

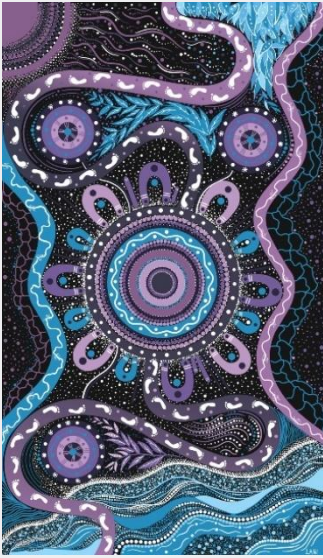
Improving security frameworks for the energy transition

December 2024

High Level Implementation Assessment

Version 0.2 - how the rule change is intended to be implemented by AEMO





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 an overview on how the improving security frameworks (ISF) for the energy transition rule change will be implemented. This document aligns with the outcomes of the final ISF Rule, released on 28 March 2024.

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Version control

Version	Release date	Changes
0.1	31 May 2024	Initial version for release
0.2	12 December 2024	Second version with updates

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Contents

1	Introduction to the Improving Security Frameworks (ISF) Rule	6
1.1	ISF for the energy transition – the Rule Change	6
1.2	Document background and purpose	6
1.3	Key implementation dates	7
1.4	HLIA stakeholder feedback	8
1.5	Stakeholder engagement	8
2	AEMO summary of key impacts	9
2.1	AEMO’s enablement obligations	10
3	Procedure impacts review	13
3.1	Procedure consultation timeline	16
4	System impacts	17
5	Participant impacts	20
6	Implementation pathway	21
6.1	Proposed implementation timeline	21
6.2	Delivery risks and issues	22
7	Proposed industry readiness approach	24
7.1	Approaches to industry testing	26
7.2	Industry testing environments	27
A1.	Impact ratings	28

Tables

Table 1	Assessment of the new procedures and documents required to implement the ISF Rule	13
Table 2	Final assessment of existing procedures and documents impacted by the ISF Rule	14
Table 3	Impacts to participants	20
Table 4	Initial assessment of delivery risks and issues	22
Table 5	Industry readiness approach for ISF December 2025 release	25
Table 6	AEMO industry testing approaches	27



Figures

Figure 1	Summary of impacts for ISF	9
Figure 2	Procedure consultation timeline	16
Figure 3	High-level solution overview	18
Figure 4	Proposed implementation timeline	22
Figure 5	Overview of industry readiness approach for ISF	24

Definitions

Definition	Description
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
API	Application programming interface
HLIA	High Level Implementation Assessment
IRP	Integrated resource provider
IRS	Integrated resource system
ISF	Improving Security Frameworks
NEM	National Energy Market
NER	National Electricity Rules
NMAS	Non-market Ancillary Services
NSCAS	Network Support and Control Ancillary Services
OSM	Operational Security Mechanism
RERT	Reliability and Emergency Reserve Trader
TNSP	Transmission Network Service Provider



1 Introduction to the Improving Security Frameworks (ISF) Rule

1.1 ISF for the energy transition – the Rule Change

On 28 March 2024, the Australian Energy Market Commission (AEMC) made a final determination and preferable final rule to improve market arrangements for system security services. This response comes following rule change requests from Hydro Tasmania and Delta Electricity. The final rule¹ represents a revised approach to the 'Operational Security Mechanism' (OSM) rule change for which a draft determination was released in September 2022.

The final ISF 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 the National Electricity Market (NEM) transitions to a secure net zero emissions power system.

The AEMC's revised approach will result in the:

- alignment of the existing inertia and system strength frameworks (introducing a NEM-wide inertia floor, aligning procurement timeframes with the system strength framework, and removing restrictions on the procurement of synthetic inertia);
- removal of the exclusion to procuring inertia network services and system strength in the network support and control ancillary services (NSCAS) framework;
- creation of a new transitional non-market ancillary services (NMAS) framework for AEMO to procure security services necessary for the energy transition;
- requirement for AEMO to enable (or 'schedule') system strength and inertia services (including those procured under the NSCAS framework) across the whole NEM², and may at its discretion enable other NSCAS and transitional services via a new enablement tool; and
- changing of the directions reporting framework.

1.2 Document background and purpose

The purpose of this document is to provide information to participants³ on how the ISF rule change will be implemented by AEMO. This is intended to assist and inform participants in the development of their own

¹ See <https://www.aemc.gov.au/rule-changes/improving-security-frameworks-energy-transition>.

² Refer Figure 3.8: Interactions between system strength, inertia, and NSCAS frameworks, AEMC Rule determination Improving security frameworks 28 March 2024.

³ The term 'participants' refers to all stakeholders involved in procuring, providing or other activities in the Improving Security Frameworks.

implementation timelines and impact assessments. This High Level Implementation Assessment (HLIA) v. 0.2 provides an updated overview of:

- Impacted Market Procedures.
- High level system and data exchange impacts.
- Timelines showing consultation period, industry testing and go-live timings.

This document is indicative only and will not necessarily reflect the project’s final design. It is superseded by any information produced later in the project, after project design is finalised, such as Technical Specifications, Data Model reports, and so on. Please refer to the ISF project page⁴ for the latest information.

1.3 Key implementation dates

Table 1 Timetable for key implementation dates

Stage	Timeline	Status
AEMC Final Rule Determination.	28 March 2024	COMPLETE
AEMO to publish High Level Implementation Assessment.	31 May 2024	COMPLETE
Transitional services framework to commence (AEMO to procure transitional services subject to the publication of the Transitional Services Guideline – which will be published by 1 December 2024).	3 June 2024	COMPLETE
<ul style="list-style-type: none"> • AEMO to publish market notices in real time. • Changes to directions reporting to commence. 	4 July 2024	COMPLETE
<ul style="list-style-type: none"> • AEMO to publish the Provisional Security Enablement Procedure (https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_372_0---provisional-security-enablement-procedure.pdf?la=en). 	30 June 2024	COMPLETE
<ul style="list-style-type: none"> • New inertia framework to commence. • AEMO to publish amendments to NSCAS Description and Quantity Procedure (https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/system_security_planning/nscas-description-and-quantity-procedure-v3-0.pdf?la=en) and Inertia Requirements Methodology (https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/system_security_planning/inertia-requirements-methodology-v2-0.pdf?la=en) and system security reports. • AEMO to publish Transitional Services Guideline (https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2024/transitional-services-guideline-consultation/transitional-services-guideline.pdf?la=en). • AEMO to publish first Transition Plan for system security. (https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/transition-planning). • Revisions to Transmission Network Service Provider (TNSP) cost recovery for non-network system security costs will commence. 	1 December 2024	COMPLETE
<ul style="list-style-type: none"> • AEMO to publish full SO_OP_3720 Security Enablement Procedure, and other related procedure updates. 	31 August 2025	PLANNING
<ul style="list-style-type: none"> • Enablement obligations on AEMO will commence. 	2 December 2025	PLANNING

⁴ At <https://aemo.com.au/initiatives/major-programs/nem-reform-program/nem-reform-program-initiatives/improving-security-frameworks-for-the-energy-transition>.

1.4 HLIA stakeholder feedback

AEMO is seeking stakeholder comment on this HLI. Any comments or feedback should be sent by email to NEMReform@aemo.com.au. Stakeholders are also invited to express interest in AEMO scheduling a webinar to accompany the release of this version of the HLI.

AEMO intends to publish the next update to this HLI in March 2025, which will consider amendments due to stakeholder feedback received and will provide further information on the System Impacts and Implementation pathway.

1.4.1 Stakeholder feedback on previous version of the HLI

AEMO thanks stakeholders for reviewing v.0.1 of the ISF HLI. Feedback was received from one participant and has been taken into account in the development of this version of the HLI. In the feedback, clarification was sought on the following key aspects of ISF:

- Scope of Phases 1 and 2 of the ISF implementation timeline.
- Definition of 'Providers' of system security services.
- Affected participants.
- Format and interface of exchange of operational information and instructions.
- Security services in scope for ISF.

1.5 Stakeholder engagement

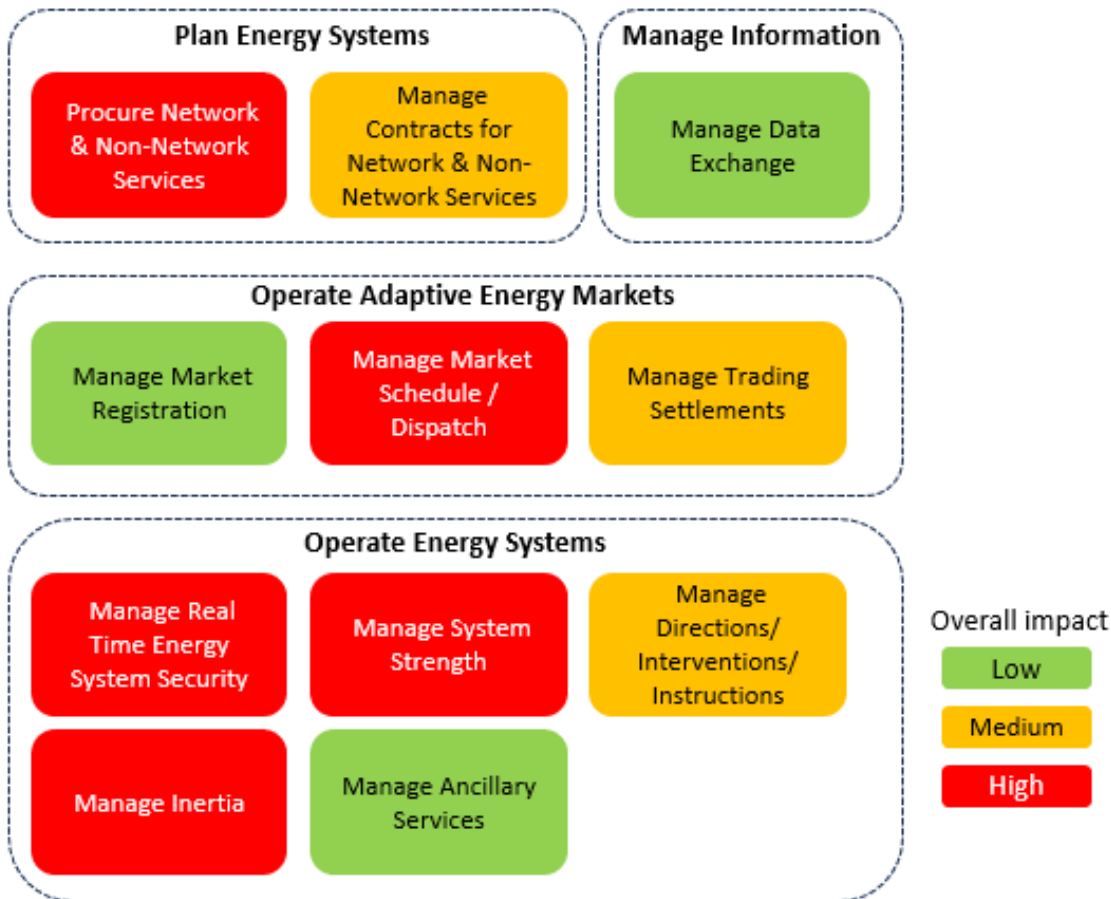
Collaboration and communication with industry stakeholders on implementation of the ISF Rule will occur via the following channels:

- NEM Reform engagement will occur through the regular monthly forums that AEMO conducts as part of the NEM Reform Program, including:
 - The Program Consultative Forum (PCF, at <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/program-consultative-forum>).
 - The Electricity Wholesale Consultative Forum (EWCF, at <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/electricity-wholesale-consultative-forum>).
 - The Implementation Forum (at <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/implementation-forum>).
- Focused engagement with transmission network service providers (TNSPs) through existing AEMO collaboration, as well as a dedicated Working Group.
- Initiative webpage (at <https://aemo.com.au/initiatives/major-programs/improving-security-frameworks-for-the-energy-transition>).
- Mailbox: NEMReform@aemo.com.au.

2 AEMO summary of key impacts

The diagram below depicts the key impacts to AEMO’s systems and processes from the ISF rule change.

Figure 1 Summary of impacts for ISF



Tabular view of key impacts

Focus area	Impact description
Plan energy systems	Procure Network and Non-Network Services
	Manage Contracts for Network and Non-Network Services
	Publish Documentation and Reports

- New transitional non-market ancillary services (NMAS) framework introduced for AEMO to procure security services as Type 1 or Type 2 Transitional Services.
- Removes the exclusion to procuring inertia network services and system strength in the NSCAS framework.
- Updates to the existing Inertia Methodology and Report, including the introduction of a new NEM-wide inertia floor.
- Introduce the Inertia Services Specification (incorporated within the Inertia Methodology and Report).
- Transitional Services Guideline to be produced.
- A Statement of Security Need must be published as part of the procurement process.

Focus area	Impact description	
		<ul style="list-style-type: none"> • New annual Transition Plan for System Security report.
Operate adaptive energy markets	Manage market schedule / dispatch	<ul style="list-style-type: none"> • Develop procedures for the enablement of system security. • Enable (or 'schedule') security services with a whole-of-NEM perspective. • Daily and annual reporting requirements for operational enablement.
	Manage trading settlements	<ul style="list-style-type: none"> • Payments and recovery for NSCAS and Transitional Services.
	Manage market registration	<ul style="list-style-type: none"> • Register ISF assets as required as system strength production units, inertia production units, transitional services units, or other relevant types.
Manage information	Manage data exchange	<ul style="list-style-type: none"> • Issue indicative schedules to providers and TNSPs. • Issue enablement instructions to relevant providers (and TNSPs if procurer of service) to enable security services. • Issue daily reporting on previous day enablement quantities, estimate of costs, and reasons for enablement, per NER 4.4A.75. • Manage dynamic inputs (i.e., availability and other operational information); and other contract information provided by participants. • Issue data to TNSPs to facilitate settlement.
Operate energy systems	Manage real-time energy system security	<ul style="list-style-type: none"> • Real-time monitoring and management of schedule of security services. • Manage interaction between directions, scheduled security services and NEMDE dispatch.
	Manage system strength	<ul style="list-style-type: none"> • Change in approach to managing system strength and inertia to adopt contracting approach introduced by the ISF rule.
	Manage inertia	
	Manage ancillary services	
	Manage directions / interventions / instructions	<ul style="list-style-type: none"> • Maintain and update reporting on directions. • Reporting on trends in the use of directions.

2.1 AEMO's enablement obligations

The remaining ISF milestones relate to AEMO's security contract enablement obligations:

- **By 31 August 2025: Publication of the *Full Security Enablement Procedure*.**
- **On 2 December 2025: Commencement of full enablement obligations (operational).**

The published SO_OP_3720 Security Enablement Procedure (Provisional) outlines minimum and recommended contracting requirements. The final complete SO_OP_3720 Security Enablement Procedure will outline AEMO's methodology for service enablement following a stakeholder consultation period. The system impacts outlined in Section 4 are largely related to operationalising AEMO's full enablement obligations for December 2025.

AEMO's operational enablement will be guided by principles specified in the rules, including that contracts should:

- Be enabled to meet power system security requirements at the lowest cost;
- Be enabled as close to real-time as practicable but not more than 12 hours ahead of time;

⁵ NER 4.4A.7 System security services reporting

- Only be enabled to meet operational security gaps; and
- Only be enabled to maintain the stable voltage waveform and host the projected level of IBR in circumstances where enabling those contracts would not result in a significant adverse effect on emissions or efficiency.

Under the new framework⁶, AEMO will be responsible for enabling under its scheduling function:

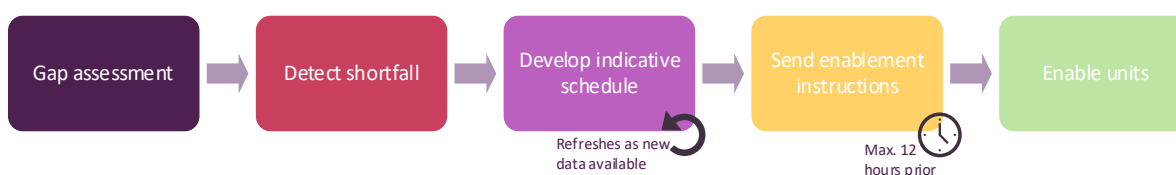
- System Strength contracts, including System Strength contracts procured under the NSCAS framework to meet a NSCAS gap.
- Inertia contracts, including Inertia contracts procured under the NSCAS framework to meet a NSCAS gap.

It is at AEMO’s discretion, and will be determined on a contract-by-contract basis, whether to enable via its new enablement tool for:

- NSCAS contracts outside of System Strength and Inertia.
- Transitional Type 1 and Type 2 service contracts.

High-level overview of enablement process

Notwithstanding the full methodology that is to be released in the Security Enablement Procedure, the following outlines AEMO’s process for enabling security contracts in real time:



Gap assessment:

- Assessment performed to identify system security gaps and region or location where a service may need to be enabled based on pre-dispatch information.
- The gap assessment will identify any forecast shortfalls in required inertia (MWs) and system strength requirements (minimum system security requirement and stable voltage waveform requirement).

Schedule:

- An indicative schedule is produced based on available ISF assets to respond to a detected shortfall at least cost and in consideration of system conditions (such as system normal, outages, risk of islanding, minimum system load events).
- The schedule will be prepared by AEMO based on the latest gap assessment outcomes and service providers will be issued a notice if they have been scheduled.

⁶ AEMC, Table 6.1 Improving security frameworks for the energy transition Final Determination, accessed via <https://www.aemc.gov.au/sites/default/files/2024-03/ERC0290%20-%20ISF%20final%20determination.pdf>



Enablement:

- Enablement instructions will be issued to participants as specified in the final SO_OP_3720 Security Enablement Procedure.
- In accordance with NER 4.4A.5(b) and 4.4A.5(c), AEMO may at any time give an enablement instruction to a participant stating that AEMO requires system security services to be enabled or ceased, respectively.
- Enablement instructions will be given by AEMO in accordance with new NER clause 4.4A.5(b).
- Enablement instructions will be issued to participants no more than 12 hours in advance of the enablement period, per NER 4.4A.4(b). However, the enablement end time of the instruction may be more than 12 hours in advance. The Provisional Security Enablement Procedure outlines that if the activation lead time is more than 12 hours, the service will be considered unavailable for scheduling and enablement.
- Enablement instructions may be amended depending on changing conditions, for example, they may be cancelled, or enablement start times and enablement end times may be revised.
- Participants will be required to respond to enablement instructions. Upon receipt of an enablement instruction, market participants are required to update their energy bids/offers in a similar manner to the current process for responding to directions.
- When a participant is enabled to provide system security services, the participant must comply with the enablement instruction in a manner that is consistent with the form of operation required to provide the services in accordance with new NER clause 4.4A.5(e)(f)(g) and the Security Enablement Procedures⁷.

Further information on system impacts is in Section 4.

⁷ SO_OP_3720 Security Enablement Procedure (provisional) at https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3720---provisional-security-enablement-procedure.pdf?la=en.

3 Procedure impacts review

The ISF rule makes consequential changes to several procedures and documents and introduces new procedures and guidelines. These changes will reflect new business processes, changes to existing business processes, and any minor or administrative changes required to reflect the ISF Rule.

Consultation will be required on several of these documents, as indicated in the below tables.

Any changes to the below list of procedure updates and reporting on the progress of consultation processes to update these documents, will be reported via AEMO’s Electricity Wholesale Consultative Forum⁸.

Table 1 Assessment of the new procedures and documents required to implement the ISF Rule

Type of document	Title	Effort required*	Content required	Consultation required?	Due date
Procedure	SO_OP_3720 Security Enablement Procedure (Provisional)	High	Minimum and recommended requirements for contracting. Published by 30 June 2024.	No	30 Jun 24 (COMPLETE)
Procedure	SO_OP_3720 Security Enablement Procedure (Final)	High	Above plus methodology for enablement and forecasting. Published by 31 August 2025.	Yes	31 Aug 25
Guideline	Transitional services guideline	High	Technical requirements for transitional services, and approach to procurement.	Yes	1 Dec 24 (COMPLETE)
Report	Transition plan for system security	High	Understanding of power system security in a low- or zero-emission power system and how AEMO is planning to maintain system security throughout the transition (December 2024 is first publication).	Yes	1 Dec 24 (COMPLETE)
Report	System security services report	Medium	An assessment of the system security services enabled throughout the previous financial year.	Yes	30 Sep 26
Report	NMAS Cost and Quantities Report (includes the transitional services annual report)	Medium	NER 3.11.12(b) Report on services procured through the transitional services framework.	N/A	Once each October
Report	Directions reporting changes	Low	Required to outline why the direction was needed, in addition to existing information already reported.	No	4 Jul 24 (COMPLETE)

⁸ See <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/electricity-wholesale-consultative-forum>.

Type of document	Title	Effort required*	Content required	Consultation required?	Due date
Template	Statement of security need	Medium	Required to procure transitional services – describes how the transitional services satisfy the Transitional Services Objective.	N/A	Ready for publication at the start of each procurement process

*Please refer to the Appendix for a description of effort ratings.

Table 2 Final assessment of existing procedures and documents impacted by the ISF Rule

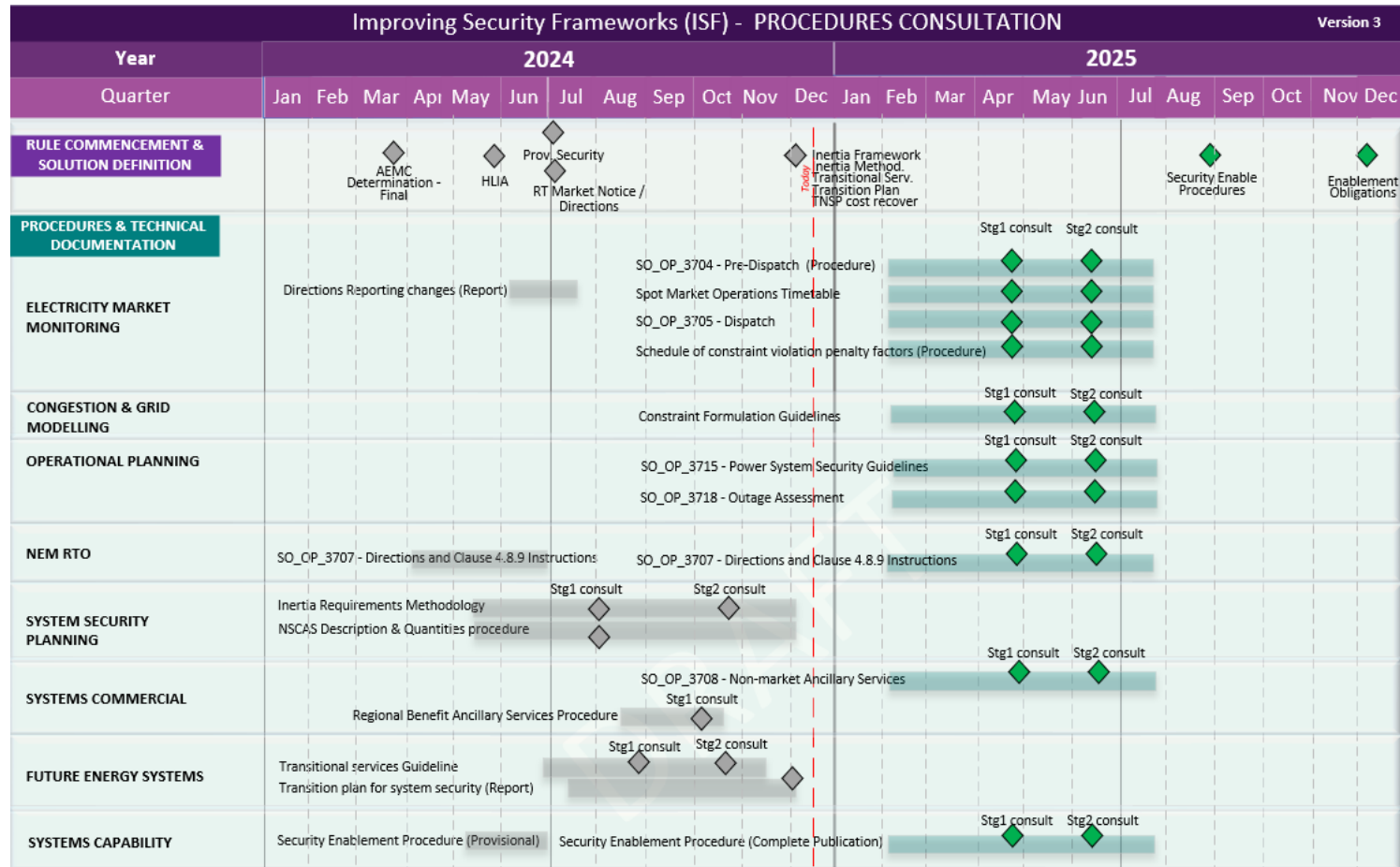
Document	Due date	Impact	Consultation required?	Indicative consultation commencement
Constraint Formulation Guidelines	31 Aug 25	Additional section required to describe how ISF-specific constraints are formulated, if required by solution design. For example, constraints on ISF units to give them targets when contracts are active in the ISF.	Standard Consultation	April 2025
Constraint Implementation Guidelines	1 Dec 25	Any changes to constraint implementation as a result of the ISF to be reflected.	Implementation Guidelines updated after Formulation Guidelines to reflect changes	Not applicable
Schedule of constraint violation penalty factors	31 Aug 25	Include new constraint violation penalty factors for constraints implemented in NEMDE as part of ISF enablement. It is possible that ISF constraints in NEMDE will use existing CVPs for security constraints, meaning that potentially no update is required.	Standard Consultation	April 2025
SO_OP_3704 - Pre-Dispatch	31 Aug 25	Pre-dispatch must include the security services scheduled in the latest ISF schedule (via constraints or bids). Include this information in the pre-dispatch procedure if required, such as by referencing ISF inputs or the Security Enablement Procedure.	Standard Consultation	April 2025
SO_OP_3715 - Power System Security Guidelines	31 Aug 25	Include ISF as one of the options for managing secure power system security. If the ISF requires accreditation or testing of ISF assets for participation, add in considerations for this and how it must be done to minimise impacts on power system security.	Standard Consultation	April 2025
SO_OP_3718 – Outage Assessment	31 Aug 25	Include an explanation that an outage is unlikely to proceed if there are insufficient ISF services available.	Standard Consultation	April 2025
Inertia Requirements Methodology	1 Dec 24	Add features to the existing methodology document to account for the system-wide minimum level of inertia concept introduced by ISF.	Standard Consultation	Completed
NSCAS Description & Quantities procedure	1 Dec 24	Introduce system strength and inertia gaps as potential NSCAS gaps, and define how they will be quantified and declared.	Standard Consultation	Completed
SO_OP_3707 - Directions and Clause 4.8.9 Instructions	4 Jul 24	Update with market notice information for improving directions transparency.	Expedited consultation	Completed

Document	Due date	Impact	Consultation required?	Indicative consultation commencement
		Further update may be required to include that the ISF solution forms part of the considerations before issuing a direction and may impact the decision-making process for issuing directions.		
SO_OP_3707 - Directions and Clause 4.8.9 Instructions	31 Aug 25	Possible reference to the ISF schedule as an additional consideration before issuing a direction.	Standard Consultation	April 2025
Spot Market Operations Timetable	31 Aug 25	To reflect NER 4.4A.7, new information to address AEMO's publication of system security service information from the previous day.	Standard Consultation	April 2025
SO_OP_3705 - Dispatch	31 Aug 25	To include instructions from NER 4.4A.5, either directly or through reference to the Security Enablement Procedure. Other minor changes to wording.	Standard Consultation	April 2025
SO_OP_3708 - Non-market Ancillary Services	31 Aug 25	Dispatch instructions for NEMAS will be reviewed to consider any specifications that are unique for Transitional Services.	Standard Consultation	April 2025
Settlements guide to ancillary services payment and recovery	31 Aug 25	Include information on how the payments and recovery for ISF Transitional Services are calculated in a new section of the document.	No	March 2025
AEMO statement layout	31 Aug 25	Incorporate any changes to settlement statements due to Transitional Services in the ISF.	No	Not applicable
Guide to ancillary services in the NEM	31 Aug 25	Change the title of section 4 and add information on transitional services to that section.	No	Not applicable
NEM Settlement Estimates Policy	No changes	Not applicable.	Not applicable	Not applicable
System Strength Requirements Methodology	No changes	Not applicable.	Not applicable	Not applicable
Settlement Estimation Guide	No changes	Not applicable	Not applicable	Not applicable

*Please refer to the Appendix for a description of effort ratings.

3.1 Procedure consultation timeline

Figure 2 Procedure consultation timeline





4 System impacts

This section focuses on the system impacts associated with commencing the scheduling function from 2 December 2025. The ISF Rule provides AEMO with flexibility regarding the enablement approach, in recognition of the need to balance solution complexity and implementation cost alongside the requirement to commence the scheduling function in time.

Owing to the timeframe for implementation of this initiative, AEMO plans to build an initial solution in time for the ISF Rule commencement date. Thereafter AEMO plans to make progressive solution updates that would either systematise any remaining manual components of the scheduling process that deliver efficiency benefits, or incorporate new requirements that arise with operational experience.

This section provides a high-level indicative overview of the participant interaction and interface impacts to facilitate the initial solution implementation. It is predicated on the critical solution requirements identified to support the security enablement arrangements to be specified in AEMO's Security Enablement Procedure.

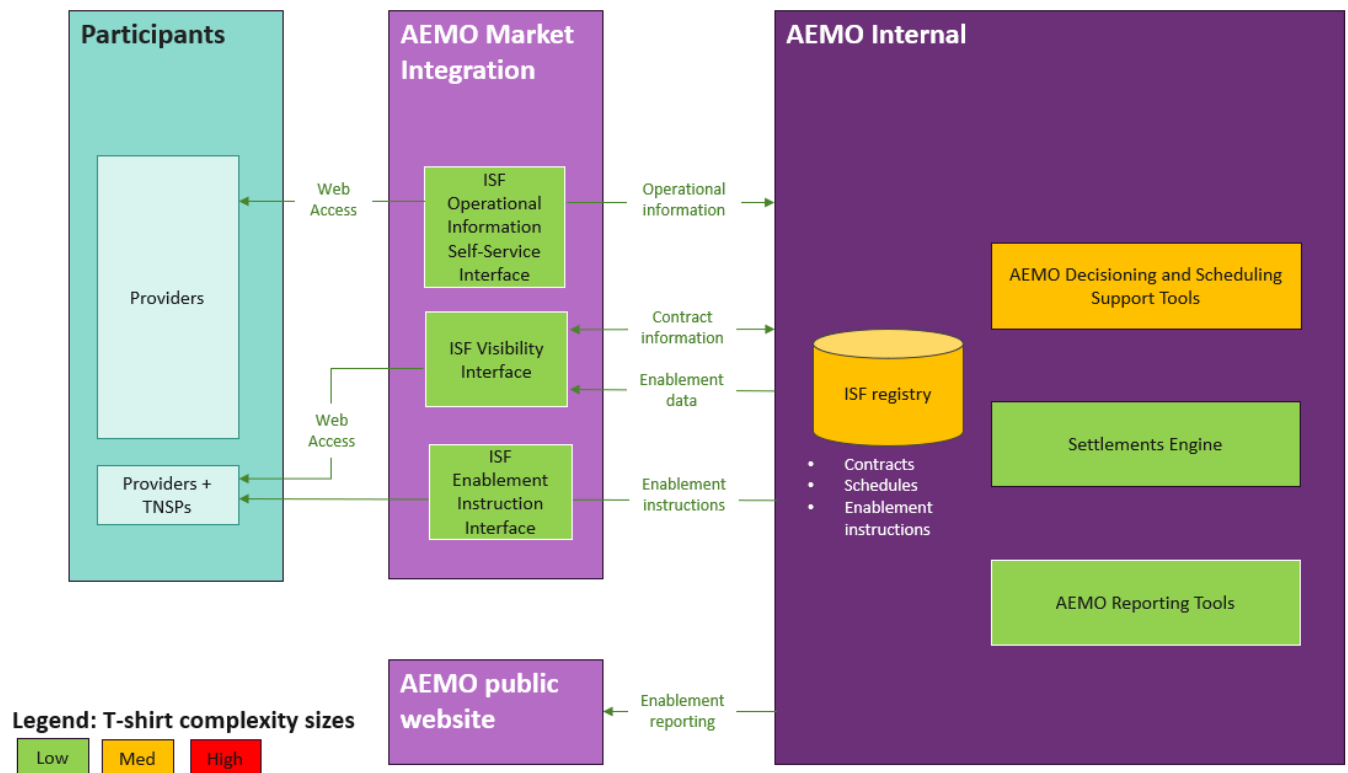
The initial solution design will be confirmed to allow sufficient time for AEMO and participants to implement the solution. Key priorities for the initial solution implementation include:

- An auditable, disaster recoverable data store to log ISF relevant information such as contracts, availability, schedules and enablement instructions.
- Ability for enablement instructions to be passed on with minimal reliance on manual processes.
- Ability to satisfy the reporting requirements on enablement outcomes as outlined in the ISF rule change.
- Ability for providers to provide up to date operational and contract information to AEMO in a structured format with minimal reliance on manual processes.

If requirements are unable to be met during the available timeframe, then a potentially less systematised and more manual solution may be in place by the rule commencement date.

Details of planned solution updates (to be made after deployment of an initial solution deployment), will be provided as required, through a further update to this HLIA in March 2025.

Figure 3 High-level solution overview



Note: Please refer to Appendix A1 for a description of complexity sizing.

The initial solution design will support the following high-level process:

1. Provision of inputs:

- TNSPs will provide information to AEMO that enables AEMO to effectively enable contracts, including cost information. This information is anticipated to be static in nature, or infrequently updated. This interface type will require design discussion given the need for security but also the infrequency of uploads.
- Providers will submit to AEMO up to date availability information (and other operational information if required) that allows AEMO to schedule services effectively⁹.

2. Security assessment and scheduling:

- AEMO will determine the need to schedule system security services to address operational security gaps, and, where appropriate, to maintain the stable voltage waveform and host the projected level of IBR.
- Where AEMO identifies that system security services are required, AEMO will determine the least-cost schedule to address the identified gap (subject to the considerations outlined in Section 2.1 of this document). AEMO will use the inputs collected from Step 1 to determine this schedule.
- AEMO decision and scheduling support tools will be developed for this purpose.

⁹ See AEMO's Security Enablement Procedure (Provisional), at https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3720---provisional-security-enablement-procedure.pdf?la=en.



3. Enablement:

- AEMO will issue enablement instructions (interface to be determined) to participants to enable security services.
- These will be viewable via enhanced browser services.

4. Reporting:

- AEMO will publish enablement reports each day, as required under ISF Rule cl. 4.4A.7(a), that will contain enablement outcomes such as type of security services enabled, relevant facilities, and estimate costs of enablement over the day. AEMO will use the existing NEMReports tool for this purpose, enabling participants to see the reports via automated files as well as being published on AEMO's website.

5. Settlements:

- AEMO will make changes to settlements systems to facilitate the settlement of transitional services under NER cl. 3.15.6A, consistent with the way that NSCAS is currently settled.

5 Participant impacts

This section identifies a list of proposed changes and AEMO’s view of the impact on all participants (stakeholders involved in procuring, providing or other activities in the Improving Security Frameworks) based on the ISF Rule.

It does not address updates that participants may make within their systems to support business processes given the diverse levels of system maturity and automation across participants, because AEMO cannot predict the exact scale or nature of impacts for each participant. AEMO recommends that each participant perform their own detailed analysis of the rule change, and in this section has highlighted common areas likely to be involved in most participants’ impact analysis to achieve the rule outcomes.

For clarity, participants can be:

- Procurers – AEMO or TNSPs are the parties that procure contracts from the system security service provider.
- Providers – the parties that enter into system security contracts with the procurer (AEMO or TNSPs) to provide the services impacted or introduced by ISF. These providers will be identified via AEMO’s and TNSPs’ respective procurement processes for these services¹⁰.
- Providers may be Market Generators with Generators (Scheduled and Semi-Scheduled) or Integrated Resource Providers, however, they may not always be a Registered Participant under the NER.

Table 3 Impacts to participants

Impacted participant	Proposed impact
Generators (Scheduled and Semi-Scheduled); Integrated Resource Providers; and/or Other security service providers	Providers contracted with TNSPs and/or AEMO to provide security services will be required to comply with AEMO’s Security Enablement Procedure. Providers will make system updates that support provision of up-to-date availability information (and other operational information if required) to allow AEMO to schedule services effectively. Potential system impacts as required to receive and respond to enablement instructions. Potential system impacts associated with settlement of NSCAS and Transitional Services.
Transmission Network Service Providers	Align business processes with that set out in AEMO’s Security Enablement Procedure. Potential system impacts, if required, to ensure contract information provided to AEMO for the purposes of scheduling for security, and to receive schedule information for the purpose of security contract settlement.
Cost Recovery Market Participants	Cost Recovery Market Participants (CRMPs) will be impacted by the introduction of Transitional Services, which are to be recovered under the same methodology as NSCAS, per NER 3.15.6A. (AEMO Regional Benefits Ancillary Services Procedure: https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2024/isf-rule-changes-for-regional-benefits-ancillary-services-procedure/regional-benefit-ancillary-services-procedures_final.pdf?la=en .)

For more information on the readiness activities, see Section 7. Stakeholders are encouraged to engage in AEMO’s readiness activities throughout 2025.

¹⁰ Please refer to each TNSP for further information regarding procurement processes and timelines.

Powerlink: <https://www.powerlink.com.au/addressing-system-strength-requirements-queensland-december-2025>;

Transgrid: <https://www.transgrid.com.au/projects-innovation/meeting-system-strength-requirements-in-nsw>;

AEMO: <https://aemo.com.au/initiatives/major-programs/victorian-system-strength-requirement-regulatory-investment-test-for-transmission>;

ElectraNet: <https://electranet.com.au/projects/system-strength-requirements-in-south-australia/>;

TasNetworks: <https://www.tasnetworks.com.au/Poles-and-wires/Planning-and-developments/Our-current-projects/Meeting-System-Strength-Requirements>.



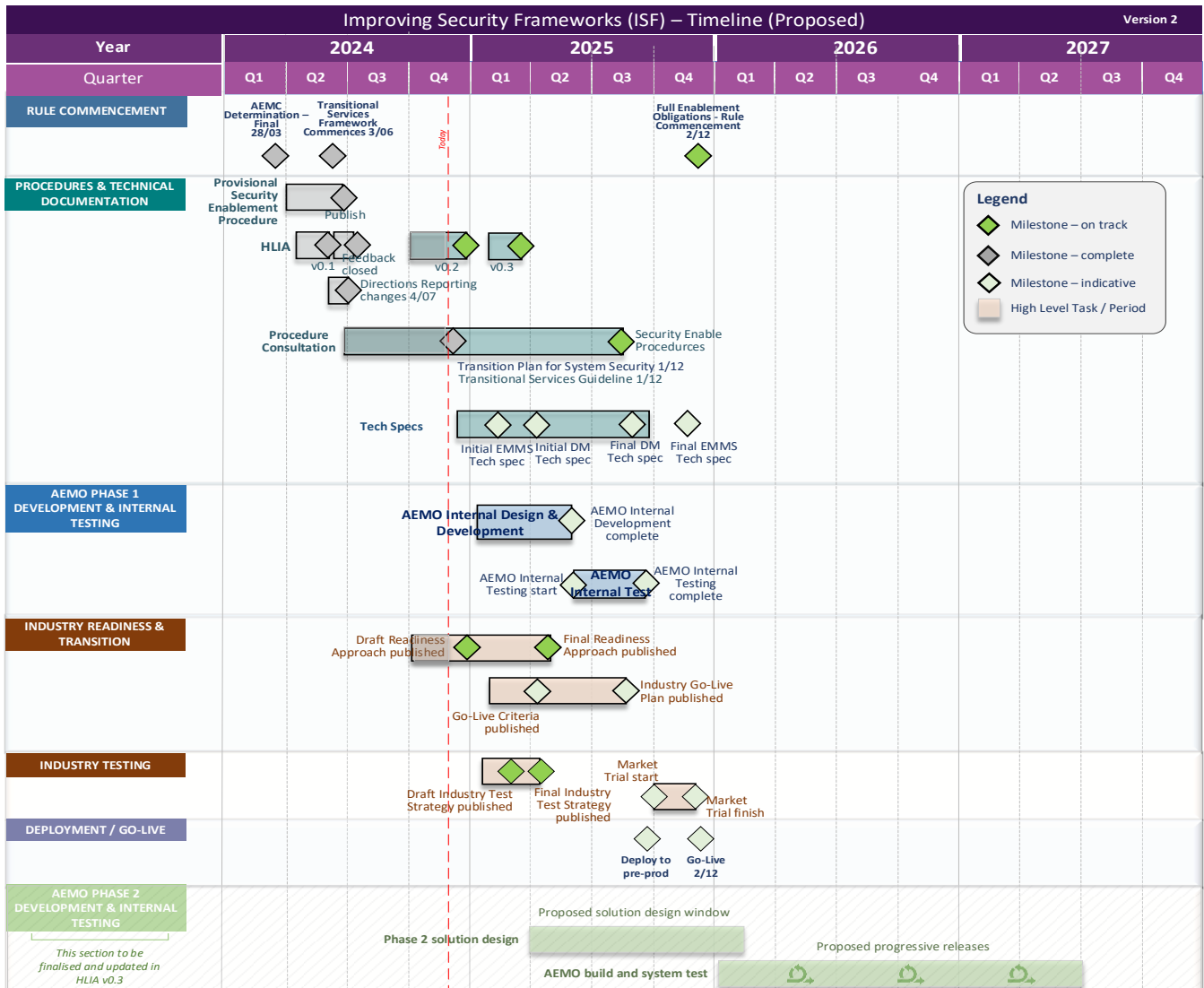
6 Implementation pathway

6.1 Proposed implementation timeline

The timeline shown in Figure 4 below considers the scale of change for AEMO and participants based on the impact assessment of the final rule change determination. Timeframes are indicative – AEMO presents them to promote discussion with industry. To provide sufficient time for AEMO and industry to implement an initial system solution in time for rule commencement, a ‘base level’ of requirements has been defined and will be confirmed by Q1 2025. These and the associated solution (such as the enablement interface design and impacts on settlements) would be articulated in the Readiness Approach published in Q1 2025 and a system solution for December 2025 built on the basis of those requirements.

After 2 December 2025, AEMO plans to make progressive solution updates as part of a Phase 2 that would either systematise any remaining manual components of the scheduling process that deliver efficiency benefits, or incorporate new requirements that arise with operational experience. AEMO is endeavouring to minimise any participant-side changes during this phase. Whilst AEMO aims to automate as much of the solution as possible for implementation by 2 December 2025, the scope and associated implementation timeline of these progressive Phase 2 updates have a dependency on the consultation and completion of procedures and documents due 31 August 2025. Once the scope has been confirmed it will be published in an updated HLIA (version 0.4) in Q3 2025.

Figure 4 Proposed implementation timeline



6.2 Delivery risks and issues

AEMO has identified the following risks for the delivery of the ISF rule change, noting that the project is in its early stages. AEMO will identify, monitor and manage risks as the project progresses, and proposes to report these via the Implementation Forum.

Table 4 Initial assessment of delivery risks and issues

Identified risk	Inherent rating (current rating)	Mitigation strategies	Residual rating (after mitigation)
Participant readiness	High	Participants knowledge that they are a counterparty to an agreement, and therefore must make system/process changes, will be subject to TNSP (or AEMO) procurement timelines. AEMO to ensure TNSPs are making counterparties aware of the need to adopt AEMO’s system and process impacts.	High

Identified risk	Inherent rating (current rating)	Mitigation strategies	Residual rating (after mitigation)
		<p>Make information on participant impacts available with opportunities for engagement with AEMO, including:</p> <p>Release updates of HLIA with further information regarding system impacts as available.</p> <p>Engage with participants via AEMO forums.</p> <p>Consult with participants via AEMO's Implementation Forum on proposed testing approach and release of technical documentation.</p>	
Contention and priority of Improving Security Frameworks amongst other reform initiatives – impacting common capability areas.	High	<p>NEM Reform program governance to manage priority and contention.</p> <p>Phased delivery of capability to support market transition.</p>	Medium
Compressed timeframes to meet required rule commencement dates	High	<p>Progress phased delivery of system implementation.</p> <p>Plan for possible update to solution requirements in late 2025 pending completion of Security Enablement Procedure – reflected in Proposed Timeline in Section 6.1.</p>	Medium
Scope of initial system implementation meets delivery timeframes, but results in too much internal resource effort to fulfill AEMO scheduling obligations.	High	<p>Prioritise scope inclusions in initial system implementation that deliver most value and reduce manual resource effort, within the time constraints of the ISF Rule.</p> <p>Consider the most appropriate solution delivery strategy that will support responsiveness to need for solution updates post December 2025.</p>	Medium
Implementation complexity arising due to policy uncertainty, which is driven by the principles-based nature of the framework improvements under the ISF Rule.	High	<p>Engagement with industry through procedure consultation.</p> <p>Iterative approach to system and process development.</p>	Medium

7 Proposed industry readiness approach

The following sections represent AEMO’s initial view of the readiness approach for the delivery of the ‘base level’ of requirements for ISF in December 2025, noting that the readiness approach will be prepared separately when further requirements and delivery milestones for Phase 2 have been confirmed in 2025.

The readiness approach and milestone dates proposed will be confirmed, after consultation with participants, with the issue of a Final Readiness Approach.

Figure 5 Overview of industry readiness approach for ISF

Context: NEM Reform program industry strategy

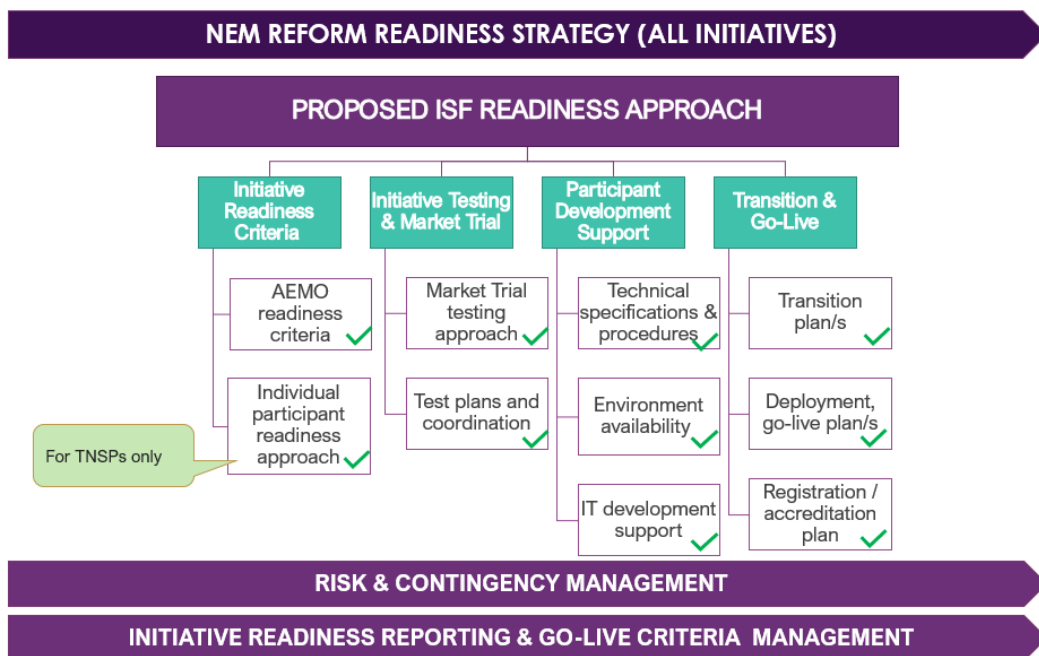


Table 5 Industry readiness approach for ISF December 2025 release

Readiness area		Initial view of industry readiness
Phase 1 - Initiative readiness criteria	Individual participant readiness approach	<p>Individual participant (or participant category) readiness is not a dependency for go-live. However, rule commencement requires impacted participants to make timely system/process changes in readiness for rule commencement 2 December 2025.</p> <p>TNSP readiness is a dependency for go-live. Rule commencement requires TNSPs to provide AEMO with sufficient information on system security agreements, and corresponding operational or limits advice on their contribution to system security requirements, to facilitate scheduling.</p>
	AEMO readiness criteria	<p>By the ISF rule commencement date (2 December 2025) AEMO's:</p> <ul style="list-style-type: none"> • Solution needs to be updated and tested for: <ul style="list-style-type: none"> – Registrations system changes for new standing data requirements. – New ISF Markets Portal: <ul style="list-style-type: none"> ○ to access Contract information and enablement instructions, ○ to submit/maintain ISF service availability (and other operational information). – Settlements/Billing changes for NSCAS and NMAS security services procured by AEMO. – Wholesale data interchange and participant data model support of enablement instructions, ISF schedules and ISF reporting. – Effective enablement of ISF contracts to maintain power system security and correct operation in conjunction with other existing market systems and processes. – Effective alarming and enablement of real time response to contingency events impacting ISF services. • Business needs to be ready to operate. • IT support needs to be in place.
Market Trial	Market Trial strategy	<ul style="list-style-type: none"> • Detailed approach along with timings will be confirmed with the issue of an Industry Test Strategy (31 March 2025*). Please refer to Section 7.1 for a general overview of AEMO's approaches to Industry Testing. • A market trial is considered appropriate to coordinate activities such as scheduling security services and (if required) settlements runs for all impacted participants to confirm their updated systems and processes against AEMO market systems. • AEMO will allow a two-month period, from 1 October 2025*, to conduct the market trial. • This will allow participants and TNSPs to test: <ul style="list-style-type: none"> – Provision of ISF information to AEMO – contracts, enablement data, operational availability – Participant receipt of, and response to, enablement instructions – AEMO scheduling of security services – Daily enablement reports – TNSPs receipt of information to enable contract settlement – Settlements. • Scoping and planning will occur in collaboration with industry.
	Test plans and coordination	<ul style="list-style-type: none"> • Test plan for coordinated activities will be developed in collaboration with participants reflecting the scope of the trial established in the industry Test Strategy. • Industry Test Working Group (ITWG) Q&A sessions available for updates on testing progress and for additional support. Sign up at NEMReform@aemo.com.au.
Participant development support	Procedures	<ul style="list-style-type: none"> • ISF rule specifies that new procedures and guidelines will need to be developed, consulted on and published by the timeframes set in the final rule. • Refer section 3.1 Procedure consultation timeline. • Progress of consultation processes to update the documents will be reported via AEMO's Electricity Wholesale Consultative Forum.
	Technical specifications	<ul style="list-style-type: none"> • EMMS Technical Specification tentatively available Q1 2025*. • EMMS Data Model initial technical specification tentatively available March 2025* with monthly updates as required through to go-live. • Market Systems User Group (MSUG) sessions available for additional support. Sign up details at https://www.aemo.com.au/energy-systems/market-it-systems/it-change-and-release-management.

Readiness area		Initial view of industry readiness
	Environment availability	<ul style="list-style-type: none"> Preproduction will be available to support the market trial to test changes. No additional development support environment has been identified to date, but will be considered when overall participant development timeframes are determined.
	IT development support	<ul style="list-style-type: none"> AEMO will run ITWG Q&A sessions during the Industry Test period to support participants. As required, AEMO will provide industry support via NEM Reform forums, information sessions, focus groups and daily stand-ups for affected participants. These engagements would be scheduled as the IT design and approach is formalised to support participants development.
Transition and go-live	Transition plans	<ul style="list-style-type: none"> If required, existing security service agreements and those to be implemented prior to go-live, to be transitioned to the new enablement process. Individual transition plans to be developed, in conjunction with TNSPs where they are procurer. Timing: Prior to Market Trial – Draft August 2025 and Final September 2025.
	Go-live plan	<ul style="list-style-type: none"> An Industry Go-live plan will be developed, in consultation with industry, to confirm detailed deployment and capability availability timeframes in the lead up to rule commencements including: <ul style="list-style-type: none"> When data model will be populated with new/changed data and reports available. Commencement of scheduling enablement Process and timings for loading existing and new security service agreement detail into the ISF enablement mechanism. Final plan to be published August 2025*.
	Registration or accreditation plans	<ul style="list-style-type: none"> To support new onboarding obligations. Onboarding guidelines, if required, may be issued in advance of Market Trial.
Risk & contingency management		Will be developed in consultation with industry.
Initiative readiness reporting & go-live criteria management		<ul style="list-style-type: none"> Formalised participant readiness reporting required for TNSPs and Service Providers to confirm access and ability to receive enablement instructions. AEMO will report to industry, summary of Industry activities and progress against confirmed L1/L2 industry readiness milestones on a regular basis through NEM Reform forums. AEMO will schedule formal checkpoints against go-live criteria for each initiative, 3 and 1 month prior to go-live, to provide assurance of implementation preparations, allowing time for finalising AEMO's and participants business preparations.

*Dates are tentative.

7.1 Approaches to industry testing

AEMO plans to provide an opportunity for industry participants to test their updated systems and processes prior to release of AEMO updates into production.

The approach to the level of co-ordination, integrated planning and scenario management that will be provided is dependent on a number of factors including:

- Impact to end-to-end participant process flows;
- Ability of impacted participants to successfully test changes without AEMO or other participant co-ordinated activity; and
- Number and range of participants impacted by release.

The approaches to industry testing are outlined in the following table.



Table 6 AEMO industry testing approaches

Type of industry test	Description	Example
Industry testing	Self-testing of functionality such as connectivity, and/or coordinated multi-party testing of functional scenarios.	Testing a change request (CR) or processing a reallocation or bid submission
Invitation industry testing	Coordinated testing of business process scenarios with a select number or subset of participants with systems ready for testing.	Testing NMI transfer Process
Market trials	Coordinated multi-party end-to-end testing of business process scenarios.	Meter exchange involving CRs, service orders and 5-minute meter reads

In all cases, involvement in testing is voluntary on participants’ behalf.

Agreement on approach to the type of industry testing for a release is conducted through the Implementation Forum and Industry Test Working Group (ITWG) along with support arrangements during the test period.

7.2 Industry testing environments

AEMO provides a pre-production (**preprod**) environment for industry tests, market trials and general participant testing. Key features of the preprod environment are:

- All AEMO Market Systems can be tested in preprod. This includes test versions of AEMO’s Retail and Wholesale IT Systems.
- Participants can interact with preprod via a test version of the Markets Portal and via AEMO’s various interfaces¹¹.
- The Market Systems applications in preprod are generally maintained to a high level. Generally, preprod is used as the final step for system changes for both BAU and projects prior to promotion to Production. Preprod is regarded as a production-like system, and any issues with preprod can be reported to the AEMO Support Hub.
- Data in preprod is a complete copy of the production Market Systems and is normally refreshed annually and is driven by project requirements¹².
- Access to production and pre-prod is managed via the Participant Administrator (PA) role¹³.

¹¹ For information on connecting to AEMO’s production and preproduction systems, see https://visualisations.aemo.com.au/aemo/web-help/Content/ConnectingToAEMO/Interfaces.htm?tocpath=Connecting%20to%20Market%20Systems%7C_____0.

¹² For information on preprod data, see https://visualisations.aemo.com.au/aemo/web-techspecportal/Content/TSP_TechnicalSpecificationPortal/Pre-productionRefresh.htm.

¹³ For more information on system access, see https://visualisations.aemo.com.au/aemo/web-help/Content/Common/UserRightsAccessMarketsPortal.htm?tocpath=About%20the%20Markets%20Portal%7C_____6.

A1. Impact ratings

Impact rating	Description
No impact	No change's to AEMO or industry systems, processes, guidelines, or procedures. Stakeholder consultation not required.
Immaterial	Immaterial administrative changes to AEMO procedures and/or guidelines, purposes of consistency. Immaterial changes or additions to existing business processes and/or technology systems. Stakeholder consultation not required.
Low	Minor changes, additions, or updates to AEMO procedures and/or guidelines, purposes of consistency. Minor changes, additions, or updates to existing business processes and/or technology systems.
Medium	Material changes or additions to AEMO procedures and/or guidelines. Significant changes or additions to existing business processes and/or technology systems. Stakeholder consultation required.
High	Significant changes, additions, or creation of new AEMO procedures, and/or guidelines. Significant changes, additions, or the creation of new business processes and/or technology systems. Stakeholder consultation required.