

NEM Reform Program

General Stakeholder briefing

22 May 2024



Disclaimer

This presentation includes material outlining AEMO's interpretation of indicative impacts of several national energy market (NEM) reforms to energy market systems and processes for energy industry participants, as at 22 May 2024.

The interpretations expressed in this presentation are not binding on AEMO. The interpretation of the impact of NEM reforms may change at any time.

Anyone participating or intending to participate in the NEM should obtain detailed advice about the application of the National Electricity Rules and applicable laws, procedures and policies to their specific circumstances.

To the maximum extent permitted by law, AEMO and its employees or consultants are not liable for any statements in, or omissions from, these materials, or for any use of or reliance on them.

1. Welcome

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

We pay respect to their Elders past, present and emerging.

Introduction

This session

Session 1: General Stakeholder briefing

Objectives

- An overview of AEMO's NEM Reform Program, its initiatives and impact to industry.
- To equip stakeholders with sufficient information to understand how these reforms may impact their business.



Scope

- In-Flight initiatives (Scope, timeline and impacts).
- We look forward to your feedback and questions.
- Participants are asked to familiarise themselves with AEMO's [Competition Law Meeting Protocol](#) as outlined in Appendix A and at AEMO's website.

Session 2: Roadmap briefing

Objectives

- Provide an overview and facilitate clarification on the NEM Reform Implementation Roadmap.
- Walk through the incremental and material changes since the v.3.1 release in December 2023.



Scope

- Holistic longer term NEM reform (planning focus).

Agenda

#	Time	Topic	Presenters from AEMO
1	1:00-1:05pm	Welcome	Lance Brooks
2	1:05-1:10pm	Context & Program Overview	David Reynolds
3	1:10-1:50pm	Program initiatives Inflight (Committed) Initiatives Retail Market Improvements (RMI) initiatives Integrating Energy Storage Systems (IESS) Frequency Performance Payments (FPP) SCADA Lite Enhancing Reserve Information (ERI) Improving Security Frameworks (ISF) for the energy transition Mobilisation Activities Accelerating smart meter deployment (MSR) Unlocking CER benefits through flexible trading AEMO Foundational & Strategic Initiatives (FaSI)	Blaine Miner Emily Brodie Oliver Derum David Reynolds Oliver Derum David Reynolds Justin Stute Justin Stute Andrew Bell
4	1:50-2:00pm	Q&A	Lance Brooks
5	2:00pm	How to get involved & close	Lance Brooks

Appendix A: AEMO Competition Law - Meeting Protocol

Appendix B: Reference information



“Please note that this meeting will be recorded by AEMO and may be accessed and used for the purposes of publishing it on the external [NEM Reform Public forums webpage](#) as a resource for industry participants. By attending the meeting, you consent to AEMO recording the meeting and using the recording for this purpose. No other recording of the meeting is permitted”

General Housekeeping

1. Please mute your microphone.
2. Use the 'Chat' function to ask any questions or comments.
 - AEMO SMEs are on the call, who will attempt to respond in the chat.
3. Key questions or comments will be addressed in the Q&A section.
4. In attending this meeting, you are expected to:
 - Contribute constructively.
 - Be respectful, both on the call and in the chat.

2. Context & Program overview

David Reynolds

NEM Reform Program is enabling the energy transition

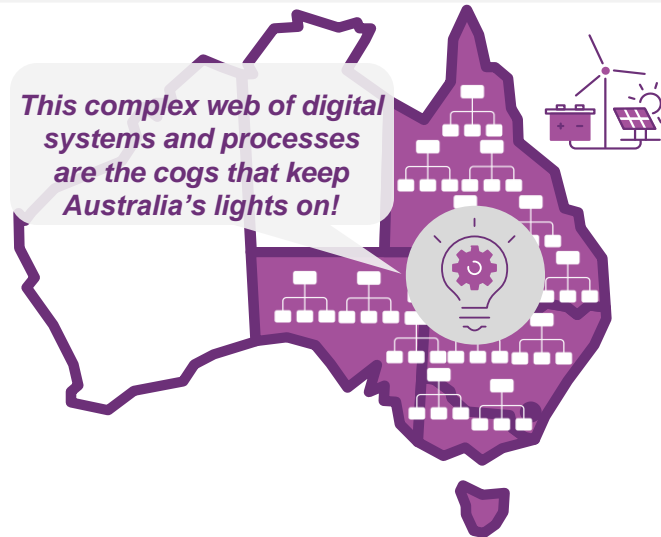
The most significant modernisation of the NEM since 1998

The energy transition and NEM Reform

Australia's National Electricity Market (NEM) is transitioning from coal generation to a future driven by renewables. NEM Reform is needed to **modernise the digital systems and market processes** that will support and operate the future system

Why a digital transition?

- The NEM's systems and processes were built to support (synchronous) coal powered generation
- Uplift must occur to support more renewable energy generation and storage types
- Systems must be made more secure



30 + projects between now and 2029 will..

- Upgrade and re-configure digital systems
- Impact both wholesale and retail markets
- Build and reconstruct future-proofed systems
- Implement new processes
- Deliver to regulatory rule change dates
- Embed changes into the way our people work

Program Outcome

AEMO's systems and processes are capable of transitioning Australia to net zero



More renewable energy will reach consumers



Increased safety and security of the power system



Increased efficiencies for energy participants

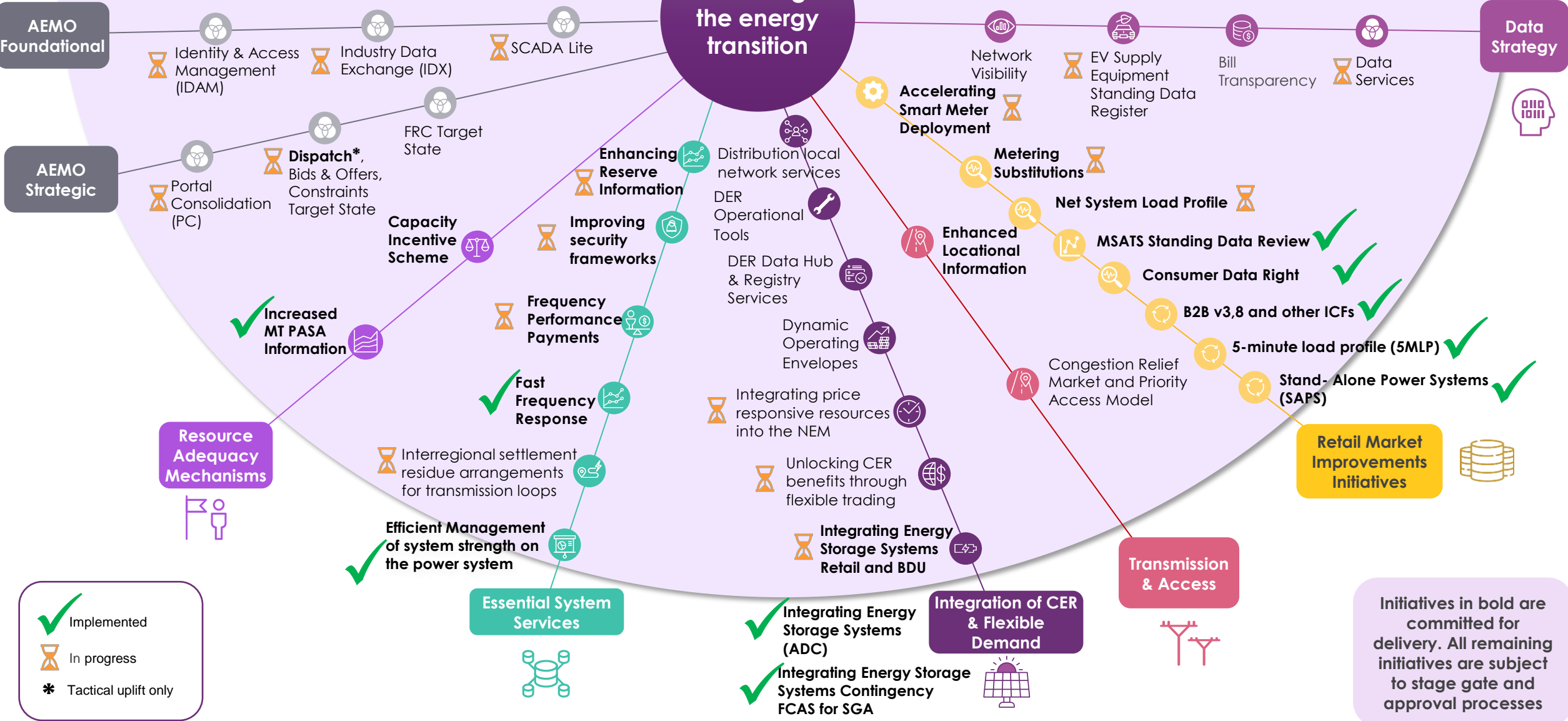


More investment in renewable infrastructure

Who is involved?

- ✓ AEMO's digital and business teams are playing a critical role in delivering the solutions needed
- ✓ Plus teams from every AEMO division
- ✓ AEMO is collaborating with every energy participant across industry

Enabling the energy transition



Reform pathways & how we are going

Successfully delivering reform initiatives

- The NEM reform program has delivered 14 initiatives, 9 rule changes and several procedure changes
- The program delivers extensive engagement and integrated planning for participants and supports participants with information to support readiness preparations
- For example:
 - **Engagement:** AEMO has held 200+ engagement sessions to date with 3,000+ attendees across all forums and dealt with 1000+ industry mailbox enquiries.
 - **HLIA:** AEMO to provide early, whenever possible High-Level Impact Assessment (HLIA) for participant consideration
 - **FaSI:** AEMOs extensive collaboration with industry over 2023 and into 2024 on the Foundational and Strategic initiatives led to the development of a business case endorsed by Executives across industry.

Release	Initiatives delivered	Status
Mar-23	Integrating Energy Storage Systems (Initial release)	Delivered
	Stand Alone Power Systems (SAPS) Market Stand-Alone Power System Resource Provider (MSRP) Registration	Delivered
MAY-23	CDR (excluding LCCD)	Delivered
	B2B v3.8 and other ICFs	Delivered
JUN-23	SAPS	Delivered
AUG-23	Integrating Energy Storage Systems (ADC)	Delivered
	Fast Frequency Response - Dispatch & Reg	Delivered
OCT-23	Fast Frequency Response	Delivered
	5 Minute load profile	Delivered
	Increased MT PASA Information	Delivered
NOV-23	CDR (LCCD), CDR Ph3, MSDR compliance Holiday	Delivered
MAR-24	Metering Exemptions (MSDR)	Delivered

Inflight initiatives

The Program is working towards several releases across multiple initiatives in 2024 & 2025

Release	Initiatives in flight	Impacted Stakeholders	Status
JUN-24	Integrating Energy Storage Systems	IRPs, NSPs, FRMP, MC/MP/MDP, MSRPs ENMs, Vendors	• In progress
SEP-24	Retail Market Improvements (NSLP methodology change and Metering Substitutions)	FRMP, MDP, LNSP	• In progress
OCT-24 (TBC)	SCADA Lite	DRSP, VPP, SGA, Operators of remote grid scale assets	• In progress
DEC- 24	Frequency Performance Payments (Non-Financial)	Generators, Scheduled Loads	• In progress
JUN-25	Frequency Performance Payments (Financial Commencement)	Generators, Market Customers	• In progress
Go-live various dates including Dec 2025	Improving Security Frameworks	Generators, Scheduled Load, Market Customers, TNSPs	• In progress
Go-live 1 July 2025 & 1 July 2027	Enhancing Reserve Information	Generators, Scheduled Load, FRMP, TNSPS	• In progress

3. Program initiatives

The information presented in this session is general in nature. AEMO encourages industry participants to undertake their own due diligence to assess energy market reform impacts on their respective organisations.

Inflight initiatives

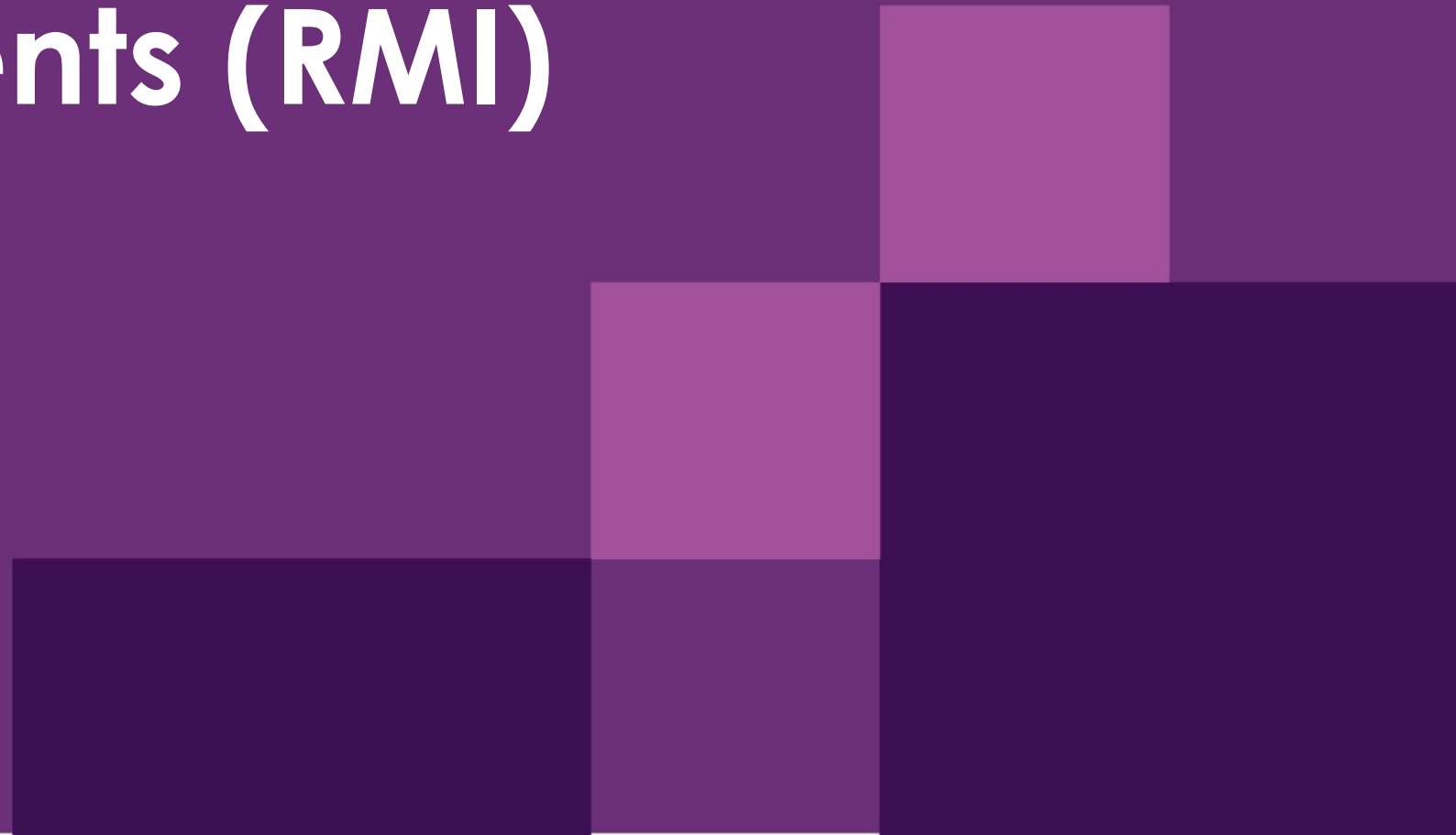
Committed initiatives to be delivered over
2024 & 2025





Retail Market Improvements (RMI)

Blaine Miner



Net System Load Profile (NSLP)

Overview

- The Net System Load Profile (NSLP) initiative is part of the 'Retail Market Improvements (RMI)' reform pathway.
- Net System Load Profiles (NSLP) are used to convert accumulation (basic meter) reads into 5-minute trading intervals for market settlement purposes.
- When positive and negative NSLP trading interval values are present, significant fluctuations, or 'spikes', are observed when the NSLP is applied to these reads.
- These 'spikes' are a consequence of having a small denominator value in the profiling algorithm.
- This new methodology will manage these situations by applying a minimum (non-zero) 'floor' to the applicable values.
- AEMO is intentionally implementing this change in a historically less volatile pricing period, to limit any potential financial exposures to Retailers/FRMPs during the transition between methodologies.

Key Benefits

- ✓ A more indicative NSLP shape supporting critical market settlements.
- ✓ A standard and consistent methodology being applied across the NEM.
- ✓ Elimination of energy volume spikes in profiled reads.
- ✓ Reduced manual handling by AEMO.

Key dates



- New methodology to become effective from 29 Sept 2024

Want to find out more?



- [NEM Reform Program](#)
- [Contact the NEM Reform Team](#)

Substitution Types and Reason Codes

Overview

- Substitution types which are associated with small market interval metering are limited. Accordingly, in recent years, substitution approvals have risen dramatically from affected FRMPs, ENLRs and LNSPs.
- These approvals are required where the MDP intends to apply the Type 16 Agreed Method. The associated approval processes:
 - result in a substantial amount of administrative effort for all parties;
 - may result in delays in the provision of metering data; and
 - may result in compliance issues for the MDPs.
- When applying the Type 16 Agreed Method, the underlying cause of the substitution is not easily communicable to recipients. For example, the recipient will not be able to distinguish between a situation where the substitution is being provided due to crossed meters or failed phase on 3 phase supply.
- This review has resulted in seven new substitution types; the obsolescence of substitution type 16; and the addition of 10 new Reason Codes.

Key Benefits

- ✓ More insightful substitution types and associated reason codes
- ✓ More efficient downstream processes
- ✓ Reduced manual handling
- ✓ Improved customer communication and support

Key dates



- New and amended substitution types and reason codes to become effective from 4 November 2024

Want to find out more?




- [NEM Reform Program](#)
- [Contact the NEM Reform Team](#)

Participant Impact Assessment

Market Sector


Impact Summary



Financially Responsible Market Participant (FRMP)

Registration
Bidding & Dispatch
Retail & Metering
Settlements


- The ingestion of the seven, four new and three renamed, Substitution Types.
- The ingestion of 10 new Reason Codes.
- The ingestion of NLSP Floor values per profile area.



Metering Coordinator/ Provider/ Data Provider

Registration
Bidding & Dispatch
Retail & Metering
Settlements

- The application of the new Substitution Type methodologies
- The provision of the seven, four new and three renamed, Substitution Types.
- The provision of 10 new Reason Codes.
- The obsolescence of Substitution Type (16).



Distribution Networks

Registration
Bidding & Dispatch
Retail & Metering
Settlements

- The ingestion of the seven, four new and three renamed, Substitution Types.
- The ingestion of 10 new Reason Codes.

Legend

- HIGH
- MODERATE
- LOW
- NONE



Integrating Energy Storage Systems

Ulrika Lindholm

Integrating Energy Storage Systems (IESS)

Overview

- The electricity markets were traditionally one-sided with separate producers and consumers of electricity; which has been reflected in the rules, systems and processes that shapes interactions between AEMO and market participants.
- Energy storage and hybrid/aggregate systems are bi-directional, currently requiring them to e.g. register and participate under two different categories and other arrangements which creates inefficiencies for energy storage compared to other market participants.
- At the same time, as our electricity system transitions to a net zero system with very high proportions of variable renewable energy, Energy storage plays an important role to firm up the expanding volume of renewable energy, and
- The Integrating Energy Storage Systems (IESS) rule (among other changes) establishes an Integrated Resource Provider registration category to allow storage to register and participate in a single registration category, as well as allow aggregators for small generators and bi-directional units to register as an IRP and provide ancillary services.
- AEMO established the IESS project under the NEM Reform Program to:
 - Carry out the procedure and system changes arising from the IESS rule
 - Support industry readiness for the IESS changes.

Key Benefits

- Remove barriers to entry for more flexible resources and services in the future power system, including emerging participants with grid-scale batteries of different sizes and capabilities, such as simplifying registration process.
- Provide participants access to additional value streams through opening contingency FCAS markets to Small Generation Aggregators, which in turn promotes increased competition in the contingency FCAS markets
- Provide operational flexibility for aggregate systems to dispatch energy at the connection point from a combination of its units rather than on a unit-by-unit basis (with some restrictions).
- Better reflect how participants use and benefit from AEMO's non-energy services by changing the way nonenergy costs are recovered.

Key dates

Timing



- Market Trial - 3 Apr to 24 May 2024



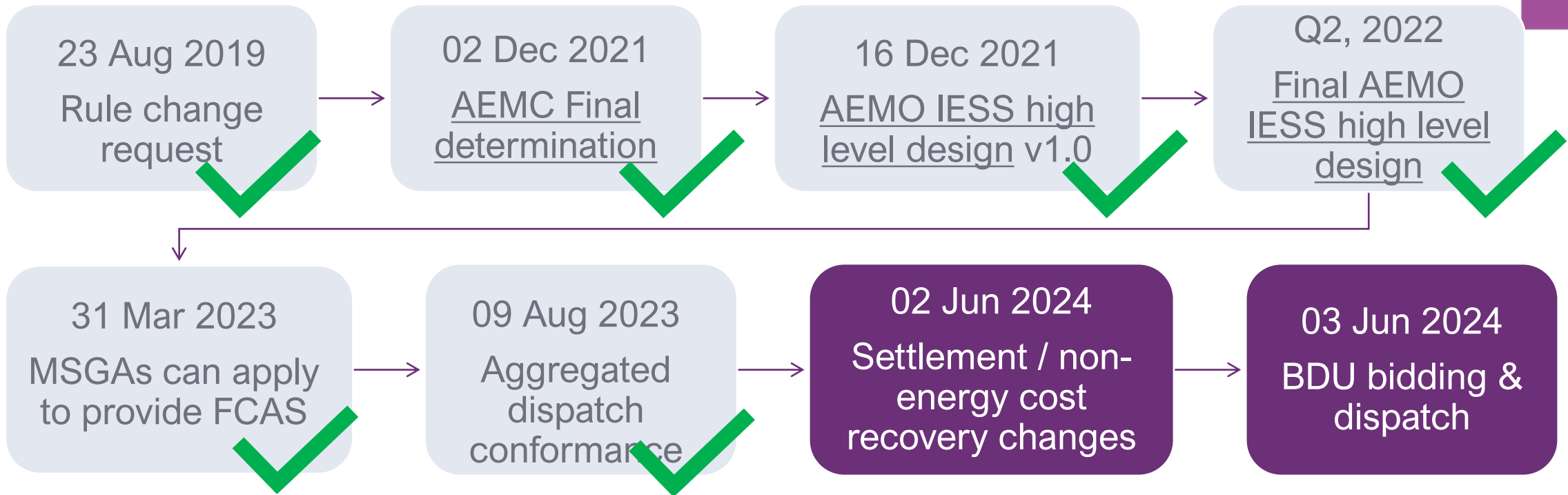
- IESS Final Releases - 2 and 3 Jun 2024

Want to find out more?



- [IESS webpage](#)
- [Contact the NEM Reform Team](#)

High-level Timeline



MSGA	Market small generation aggregator
FCAS	Frequency control ancillary service/s
IRP	Integrated resource provider
BDU	Bidirectional unit

- REFERENCES**
- [AEMC IESS rule change](#)
 - [AEMC Implementing IESS rule change](#)
 - [AEMO IESS High Level Design and Implementation Strawperson](#)
 - [AEMO IESS Participant Toolbox](#)

Scope and key dates (1/2)

TIMING	ELEMENT	SUMMARY
24 Jul 2023	Bidirectional Unit Implementation Design	✓ Final design has been published
18 Sep 2023	Retail procedures	✓ Final procedure has been published, following consultation. It covers: Changes to National Metering Identifier (NMI) Classification Codes to enable AEMO to appropriately allocate unaccounted for energy (UFE), market fees, and monitor the integrity of the market.
13 Sep 2023	Technical specification draft	✓ Based on AEMO Detail Design at level to support participants' development activities for the IESS June releases (settlements changes and the introduction of bidirectional units (BDUs))
11 Sep 2023	Data model technical specification initial draft	✓ Participant data model, containing changes to Settlement tables, columns and definitions
9 Oct 2023	Readiness Approach update	✓ Outlines activities planned to ensure that industry and AEMO are ready for rule commencement
17 Oct 2023	Industry test and market trial strategy	✓ Plan for managing, coordinating, monitoring and reporting on AEMO's and NEM participants' IESS market testing activities scheduled for April and May 2024
18 Oct 2023	Participant Impact Assessment update	✓ High level view on participant impacts of IESS
23 Oct 2023	Technical specification update	✓ As above, version that AEMO development will be based on. High degree of certainty for Participant development/planning
15 Dec 2023	Transition and cutover plans draft	✓ Establishes a timetable and process for transitioning affected participants to new arrangements
15 Dec 2023	Participant Development Support Environment - Settlements	✓ Temporary system environment which allows Participants access to static settlement data format examples
22 Jan 2024	Participant Development Support Environment – Bidirectional Unit	✓ Temporary system environment which allows Participants access to “beta” release of bidding and reporting interface changes supporting single DUID changes.
19 Jan 2023	Transition and cutover plans final	✓ Establishes a timetable and process for transitioning affected participants to new arrangements
02 Apr 2024	Technical specification final	✓ Outlines settlements changes and the introduction of bidirectional units (BDUs)
15 Apr 2024	Data model technical specification final	✓ Participant data model is released in production environment

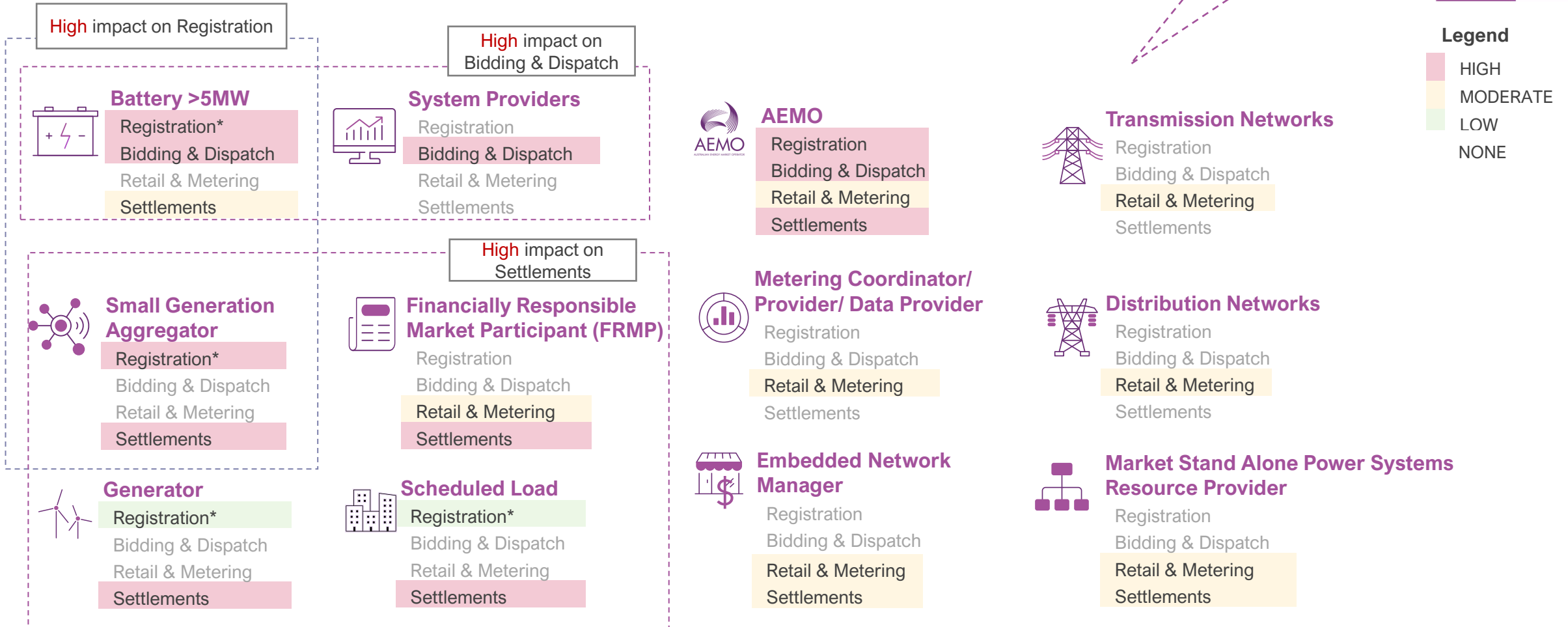
Scope and key dates (2/2)

TIMING	ELEMENT	SUMMARY
April-May 2024	Market trial	<ul style="list-style-type: none"> Coordinated multi-party end-to-end testing of business process scenarios
02 Jun 2024	Settlement and non-energy cost recovery (NECR) changes	<ul style="list-style-type: none"> Fundamental change - move from current category-based approach to a directional approach: <ul style="list-style-type: none"> “Generator” and “customer” energy will become “sent out” and “consumed” energy, regardless of the type of connection point Changes to the way NEM participants pay for “non-energy” services i.e. costs of ancillary services, interventions etc. Major AEMO database structure changes required to enable the new calculations, these changes will flow into the Data Model and affect participant reconciliation and reporting activities and also AEMO data provision. Non-energy cost recovery will change to recovery from cost recovery market participants (CRMPs) based on their proportion of sent-out or consumed energy. CRMPs are: <ul style="list-style-type: none"> Market generators Integrated resource providers Market customers
02 Jun 2024	New/updated National Meter Identifier (NMI) Classification Codes	<ul style="list-style-type: none"> Via the Retail Procedures, 3 new codes and amendments to 2 further codes will be implemented under IESS for: <ul style="list-style-type: none"> Identifying integrated resource systems (IRS) and removing the current use of two NMIs for grid-scale storage facilities Appropriate application of market fees and unaccounted-for-energy (UFE) Incorporating changes relating to the new Small Resource Aggregator category Enabling appropriate compliance monitoring to protect the integrity of market settlements.
Sun 02 Jun 2024 (SGAs) On and from 03 Jun 2024 (other)	Facilitating a new category, near universal participant type – Integrated Resource Provider (IRP)	<ul style="list-style-type: none"> An Integrated Resource Provider will be able to classify a wide range of units. <ul style="list-style-type: none"> New category will help simplify registration, particularly for battery participants who currently need to register as both a customer and a generator. Existing Bi-directional unit (BDU) participants (generator/customer) transition to IRPs Small Generation Aggregators become IRPs
03 Jun 2024	Facilitating bi-directional units (BDU)	<ul style="list-style-type: none"> A new unit type for plant (such as a battery) that can act as a generator and a consumer of electricity. There will also be a new approach to bidding whereby a BDU will use a single bid form, rather than the current two (one each for generation and consumption).

Participant Impact Assessment

For detailed Participant Change Impacts, refer to published [IESS Participant Impact Assessment](#)

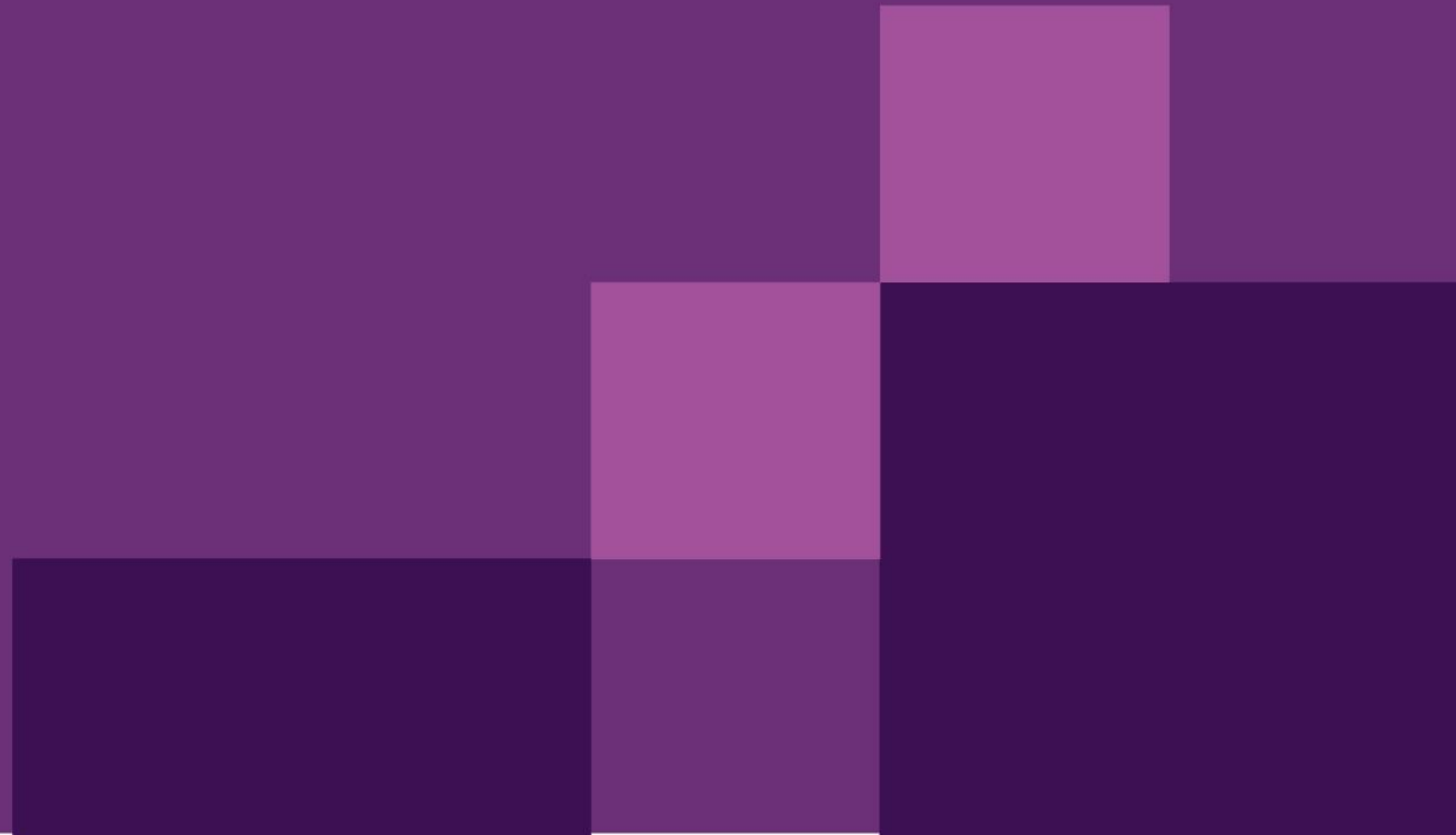
Indicative industry impact heatmap showing affected market systems and processes



* An Integrated Resource Provider will be able to classify a wide range of units. From June 2024, batteries and aggregated small resources must be classified by an IRP. Other generator and load types may be classified by an IRP i.e. in these cases, market generators & market customers can choose to become IRPs.

Frequency Performance Payments

Oliver Derum



Frequency Performance Payments (FPP)

Overview



- AEMO is currently implementing the Australian Energy Market Commission's (AEMC) September 2022 [PFR Incentives Final Rule](#).
- The new Frequency Performance Payments (FPP) framework comes into effect in June 2025.
- As the generation mix transforms and more renewable sources and batteries come on-line, it is increasingly important to provide frequency response to keep the electricity grid stable and control system frequency close to 50Hz to avoid blackouts.
- Under the new arrangements, the impact of generators and large loads on power system frequency will be calculated every five minutes, with incentive or penalty payments being allocated based on the impact of a particular generator or large load. Positive and negative payments are equal in each interval.
- The new five-minute contribution factors will also be used to allocate and recover the cost of Regulation Frequency Control and Ancillary Services (Reg FCAS), replacing the current Causer Pays framework.

Key Benefits

- The costs and value of helpful and unhelpful frequency performance will be transparently priced, allowing facility operators to make informed decisions about their own operations and investments.
- Recovery of regulation FCAS to be done in a significantly more granular way, allowing market participants to more clearly see (and respond to) the link between performance and financial outcomes.

Key dates

Timing

-  • Dec 2024 – May 2025 Non-financial operation of new FPP system
-  • 8 Jun 2025 Go-live

Want to find out more?



- [FPP webpage](#)
- [Contact the NEM Reform Team](#)

Scope and key dates

TIMING	ELEMENT	SUMMARY
4 May 2023	Primary Frequency Response	<ul style="list-style-type: none"> ✓ Final procedure has been published, following consultation. Procedure covers: <ul style="list-style-type: none"> ✓ Requirement to provide Primary Frequency Response (PFR) ✓ PFR parameters and additional performance requirements
1 June 2023	Frequency Contribution Factor Procedure (FCFP)	<ul style="list-style-type: none"> ✓ Final procedure has been published, following consultation. The FCFP, covers: <ul style="list-style-type: none"> ✓ The calculation of a generating unit’s impact on system frequency and the associated payment ✓ Determination of the need to raise or lower power system frequency
July 2023	Participant Impact Assessment	<ul style="list-style-type: none"> ✓ High level view on participant impacts of FPP
December 2023	High-level technical design (available but superseded)	<ul style="list-style-type: none"> ✓ Detail regarding FPP reporting to enable participants to scope their own requirements, begin engagement with developers/vendors and provide feedback to AEMO ✓ SUPERSEDED by the tech spec published in April 2024.
April 2024	Data model technical specification update - Reporting	<ul style="list-style-type: none"> ✓ Updated participant data model, containing new Frequency Performance Payments (FPP) data reporting, numbered EMMS DM 5.4.
September 2024	Data model technical specification update – Settlements	<ul style="list-style-type: none"> • Updated participant data model, containing new elements for FPP settlements
December 2024 to May 2025	Non-financial operation of new FPP systems	<ul style="list-style-type: none"> • Extended period of non-financial operation of the new FPP system to allow market participants to familiarise themselves with its operation
8 June 2025	Frequency Performance Payments Go live	<ul style="list-style-type: none"> • New FPP arrangements replace existing ‘causer pays’ arrangements.

Participant Impact Assessment

Objective	Scope and key dates
<p>The new rule creates a system of positive and negative Frequency Performance Payments, which will replace the current “Causer Pays” system in June 2025.</p> <p>Under the new regime, market participants will receive payments for eligible facilities where their PFR helps to reduce the frequency deviations which would otherwise require the use of regulation Frequency Control and Ancillary Services (FCAS).</p>	<p>On 8 June 2025 - new FPP arrangements replace existing ‘causer pays’ arrangements.</p>

Legend

- HIGH
- MODERATE
- LOW
- NONE

Industry impact heatmap showing affected market systems and processes



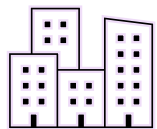
Generation

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



AEMO

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



Scheduled Loads

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements

Participant Change Impacts

Registration

- No impact on the participant registration process.
- registration data used in FPP app

Bidding & Dispatch

- No impact on the NEM bidding or dispatch process.

Retail & Metering

- No new metering obligations. Four-second SCADA data is required for participants to receive an individual FPP contribution factor.

Settlements

- New FPP contribution factors will be used to allocate amounts to be deducted or credited in the settlement process.
- New contribution factors to be used to allocated the recovery of Regulation FCAS, replacing causer pays.



SCADA Lite

David Reynolds

Overview




- Provide a new capability for a market participant to establish a bidirectional communication path to exchange telemetry data and control signals with AEMO such that they can participate in the wholesale market. Specifically:
 - Demand Response Service Providers (DRSP) providing Wholesale Demand Response (WDR).
 - Generators or Integrated Resource Providers not able to exchange information or controls with AEMO via an NSP.
- The evolving and transitional NEM market will involve several new non-NSP (Network Service Provider) Participants in addition to the already existing traditional ones (such as NSPs and Generators).
- It has been onerous for these non-NSP Participants to establish a telemetry connection with AEMO using the ICCP (Inter-control Centre Communications Protocol) protocol that AEMO currently supports.
- SCADA Lite solution will deliver the requirements defined in both the [WDR Guidelines](#) (Version 1.0, Effective Date: 24 June 2021) and [Power System Data Communication Standard](#) (Version 3.0, Effective Date: 3 April 2023).

Key Benefits

- Provides a platform for non-NSP participants to establish telemetry connection with AEMO using the ICCP protocol
- New Reform initiatives such as [Integrating price-responsive resources into the NEM](#) will soon open new market opportunities for non-NSP Participants once accessible telemetry exchange channels are available.

Key dates

Timing

-  • September 2024 - Pilot test complete
-  • External Guidelines Published October 2024 (TBC)
-  • Go-live (production availability) Oct 2024 (TBC)

Want to find out more?



- [SCADA Lite](#)
- [Contact the NEM Reform Team](#)

Scope and key dates

TIMING	ELEMENT	SUMMARY
24 May 2024	AEMO Development commences	<ul style="list-style-type: none"> AEMO commences Build and configuration process
30 August 2024	<u>AEMO Development and Internal Testing complete</u>	<ul style="list-style-type: none"> SCADA Lite solution ready for pilot testing
20 Sept 2024	Pilot test complete	<ul style="list-style-type: none"> Pilot testing of solution with selected external participant successfully completed
1 Oct 2024	External Guidelines Published	<ul style="list-style-type: none"> Guidelines for uptake of SCADA Lite service available for eligible participants
24 Oct 2024	Production Release	<ul style="list-style-type: none"> SCADA Lite service available of uptake by eligible participants

Participant Impact Assessment

Objective

Provide a new capability for a market participant to establish a bi-directional communication path to exchange telemetry data and control signals with AEMO such that they can participate in the wholesale market.

Industry impact heatmap showing affected market systems and processes



Demand response service provider [DRSP]

Registration
Bidding & Dispatch
Retail & Metering
Settlements



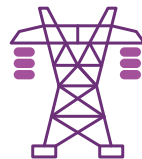
Integrated Resource Provider [IRPs, Generators]

Registration
Bidding & Dispatch
Retail & Metering
Settlements



AEMO

Registration
Bidding & Dispatch
Retail & Metering
Settlements



NSP's

Registration
Bidding & Dispatch
Retail & Metering
Settlements

Participant Change Impacts

Legend

- HIGH
- MODERATE
- LOW
- NONE

Registration

- *Required:* DRSPs seeking to register >5MW of WDR from a single site/aggregation who do not provide telemetry via an NSP will require a SCADA lite connection .
- *Optional:* IRPs or Generators seeking a transitional SCADA Lite connection where the NSP does not support the service.

Bidding & Dispatch

- *Optional:* Operational systems could be upgraded to receive/respond to instruction signals from a SCADA Lite feed.

Retail & Metering

- No Impact.

Settlements

- No Impact.

Enhanced Reserve Information

Oliver Derum

Enhanced Reserve Information

Overview



- AEMO is implementing the [AEMC's Enhancing Reserve Information](#) rule change, made on 21 March 2024.
- The AEMC and stakeholders had extensively considered, and rejected, the development of an operating reserve market.
- Instead, AEMO will provide participants with information about:
 - Availability of all scheduled generators (that is, any reduction in capacity below the nominal maximum, due to factors such as fuel shortage or partial outages), aggregated by NEM region.
 - The state of charge of all grid-scale batteries, aggregated by region. From July 2025, this data will be provided for the previous trading day; from July 2027, it will be provided each five-minute dispatch interval.

Key Benefits

- The changes will participants to make more informed decisions about their own behaviour, including when periods of tighter supply-demand balance in the wholesale electricity market are anticipated.

Key dates

Timing

-  • 1 July 2025 – Go live of 'previous days charge' data for batteries and scheduled plant capacity reductions.
-  • 1 July 2027 – Publication of state of charge of batteries in real time.

Want to find out more?



- [NEM Reform Program](#)
- [AEMC Rule change](#)
- [Contact the NEM Reform Team](#)

Scope and key indicative dates

TIMING	ELEMENT	SUMMARY
22 Sept 2024	ERI Tech Spec published	Changes to Electricity Market Management System Data Model will be specified in this tech spec.
30 Nov 2024	AEMO Development complete	AEMO and participant testing to follow.
1 July 2025	Go live of initial changes	Commencement of initial changes (reporting of previous days' state of charge for grid-scale batteries and the limitations (reductions in capacity) for scheduled generators for the current day. Noting that some changes (e.g. data model changes) are likely to be delivered into production earlier.
From Feb 2027	(Re-)Testing of final change	Nature of testing and readiness activities to be determined in consultation with industry, recognising this functionality will already have been tested at the time of deployment.
1 July 2027	Go live of final change	Commencement of reporting aggregated state-of-charge for grid-scale batteries every five-minute interval.

Participant Impact Assessment

Objective	Scope and key dates
Provide appropriate transparency on the reserve capacity of grid-scale batteries and scheduled generators	<ul style="list-style-type: none"> Maximum State of Charge of grid-scale batteries to be part of Ner Schedule 3.1 Bid Validation data. AEMO to publish aggregated information about scheduled plant AEMO to publish data about batteries state of charge over the previous day (from 1 July 2025) and each five-minute dispatch interval (from 1 July 2027).

Legend

- HIGH
- MODERATE
- LOW
- NONE

Industry impact heatmap showing affected market systems and processes



Scheduled generators

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



AEMO

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



Bi-directional units

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements

Participant Change Impacts

Registration

- New data point, maximum storage capacity, to be added to registration process and annual Schedule 3.1 validation.

Bidding & Dispatch

- No change to systems or processes, but the new information is intended to influence bidding behaviour.

Retail & Metering

- No impact for AEMO or participants.

Settlements

- No impact for AEMO or participants.

Improving Security Frameworks for the energy transition

David Reynolds



Improving Security Frameworks (ISF) for the energy transition

Overview

- AEMO is implementing the AEMC's [Improving security frameworks for the energy transition](#) rule change, made on 28 March 2024.
- The final rule builds on existing tools and frameworks within the power system to enhance system security procurement frameworks.
- It addresses system security challenges during the transition by reducing reliance on directions and providing better incentives for participants to invest in providing system security in the longer-term.
- It also increases transparency on system security needs and understanding, and how AEMO plans to manage system security as we transition to a secure net-zero emissions power system.

Key Benefits

- Enhancements to the existing procurement frameworks and expansion to include the transitional NMAS services framework, combined with AEMO's operational enablement, should improve AEMO's ability to maintain power system security.
- Procurement of security services provides consumers with better assurance that power system security needs will continue to be met through the transition.
- Should reduce market interventions to maintain system security and improves transparency for participants (plants) that are providing these services.
- The final rule amends existing frameworks, systems and understandings of the power system to keep costs and complexity as low as possible.
- The rule makes a number of improvements to promote transparency and predictability of system security needs and the frameworks to meet these needs.

Key dates

Timing



- **3 June 2024** - Transitional services framework to commence (AEMO only able to procure transitional services subject to the publication of the transitional services guideline – which must be published by 1 December 2024).
- **4 July 2024** - Changes to Directions reporting to commence.
- **1 December 2024** - New inertia framework to commence, Revisions to TNSP cost recovery for non-network system security costs will commence, AEMO to publish first transition plan report for system security.
- **31 August 2025** - AEMO to publish full security enablement procedures.
- **2 December 2025** - Full enablement obligations go-live



Want to find out more?



- [NEM Reform Program](#)
- [AEMC Rule change](#)
- [Contact the NEM Reform Team](#)

Scope and key dates

TIMING	ELEMENT	SUMMARY
3 June 2024	Transitional services framework	<ul style="list-style-type: none"> Transitional services framework to commence (AEMO only able to procure transitional services subject to the publication of the transitional services guideline – which must be published by 1 December 2024).
30 June 2024	Part-publication of Security Enablement Procedure	<ul style="list-style-type: none"> Provides any minimum or recommended requirements to be included in TNSPs’ contracts for security services
4 July 2024	Directions transparency	<ul style="list-style-type: none"> Changes to Directions reporting to commence
1 December 2024		<ul style="list-style-type: none"> New inertia framework to commence, Revisions to TNSP cost recovery for non-network system security costs will commence, AEMO to publish first transition plan report for system security.
31 August 2025	Security Enablement Procedure	<ul style="list-style-type: none"> AEMO to publish full security enablement procedure.
2 December 2025	Full enablement obligations go-live	<ul style="list-style-type: none"> full enablement obligations on AEMO will commence

Participant Impact Assessment

Objective	Scope and key dates
Participants who contract with Network Service Providers, may provide security services that are enabled by AEMO.	Refer prior slide.

Legend

- HIGH
- MODERATE
- LOW
- NONE

Industry impact heatmap showing affected market systems and processes



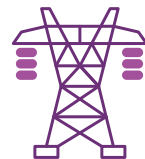
Generators & Integrated Resource Providers

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



AEMO

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements



TNSPs

- Registration
- Bidding & Dispatch
- Retail & Metering
- Settlements

Participant Change Impacts

Bidding & Dispatch

- Providers of system security to be scheduled in the operational timeframe by AEMO.

Settlements

- Security contracts settled with TNSPs.

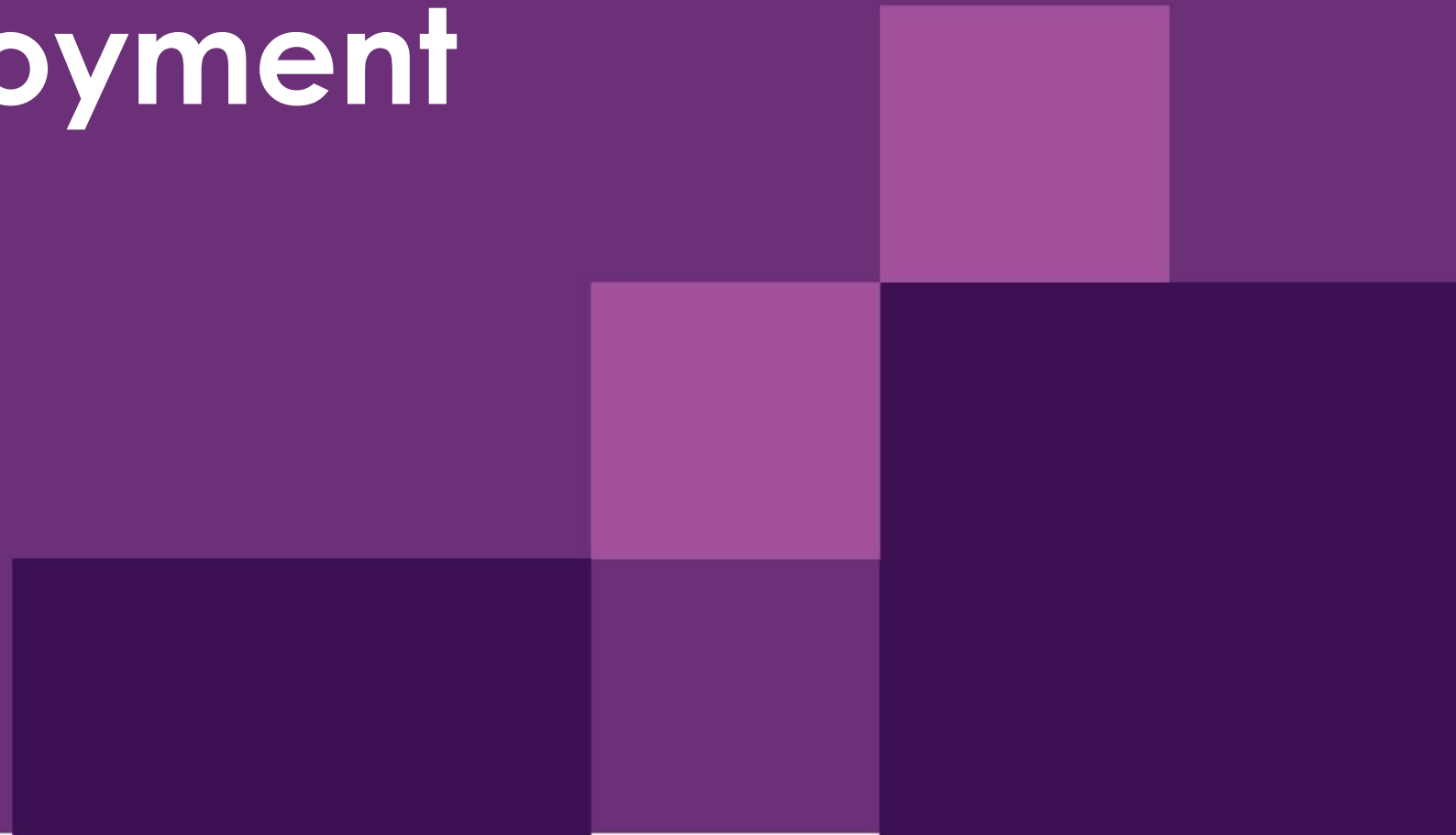
Mobilisation Activities





Accelerating smart meter deployment

Justin Stute



Accelerating smart meter deployment (MSR)

Overview

- To accelerate the deployment of smart meters the AEMC has recommended:
 - DNSPs develop an annual schedule to retire legacy type 5 and type 6 meters. Retailers would then be responsible to engage their preferred Metering Coordinator to install a smart meter within the schedule.
 - Site defects to be recorded in a shared database, such as MSATS
 - DNSPs, Retailers and Metering parties to coordinate outages to allow sites with group legacy metering to be exchanged within a specified timeframe
 - Metering Coordinators to ensure Type 4D and Type 4C meters provide basic power quality data (Volts, Amps, PF, per interval) to the DNSP.
 - Metering Coordinators be exempted from testing and inspection requirements for type 5 and type 6 meters during the acceleration of the deployment of smart meters.
 - AEMO to develop guidelines for the Asset Management Strategies which would specify the information Metering Coordinators must submit for AEMO approval.
- Under the Final Report recommendations B2B and B2M procedures and systems would be impacted
- Proposed consultation approach to create three packages: Acceleration, Power Quality and Testing/Inspection

Key Benefits

- Targeted scheduled interval metering rollout, to ensure every relevant site is attempted to be replaced by July 2030.
- New processes to enable the replacement of meters for 'difficult' sites e.g. shared fuse arrangements
- Provision of power quality data to contribute to the DNSP's to provide understanding of their network
- Clarification of the testing and inspection requirements for Metering Coordinators

Key dates

Timing



- AEMC Final Determination and Rules scheduled to be published 11 July 2024



- AEMO and IEC Procedure consultations scheduled to commence 29 May 2024

Want to find out more?



- [NEM Reform Program](#)
- [AEMC Rule change](#)
- [Contact the NEM Reform Team](#)

Unlocking CER benefits through flexible trading



Justin Stute

Unlocking CER benefits through flexible trading

Overview

- This initiative enables improved flexibility and trading of consumers' energy resources (CER) to unlock value for consumers.
- CER includes responsive/flexible loads and generation at a consumer premise, such as rooftop solar panels, batteries, home and business energy management systems, electric vehicles as well devices that have smart switching such as controllable hot-water systems.
- The AEMC have proposed to provide a rule on the following areas:
 - Examine the opportunities to separately measure and identify and manage flexible CER
 - Provide flexible trading of CER with multiple energy providers for Large customers
 - Include a new framework for the measurement of street lighting and other public furniture
- Provision of flexible trading would use the embedded network framework of creating primary (Parent) and secondary (Child) relationships – subtractive metering arrangements would allocate energy usage

Key Benefits

- Provides consumers options to benefit from their CER assets should they choose to make them available.
- Provides a foundation to coordinate CER and provide cost-efficiency and reliability for consumers
- Removes an anomaly in the market by the misuse of the embedded network framework for Small Generator Aggregators
- Creates an opportunity to reduce Unaccounted For Energy with the introduction of the measurement of street lighting and street furniture

Key dates

Timing



- AEMC Final Determination and Rules scheduled to be published 11 July 2024



- AEMC Draft Determination and Rules proposed a February 2026 go-live

Want to find out more?



- [NEM Reform Program](#)
- [CER Benefits webpage](#)
- [Contact the NEM Reform Team](#)



Foundational and strategic initiatives

Andrew Bell



Foundational and Strategic Initiatives (FaSI)

Overview

- Foundational and strategic initiatives represent investments intended to establish secure, standardised and effective capability required for both existing and new market services.
- These initiatives have been identified for the NEM Reform Program and included in the NEM Reform Implementation Roadmap.
- A business case is being developed for implementation. AEMO is consulting with industry to define scope and timing prior to any funding decision being made.

Initiatives



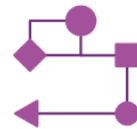
Identity and Access Management (IDAM)

A unified mechanism to authenticate and authorise external identity when accessing AEMO services, consolidating and improving overall cyber security controls.



Portal Consolidation (PC)

Enables a unified stakeholder experience that hosts web applications. The portals framework is an enabling platform that supports energy market participants and other partners to consume AEMO browser services in a secure manner.



Industry Data Exchange (IDX)

Unified access to AEMO services across the NEM, with a framework scalable to all markets. Using modern authentication and communication protocols, facilitating a cohesive approach to industry data exchange. This will leverage IDAM.

Key dates

Timing



- **February 2024:** Draft Business case published.



- **March 2024:** NEM Reform Program Executive forum endorsement.



- **June 2024:** Currently progressing business case through AEMO internal governance committee. Next update anticipated in June.

Want to find out more?



- [FaSI webpage](#)
- [Contact the NEM Reform Team](#)

Vision and Benefits of IDAM, IDX and PC initiatives

Vision

Creating **extensible, resilient and secure** enabling technology frameworks (identity management, data exchange and web access) that underpin AEMO's services to and between NEM market participants, extensible to WEM and gas.

AEMO Overall Benefits

- ✓ Supportability of the technology ongoing (transition away from a proliferation of custom solutions)
- ✓ Reduction in security vulnerability risk through move to 'secure by design' technology
- ✓ Ability to implement reform initiatives faster through scaling resourcing and more modular solutions
- ✓ Key plank of plans to meet SOCI Compliance – both minimum and evolving requirements

Industry Overall Benefits

- ✓ Reduced operational costs through self-service
- ✓ Lowered barriers to entry for participants, including in emerging markets
- ✓ Lowered localisation costs of global industry technology solutions, e.g. CIS platforms
- ✓ Improved security posture and assists industry in meeting their SOCI obligations

IDENTITY & ACCESS MANAGEMENT



A unified mechanism to authenticate and authorise external identity and entitlements when accessing AEMO services, consolidating and improving overall cyber security controls.

Specific Benefits

- ✓ Provides support for organisational hierarchy and federation
- ✓ Enhanced security and alignment with industry obligations and best practice in cyber security controls (e.g. multifactor authentication)
- ✓ Enhanced self-service auditing and reporting capabilities to support industry's governance and compliance and reduce operational costs

INDUSTRY DATA EXCHANGE



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

Specific Benefits

- ✓ Efficiently consolidates the development of data exchange protocols for new business services – avoiding protocol 'bloat', minimising siloed development & improving speed to market for new reforms
- ✓ Aligns with changing participant systems and cyber security obligations
- ✓ Improves transaction timeliness & reduces incidence of stop files
- ✓ Enables the scalable extension of existing business services [IDX Transition]
- ✓ Enable compartmentalisation of schema changes, thereby reducing regression testing costs of twice-yearly market changes [IDX Transition]

PORTAL CONSOLIDATION



A new web and mobile user portal to provide a unified stakeholder experience. The portals framework is an enabling platform that supports energy market participants and other partners to consume AEMO browser services in a secure manner.

Specific Benefits

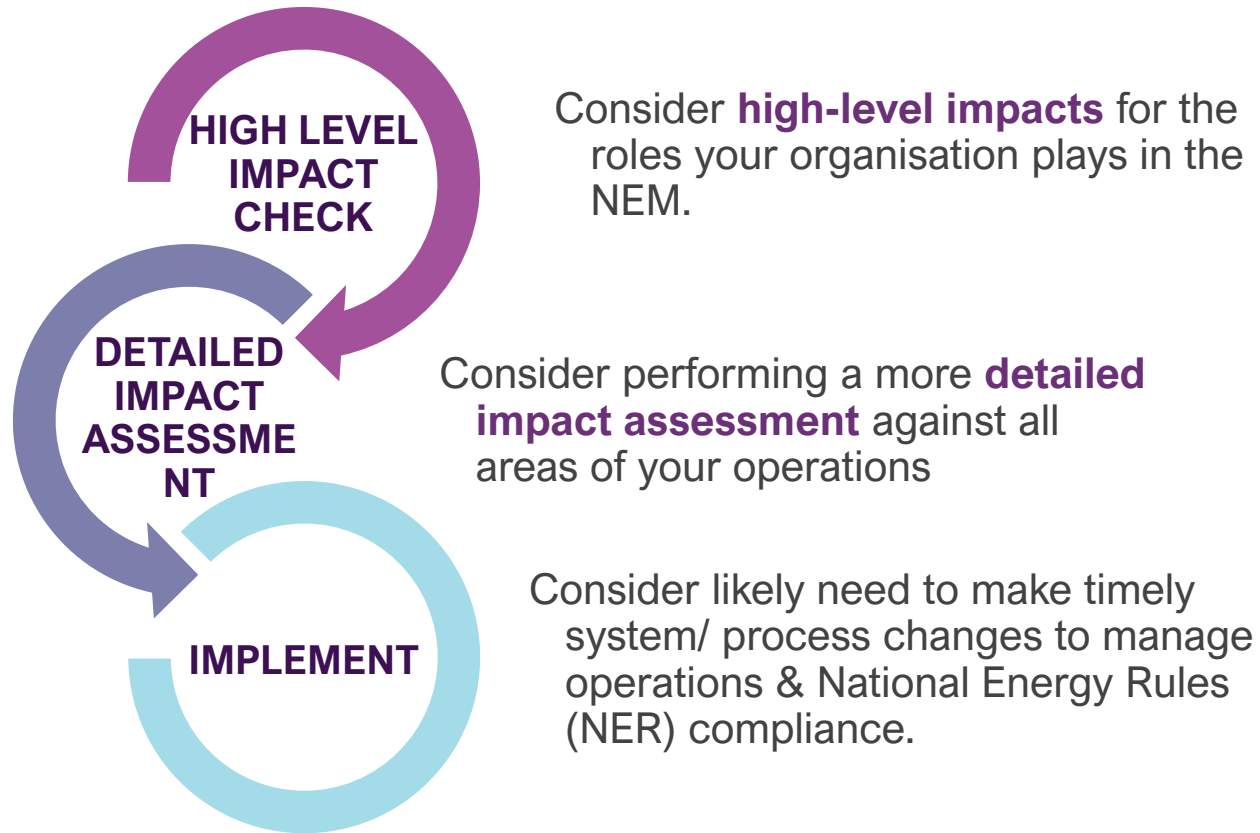
- ✓ Standardised experience to consume AEMO browser services
- ✓ Enhance self-service capabilities for market participants
- ✓ Integration with the enterprise identity management and user authentication solution
- ✓ Enables improved user experience by establishing standards for navigation, look and feel and help menus

4. Q&A

5. How to get involved & close


Lance Brooks

Indicative next steps



Tip! Note which forums on the next page might support you in these activities

NEM Reform Program Engagement

Forums	Forum focus 	Cadence	Approach
Executive Forum	Program overview and status update	3 per Year	Nomination
Reform Delivery Committee (RDC)	Long term strategic perspective	Quarterly	Nomination
Program Consultative Forum (PCF)	Inflight initiatives status & co-ordination	Monthly	Open
Implementation Forum	Implementation of reforms	Monthly	Open
Electricity Wholesale (EWCF) & Electricity Retail (ERCF) Consultative Forums	Procedures working groups	Monthly	Open
Industry Testing Working Group	Testing	Monthly	Open
Working Groups	Inflight	As appropriate	As appropriate



To learn more about these forums, please visit

- [AEMO | NEM Reform Program Forums](#)
- [AEMO | NEM Reform Program Initiatives](#)
- [AEMO | Industry Meetings Calendar](#)
- or contact the program at NEMReform@aemo.com.au.

Subscribe to the NEM Reform Newsletter [here](#)

Focus / working groups for inflight initiatives include:

- Initiative working groups
- Strategic and foundational focus groups (IDX/IDAM/PC)
- Industry Testing Working Group (ITWG) – IT technical implementations



For more information visit

aemo.com.au

Appendix A

AEMO Competition Law - Meeting Protocol



AEMO Competition Law - Meeting Protocol

- AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO, all participants agree to adhere to the CCA at all times and to comply with appropriate protocols where required to do so.
- AEMO has developed meeting protocols to support compliance with the CCA in working groups and other forums with energy stakeholders. Before attending, participants should confirm the application of the appropriate meeting protocol.
- Please visit: <https://aemo.com.au/en/consultations/industry-forums-and-working-groups>

Appendix B

Reference information



Relevant resources

Initiative / Artefact	Relevant links
NEM Reform Program and Stakeholder Forums	AEMO NEM Reform Program Forums AEMO NEM Reform Program Initiatives AEMO Industry Meetings Calendar
NEM Reform Implementation Roadmap	AEMO NEM Reform Implementation Roadmap
Retail & BAU initiatives	AEMO Consultations Load Profiling Methodologies Consultation AEMO July 2023 Retail Electricity Market Procedures Consultation
Fast Frequency Response	AEMC Fast Frequency Response Market Ancillary Service AEMO Consultations MASS Very Fast FCAS
Increased MT PASA information	AEMC Enhancing Information Generator Availability MT PASA AEMO Consultations 2022 Reliability Forecasting Guidelines and Methodology
Integrating Energy Storage Systems	AEMC Integrating Energy Storage Systems NEM AEMO Integrating Energy Storage Systems Project AEMO Integrating Energy Storage Systems Working Group AEMO Integrating Energy Storage Systems Participant Toolbox
Frequency Performance Payments	AEMC Primary Frequency Response Incentive Arrangements AEMO Consultations Frequency Contribution Factors Procedure
Metering Services Review	AEMC Review of the regulatory framework for metering services AEMC Accelerating smart meter deployment AEMO Metering Services Review - Accelerating Smart Meter Deployment
Unlocking CER Benefits through flexible trading	AEMC Unlocking CER benefits through flexible trading AEMO Unlocking CER Benefits through flexible trading
Foundational & Strategic initiatives	AEMO NEM Reform Foundational and Strategic Initiatives Focus Group (FaSI FG)

Glossary

- A comprehensive glossary of terms (and measurements) can be found [here](#) for your reference.
- For rules terms, see the relevant industry rules on the [AEMC website](#) > [Energy rules](#).