricity Market (NEM) and system security.
ANU	Australian National University. Partner institution hosting the Intelligent Systems Centre (ISC).
ARENA	Australian Renewable Energy Agency. Australian Government agency that improves the competitiveness of renewable energy technologies and increases supply of renewable energy in Australia through funding and knowledge sharing.
AS/NZS 4777	Australian/New Zealand Standard for grid connection of energy systems via inverters. Technical standard specifying requirements for the connection of inverters to electricity networks, including voltage, frequency response, and remote disconnect capabilities.
BTM	Behind-The-Meter. Refers to energy systems and devices located on the customer's side of the electricity meter, including solar panels, batteries, EV chargers, and other distributed energy resources.
B2B	Business-to-Business. Refers to commercial interactions and data exchanges between organizations (e.g., between retailers and networks, or aggregators and AEMO).
CEC	Clean Energy Council. Australia's peak body for the clean energy industry, representing installers, designers, manufacturers, and other professionals.
CER	Consumer Energy Resources. Energy resources owned and operated by electricity customers, including rooftop solar, batteries, electric vehicles, and controllable loads. Broader term than DER, emphasizing consumer ownership.
CER Roadmap	National Consumer Energy Resources Roadmap. Policy framework establishing Australia's reform agenda for CER integration across consumers, technology, markets, and power system operations.
CSIP-AUS	Common Smart Inverter Profile - Australia. Australian implementation of IEEE 2030.5 communication protocol standard for secure communications between distributed energy resources and network operators. Enables remote monitoring and control of inverters for grid management.
CTO	Chief Technology Officer. In context of Smart Connect, refers to national technical design leadership function required for ongoing standards development and technical coordination.
DCCEEW	Department of Climate Change, Energy, the Environment and Water. Australian Government department responsible for energy policy, climate change response, and environmental management.
DEIP	Distributed Energy Integration Program. ARENA's program coordinating industry efforts to integrate distributed energy resources into Australia's electricity system. DEIP 2.0 refers to the proposed next phase continuing this coordination beyond March 2026.
DER	Distributed Energy Resources. Small-scale energy generation or storage technologies connected to the distribution network, including rooftop solar, batteries, and controllable loads. Often used interchangeably with CER.
DER Register	AEMO's central registry of distributed energy resources connected to the National Electricity Market. Provides visibility of installed solar, batteries, and other DER for market operations and system security.
DNSP	Distribution Network Service Provider. Organizations that own and operate electricity distribution networks (poles and wires) delivering electricity to homes and businesses. Australia has eight major DNSPs across jurisdictions.
DOE	Dynamic Operating Envelope. Real-time limits on how much electricity a customer's DER system can import from or export to the grid, based on local network conditions. Replaces static export limits with flexible, time-varying constraints.
ECMC	Energy and Climate Ministerial Council. Peak intergovernmental forum on energy and climate policy in Australia, comprising Australian Government and state/territory energy and climate ministers.
ENA	Energy Networks Australia. National industry body representing electricity transmission and distribution network businesses across Australia.
EV	Electric Vehicle. Vehicle using electric motors for propulsion, powered by rechargeable batteries. Relevant to CER as both an electricity load and potential source of grid flexibility through smart charging or vehicle-to-grid capabilities.
EVSE	Electric Vehicle Supply Equipment. Charging infrastructure for electric vehicles, including home chargers, public charging stations, and workplace charging facilities.
IEEE	Institute of Electrical and Electronics Engineers. International standards organization developing technical standards including IEEE 2030.5 (basis for CSIP-AUS).
IEEE 2030.5	International standard for smart grid communications and interoperability. Defines protocols for secure communications between utilities and customer-owned devices. Foundation for CSIP-AUS.
IPRR	Integrating Price-Responsive Resources. Framework recommended by Nelson Review for enabling demand-side participation in NEM dispatch through price-responsive load and generation.
ISC	Intelligent Systems Centre. Research center at Australian National University responsible for coordinating CSIP-AUS development, testing, and certification services for CER devices.
ISP	Integrated System Plan. AEMO's long-term infrastructure plan for the National Electricity Market, projecting future electricity supply, demand, and infrastructure requirements.
NEM	National Electricity Market. Wholesale electricity market covering eastern and southern Australia (Queensland, New South Wales, Australian Capital Territory, Victoria, South Australia, and Tasmania).
NEPKI	National Energy Public Key Infrastructure. Not-for-profit entity established to provide universal digital certificate services enabling secure authentication and communications for CER ecosystem participants.
NESO	National Energy System Operator. UK equivalent of AEMO, responsible for operating Britain's electricity and gas systems.
OCPP	Open Charge Point Protocol. Open application protocol for communication between EV charging stations and central management systems.
OEM	Original Equipment Manufacturer. Companies that design and manufacture CER devices including solar inverters, batteries, EV chargers, and other equipment.
PKI	Public Key Infrastructure. Digital security framework using cryptographic key pairs to authenticate parties and encrypt communications. NEPKI provides PKI services for the CER ecosystem.
PMO	Project Management Office. In Smart Connect context, refers to coordination function providing integrated program management, stakeholder engagement, risk management, and delivery oversight across multiple workstreams.
PRR	Price-Responsive Resource. Energy resource (load or generation) that can adjust consumption or output in response to electricity price signals, enabling market participation and demand-side flexibility.
SEC	Smart Energy Council. Australian industry association representing solar, battery storage, and smart energy sectors.
VPP	Virtual Power Plant. Aggregation of multiple distributed energy resources (typically batteries and solar systems) coordinated to act as a single entity in electricity markets or provide network services.

Glossary

Technical Terms

Access Framework	Set of rules, standards, and technical requirements governing how authorized parties (retailers, aggregators, networks, AEMO) can access CER standing data and operational information from registries and data platforms.
Aggregator	Organization that pools together multiple customer DER systems to create larger-scale resources for market participation or network services. Aggregators coordinate VPPs and demand response programs.
Authentication	Process of verifying the identity of users, devices, or systems attempting to access CER infrastructure. NEPKI provides authentication services through digital certificates.
Authorization	Process of granting specific access rights to authenticated parties, determining what data or systems they can access and what actions they can perform.
Backstop (Emergency)	Emergency control mechanism allowing network operators to remotely curtail or disconnect solar/battery exports during grid emergencies to maintain system security. Being implemented in NSW, ACT, SA, and WA.
Battery Scheme	Cheaper Home Battery Scheme. Australian Government program providing subsidies for household battery installations. Launched July 2025, targeting 1-2 million battery installations by 2030.
Certification	Formal verification that a CER device (inverter, battery, charger) complies with relevant technical standards and can interoperate with grid systems. ISC coordinates national certification pathways for CSIP-AUS devices.
Commissioning	Process of configuring and testing a newly installed CER system to ensure it operates correctly and complies with network requirements. Includes registration with AEMO and network operator.
Connection Workflow	Standardized process for connecting new CER installations to the electricity network, from initial application through installation, commissioning, registration, and activation of grid services.
Coordination Function	Ongoing organizational capacity required to maintain alignment across CER integration programs. Smart Connect identifies three types: Policy & Regulatory (Ⓟ), Program Management (Ⓜ), and Technical Design (Ⓣ).
CER Data Exchange	AEMO initiative to enhance data sharing capabilities between DER Register and authorized parties including retailers, aggregators, and network operators. Enables retailer access to standing data and DOEs.
Customer Agent	Party acting on behalf of electricity customer to coordinate their CER participation in markets or network services. May be retailer, aggregator, or other service provider.
Cybersecurity Framework	Set of standards, controls, and practices to protect CER systems and data from cyber threats. Developed collaboratively by DNSPs following AEMO's ACSCSF (Australian Cyber Security Controls Framework) approach.
Data Exchange	Secure sharing of information between CER ecosystem participants following standardized formats and access controls. Includes standing data (device specifications, location) and operational data (generation, consumption, DOE limits).
Design-Build-Operate	Framework describing three continuous capacities required for CER coordination: (1) Design - technical standards development; (2) Build - program delivery and infrastructure deployment; (3) Operate - ongoing service provision and maintenance.
Device Interoperability	Technical capability for CER devices from different manufacturers to communicate and function consistently across different network operators and market participants using common protocols and standards.
Emergency Backstop	See Backstop (Emergency)
Export Limit	Maximum amount of electricity a customer's CER system can send to the grid at any point. May be static (fixed limit) or dynamic (varies based on network conditions via DOE).
Flexible Connections	Network connection approach using dynamic export limits (DOEs) instead of static limits, allowing higher peak capacity installations by managing exports based on real-time grid conditions.
Functional Requirements	Technical capabilities that must work consistently across the CER ecosystem to enable integration. Smart Connect Workpaper #1 identified five categories: Hardware Function, Communications, Registration, Data Exchange, and Service Enablement.
Grid Security	Maintenance of stable, reliable electricity supply within technical parameters including voltage, frequency, and power quality. CER integration must support grid security through visibility, control, and coordination.
Grouping and Membership	Capability for customers' CER assets to be organized into groups (e.g., VPPs) with clear membership management, allowing customers to join, leave, or switch between groups while maintaining data portability.
Installer Portal	Digital platform (e.g., NSW CER Digital Installer Portal) providing streamlined process for installers to register new CER connections, submit compliance documentation, and integrate with DER Register and network systems.
Interoperability	See Device Interoperability
Inverter	Electronic device converting direct current (DC) from solar panels or batteries into alternating current (AC) for use in homes or export to grid. Modern smart inverters enable remote monitoring and control via protocols like CSIP-AUS.
Market Participation	Ability for CER assets to provide services in NEM markets, including energy arbitrage, frequency control ancillary services (FCAS), and demand response. Requires registration, visibility, and coordination infrastructure.
Nelson Review	Independent review of Australia's National Electricity Rules conducted by Anna Collyer, recommending reforms to enable price-responsive resource participation and improve market design for CER integration.
Network Services	Grid support functions that CER can provide to distribution networks, including voltage control, peak demand reduction, and emergency response. Delivered through coordinated aggregations or individual assets.
Portability (Customer)	Ability for customers to switch their CER enrollment between different retailers, aggregators, or service providers without technical barriers, maintaining asset registration and market visibility.
Protocol	Standardized set of rules governing communication between devices or systems. CSIP-AUS is the protocol standard for CER-to-network communications in Australia.
Real-Time Monitoring	Capability to track CER device status, generation, consumption, and responses continuously, enabling operational visibility for networks, markets, and service providers.
Register-Once Visible-Everywhere	Principle that CER assets should be registered in a central system (DER Register) once during connection, with data accessible to all authorized parties rather than requiring separate registration with each network, retailer, or market operator.
Registration System	Digital infrastructure capturing and maintaining information about installed CER assets, including location, capacity, ownership, and technical specifications. DER Register is Australia's central system.
Retailer	Company licensed to sell electricity to end customers. In CER context, retailers increasingly offer VPP services and coordinate customer DER participation in markets.
Server Harmonization	Standardization of network-side systems (CSIP-AUS servers) so device manufacturers can certify their products once against common specifications rather than separately for each DNSP.
Service Enablement	Technical and commercial frameworks allowing CER to deliver energy services through standardized interfaces, including VPP enrollment, demand response participation, and network service provision.
Shared Infrastructure	Common technical capabilities built once and used by all ecosystem participants, including testing facilities, PKI services, registries, and data platforms. Contrasts with fragmented approach where each party builds separately.
Standing Data	Static or slowly-changing information about CER installations, including device specifications, installation location, capacity, and ownership details. Distinguishes from operational data (real-time measurements).
Switching (Customer)	Process enabling customers to transfer their CER asset from one service provider (retailer/aggregator) to another, ideally through standardized "in-band" processes using device communications protocols.
System Security	See Grid Security
System Value	Total economic benefit from efficient CER integration, including avoided network investment, reduced wholesale electricity costs, improved reliability, and enhanced grid flexibility. AEMO ISP 2026 estimates $7.2B in value from coordinated CER.
Testing and Certification	See Certification
Universal Registration	See Register-Once Visible-Everywhere
Virtual Power Plant	See VPP (in Acronyms section)
Visibility Services	Data services providing real-time or near-real-time information about CER status, performance, and c… authorized parties including networks, retailers, aggregators, and AEMO.