FIRST & FINAL Implementation Assessment for Contingency Reserve Lower Procurement and Recovery +++ Project

June 2025

Ref: IA-2025#01

Preliminary assessment of the changes, impacts and risks to implement a new initiative

We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have launched its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation - a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Important notice

Purpose

AEMO has prepared this document to provide preliminary information about the implementation of the Contingency Reserve Lower Procurement and Recovery +++ Project.

Disclaimer

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Version control

Version	Release date	Changes
1	19/06/2025	N/A

Contents

1 Introduction

This section explains:

- The background and high-level rationale for a policy initiative to improve WEM cost allocations
- The purpose of this Implementation Assessment (IA) document
- Key dates relating to the subject of this IA
- How stakeholders can respond to the material set out in this IA.

1.1 Background

EPWA has identified a range of shortcomings in the current approach taken to setting certain Frequency Control Essential System Services (FCESS) requirements and allocating the costs of providing some FCESS services. EPWA has developed several separate rule changes to address these issues.

1.2 Purpose of the IA

This IA provides a non-binding view on how AEMO proposes to implement EPWA rule changes seeking three changes concerned with the treatment of load contingencies in Central Dispatch, and the allocation of costs from three essential system services – CRL, CRR and RCS. It outlines the proposed system, process and operational changes and the indicative timeline likely to be required to implement the changes. This IA also provides AEMO's indicative assessment of what these changes may mean for other Rule Participants in the WEM.

Accordingly, in publishing this First and Final IA, AEMO intends to assist and inform affected participants in developing their own implementation timelines and impact assessments

1.3 Providing feedback

This First and Final IA provides information to the market regarding a set of changes, which AEMO had already commenced implementing, at the time of writing. Given this context, stakeholders should be aware that AEMO will have limited flexibility to adjust its approach to implementing these changes, in response to feedback. AEMO is committed to accelerating its preparation and sharing of IAs to support both early dissemination of information and more timely stakeholder input.

As this is the first example of an IA produced by AEMO for projects in the WEM, AEMO encourages stakeholders to provide feedback on the structure, scope and level of detail covered in the document.

Comments should be sent via email to majorprojects@aemo.com.au.

2 Problem Statement

Energy Policy WA (EPWA) has amended the Wholesale Electricity Market (WEM) Rules with three broad changes, which are the focus of this Implementation Assessment.

2.1 Change 1: Contingency Reserve Lower (Cost Allocation Reform Rules 2024)

Problem: The cost of providing the CRL service is currently recovered from loads based on their share of consumption in a trading interval, without regard for the differences between loads in terms of how much each load can be said to have "caused" the requirement for CRL. This approach provides no incentive to developers to consider the impact of a given new load on the cost of providing CRL services. This problem may distort investment decisions, such as investments in large scale Energy Storage Resources[1].

Response: The amended WEM Rules require AEMO to apply a modified runway method to allocate CRL costs, to give effect to the causer pays principle. Under the amended approach, the rules for allocating costs will depend on both what type of contingency is taken to be the Largest Credible Load Contingency (LCLC) during the relevant interval and the type of load whose financial contribution is to be assessed.

- Any contribution to the LCLC that is less than 120MW ("Generic Load") will be allocated using a consumption share method.
- The runway method will be used when the LCLC is greater than 120MW and the runway starts at 120MW rather than 0MW.
- If the LCLC is greater than the largest Facility Lower Risk, a Network Lower Contingency will set the LCLC and a network share must be calculated. In this case a portion of the network contingency risk above the runway will need to be cost recovered from network loads.
- Each material causer is assigned a network share based on its Facility Lower Risk contribution to the Network Lower Contingency.

Additionally, the amended WEM Rules give AEMO the obligation to co-optimise the size of the LCLC for Registered Facilities, as it currently does for the Largest Credible Supply Contingency (LCSC). This means that AEMO will not dispatch Facilities where their LCLC would be an economically inefficient outcome for the WEM, considering the services available to cover the LCLC for a given Dispatch Interval.

[1] In some instances, the scale of facilities under consideration has the potential to substantially increase CRL requirements.

2.2 Change 2: Contingency Reserve Raise (Miscellaneous Amendments No. 3 Rules 2024)

Problem: There are multiple situations in which the current cost allocation methodology for Contingency Reserve Raise (CRR) produces allocations that do not produce the desired causer pays outcome. The situations in which this result arises include where:

- a Registered Facility contains independently dispatchable energy producing units with separate network connections;
- auxiliary loads result in the overall Facility Risk exceeding the facility's Dispatch Target or Dispatch Forecast;
- the sudden loss of a Registered Facility triggers:
  - the loss of output from Distributed Energy Resources (DER) located behind the connection point of a Non-Dispatchable Load (NDL); or
  - the loss of output from another Registered Facility
- a Network Raise Contingency causes the loss of Injection from Distributed Energy Resources (DER) located behind the connection point of a NDL;
- Intermittent Loads are concerned, since the calculated contribution may not reflect the actual risks associated with these facilities (actual risks may be higher or lower);
- Network Raise risks are concerned, as the runway method is generally inappropriate in such cases.

Response: The cost allocation methodology in Appendix 2A for CRR and the Additional RoCoF[2] Control Requirement has been updated to achieve the desired cost allocation in the edge cases cited above. Once the revised methodology is implemented, the cost of procuring CRR and the Additional RoCoF Control Requirement will be more fairly allocated to a Market Participant according to the individual risks of their facilities ("facility runway" component); and the contribution of their facilities to any Network Raise Risks that set the Largest Credible Supply Contingency ("network" component).

2.3 Change 3: RoCoF Control Service (Tranche 8 Rules 2025)

Problem: Facilities are directed on to ensure sufficient RCS is always online and are currently compensated by means of Energy Uplift Payments. The costs of funding these payments are allocated using a consumption share method. As a result, the costs of providing the protection afforded by the RCS are not specifically allocated to the causers of the RCS requirement.

Response: By this set of amendments, EPWA aims to ensure that costs of Energy Uplift Payments arising from AEMO constraining-on a facility to provide RCS are appropriately allocated to all Market Participants who cause the RCS requirement[3]. The change will achieve this by[4]:

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[2] Rate of Change of Frequency

[3] EPWA, *Explanatory Note for Exposure Draft of the Tranche 8 Proposed ESM Amending Rules*, https://www.wa.gov.au/system/files/2025-03/esm_amendment_tranche_8_exposure_draft.pdf, accessed 7/04/2025.

[4] EPWA, *Explanatory Note for Exposure Draft of the Tranche 8 Proposed ESM Amending Rules*, https://www.wa.gov.au/system/files/2025-03/esm_amendment_tranche_8_exposure_draft.pdf, accessed 7/04/2025, page 1.

- explicitly identifying the Constraint Equations used by AEMO to facilitate directions to provide RCS[5]; and
- replacing the Energy Uplift Payments made in these situations with a new payment type ("RCS Uplift Payment"), which will be similar to an Energy Uplift Payment except that the costs are allocated to all the causers of the RCS requirement.

2.4 Key Dates

Key dates relevant to the changes assessed in this IA are summarised in the table below.

Table 1: Timings – publication and commencement dates

Step	Date
Exposure Draft Rules published (EPWA)	
Change 1: Wholesale Electricity Market Amendment (Cost Allocation Reform) Rules 2024[6]	23 October 2023
Change 2: Wholesale Electricity Market Amendment (Miscellaneous Amendments No 3) Rules 2024[7]	10 June 2024
Change 3: Electricity System and Market (Tranche 8) Amending Rules 2025[8]	27 March 2025
Gazetted Amendment Rules (Minister for Energy)	
Change 1: Wholesale Electricity Market Amendment (Cost Allocation Reform) Rules 2024	7 June 2024 (No. 66)
Change 2: Wholesale Electricity Market Amendment (Miscellaneous Amendments No 3) Rules 2024[9]	4 October 2024 (No. 120)
Change 3: Electricity System and Market (Tranche 8) Amending Rules 2025	4 June 2025 (No.64)
AEMO First and Final IA published	18 June 2025
Rule Commencement	
Change 1: Wholesale Electricity Market Amendment (Cost Allocation Reform) Rules 2024, Schedule 4	TBC
Change 2: Wholesale Electricity Market Amendment (Miscellaneous Amendments No 3) Rules 2024, Schedule 4	TBC
Change 3: Electricity System and Market (Tranche 8) Amending Rules 2025, Schedule 7	TBC

[5] The constraint equation will be used in settlement to identify facilities that are eligible for RCS Uplift Payments as compensation for enablement losses incurred.

[6] https://www.wa.gov.au/government/document-collections/cost-allocation-review

[7] https://www.wa.gov.au/government/publications/exposure-draft-of-the-miscellaneous-amendments-no3-wem-amending-rules

[8] https://www.wa.gov.au/system/files/2025-04/esm_amendment_tranche_8_exposure_draft_extended_consultation_date.pdf

[9] https://www.wa.gov.au/government/document-collections/wholesale-electricity-market-amendment-miscellaneous-amendments-no-3-rules-2024

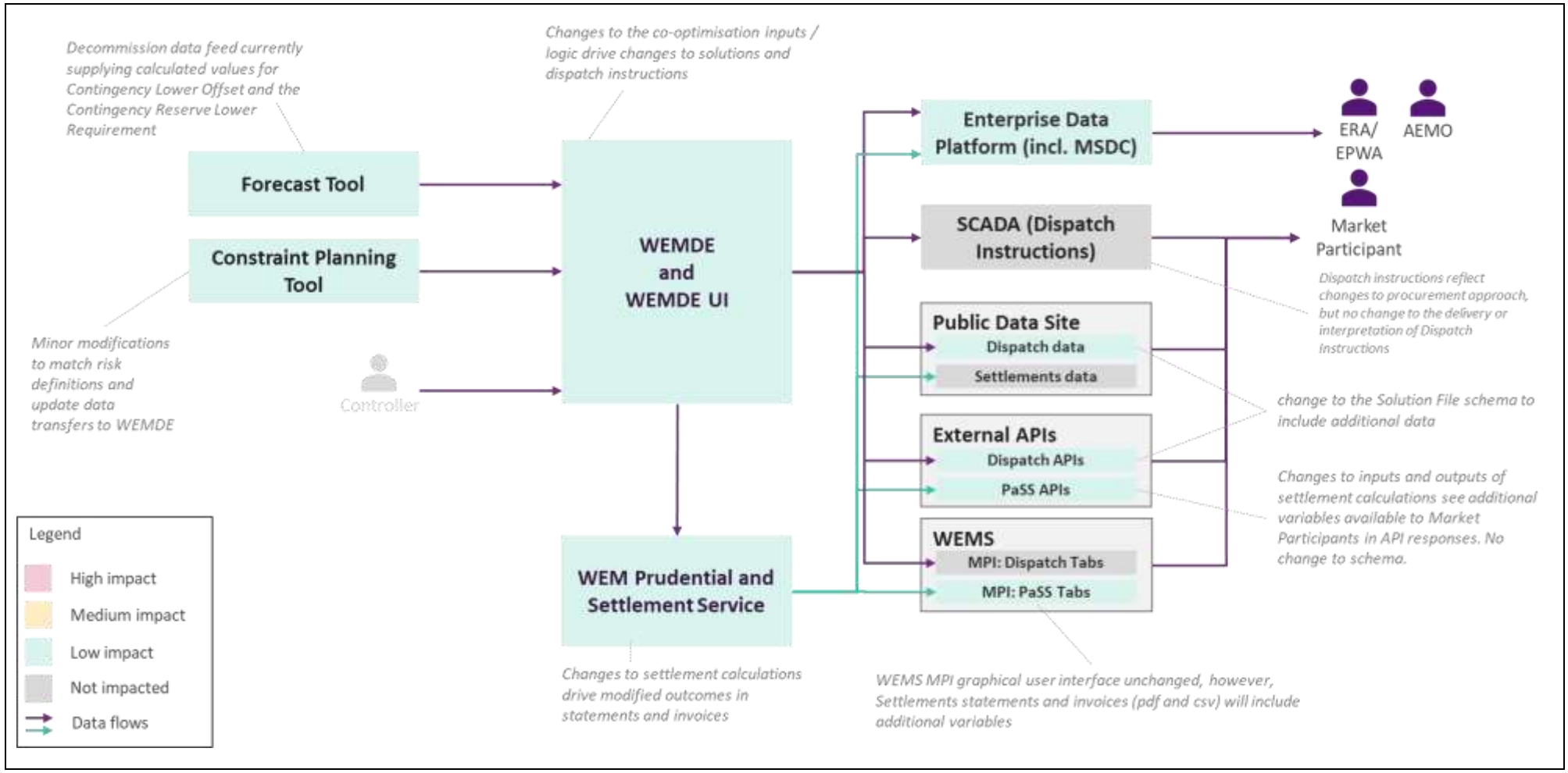
3 System Impacts

3.1 Change 1: Contingency Reserve Lower

3.1.1 System Impact Illustration

The high-level system impacts of Change 1 are illustrated in the figure below (see over page).

Figure 1: Change 1: Overview of impacts to AEMO systems (CRL)



Reference: P3109 - Simplified External CAD.pptx

3.1.2 System Impact Summary

System impacts are summarised in the table below. All identified system impacts are rated as "Low".

Table 2: Change 1: System impacts (CRL)

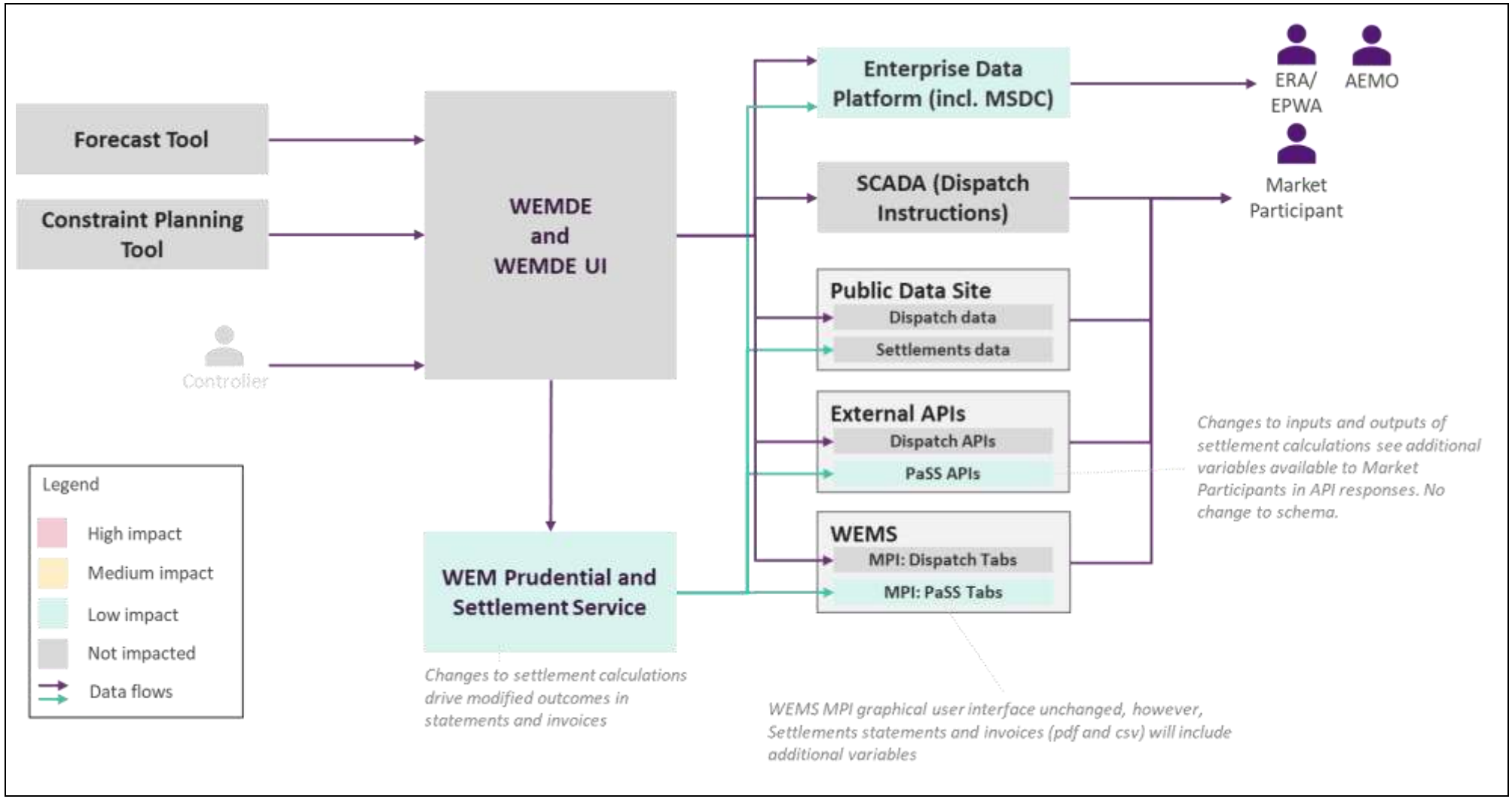
System / Component	Impact rating	Summary of impacts
Forecasting Tool	Low	• WEMDE will cease using a CRL Requirement supplied by the Forecasting Tool (since it will now calculate the requirement itself as part of the co-optimisation process) • This data feed will be decommissioned.
Constraint Planning Tool (CPT)	Low	• CPT modified to match risk definitions • Internal data exchange definitions adjusted to support transfer to WEMDE
WEMDE / WEMDE UI	Low	• Update WEMDE to: – co-optimise the Largest Credible Load Contingency with the dispatched quantity of CRL – handle modified schemas for case and solution files – handle data for settlement purposes related to identities of Major Loads • Update data exchange with PaSS to support additional variables
PaSS	Low	• Update PaSS to: – Update data exchange to receive new/modified data from WEMDE – Implement formulas to effect the new cost recovery approach – Implement new Invoice line items – Provide new and existing Settlement data in Settlement Statements and Invoices. These will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
SCADA (dispatch instructions)	N/A	No change to systems. Dispatch instructions will reflect outcomes driven by the other system changes.
WEMS MPI	Low	• WEMS MPI graphical user interface unchanged, though settlements statements and invoices (pdf and csv) accessed through WEMS MPI tabs related to PASS will include additional variables • New variables will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
External APIs	Low	• The schema of case and solution files will be affected by the inclusion of additional parameters used or outputted by WEMDE – These changes will be documented in the relevant swagger files published on the Developer Portal • The schema for PaSS APIs will not change. • New variables within the payload will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
Public Data Site (PDS)	Low	• The changes to case and solution files noted in relation to External APIs will also apply to the files published to the Public Data Site – see *Dispatch > Case Input Data Files* and *Dispatch> Dispatch Solution Files*. • No change to the settlement data published to the PDS.
Enterprise Data Platform (EDP), incorporating the Market Surveillance Data Catalogue (MSDC)	Low	• publish to the MSDC new data used and outputted by WEMDE (e.g. Largest Credible Load Contingency). • publish to the MSDC new data outputted by PaSS.

3.2 Change 2: Contingency Reserve Raise

3.2.1 System Impact Illustration

The high-level system impacts of Change 2 are illustrated in the figure below (see over page).

Figure 2: Change 2: Overview of impacts to AEMO systems (CRL)



Reference: P3109 - Simplified External CAD.pptx

3.2.2 System Impact Summary

System impacts are summarised in the table, below. All identified system impacts are rated as "Low".

Table 3: Change 2: System impacts (CRL)

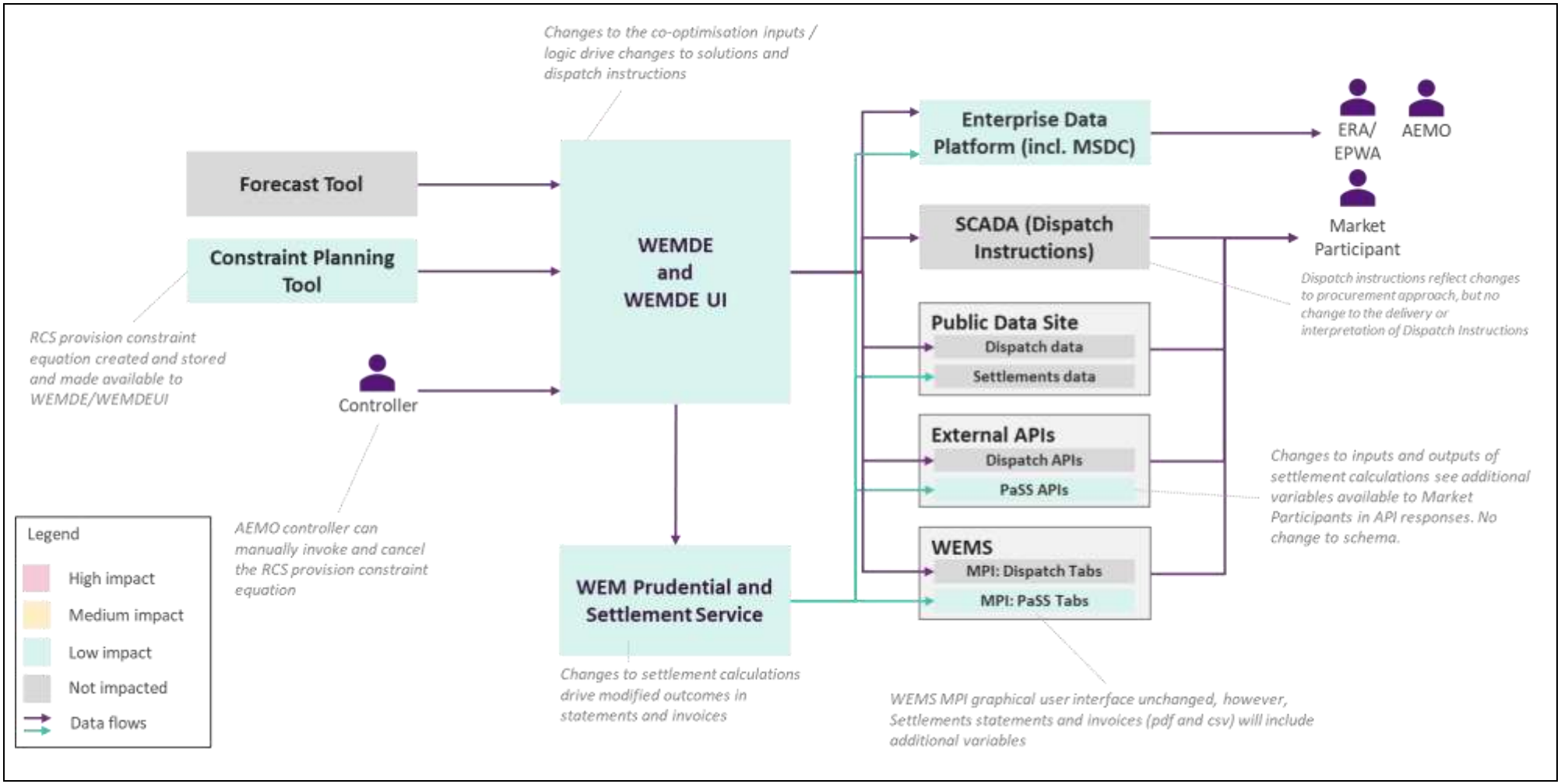
System / Component	Impact rating	Summary of impacts
WEMDE / WEMDE UI	Low	• Update data exchange with PaSS to support additional variables
PaSS	Low	• Update PaSS to: – Update data exchange to handle new/modified data from WEMDE – Implement formulas to effect the new cost recovery approach – Publish new and existing Settlement data in Settlement Statements and Invoices. These will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
SCADA (dispatch instructions)	N/A	No change to systems.
WEMS MPI	Low	• WEMS MPI graphical user interface unchanged, though settlements statements and invoices (pdf and csv) accessed through WEMS MPI tabs related to PASS will include additional variables • New variables will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
External APIs	Low	• The schema for PaSS APIs will not change. • New variables within the payload will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
Public Data Site (PDS)	Low	• No change to the settlement data published to the PDS.
Market Surveillance Data Catalogue (MSDC)	Low	• publish to the MSDC new data outputted by PaSS.

3.3 Change 3: RoCoF Control Service

3.3.1 System Impact Illustration

The high-level system impacts of Change 3 are illustrated in the figure below (see over page).

Figure 3: Change 3: Overview of impacts to AEMO systems (RCS)



Reference: P3109 - Simplified External CAD.pptx

3.3.2 System Impact Summary

System impacts are summarised in the table below. All identified system impacts are rated as "Low".

Table 4: Change 3: System impacts (RCS)

System / Component	Impact rating	Summary of impacts
Constraint Planning Tool (CPT)	Low	• CPT modified to store the new RCS provision constraint equation. • Internal data exchange definitions adjusted to support transfer to WEMDE.
WEMDE / WEMDE UI	Low	• Update WEMDE solver to handle RCS Provision Constraints • Update data exchange with PaSS to support additional variables
PaSS	Low	• Update PaSS to: – Update data exchange to handle new/modified data from WEMDE – Implement formulas to effect the new cost recovery approach – Implement new Invoice line items – Publish new and existing Settlement data in Settlement Statements and Invoices. These will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
SCADA (dispatch instructions)	N/A	No change to systems. Dispatch instructions will reflect dispatch solutions that conform with invoked RCS Provision Constraint(s).
WEMS MPI	Low	• WEMS MPI graphical user interface unchanged, though settlements statements and invoices (pdf and csv) accessed through WEMS MPI tabs related to PASS will include additional variables • New variables will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
External APIs	Low	• The schema for PaSS APIs will not change. • New variables within the payload will be documented in the *WEM, Metering, Settlements and Prudential Calculation* technical specification.
Public Data Site (PDS)	Low	• No change to the settlement data published to the PDS.
Market Surveillance Data Catalogue (MSDC)	Low	• publish to the MSDC new data outputted by PaSS.

4 Impacts on Published Documentation

The project / initiative will require changes to several pieces of existing published documentation, as detailed in the following table. No examples of new published documentation artefacts have been identified. In all cases, the expected complexity of the changes required to these documents is rated as "low".

Table 5: Summary of published documents affected by Changes 1, 2 and/or 3

Document Name	Complexity of changes	Changes (existing WEMP) or Content (new WEMP)	External briefings or consultation proposed?
WEM Procedure: Dispatch Algorithm (Existing)	Low	Update to reflect changes for: • CRL	Yes. Standard WEMP consultation process through AEMO Procedure Change Working Group.
WEM Procedure: ESS Quantities (Existing)	Low	Update to reflect changes for: • CRL	As above
WEM Procedure: Determination of Market Schedules (Existing)	Low	Update to reflect changes for: • CRL	As above
WEM Procedure: Credible Contingencies (Existing)	Low	Update to reflect changes for: • CRL • CRR	As above
WEM, Metering, Settlements and Prudential Calculation technical specification (Existing)	Low	Update to reflect changes for: • CRL • CRR • RCS Uplift Payments	No
External API Documentation (Existing)	Low	Update to reflect changes to the data published as a result of the changes related to Change 1 (CRL)	Yes. Briefing to the Industry Testing Forum.

5 External Impacts

This section identifies a list of proposed changes and AEMO's view of the impact on different participant types, based on the proposed implementation approach – see "System Impacts" and "Impacts on Published Documentation". AEMO cannot predict the exact scale or nature of impacts for each participant. Therefore, this section does not identify what specific changes participants may need to make, given the diverse levels of system maturity and automation across participants. AEMO recommends that each participant perform their own detailed analysis based on the information in this IA.

Table 6: Indicative impacts on other Rule Participants and related regulatory entities

Function or Capability	New/Existing	Entity type	Impact rating	Related AEMO functions (WEM)	Remarks
Retrieve and assess constraint information	Existing	Market Participant	Low	Real-time Market Monitoring; Real-Time Operations; System Engineering	Addition of Load Contingency Constraint Equations (same as existing Constraint Equation format) Addition of the RCS provision constraint equation (Change 3)
Interpret and understand co-optimised dispatch, pricing and other market outcomes	Existing	Market Participant	Low	Real-time Market Monitoring; Real-Time Operations;	Changes to WEMDE inputs, outputs, and to co-optimisation formulation (Change 1, Change 3)
Receive and respond to dispatch instructions	Existing	Market Participant	Nil	Real-Time Operations	While dispatch outcomes may change, the form, timing and effect of Dispatch Instructions won't
Understand settlements formulae / calculations	Existing	Market Participant	Low	Prudentials and Settlements	Changes will be documented in in the *WEM, Metering, Settlements and Prudential Calculation* technical specification
Request, retrieve and parse data via API…					
WEM Dispatch APIs	Existing	Market Participant	Low	Real-time Market Monitoring	Minor changes to API Specification, including changes to the schema for case files and solution files.
PaSS APIs	Existing	Market Participant	Low	Prudentials and Settlements	Additional variables will be included in API responses, these will not change the payload schema. Changes will be documented in in the *WEM, Metering, Settlements and Prudential Calculation* technical specification
Retrieve and parse data from the Public Data Site…					
Dispatch data	Existing	Market Participant	Low	Real-time Market Monitoring	Minor changes to the schema for case files and solution files.
Navigate and use information from WEMS MPI…					
Settlements Statements and Invoices	Existing	Market Participant	Low	Prudentials and Settlements	Additional variables included in Settlements Statements and Invoices. Changes will be documented in in the *WEM, Metering, Settlements and*

Function or Capability	New/Existing	Entity type	Impact rating	Related AEMO functions (WEM)	Remarks
					Prudential Calculation technical specification
Retrieve and parse data from Market Surveillance Data Catalogue (MSDC)	Existing	ERA and EPWA	Low	Real-Time Market Monitoring; Prudentials and Settlements;	Scope to be agreed with end users, but likely to include new data used and outputted by WEMDE and PaSS.

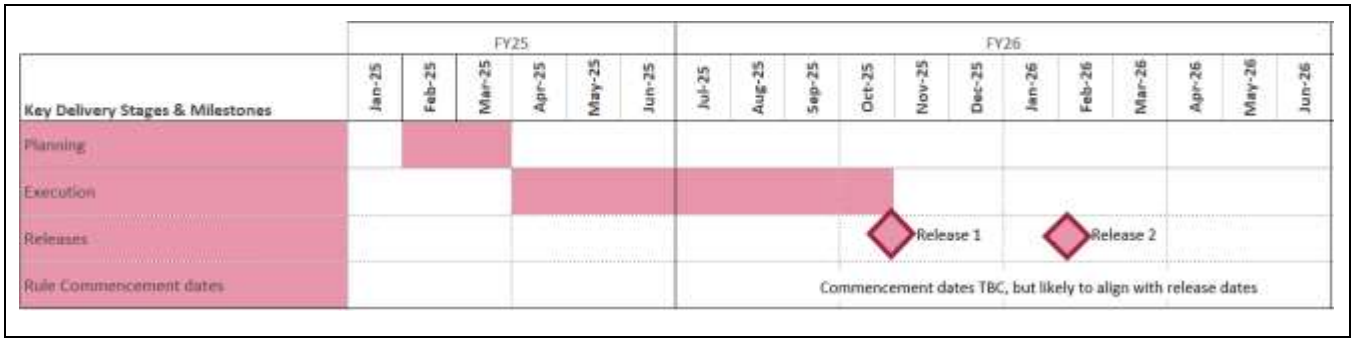
6 Implementation

- Indicative implementation timeline

Figure 4 sets out an indicative implementation pathway for the cost allocation changes described in this IA as Changes 1, 2 and 3. The work is already underway. The main development task is expected to be completed by around October, with the following release dates planned.

- The estimated date for Release 1 is around October 2025. This release would implement Change 1 (the CRL cost allocation changes); and
- The estimated date for Release 2 is around February 2026. This release would put Changes 2 and 3 into effect (the CRR & RCS cost allocation changes).

Figure 4: Indicative delivery timeline



The above timeline reflects AEMO's resourcing constraints and preliminary discussions with EPWA regarding potential commencement dates. Actual release dates will depend not only on AEMO's actual delivery, but also on the commencement dates that the State Government ultimately adopts for the relevant rule changes, namely the commencement dates for the following packages of amendment rules:

- Change 1: WEM Amendment (Cost Allocation Reform) Rules 2024 – Schedule 4.
- Change 2: WEM Amendment (Misc 3) Rules 2024 – Schedule 4
- Change 3: Electricity System and Market Amendment (Tranche 8) Rules 2025 – Schedule 7.

6.1 Indicative implementation cost – AEMO

AEMO's preliminary estimate for the cost to implement this change is around $2.4 million.

AEMO will report the actual approved implementation budget (including contingency) for the project established to implement the changes described in this IA, as part of its reporting on the WEM Implementation Roadmap. As implementation of the changes detailed in this IA has already commenced, the reader is referred to the following project included on the Roadmap *P3109: WEM Contingency Lower Procurement and Recovery*.

6.2 Implementation Risks

Risks identified by AEMO through this initial IA of Cost Allocation Changes 1, 2 and 3 are outlined in the following table.

Table 7: Initial assessment of implementation risks associated with change

Identified risk	Current rating	Mitigation strategies	Residual rating
Resource capacity and availability may cause delays to WA Reform Program planning and delivery, impacting AEMO's ability to meet its obligations under WEM Market Rules and the expectations of WA Government and other stakeholders.	Medium	External liaison with EPWA and Rule Participants and internal coordination and review across the WA Reform Program to inform prioritisation.	Medium
Inadequately supported system changes affect the Control Room's ability to direct generators to provide RoCoF service.	Low	Support the system updates with documentation and training for the system operators.	Nil
Market Participants are unable to make changes to their systems to consume updated schemas and APIs before the project deployment date.	Low	Early engagement with Market Participants to finalise API specifications, to provide sufficient time for development to occur.	Low

A1. Glossary

This document uses many terms that have meanings defined in the Wholesale Electricity Market Rules (WEM Rules). The WEM Rules meanings are adopted unless otherwise specified.

Table 8:Glossary of terms and acronyms used in this IA

Term	Definition
AEMO	Australian Energy Market Operator
API	Application Programming Interface
COE	Coordinator of Energy
CPT	Constraint Planning Tool
CRL	Contingency Reserve Lower
CRR	Contingency Reserve Raise
DER	Distributed Energy Resources
EDP	Enterprise Data Platform
EPWA	Energy Policy WA
ESR	Electric Storage Resource
ESS	Essential System Services
LCLC	Largest Credible Load Contingency
MSDC	Market Surveillance Data Catalogue
NDL	Non-Dispatchable Load
PaSS	Prudential and Settlement Service
PaSS UI	PaSS User Interface
PDS	Public Data Site
RCS	RoCoF Control Service
RoCoF	Rate of Change of Frequency
SCADA	Supervisory Control and Data Acquisition
WEMDE	Wholesale Electricity Market Dispatch Engine
WEMDE UI	WEMDE User Interface
WEMS MPI	Wholesale Electricity Market System Market Participant Interface

A2. Impact Rating Guidance

AEMO's approach for rating impacts from No Impact, Low, Medium or High applies a predefined matrix of impact types, summarised in the table below (see next page).

Table 9: Impact assessment guidance

Dimension considered	Question	High	Medium	Low	None
Impact on documentation	What is the change to a given internal process, WEM Procedure or technical document that AEMO must maintain and/or publish?	Major changes to documentation. E.g. creating a significant new document (or extensively rewriting existing). E.g. document drafting and review extensively involves multiple AEMO teams.	Moderate changes to an existing document. E.g. addition, elimination or reorder of multiple process steps. E.g. document drafting and review involves multiple AEMO teams to some extent.	Minimal change to an existing document. E.g. addition, elimination or reorder of small number of process steps. E.g. document drafting and review is primarily carried out within a single AEMO team.	No changes to documentation
Systems impact – market applications **(internal only)**	How extensively will the change affect the underlying market applications?	Involves a major change to, or addition of, a market application. E.g. introduction of a new application or decommissioning of existing system	Moderate change to existing market applications. E.g. introducing many new features or significantly increasing non-functional requirements	Minor change to existing market applications. E.g. adding one or several minor new features. E.g. expanding system functionality with only minor adjustments to the application's data and processing frameworks.	No change market applications
Systems impact – user interfaces (internal and external)	How is the change affecting user interfaces? How easily will the change be integrated by users?	Major changes to user interface(s) e.g. introduction of significant new or decommissioning of existing UI tabs. E.g. manyu users may not understand the UI without training.	Moderate change to existing interfaces. E.g. significantly expanded range of controls within an existing UI tab. E.g. many users will understand the UI relatively quickly on their own, but without training, some many not.	Minor change to existing interfaces. E.g. small addition of controls within an existing UI tab. E.g. almost all users will understand the UI quickly on their own, even in the absence of training.	No change to user interfaces
Systems impact – system to system interfaces **(internal-internal and internal-external)**	How is the change affecting the interactions between systems? How easily will changes be accommodated by systems up or downstream?	Major systems interface change. E.g. entirely new machine interface, with unfamiliar data schema or transfer formats must be negotiated or understood. E.g. upstream or downstream limitations significantly constrain or complicate the implementation of the core application changes.	Moderate systems interface change. E.g. the change involves significantly expanding the number of parameters or data-streams to be exchanged, but closely follows established patterns, formats and schemas. E.g. upstream or downstream systems require many changes, but these closely follow established patterns, logic or structures.	Minor system interface change. E.g. the change involves adding a small number of parameters or data-streams, adhering to established patterns, formats and schemas. E.g. upstream or downstream systems require several minor changes.	No system to system interface impacts