

# Regulatory implementation roadmap update

Stakeholder forum  
24 November 2021

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# Welcome

- Welcome to the Regulatory Roadmap Industry Forum for Version 6.
- We look forward to your feedback and questions.
  - Participants are able provide comments and ask questions by using the audio and chat function.
  - We will pause at specific times to answer questions.
  - Stakeholders will also be invited to provide written feedback.
  - This forum will be recorded.

# Background

- In April-May 2020, the market bodies undertook a process to prioritise the regulatory program, in response to COVID-19, and in recognition of the significant regulatory workload
- As part of this process, AEMO developed a regulatory implementation roadmap focused on regulatory initiatives with material IT system implementation impacts, and other key/strategic reforms
- AEMO committed to maintaining the roadmap to support ongoing transparency, prioritisation and program management by all stakeholders
- AEMO published version 5 of the roadmap on 5 August 2021.
- <https://aemo.com.au/en/initiatives/major-programs/regulatory-implementation-roadmap>

# Objectives of this forum

- For this version of the Roadmap, we plan to:
  - Look backwards and capture the feedback and lessons learnt from 2021 reforms.
  - Cover key IT and regulatory reforms updates, for Regulatory Roadmap version 6.
  - Provide a forward look at the Reform Delivery Committee and ESB Reforms.

# 2021 major reforms – lessons learnt

- 2020/2021 saw a raft of major IT and regulatory reforms such as 5MS, customer switching and Wholesale Demand Response successfully introduced.
  - Delivery challenges were experienced to meet regulatory obligations.
  - First-hand experience of bundling, sequencing and prioritisation.
- The Regulatory Implementation Roadmap (and associated forums) has been used to provide oversight of the complex implementation program required to support these reforms.
  - Transparency of initiatives and latest implementation dates.
  - Consultation on specific questions/options.
- Major regulatory and IT reform is likely to continue in view of the forthcoming NEM2025 program and other regulatory initiatives. Feedback sought from stakeholders:
  - During 2021, what went well, not so well.
  - What can AEMO/industry/market bodies do differently.
  - Feedback sought in relation to reform implementation lessons and/or the roadmap.



# Roadmap updates for version 6

# Roadmap Updates for Version 6

Committed regulatory initiatives with IT system impacts

- Global settlements (GS), MSATS standing data review (MSDR) and metering coordinator planned interruptions (MCPI):
  - Implementation of GS, MCPI and MSDR is being managed through May 2022 Readiness Focus Group (RWG).
  - GS and MCPI are on track for commencement on 1 May 2022.
  - Changes to the scope of MSDR version 1 (1 May 2022 go-live) and version 2 (7 November 2022 go-live) have been discussed with the RWG.
  - Version 1 will deliver aseXML schema release and version 2 is proposed to be majority of MSDR.
  - AEMO will commence the minor amendment process on 3 December 2021 to update the effective date.
  - Implementation schedule and schema schedule updated for MSATS standing data review.

# Roadmap Updates for Version 6

Committed regulatory initiatives with IT system impacts

- Stand alone power systems
  - NEL changes made March 2021, NER changes currently with SA Energy Minister to be made.
  - Jurisdictions will need to opt-in with jurisdictions having to amend jurisdictional legislative instruments. SA has already progressed jurisdictional approval to enable SAPS within South Australia.
  - Roadmap reflects 12 month implementation period from the making of the final rule. Note, AEMO proposed a go-live date of May 2023 given significant reform agenda throughout 2021 and 2022.
  - Following the final rule being made, AEMO will promptly commence consultation on SAPS implementation approach.
  - SAPS is expected to impact settlement IT systems.
  - AEMO intends to hold a pre-consultation meeting prior to the publication of an issues paper.
  - DNSPs may be able to deploy SAPS ahead of May 2023 with details expected to be provided in the rule when published.

# Roadmap Updates for Version 6

Committed regulatory initiatives with IT system impacts

- Consumer data right
  - Consumer Data Right Rules were made on 15 November 2021. The Roadmap reflects four tranches of implementation between November 2022 and May 2024.
  - CDR is included in the implementation schedule.
- ST PASA
  - The Roadmap reflects rules development timeframes set out in AEMC's consultation paper (Aug 2021) with indicative go-live date of September 2022. The consultation process to date indicates mixed views and flagged issues that may see the rules development stage extended. Where possible, implementation is expected to run concurrently with Rules Development.

# Roadmap Updates – Draft version 6

## Committed regulatory initiatives with IT system impacts

**Key:**

<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Policy development/market design	<span style="background-color: purple; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Rules development	<span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Procedure/guideline development	<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> AEMO preferred Implementation
<span style="background-color: green; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Implementation - IT systems, processes	<span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Indicative IT implementation	<span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Engineering Implementation	
<span style="color: red;">●</span> Committed Go-Live Date	<span style="color: orange;">▲</span> Proposed Go-Live	<span style="color: blue;">■</span> Indicative Go-Live	<span style="color: purple;">◆</span> Estimated Go-Live
			<span style="color: grey;">+</span> Updated for version 6

Impacted Industry Sector	Reform Status	Reform Initiative	2021				2022				2023				2024				2025				2026							
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<b>INITIATIVES WITH IT SYSTEM IMPLEMENTATION IMPACTS</b>																														
Gas	Committed	Gas B2B changes	<div style="background-color: green; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; right: 0; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; right: 0; top: -15px; font-size: 10px;">IN003/20 (business enhancements, schema uplift) - 29 Nov 2021</span> </div>																											
Industry-wide	Committed	Global Settlements	<div style="background-color: green; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 20%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 20%; top: -15px; font-size: 10px;">GS soft start</span> <span style="position: absolute; left: 45%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 45%; top: -15px; font-size: 10px;">GS (extern) AEMC final determination - go-live 1 May 2022</span> </div>																											
Retail	Committed	Metering Coordinator Planned Interruptions (MCPI)	<div style="background-color: green; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 5%; background-color: lightblue; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 45%; top: -15px; font-size: 10px;">AEMO notice to reschedule to 1 May 2022, bundled with MSDR</span> </div>																											
Retail	Committed	MSATS Standing Data Review (MSDR)	<div style="background-color: green; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 45%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 45%; top: -15px; font-size: 10px;">v1</span> <span style="position: absolute; left: 65%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 65%; top: -15px; font-size: 10px;">v2</span> <span style="position: absolute; left: 65%; top: -20px; font-size: 10px;">v1 MCPI and schema for MSDR go-live 1 May 2022 and v2 majority of MSDR go-live 7 Nov 2022</span> </div>																											
Retail	In progress	Regulatory Arrangements for Stand Alone Power Systems (SAPS - Priority 1)	<span style="color: grey; font-size: 12px;">+</span> <div style="background-color: purple; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 45%; background-color: lightblue; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; background-color: lightgreen; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; background-color: yellow; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 60%; top: -10px; font-size: 10px;">AEMC recommended implementation 12 months after law and rule changes made</span> </div>																											
Retail	In progress	Energy Consumer Data Right	<span style="color: grey; font-size: 12px;">+</span> <div style="background-color: purple; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 45%; background-color: green; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 75%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 75%; top: -15px; font-size: 10px;">T1</span> <span style="position: absolute; left: 85%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 85%; top: -15px; font-size: 10px;">T2</span> <span style="position: absolute; left: 95%; top: -10px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 95%; top: -15px; font-size: 10px;">T3</span> <span style="position: absolute; left: 95%; top: -20px; color: red; font-size: 10px;">●</span> <span style="position: absolute; left: 95%; top: -25px; font-size: 10px;">T4</span> <span style="position: absolute; left: 95%; top: -30px; font-size: 10px;">CDR go-live has 4 tranches - 15 Nov 2022, 15 May 2023, 1 Nov 2023 and 1 May 2024</span> </div>																											
Retail	Proposed - Review	Review of Regulatory Framework for Metering Services	<span style="color: grey; font-size: 12px;">+</span> <div style="background-color: yellow; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 45%; background-color: purple; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; background-color: lightblue; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; background-color: lightgreen; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 60%; top: -10px; color: purple; font-size: 10px;">◆</span> <span style="position: absolute; left: 60%; top: -15px; font-size: 10px;">IT implementation likely but not yet clear, dependent on review outcomes</span> </div>																											
Wholesale	In progress	ST PASA - Replacement project and methodology update	<span style="color: grey; font-size: 12px;">+</span> <div style="background-color: purple; width: 100%; height: 15px; position: relative;"> <span style="position: absolute; left: 45%; background-color: lightgreen; width: 10%; height: 100%;"></span> <span style="position: absolute; left: 45%; top: -10px; font-size: 10px;">Estimated timing, subject to rule change process</span> </div>																											

# Roadmap Updates for Version 6

## Committed regulatory initiatives with IT system impacts

- The following regulatory initiatives have been identified as either immediate or initial reforms in the ESB's final report to Energy Ministers on post-2025 market design. These initiatives have been aligned to the relevant ESB workstream on the roadmap. The delivery implications and options for these initiatives will be considered as part of the NEM2025 reforms and the Reform Delivery Committee
- Resource adequacy mechanisms
  - This is captured in the Roadmap as a single line item. The ESB will develop a range of initiatives throughout 2022 such as Investment principles for jurisdictional schemes; Generator exit mechanisms; Jurisdictional strategic reserve; Ministerial RRO trigger; Capacity Mechanism; Monitoring reliability & costs.
- MT PASA – Availability Information Enhancements
  - Rule change process to facilitate ESB's recommendations to increase information provision around mothballing and seasonal shutdowns to support notice of closure requirements has not formally commenced. This initiative has been included on the roadmap as AEMO intends to submit a rule change imminently.
- Fast Frequency Response (FFR) Market Ancillary Service
  - The Roadmap shows an implementation date of 9 October 2023 as per AEMC's final rule. FFR will impact on AEMO's dispatch and settlement systems. With a hard deadline in the Rules, the settlement solution for FFR is a priority and other projects with settlement dependencies will need to be sequenced around it.

# Roadmap Updates for Version 6

Committed regulatory initiatives with IT system impacts

- Primary Frequency Response
  - Draft rule provided for a March 2024 commencement. AEMO is aware that some stakeholders have requested the final determination due 9 December 2021 be extended and this may effect implementation timeframes.
- Operating Reserve Market and Introduction of Ramping Services
  - Extended the rule development phase to end of 2023 to reflect AEMC's notice to extend draft determination until 30 June 2023
- Integrated Energy Storage Systems
  - The Roadmap reflects draft rule and proposed commencement date of April 2023.
  - AEMO has provided advice to the AEMC that the full implementation of the rule change will likely require up to May 2024,
  - A final determination is due 2 December 2021. For AEMO, IESS will require updates to registration, dispatch and operations, metering and settlement systems and processes.

# Roadmap Updates for Version 6

Committed regulatory initiatives with IT system impacts

- Congestion Management Model
  - ESB commenced a consultation on transmission access reform on 18 November 2021, following its recommendation to adapt a congestion management model (CMM) for renewable energy zones. ESB has been asked to progress detailed design work on the CMM and present a rule change request to Energy Ministers by the end of 2022. This is captured on the roadmap.
- Transmission Planning and Investment Review
  - AEMC commenced a review in August 2021 to identify/test issues with existing frameworks to plan, fund and deliver and identify and develop solutions. The review has been included on the Roadmap and timeframes reflect those set out in the consultation paper.

# Roadmap Updates – Draft version 6

## Committed regulatory initiatives with IT system impacts

**Key:**

 Policy development/market design	 Rules development	 Procedure/guideline development	 AEMO preferred Implementation
 Implementation - IT systems, processes	 Indicative IT implementation	 Engineering Implementation	
 Committed Go-Live Date	 Proposed Go-Live	 Indicative Go-Live	 Estimated Go-Live
			 Updated for version 6

Impacted Industry Sector	Reform Status	Reform Initiative		2021				2022				2023				2024				2025				2026							
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<b>ESB INITIATIVES WITH IT SYSTEM IMPLEMENTATION IMPACTS</b>																															
Industry-wide	In progress	Resource Adequacy Mechanisms and Ageing Thermal Generation	+	Market Design								Indicative Execution Range, Legislation, Rules, Procedures, IT								Extended Execution Range											
Wholesale	In progress	MT PASA - Information Availability Enhancements	+	Policy development/market design				Rules development				Indicative IT implementation				Immediate ESB reform. Implementation planning co-ordinated through Reform Delivery Committee															
Industry-wide	In progress	Essential System Services, Scheduling and Ahead Mechanisms	+	Market Design				Indicative Execution Range: Legislation, Rules, Procedures, IT								Extended Execution Range															
Wholesale	Committed	Efficient management of system strength on the power system	+	Rules development				Procedure/guideline development				Committed Go-Live Date																			
Wholesale	Committed	Fast Frequency Response Market Ancillary Services	+	Rules development				Procedure/guideline development				Implementation - IT systems, processes				Committed Go-Live Date				Implementation planning co-ordinated through Reform Delivery Committee											
Wholesale	In progress	Primary Frequency Response Incentive Arrangements	+	Rules development				Procedure/guideline development				Indicative IT implementation				AEMO preferred Implementation				Implementation planning co-ordinated through Reform Delivery Committee											
Wholesale	In progress	Operating Reserve Market	+	Rules development																				Implementation planning co-ordinated through Reform Delivery Committee							
Wholesale	In progress	Introduction of ramping services	+	Rules development																				Implementation planning co-ordinated through Reform Delivery Committee							
Wholesale	In progress	Synchronous Services Markets	+	Rules development								Indicative Execution Range: Procedures, IT								Implementation planning co-ordinated through Reform Delivery Committee											
Wholesale	In progress	Capacity commitment mechanism for system security and reliability services	+	Rules development								Indicative Execution Range: Procedures, IT								Implementation planning co-ordinated through Reform Delivery Committee											
Industry-wide	In progress	Demand Side Participation	+	Market Design				Indicative Execution Range: Legislation, Rules, Procedures, IT								Extended Execution Range															
Wholesale	In progress	Integrating Energy Storage Systems (IESS)	+	Rules development				Procedure/guideline development				Indicative IT implementation				AEMO preferred Implementation								Implementation planning co-ordinated through Reform Delivery Committee							
Industry-wide	In progress	Transmission and Access	+	Market Design								Indicative Execution Range, Legislation, Rules, Procedures, IT								Extended Execution Range											
Industry-wide	In progress	Renewable Energy Zones - Implementation (Stage 2)	+	Policy development/market design				Final report published																							
Wholesale	In progress	Congestion Management Model	+	Rules development								Indicative Execution Range: Procedures, IT								Initial ESB reform. Implementation planning co-ordinated through RDC											
Network	Proposed - Review	Transmission Planning and Investment Review	+	Policy development/market design				Subject to review process																							

# Roadmap Updates for Version 6

Regulatory initiatives with limited IT system impacts

- Management of System Strength
  - The Roadmap reflects AEMC's final rule made on 21 October 2021 - staggered go-live dates of 1 December 2022 and 15 March 2023. The status has been updated to committed.
- Generator Registrations and Connections
  - The Roadmap reflects the AEMC's final rule made on 21 October 2021. The Rule commences on 21 April 2022. Status updated to committed.
- Access, Pricing and Incentive Arrangements for Distributed Energy Resources
  - The Roadmap reflects AEMC's final rule made on 12 August 2021. Rule commences on 19 August 2021 and 1 July 2022. Status updated to committed.
- Operational Resilience to Indistinct Events
  - The Roadmap reflects AEMC's draft rule made on 28 October 2021. Proposed go-live of 18 August 2022. Status remains "in progress"

# Roadmap Updates for Version 6

## Regulatory initiatives with limited IT system impacts

- Governance of Distributed Energy Resources Technical Standards
  - AEMC commenced rules consultation process. Rules development timeframes updated and status changed to “in progress”.
- Gas regulatory framework review for hydrogen and renewable gases
  - AEMC commenced review to determine changes to the National Gas Rules/National Energy Retail Rules, to facilitate the inclusion of low-level hydrogen blended gases and other renewable gases in the framework. Incorporates Victorian rule change to include distribution connected facilities in the DWGM.
- Consolidation of roadmap with implemented initiatives removed
  - Number of implemented initiatives with limited IT systems impacts removed.
  - Updating the regulatory frameworks for embedded networks initiative has been temporarily moved to bottom of roadmap until there is greater clarity as to how this initiative will progress.
  - Log of changes captures all changes from final version 5.



# Detailed implementation schedule

- AEMO has updated the detailed implementation schedule and schema changes – to provide a more granular view of key phases and milestones for the following committed NEM and gas projects with go-live in 2022 (where possible):
  - Global Settlement
  - Gas B2B
  - MSATS Standing Data Review and MCPI
  - Declared Wholesale Gas Market enhancements
  - Energy consumer data right.

# Detailed implementation schedule

**Key:**
 Pre-Production Test

 Market Trial

 Production Date

 Schema Change

 Technical Specifications

 Checkpoint (Production Readiness)

 Data Model release

Reform Initiative	2021			2022							
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
Global Settlements							GS Market Trial: proposed timin	● Global Settlements 1/5			2022 cont.
Electricity B2B changes	Pre-Production Industry Test	● B2B Go-Live 10/11 □ Schema Change R41									
Gas B2B changes (life support)	Pre-Production Industry Test	● Ghub 28/11 - 29/11 □ Schema Change R40									
MSATS Standing Data Review (MSDR and MCPI)		■ Schema R42	■ MCPI Tech Spec				Pre-Production Industry Test	□ Schema change R42 ● MCPI in MSATS and schema released 1/5			
DWGM Enhancements									Pre-Production Industry Tes	● Issue Auction Notice	
Energy Consumer Data Right			■ CDR Data Standards								Pre-Production Available

# Detailed implementation schedule

Continued.

Key:

 Pre-Production Test

 Market Trial

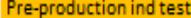
 Production Date

 Schema Change

 Technical Specifications

 Checkpoint (Production Readiness)

 Data Model release

Reform Initiative	2022						2023			
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Global Settlements	 Global Settlements 1/5									
Electricity B2B changes										
Gas B2B changes (life support)										
MSATS Standing Data Review (MSDR and MCPI)	<input type="checkbox"/> Schema change R42  MCPI in MSATS and schema released 1/5					 Pre-production ind test	 New, amended and deprecated fields for MSDR 7/11			
DWGM Enhancements		 Pre-Production Industry Tes	 Issue Auction Notice			 Pre-Production Industry Tes	 Markets Systems Deployment (dormant)		 Go Live (effective date 1/1)	
Energy Consumer Data Right		 Pre-Production Available					 CDR Tranche 1 Go-Live <input type="checkbox"/> if required			

2022 cont. 

07

# Energy Security Board and Reform Delivery Committee

- AEMO’s objective is to establish a collaborative process with stakeholders to define a roadmap for implementing the NEM2025 reforms – the “NEM2025 Implementation Roadmap”
- This roadmap can then be used by all stakeholders to assist in navigating the reforms over the coming few years, de-risk delivery and to inform regulatory implementation timings
- The Reform Delivery Committee (RDC) has been setup to help establish and guide the roadmap
  - The RDC held their first meeting 10 November 2021
- The RDC is comprised of representatives from:
  - Market bodies – AEMC and AER
  - Industry participants representing – AEC, ENA and CEC
  - Consumer representatives – ECA, MEUA, EUAA and PIAC
- The purpose of this update is to provide an overview of the RDC, its objectives and proposed approach

- The ESB provided its final advice on the Post-2025 reforms to the Energy National Cabinet Reform Committee on 27 July. National Cabinet approved the Post-2025 reform recommendations on 29 October
- One of the main enablers for the reforms is the development of IT systems and business processes
- An initial assessment of the impacts associated with the delivery of the reforms was prepared by AEMO and formed part of the ESB's final advice
- The ESB's final advice called for further consideration of how to deliver these changes together with industry stakeholders as part of an integrated roadmap approach for NEM regulatory and IT systems implementation
- The NEM2025 Implementation Roadmap will enable careful planning for the delivery of reforms, avoid unnecessary or duplicative costs, and identify where strategic investments can be made to deliver efficient outcomes for AEMO, market participants and consumers
- AEMO has identified initiatives that are required to be delivered ahead of the P2025 reform program to provide a functional or technological dependency (e.g. pre-requisites were identified across digital, registration, operational and dispatch streams)

# Four major reform pathways were put forward

Pathway	Objective	Key Reforms
Resource Adequacy Mechanisms and Ageing Thermal Generation Strategies	Facilitate the orderly retirement of the ageing thermal fleet and have sufficient replacement generation in place	<ul style="list-style-type: none"> <li>• Investment principles for jurisdictional schemes</li> <li>• Generator exit mechanisms</li> <li>• Jurisdictional strategic reserve</li> <li>• Ministerial RRO trigger</li> <li>• Capacity Mechanism</li> <li>• Monitoring reliability &amp; costs</li> </ul>
Essential System Services, Scheduling & Ahead Mechanisms	Availability of resources that provide essential system services to balance the highly variable dynamics of the changing generation mix, without AEMO intervention. AEMO has the right tools to manage the greater complexity and uncertainty to schedule these resources so they are available when they are needed	<ul style="list-style-type: none"> <li>• Primary frequency response</li> <li>• Fast frequency response</li> <li>• Operating reserve market</li> <li>• System strength (planning)</li> <li>• Structured procurement and scheduling mechanism (UCS &amp; SSM)</li> <li>• Unbundling of services &amp; integrated ahead market</li> </ul>
Integration of DER and Flexible Demand	Enable the integration of DER and value flexible demand so they can provide services to networks, the wholesale market and other consumers	<ul style="list-style-type: none"> <li>• Integrating Energy Storage Systems (rule change)</li> <li>• Flexible Trading Arrangements</li> <li>• Scheduled Lite</li> <li>• DER Data Exchange and Enhanced Registry Services</li> <li>• Dynamic Operating Envelopes</li> <li>• Distribution / Local Services</li> <li>• Turn-up Services</li> <li>• DER Operational Integration</li> </ul>
Transmission and Access	The addition of transmission investments to enable the new generation and market arrangements and that new generation and storage locates and operates in ways that use transmission investment efficiently	<ul style="list-style-type: none"> <li>• Connection assets &amp; system strength</li> <li>• Interim REZ framework</li> <li>• Transmission access reform</li> <li>• TPIR</li> <li>• Enhanced congestion information</li> <li>• Congestion management model</li> </ul>

What are the key impacts and challenges associated with the suite of reforms across all pathways?

# AEMO impact assessment – Technology heatmap

- AEMO’s initial assessment shows some systems are heavily impacted by multiple reforms – key functions include registration, settlements and system operation tools and interfaces
- Many of the changes will require:
  - Consideration of the lifecycle state of the underlying systems
  - Coordination and need to be sequenced / bundled for efficient delivery
- AEMO anticipate similar impacts to participants systems and processes (to be confirmed)

Reform pathway	Reform initiative	Wholesale							Retail	DER
		Registration	Offers	Dispatch	PASA	Settlements Billing & Prudentials	Causar Pays	System operations		
Resource adequacy and exit mechanisms	Increased MTPASA information	Green	Green	Green	Yellow	Green	Green	Green	Green	Green
Essential system services and scheduling	Ramping/operating reserves	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Green	Green
	Primary Frequency Control	Yellow	Green	Green	Green	Yellow	Orange	Green	Green	Green
	Fast Frequency Control	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Green	Green
	Operational scheduling mechanisms for security (UCS + SSM)	Green	Green	Green	Green	Yellow	Green	Red	Green	Green
Integrating DER and flexible demand	IESS	Yellow	Green	Orange	Green	Orange	Green	Yellow	Red	Yellow
	Flexible trading arrangements	Green	Green	Green	Green	Green	Green	Green	Orange	Green
	Scheduled lite	Green	Orange	Yellow	Green	Orange	Yellow	Green	Green	Green
	Dynamic operating envelopes	Green	Green	Green	Green	Green	Green	Green	Green	Yellow
	Turn up services	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green
	DER data exchange and registry services	Orange	Green	Green	Green	Green	Green	Green	Green	Green
	DER system operator integration	Green	Green	Green	Green	Green	Green	Orange	Green	Green
Transmission and access	Congestion Management Model	Yellow	Green	Yellow	Green	Yellow	Green	Yellow	Green	Yellow

## Objective

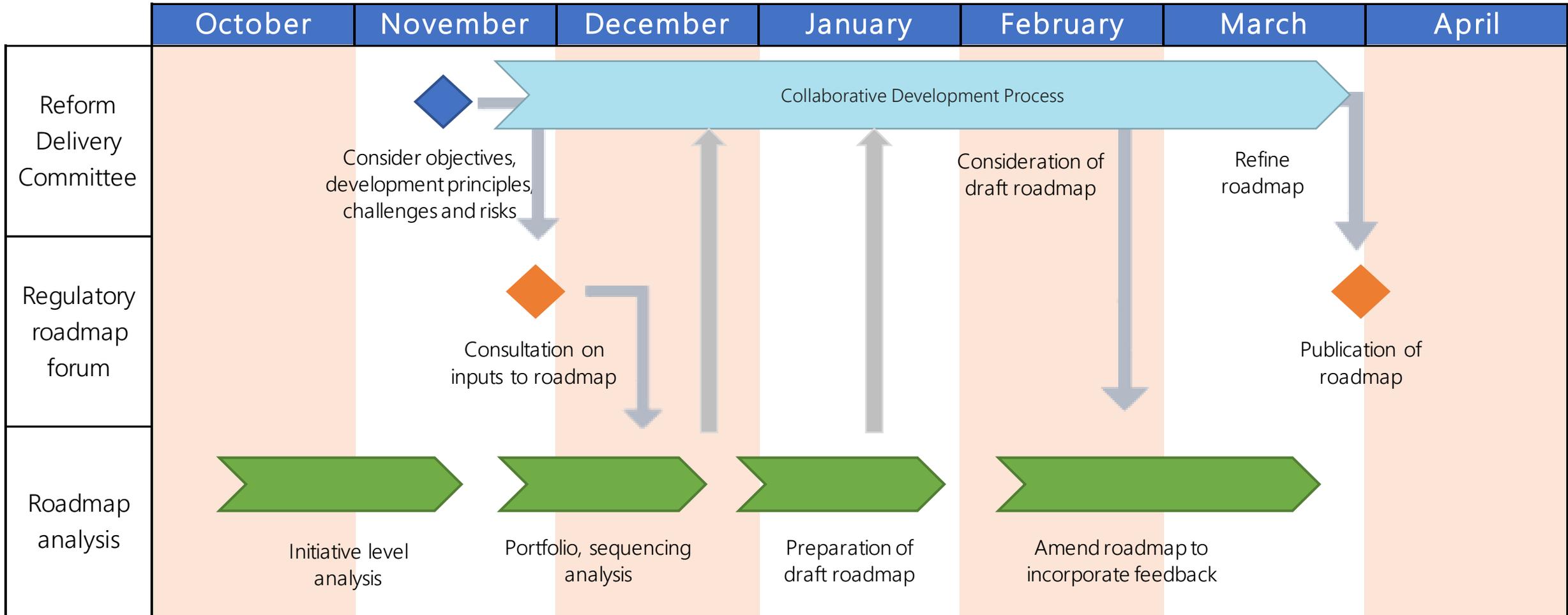
- The purpose of the “NEM2025 Implementation Roadmap” is to establish a basis upon which to navigate the breadth of ESB reforms over the coming few years, de-risking delivery and informing implementation timing. Objectives are to set out a program that:
  - Implements reforms in a timely and efficient manner
  - Co-ordinates regulatory and IT change
  - Provides transparency to stakeholders on the implementation program

## Principles

- In developing the roadmap, the following factors will be considered:
  - Reform benefits and priorities
  - Opportunities for bundling and sequencing initiatives to improve implementation efficiency
  - Industry pain points and strategic opportunities to improve operations. For example, e.g. lowering transaction costs, reducing barriers to entry and further achievement of the NEO
  - Implementation risks
  - Minimising duplicate processes
  - Allocation of implementation responsibilities taking account of efficiency, capability to deliver and management of implementation risks
  - Adaptability to respond to changes

- Extensive scope of reforms will require major change to market and participant systems
- Pre-requisite and strategic opportunities will need to be understood and factored in
- AEMO needs to consider life cycle upgrades (where applicable) for market systems
- Dependencies will be critical for sequencing and efficiency
- Different pathways/options likely to exist
  - Depending on bundling/sequencing and pre-requisites/strategic opportunities
  - Different costs and benefits
  - Different delivery timeframes and risk profile
  - May include trigger points/checkpoints
- Target is to have a solid first draft of the NEM2025 Implementation Roadmap by March 2022
- AEMO's objective is a collaborative approach to identifying and understanding the pathways and implications – as opposed to a consultative approach

# Indicative Process



AEMO has propose a collaborative approach to working with the RDC with regular meetings and workshops to be scheduled

- Stakeholder input into the industry pain points and opportunities is sought
- NEM functions impacted by NEM2025 reforms may present these opportunities
  - Wholesale: Registration, Offers, Dispatch, PASA, Settlements billing & prudentials, Causer pays, System operations
  - Retail
  - DER
- These factors can be considered when scoping the various initiatives
  - High-level/strategic feedback sought
  - Benefit statement (pref. aligned to the NEO) sought

# Concluding remarks

# Questions and feedback

Stakeholder questions and feedback are welcome

# Wrap-up and next steps

- Any stakeholder feedback is requested by 15 December 2021 via email to [RegulationUpdate@aemo.com.au](mailto:RegulationUpdate@aemo.com.au).
- AEMO plans to publish the final regulatory implementation roadmap (version 6) prior to the holiday period along with a high level summary of feedback.
- AEMO expects to publish a NEM2025 Implementation Roadmap in Q2 2022 – to align with progress on the ESB Reform delivery agenda.

Thank you.

# Appendix

Draft regulatory implementation roadmap (version 6) and log of changes

# Roadmap Updates – Draft version 6

## Committed regulatory initiatives with IT system impacts

**Key:**

Policy development/market design	Rules development	Procedure/guideline development	AEMO preferred Implementation
Implementation - IT systems, processes	Indicative IT implementation	Engineering Implementation	
Committed Go-Live Date	Proposed Go-Live	Indicative Go-Live	Estimated Go-Live
			+ Updated for version 6

Impacted Industry Sector	Reform Status	Reform Initiative	2021				2022				2023				2024				2025				2026							
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<b>INITIATIVES WITH IT SYSTEM IMPLEMENTATION IMPACTS</b>																														
Gas	Committed	Gas B2B changes	[Green bar from Q1 2021 to Q4 2021] IN003/20 (business enhancements, schema uplift) - 29 Nov 2021																											
Industry-wide	Committed	Global Settlements	[Green bar from Q1 2021 to Q4 2021] GS soft start [Red dot] [Green bar from Q1 2022 to Q4 2022] GS (extern) [Red dot] AEMC final determination - go-live 1 May 2022																											
Retail	Committed	Metering Coordinator Planned Interruptions (MCPI)	[Blue bar from Q1 2021 to Q1 2021] [Green bar from Q1 2021 to Q4 2021] [Red dot] AEMO notice to reschedule to 1 May 2022, bundled with MSDR																											
Retail	Committed	MSATS Standing Data Review (MSDR)	[Green bar from Q1 2021 to Q4 2021] v1 [Red dot] [Green bar from Q1 2022 to Q4 2022] v2 [Red dot] v1 MCPI and schema for MSDR go-live 1 May 2022 and v2 majority of MSDR go-live 7 Nov 2022																											
Retail	In progress	Regulatory Arrangements for Stand Alone Power Systems (SAPS - Priority 1)	+ [Purple bar from Q1 2021 to Q4 2021] [Blue bar from Q1 2022 to Q1 2022] [Green bar from Q1 2022 to Q4 2022] [Red dot] AEMC recommended implementation 12 months after law and rule changes made																											
Retail	In progress	Energy Consumer Data Right	+ [Purple bar from Q1 2021 to Q4 2021] [Green bar from Q1 2022 to Q4 2022] T1 [Red dot] T2 [Red dot] T3 [Red dot] T4 [Red dot] CDR go-live has 4 tranches - 15 Nov 2022, 15 May 2023, 1 Nov 2023 and 1 May 2024																											
Retail	Proposed - Review	Review of Regulatory Framework for Metering Services	+ [Yellow bar from Q1 2021 to Q4 2021] [Purple bar from Q1 2022 to Q4 2022] [Blue bar from Q1 2023 to Q4 2023] [Green bar from Q1 2024 to Q4 2024] [Red dot] IT implementation likely but not yet clear, dependent on review outcomes																											
Wholesale	In progress	ST PASA - Replacement project and methodology update	+ [Purple bar from Q1 2022 to Q4 2022] [Green bar from Q1 2023 to Q4 2023] [Red dot] Estimated timing, subject to rule change process																											

# Roadmap Updates – Draft version 6

## Committed regulatory initiatives with IT system impacts

			Key:																											
			Policy development/market design				Rules development				Procedure/guideline development				AEMO preferred Implementation				Implementation - IT systems, processes				Indicative IT implementation				Engineering Implementation			
			Committed Go-Live Date				Proposed Go-Live				Indicative Go-Live				Estimated Go-Live				Updated for version 6											
Impacted Industry Sector	Reform Status	Reform Initiative	2021				2022				2023				2024				2025				2026							
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<b>ESB INITIATIVES WITH IT SYSTEM IMPLEMENTATION IMPACTS</b>																														
Industry-wide	In progress	Resource Adequacy Mechanisms and Ageing Thermal Generation	Market Design								Indicative Execution Range, Legislation, Rules, Procedures, IT								Extended Execution Range											
Wholesale	In progress	MT PASA - Information Availability Enhancements	+ Immediate ESB reform. Implementation planning co-ordinated through Reform Delivery Committee																											
Industry-wide	In progress	Essential System Services, Scheduling and Ahead Mechanisms	Market Design				Indicative Execution Range: Legislation, Rules, Procedures, IT								Extended Execution Range															
Wholesale	Committed	Efficient management of system strength on the power system	+ [Timeline bar with red dots]																											
Wholesale	Committed	Fast Frequency Response Market Ancillary Services	+ [Timeline bar with red dot]																											
Wholesale	In progress	Primary Frequency Response Incentive Arrangements	+ [Timeline bar with yellow triangle]																											
Wholesale	In progress	Operating Reserve Market	+ [Timeline bar]																											
Wholesale	In progress	Introduction of ramping services	+ [Timeline bar]																											
Wholesale	In progress	Synchronous Services Markets	[Timeline bar]								Indicative Execution Range: Procedures, IT								Implementation planning co-ordinated through Reform Delivery Committee											
Wholesale	In progress	Capacity commitment mechanism for system security and reliability services	[Timeline bar]								Indicative Execution Range: Procedures, IT								Implementation planning co-ordinated through Reform Delivery Committee											
Industry-wide	In progress	Demand Side Participation	Market Design				Indicative Execution Range: Legislation, Rules, Procedures, IT								Extended Execution Range															
Wholesale	In progress	Integrating Energy Storage Systems (IESS)	+ [Timeline bar with yellow triangle]																											
Industry-wide	In progress	Transmission and Access	Market Design								Indicative Execution Range, Legislation, Rules, Procedures, IT								Extended Execution Range											
Industry-wide	In progress	Renewable Energy Zones - Implementation (Stage 2)	+ [Timeline bar with text: Final report published]																											
Wholesale	In progress	Congestion Management Model	[Timeline bar]								Indicative Execution Range: Procedures, IT								Initial ESB reform. Implementation planning co-ordinated through RDC											
Network	Proposed - Review	Transmission Planning and Investment Review	+ [Timeline bar with text: Subject to review process]																											

# Roadmap Updates for Version 6

Committed regulatory initiatives with Limited IT system impacts



Impacted Industry Sector	Reform Status	Reform Initiative	2021				2022				2023				2024				2025			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>INITIATIVES WITH LIMITED IT SYSTEM IMPLEMENTATION IMPACTS (including ESB initiatives)</b>																						
Wholesale	Committed	Mandatory Primary Frequency Response	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Network	In progress	Technical Standards for Distributed Energy Resources	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Wholesale	Committed	Generator Registrations and Connections	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Network	Committed	Access, Pricing and Incentive Arrangements for Distributed Energy Resources	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Network	Committed	Implementing a General Power System Risk Review	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Industry-wide	In progress	Enhancing Operational Resilience to Indistinct Events	+ <i>Implementation timing shown is indicative and depends on individual generator circumstances, managed through the self-assessment process</i>																			
Networks	In progress	Governance of DER Technical Standards	+ <i>Indicative timing, subject to rule change process</i>																			
<b>GAS INITIATIVES</b>																						
Gas	Committed	DWGM simpler wholesale price	+ <i>Implemented as a single AEMO project</i>																			
Gas	Committed	DWGM improvement to AMDQ regime	+ <i>Implemented as a single AEMO project</i>																			
Gas	In progress	Measures to Improve Transparency in the Gas Market	+ <i>Subject to passage of legislation</i>																			
Gas	Proposed - Review	Extending the Regulatory Framework to Hydrogen and Renewable Gases	+ <i>Subject to passage of legislation</i>																			
<b>INITIATIVES WITH LIMITED CERTAINTY</b>																						
Retail	In progress	Updating the Regulatory Frameworks for Embedded Networks	+ <i>Assumes rules development is re-initiated</i>																			

# Log of changes – Draft version 6

Reform	Change
MSATS Standing Data Review	Note updated to reflect change of scope of v1 and v2 MSDR changes. v1 MCPI and schema for MSDR and v2 majority of MSDR.
Regulatory Arrangements for Stand Alone Power Systems (SAPS - Priority 1)	Updated proposed go-live date to November 2022, consistent with AEMC's recommendation of 12 month implementation window following law/rules being made. Included AEMO's preferred implementation timeframe.
Energy Consumer Data Right	Updated CDR implementation for final CDR rules (published 15 Nov 2021). Staggered commencement in four tranches - 15 Nov 2022, 15 May 2023, 1 Nov 2023 and 1 May 2024. CDR included on implementation schedule.
Updating the Regulatory Frameworks for Embedded Networks	Moved to bottom of roadmap as initiative has limited certainty regarding regulatory process. Former COAG EC agreed to further consider AEMC's recommendations. Response being prepared for Energy Ministers consideration.
Review of Regulatory Framework for Metering Services	Updated review timeframes to reflect final report in March 2022. Recommendations to be provided to Energy National Cabinet Reform Committee. Rule change process indicative only.
ST PASA - Replacement project and methodology update	Extended rules development phase to March 2022 as per AEMC consultation paper (26 Aug 2021)
MT PASA – Information Availability Enhancements	Included MT PASA rule change process, noting this is an immediate reform identified by the ESB and AEMO plans to initiate rule change request imminently
Primary Frequency Response Incentive Arrangements	Draft determination (16 Sept 2021) proposed go-live date of March 2024. Included AEMO's preferred implementation timeframe.
Operating Reserve Market	Extended rules development rules to end of 2023 to reflect AEMC's notice to extend draft determination to 30 June 2023
Introduction to Ramping Services	Extended rules development rules to end of 2023 to reflect AEMC's notice to extend draft determination to 30 June 2023

# Log of changes – Draft version 6

Reform	Change
Interim Framework for Renewable Energy Zones - Implementation (Stage 2)	Updated to reflect final report published in June 2021.
Congestion Management Model	Included on the roadmap. Timeframes align with ESB's transmission access reform project initiation paper (published 18 November 2021)
Transmission Planning and Investment Review	Included on the roadmap. Timeframes align with Consultation Paper (published 19 August 2021)
Mandatory Primary Frequency Response	Extended engineering implementation given significant number of renewable generators are yet to implement changes for MPFR
Efficient management of system strength on the power system	Final Determination made on 21 October 2021, with effective dates of 1 December 2022 and 15 March 2023. Status updated to committed.
Integrating Energy Storage Systems	Included AEMO's preferred implementation timeframe
Generator Registrations and Connections	Final Determination made on 21 October 2021, with implementation date of 21 April 2022. Status updated to committed.
Access, Pricing and Incentive Arrangements for Distributed Energy Resources	Final Determination made on 12 August 2021, with implementation dates of 19 August 2021 and 1 July 2022. Status updated to committed.
Enhancing Operational Resilience to Indistinct Events	Draft Determination made on 28 October 2021 with proposed go-live date of 18 August 2022. Final Determination and Rule expected in February 2022.
Governance of DER Technical Standards	Updated to reflect timeframes set out in AEMC consultation paper (2 Sept 2021). Status updated to "in progress"

# Log of changes – Draft version 6

Reform	Change
DWGM improvement to AMDQ regime	Updated go-live date to December 2022 (minor error correction)
Extending the Regulatory Framework to Hydrogen and Renewable Gases	Review commenced on 21 October 2021 and is expected to be completed by November 2022.
Five-minute settlement	Removed as initiative has been implemented
Customer switching	Removed as initiative has been implemented
Wholesale Demand Response	Removed as initiative has been implemented
Electricity B2B procedures	Removed as initiative has been implemented
NEM Settlement in Zero and Negative Demand Conditions	Removed as initiative has been implemented
Connection of Dedicated Connection Assets	Removed as initiative has been implemented
Renewable Energy Zones - Planning (Stage 1)	Removed as initiative has been implemented
Visibility and Security of Dispatch (Stage 1) - Interim	Removed as initiative has been implemented