

Improving security frameworks for the energy transition

May 2024

High Level Implementation Assessment

Preliminary view for participants on how the rule change may be implemented by AEMO.





AEMO acknowledges the Traditional Owners of country throughout Australia and recognises their continuing connection to land, waters, and culture. We pay respect to Elders past and present.

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.

Disclaimer

This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice and should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law, the National Electricity Rules, or any other applicable laws, procedures or policies. AEMO has made reasonable efforts to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

Accordingly, to the maximum extent permitted by law, AEMO and its officers, employees and consultants involved in the preparation of this document:

- make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this document; and
- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this document, or any omissions from it, or for any use or reliance on the information in it.

Version control

Version	Release date	Changes
0.1	31 May 2024	Initial version for release

Copyright

© 2024 Australian Energy Market Operator Limited. The material in this publication may be used in accordance with the [copyright permissions on AEMO's website](#).



Contents

1	Introduction to the Improving Security Frameworks (ISF) Rule	5
1.1	ISF for the energy transition – the Rule Change	5
1.2	Document background and purpose	6
1.3	Key implementation dates	6
1.4	HLIA Stakeholder feedback	7
1.5	Stakeholder Engagement	7
2	AEMO Summary of Key Impacts	8
3	Procedure Impacts Review	10
4	System impacts	13
5	Participant Impacts	16
6	Implementation pathway	17
6.1	Proposed Timeline	17
6.2	Delivery Risks and Issues	18

Tables

Table 1	Timetable for key implementation dates	6
Table 2	Tabular view of key impacts	9
Table 3	Initial Assessment of the new procedures and documents required to implement the ISF Rule	10
Table 4	Initial Assessment of existing procedures and documents impacted by the ISF Rule	11
Table 5	Participant changes	16
Table 6	Initial Assessment of the delivery risks and issues	18
Table 7	Description of AEMO’s impact ratings	19

Figures

Figure 1	Summary of impacts for ISF	8
Figure 2	High-level solution overview	14

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 March 28, 2024, the Australian Energy Market Commission (AEMC) made a final determination and more 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 we transition 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') security services across the whole NEM for a variety of service types; and
- changing of the directions reporting framework.

¹ [Improving security frameworks for the energy transition | AEMC](#)

1.2 Document background and purpose

The purpose of this document is to provide information to participants 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 implementation timelines and impact assessments.

The initial version of this document provides a preliminary overview of:

- Likely impacted Market Procedures.
- High level system and data exchange impacts.
- Indicative timelines showing consultation period, industry testing and go-live timings.

AEMO intends to publish an update to this HLIA in Q4 2024 with further information on the above.

1.3 Key implementation dates

Table 1 Timetable for key implementation dates

Stage	Timeline
AEMC Final Rule Determination	28 March 2024
AEMO to publish High Level Implementation Assessment	31 May 2024
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
<ul style="list-style-type: none">• AEMO to publish market notices in real-time.• Changes to directions reporting to commence.	4 July 2024
<ul style="list-style-type: none">• AEMO to publish the Provisional Security Enablement Procedure.	30 June 2024
<ul style="list-style-type: none">• New inertia framework to commence.• AEMO to publish updated inertia requirements methodology and system security reports.• AEMO to publish Transitional Services Guideline.• AEMO to publish first transition plan report for system security.• Revisions to Transmission Network Service Provider (TNSP) cost recovery for non-network system security costs will commence.	1 December 2024
<ul style="list-style-type: none">• AEMO to publish full Security Enablement Procedures.	31 August 2025
<ul style="list-style-type: none">• Full enablement obligations on AEMO will commence.	2 December 2025

1.4 HLIA Stakeholder feedback

AEMO is seeking stakeholder comment on this HLIA. 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 HLIA.

AEMO intends to publish an update to this HLIA in Q4 2024, which will consider amendments due to stakeholder feedback received and will provide further, more detailed, information on the System Impacts and Implementation pathway.

1.5 Stakeholder Engagement

AEMO intends to keep interested stakeholders up to date on the ISF Rule by 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 \(PCF\)](#).
 - [The Electricity Wholesale Consultative Forum \(EWCF\)](#).
 - [The Implementation Forum](#).
- Initiative webpage: <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

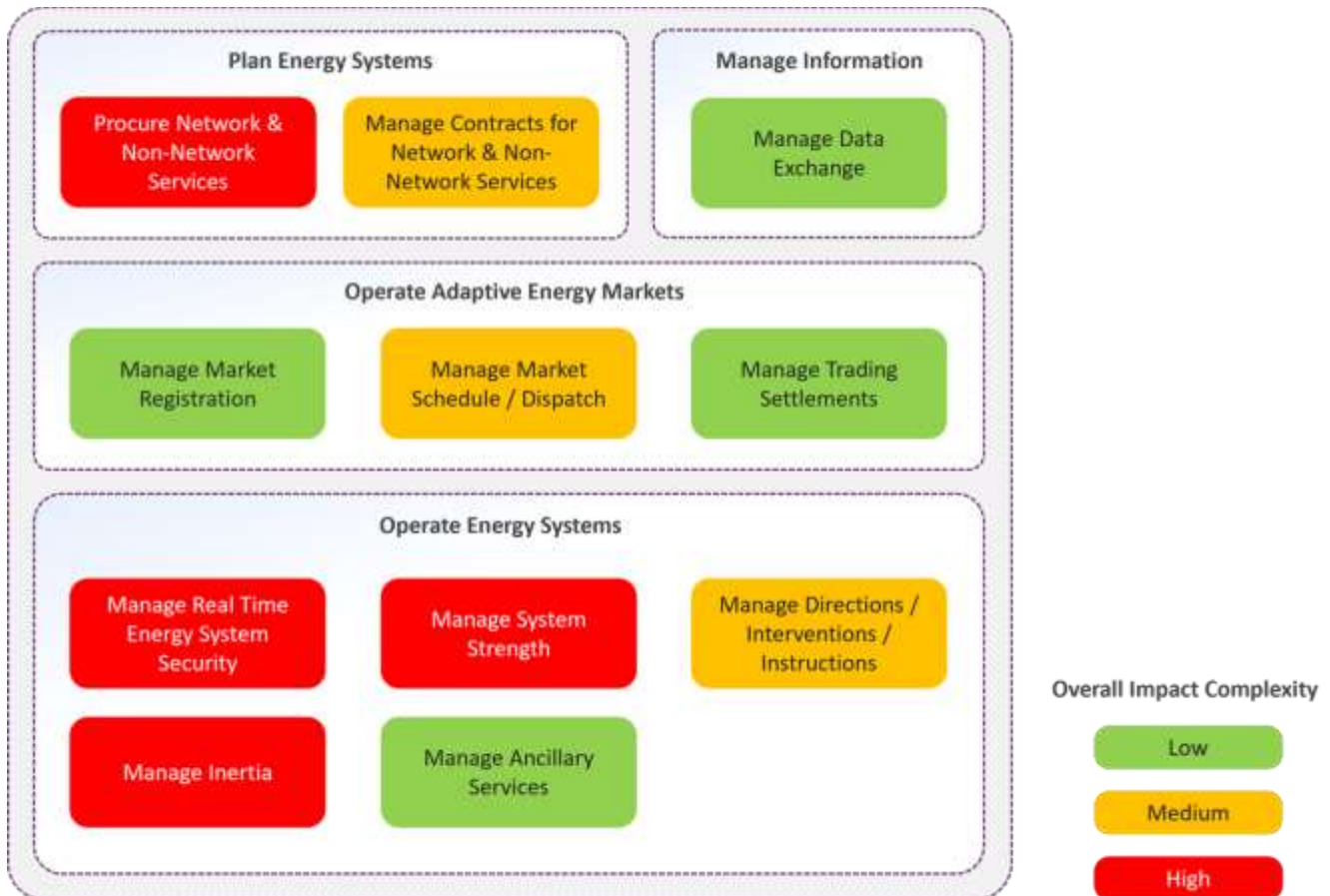




Table 2 Tabular view of key impacts

Focus Area	Impact Description	
Plan Energy Systems	Procure Network and Non-Network Services	<ul style="list-style-type: none"> • 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
	Manage Contracts for Network and Non-Network Services	
	Publish Documentation and Reports	<ul style="list-style-type: none"> • Updates to the existing Inertia Methodology and Report, including the introduction of a new NEM-wide inertia floor • Introduce the Inertia Services Specification • Transitional Services Guideline to be produced • A Statement of Security Need must be published as part of the procurement process • 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 ISF Transitional Services
	Manage Market Registration	<ul style="list-style-type: none"> • Register units as required as system strength production units, inertia units, or transitional services units.
Manage Information	Manage Data Exchange	<ul style="list-style-type: none"> • Issue enablement instructions to relevant providers to enable security services • Manage dynamic inputs (i.e., availability and other operational information); and other contract information provided by participants
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 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	<ul style="list-style-type: none"> • Maintain and update reporting on directions • Reporting on trends in the use of directions
	Manage Directions / Interventions / Instructions	

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.

This list of procedures and documents is indicative and will be updated as the project progresses. Any changes, and reporting on the progress of consultation processes to update documents, will be reported via AEMO’s [Electricity Wholesale Consultative Forum](#).

Table 3 Initial 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	Security Enablement Procedure (Provisional)	High	Minimum and recommended requirements for contracting. Published by 30 June 2024.	No	30 Jun 24
Procedure	Security Enablement Procedure (Complete Publication)	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
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
Specification	Inertia network service specification	High	Performance parameters for different kinds of inertia services (e.g., synthetic inertia).	Yes	1 Dec 24
Report	System security services report (or similar)	Medium	An assessment of the system security services enabled throughout the previous financial year.	Yes	30 Sep 26
Report	Transitional services report (or similar)	Medium	Report on services procured through the transitional services framework.	N/A	Once each calendar year

Type of document	Title	Effort Required*	Content Required	Consultation Required?	Due Date
Report	Directions reporting changes	Low	Required to outline why the direction was needed, in addition to existing information already reported.	No	4 Jul 24
Report	Statement of security need	Medium	Required to procure transitional services – describes how the transitional services satisfy the Transitional Services Objective.	N/A	After 3 Jun 24

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

Table 4 Initial Assessment of existing procedures and documents impacted by the ISF Rule

Document	Effort required*	Impact	Consultation Required?
Constraint Formulation Guidelines	Low	Additional section required to describe how ISF-specific constraints are formulated, if required by solution design. For example, constraints on units to give them targets when contracts are active in the ISF.	Formal rules consultation required.
Schedule of constraint violation penalty factors	Medium	Update constraint violation penalties based on new types of constraints that are introduced as part of the ISF, if new types of constraints are introduced.	Consultation proposed
SO_OP_3704 - Pre-Dispatch	Medium	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.	Consultation proposed
Constraint Implementation Guidelines	Medium	Any changes to constraint implementation as a result of the ISF should be documented.	No
SO_OP_3715 - Power System Security Guidelines	Medium	Include ISF as one of the options for managing secure power system security. If the ISF requires accreditation or testing of units for participation, add in considerations for this and how it must be done to minimise impacts on power system security.	No
Inertia Requirements Methodology	Medium	Add features to the existing methodology document to account for the system-wide minimum level of inertia concept introduced by ISF.	Yes
NSCAS Description & Quantities procedure	Medium	Introduce system strength and inertia gaps as potential NSCAS gaps, and define how they will be quantified and declared.	Yes
System Strength Requirements Methodology	Medium	Update to reflect new NSCAS gaps for system strength.	Yes

Document	Effort required*	Impact	Consultation Required?
SO_OP_3707 - Directions and Clause 4.8.9 Instructions	Low	Update with market notice information for improving directions transparency. 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.	Expedited rules consultation required
Spot Market Operations Timetable	Low	If required, include timetabling information for the ISF rule.	Formal rules consultation required
SO_OP_3700 - Operating Procedure Index	Administrative	Change version numbers and issue dates for other updated power system operating procedures.	Not required
SO_OP_2000 - Glossary	Administrative	Define additional terms related to the ISF rule.	Not required
SO_OP_3705 - Dispatch	Low	ISF conformance and compliance measures should be included, if required. Consider the need for ISF specific dispatch instructions.	Consultation proposed
SO_OP_3708 - Non-market Ancillary Services	Medium	Transitional Services are an NMAS and should be referenced and considered within the procedure. Interactions with other NMAS services should be considered.	Formal rules consultation required
Settlements guide to ancillary services payment and recovery	Medium	Include information on how the payments and recovery for ISF Transitional Services are calculated in a new section of the document.	Consultation proposed
NEM Settlement Estimates Policy	Medium	Estimated values for ISF Transitional Services settlement amounts will be required when normal processing is not possible.	Formal rules consultation required
Settlement Estimation Guide	Medium	Include any changes that ISF Transitional Services make to the settlement estimation process.	Consultation proposed
AEMO statement layout	Low	Incorporate any changes to settlement statements due to Transitional Services in the ISF.	Consultation proposed

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



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, and thereafter 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.

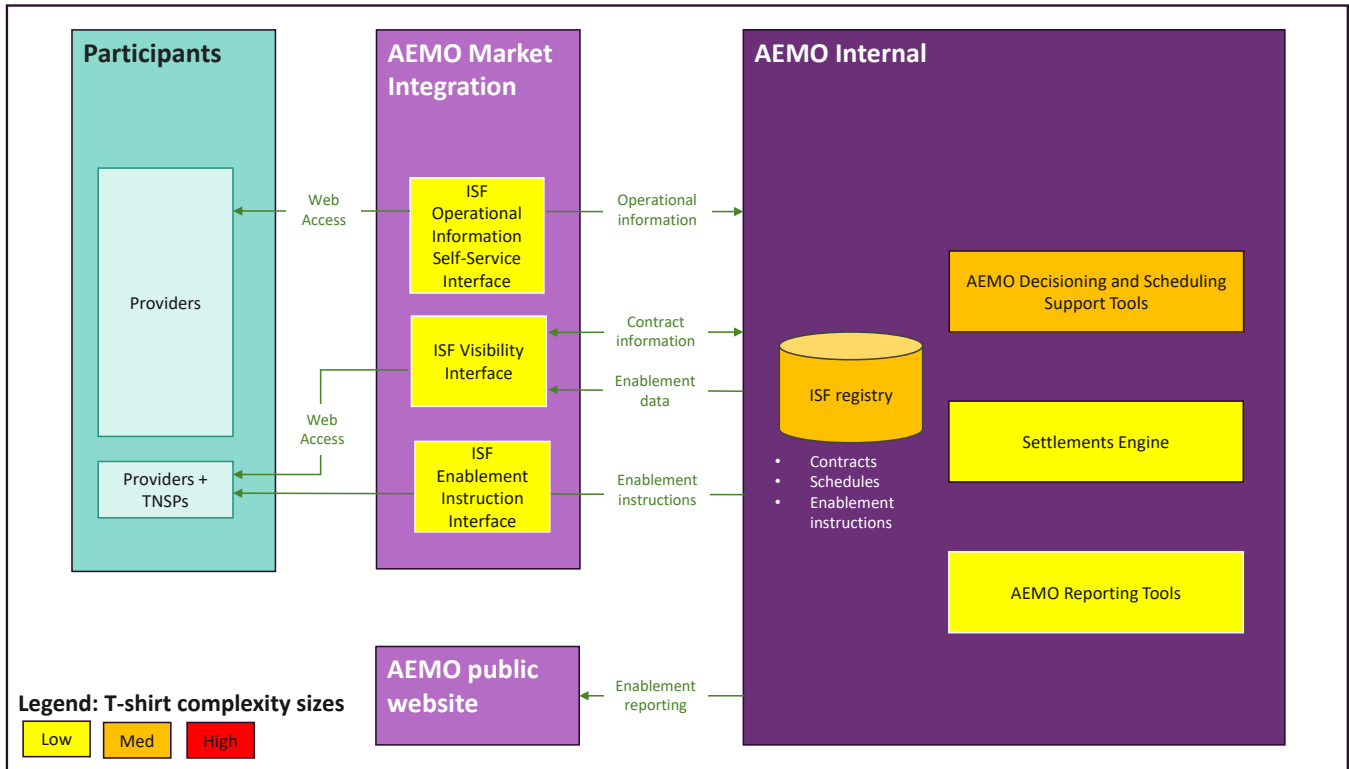
The initial solution design will be confirmed to allow sufficient time for AEMO and participants to implement the solution. Key priorities for the initial solution implementation include:

- a) An auditable, disaster recoverable data store to log ISF relevant information such as contracts, availability, schedules and enablement instructions.
- b) Ability for enablement instructions to be passed on with minimal reliance on manual intervention;
- c) Ability to satisfy the reporting requirements on enablement outcomes as outlined in the ISF rule change;
- d) 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 locked in during that timeframe, then potentially less systematised and more manual solutions may be in place by the rule commencement date.

Details of planned solution updates (to be made after deployment of an initial solution deployment), should they involve an impact to participants, will be provided in an updated HLIA.


Figure 2 High-level solution overview²



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 to submit to AEMO up to date availability information (and other operational information if required) that allows AEMO to schedule services effectively.
2. Security assessment and scheduling:
 - AEMO will determine the need to schedule system security services to address operational security gaps, and 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. AEMO will utilise the inputs collected from Step 1 to determine this schedule.
 - AEMO decision and scheduling support tools will be developed for this purpose.
3. Enablement:
 - Post the development of the schedule, AEMO will issue enablement instructions (interface to be determined) to relevant Providers to enable security services.
 - These will be viewable via enhanced browser services.
4. Reporting:

² Please refer to the Appendix for a description of complexity sizing.

- 
- AEMO will publish enablement reports each day, as required under the 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 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 different participant types, based on the final rule change. It does not address updates that participants may make within their systems to support business processes and given the diverse levels of system maturity and automation across participants, 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 analyses to achieve the rule outcomes.

Table 5 Participant changes

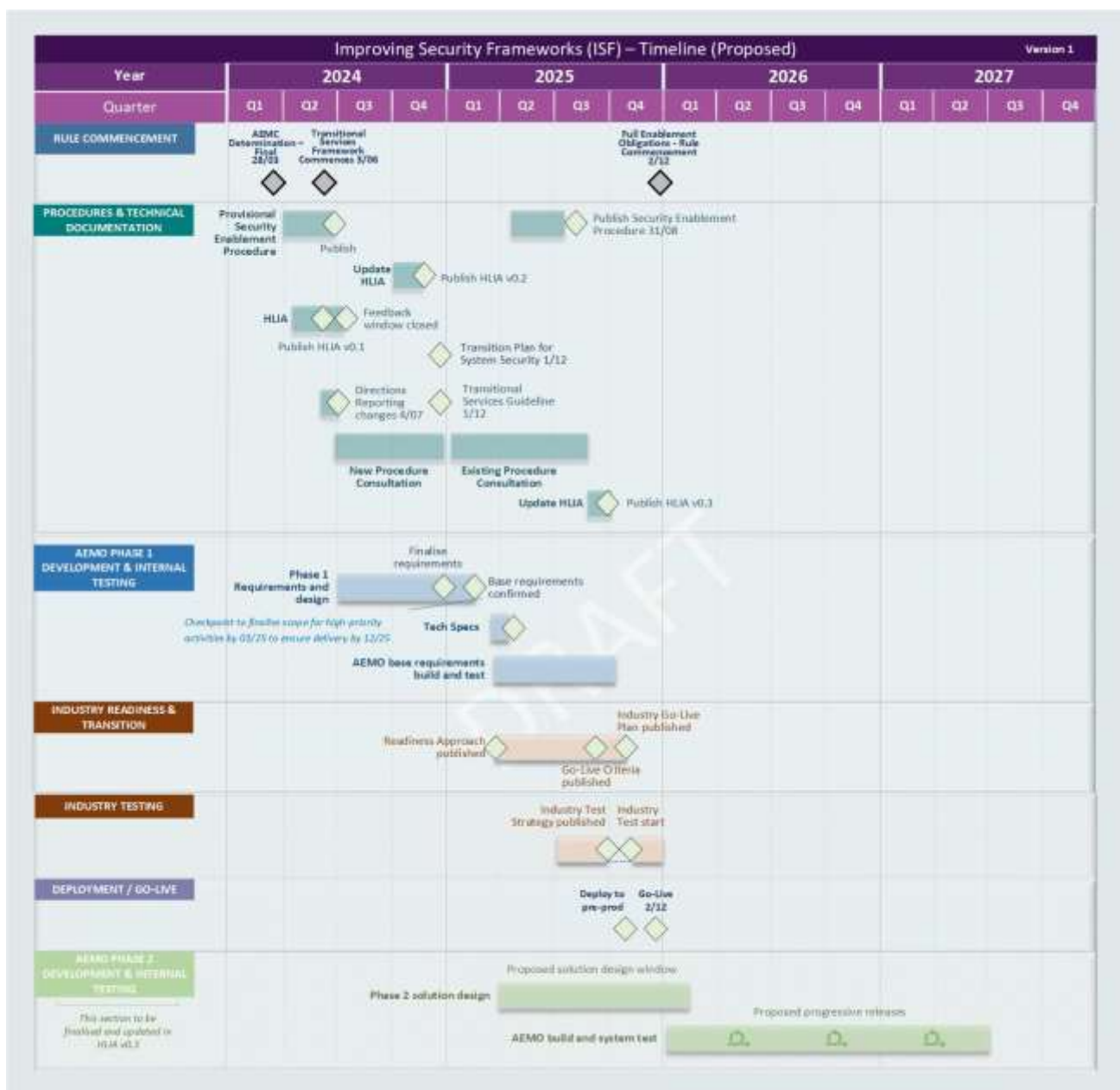
Impacted Participant Type	Proposed Changes
<p>Generators (Scheduled and Semi-Scheduled);</p> <p>Integrated Resource Providers; and/or</p> <p>Other security service providers</p>	<p>Providers, contracted with TNSPs and/or AEMO to provide security services will be required to comply with AEMO’s Security Enablement Procedure.</p> <p>Providers to 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.</p> <p>Potential system impacts as required to receive and respond to enablement instructions.</p> <p>Potential system impacts associated with settlement of Transitional Services.</p>
<p>Transmission Network Service Providers</p>	<p>Align business processes with that set out in AEMO’s Security Enablement Procedure.</p> <p>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.</p>

6 Implementation pathway

6.1 Proposed Timeline

The proposed timeline considers the scale of change for AEMO and Participants based on impact assessment of the final rule change determination.

6.1.1.1 Proposed Timeline



The proposed timeline above is indicative and is presented to promote discussion with industry.

AEMO is proposing that, in order to provide sufficient time for AEMO and industry to implement an initial system solution in time for rule commencement, that a ‘base level’ of requirements are confirmed by Q1 2025. These and the associated solution (e.g. the enablement interface design, impacts on settlements, etc) 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 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.

The scope and associated implementation timeline of these progressive updates would be published in an updated HLIA (version 0.3) in Q3 2025.

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 6 Initial Assessment of the delivery risks and issues

Identified Risk	Inherent Rating (current rating)	Mitigation strategies	Residual Rating (after mitigation)
Participant readiness	High	Release update of HLIA with further information regarding system impacts as available. Engage with participants via AEMO forums. Consult with participants via AEMO’s Implementation Forum on proposed testing approach and release of technical documentation.	Medium
Contention and priority of Improving Security Frameworks amongst other reform initiatives – impacting common capability areas.	Medium	NEM Reform program governance to manage priority and contention. Phased delivery of capability to support market transition.	Low
Compressed timeframes to meet required rule commencement dates	High	Progress phased delivery of system implementation. Plan for possible update to solution requirements in late 2025 pending completion of Security Enablement Procedure – reflected in Proposed Timeline in Section 6.1.	Medium
Scope of initial system implementation meets delivery timeframes, but results in too much internal resource effort to fulfill AEMO scheduling obligations.	High	Prioritise scope inclusions in initial system implementation that deliver most value and reduce manual resource effort, within the time constraints of the ISF Rule. Consider the most appropriate solution delivery strategy that will support responsiveness to need for solution updates post December 2025.	Medium



Identified Risk	Inherent Rating (current rating)	Mitigation strategies	Residual Rating (after mitigation)
Implementation complexity arising due to policy uncertainty, which is driven by the principles-based nature of the framework improvements under the ISF Rule.	High	Engagement with industry through procedure consultation. Iterative approach to system and process development.	Medium

AppendixTable 7 Description of AEMO’s 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.