

Scope of Work for the Coordinator's Review of the Essential System Services Framework

1. Introduction

The Coordinator of Energy (Coordinator) is conducting a review of the Essential System Services (ESS) Framework (the Review), incorporating:

- a review of the ESS Process and Standards as required by Section 3.15 of the WEM Rules; and
- a review of the Supplementary Essential Systems Services Procurement Mechanism (SESSM).¹

Essential System Services (ESS) support the operation of the energy market and are required to maintain power system security and reliability. There are three types of ESS in the WEM, however only the Frequency Co-optimised Essential System Services (FCESS) are being considered as part of this Review.²

The SESSM is a mechanism for procuring ESS capability over a longer timeframe than provided for in the Real-Time Market and triggered in two circumstances:

- if the Australian Energy Market Operator (AEMO) predicts that there will be a shortfall of FCESS in the Real-Time Market; or
- if the Economic Regulation Authority (ERA) considers that the FCESS market outcomes are inconsistent with the efficient operation of the Real-Time Market.

The purpose of this Review is to ensure the framework for FCESS provision is operating efficiently to ensure power system security and reliability can be maintained at the lowest cost to consumers. This will be increasingly important as the transition to a low emissions energy system characterised by increasing levels of intermittent and distributed generation continues.

The Review will be supported by a Working Group established under the MAC.

¹ The SESSM review is being carried out under Clause 2.2D.1(h), which confers the function on the Coordinator to consider and, in consultation with the Market Advisory Committee (MAC), progress the evolution and development of the Wholesale Electricity Market (WEM) and the WEM Rules

² The other two are Non-Co-optimised Essential System Services (NCESS), which are procured by AEMO or the Network Operator to support other system and network needs, and System Restart Services, which are used to restart the system following a widespread blackout.

2. Background

2.1 The FCESS framework

2.1.1 Frequency Co-optimised Essential System Service Process and Standards

There are five FCESS in the WEM:

- **Regulation** functions keep the frequency in the South West Interconnected System (SWIS) close to 50 Hz by offsetting minor mismatches between electricity supply and demand. It is provided by Facilities capable of receiving Automatic Generator Control (AGC) signals from AEMO.
 - **Regulation Raise** requires a Facility to increase output (or reduce consumption) to raise system frequency; and
 - **Regulation Lower** requires a Facility to reduce output (or increase consumption) to lower the system frequency.
- **Contingency Reserve** functions to arrest, stabilise, and restore the SWIS Frequency after a Contingency Event occurs. It is provided by Facilities which hold capability in reserve to rapidly adjust output or consumption in response to significant changes in their local frequency.
 - **Contingency Reserve Raise** service operates when there is a significant loss of generation; and
 - **Contingency Reserve Lower** service operates when there is a significant loss of load.
- **Rate of Change of Frequency (RoCoF) Control Service** functions to maintaining the RoCoF within the RoCoF Safe Limit. It is provided by Facilities which contribute inertia when synchronised to the power system.

Section 3.10 of the WEM Rules sets out the ESS Standards, requiring AEMO to:

- schedule and dispatch sufficient Regulation to ensure that the frequency in the SWIS is maintained within the Normal Operating Frequency Band and the Normal Operating Frequency Excursion Band;
- take into account the historic and expected variability of the frequency in the SWIS, when determining the quantity of Regulation to schedule and dispatch in accordance with clause 3.10.1; and
- schedule and dispatch sufficient Contingency Reserve and RoCoF Control Service to ensure that, in combination, following a Credible Contingency Event the frequency in the SWIS is maintained within the relevant Frequency Band and the RoCoF Safe Limit.

Section 3.11 sets out how AEMO must determine and procure FCESS to meet the requirements. Clause 3.11.7 sets out that AEMO must document in a WEM Procedure the methodologies and processes to be followed by AEMO in determining, for each pre-dispatch interval and dispatch interval:

- the quantity of Regulation to schedule and dispatch, including:
 - the identification and measurement of sources of variability; and
 - the method by which the quantity of Regulation required is calculated;
- the combination of Contingency Reserve and RoCoF Control Service required to maintain frequency in the SWIS within the Credible Contingency Event Frequency Band, including the use of Facility Speed Factors for a Facility; and
- the expected quantities of any other FCESS required in each Dispatch Interval or Pre-Dispatch Interval to meet the ESS Standards.

2.1.2 Supplementary Essential System Service Mechanism

The SESSM was introduced as a mechanism for procuring FCESS to provide a means for longer-term contractual arrangements in case of inadequate supply of FCESS in the Real-Time Market. The objectives of the SESSM are to

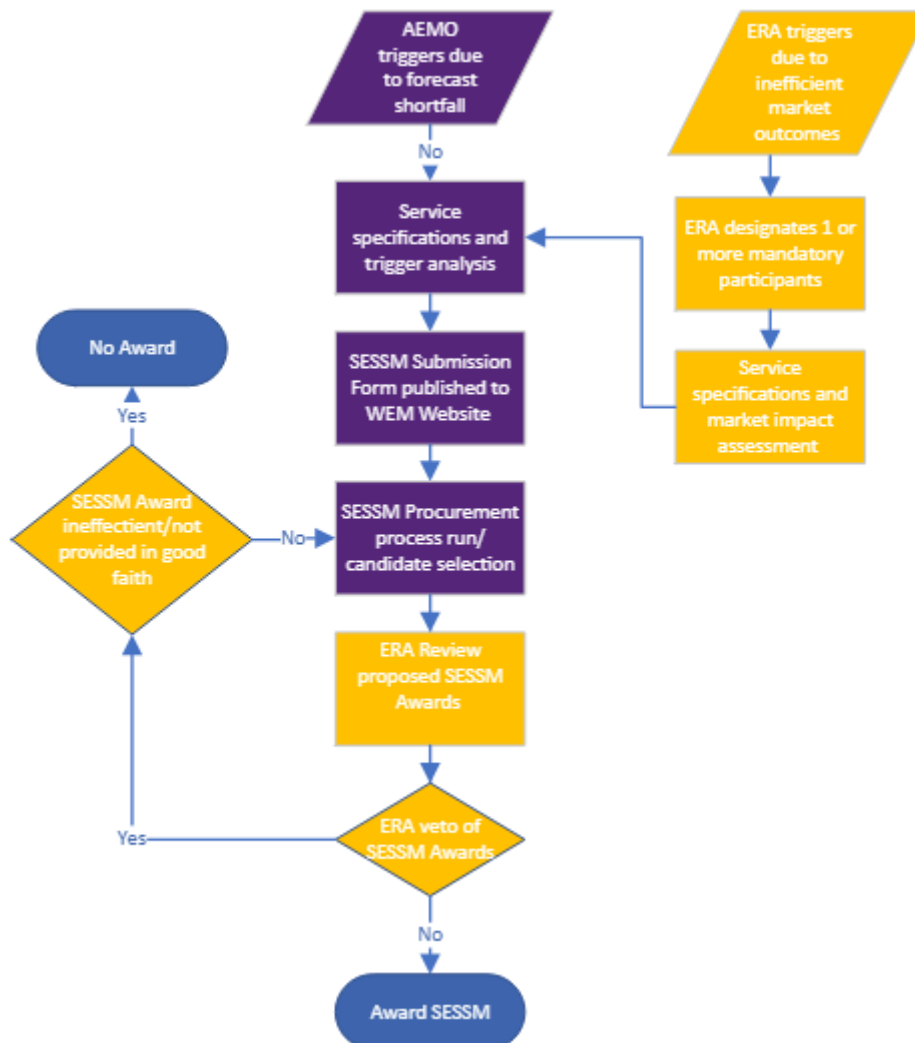
- incentivise new FCESS providers to enter the market;
- mitigate scarcity in FCESS markets, which may manifest as either as a shortfall of accredited facilities, or shortfall of participation; and
- mitigate the use of market power by:
 - providing a mechanism for competitive entry of new providers; and
 - allowing a mechanism of ex-ante review of the operating costs of ESS providers by the ERA.

The SESSM is triggered if:

- AEMO identifies a shortfall of FCESS capable Facilities and the shortfall cannot be met by Market Participants or the number of Dispatch Intervals in any 90 Trading Day period identified in clause 3.11.2(b) is greater than or equal to the threshold specified in the WEM Procedure referred to in clause 3.11.4; or if
- the ERA identifies through its monitoring activities that market outcomes are not consistent with efficient operation, or if the overall market prices are significantly above a level.

Figure 1 demonstrates the SESSM process.

Figure 1: SESSM process



AEMO is required to develop WEM Procedures relating to the SESSM. To date, these have not been developed.

A participant in the SESSM may receive a SESSM Award that contributes towards its fixed costs, which should provide additional incentive for investment in ESS-capable Facilities.

2.2 The need for review

Secure and reliable operation of the SWIS underpins the effectiveness and efficiency of the WEM. As transition to a lower emissions energy system characterised by increasing levels of intermittent and distributed generation continues, ESS become increasingly important to maintain power system security and reliability.

Participation in the FCESS markets in the new WEM which commenced on 1 October 2023 was essential for the new market to perform effectively at its inception. To ensure sufficient participation in the FCESS markets, all registered Facilities accredited for FCESS were required to offer their full accredited capability in the first six months following the New WEM Commencement Day. These transitional provisions ended on the 1 April 2024. As such, it is currently not mandatory for any facility to accredit for FCESS or participate in the FCESS markets.

Without the obligation for Facilities to accredit for FCESS, or to offer any accredited capacity into the market, there are risks that the Real-Time FCESS market may not be deliver the necessary service due to:

- insufficient participation (scarcity) resulting in shortfalls in FCESS provision;
- insufficient accredited FCESS providers entering the market, resulting in highly concentrated markets; and
- exercise of market power in highly concentrated markets, resulting in inefficient market outcomes.

Section 3.15 requires the Coordinator to complete the first review of the ESS Process and Standards within two and half years of new WEM commencement. However, the review can be carried out earlier if necessary. In this instance the Coordinator is conducting the Review early, due to:

- the transitional arrangements requiring all registered Facilities accredited for FCESS to offer their full accredited capability ended on the 1 April 2024;
- AEMO has not yet finalised several key procedures that support the ESS Framework, including the WEM Procedures relating the Low Reserve Conditions (including how AEMO assesses the probability of accredited ESS providers being insufficient to meet the ESS Standards, and two WEM Procedures relating to the SESSM Trigger);
- there have been persistent shortfalls in available FCESS since the start of the new WEM which have led to high FCESS costs; and
- the total costs of FCESS and FCESS Uplifts have been substantial, driven by significant increases in costs in all FCESS Market Services compared to their equivalents in the previous market³.

An output of a review of the ESS Process and Standards required under Section 3.15 is a review of the processes and effectiveness of the SESSM. It is therefore appropriate to undertake a review of SESSM in conjunction with the review on the ESS Process and Standards to ensure that the core processes and design elements of the SESSM and the relevant obligations are fit for purpose and work as intended.

³ [quarterly-energy-dynamics-q4-2023.pdf \(aemo.com.au\)](#)

3. Project Scope

3.1 Objective

3.1.1 Review of Essential System Service Process and Standards

The review of the ESS Process and Standards and the basis for setting the ESS requirements will aim to ensure that the existing standards are effective to ensure power system security and reliability can be maintained as the energy transition continues.

Clause 3.15 requires the Coordinator to carry out a review on the ESS Process and Standards and the basis for setting ESS requirements. In accordance with clause 3.15.1C., this review must include:

- technical analyses determining the relationship between the quantity of ESS scheduled and dispatched against the technical parameters in the Frequency Operating Standards;
- economic analyses determining the relationship between technical parameters (including, without limitation, frequency operating bands and Oscillation Control Constraint Equation parameters) and overall cost of supply of energy and ESS;
- a cost-benefit study on the effects on the Network and Market Participants of providing and using higher or lower levels of each ESS;
- identification of the costs and benefits of changing technical parameters, including the potential for increasing or decreasing the overall cost to supply energy and ESS;
- a review of the processes and effectiveness of the SESSM if it was triggered during the review period; and
- a public consultation process.

Clause 3.15.2 sets out that as part of this Review, the Coordinator, with the support of AEMO, must determine and publish a set of metrics to be used for ongoing monitoring of ESS, which must include:

- technical outcomes, such as dispatched ESS quantities, number of accredited Facilities, number of capable Facilities and the historical performance of those Facilities;
- financial outcomes, such as Market Clearing Prices and ESS costs; and
- economic outcomes, such as the overall electricity costs faced by consumers.

As this is the first review of the ESS Standards the development of these metrics is one of the objectives of this review.

As required by clause 3.15.3, the Coordinator will determine and publish the following as a part of this Review:

- whether any new ESS are required;
- whether there should be any changes to the ESS Process and Standards and the basis for setting ESS requirements; and
- the metrics and targets for to be used for the ongoing monitoring of ESS.

3.1.2 Review of the Supplementary Essential System Service Mechanism

The purpose for the review of the SESSM is to review the current SESSM process, including the process set out in section 3.15A of the WEM Rules and recommend any changes necessary to ensure that:

- the triggers for AEMO and the ERA are clear, fit for purpose and aligned to any failure of the market to achieve the future State Electricity Objective;⁴
- it incentivises new FCESS providers to enter the market and address any shortfalls in accreditation or participation in a timely manner;
- it is implemented through a timely, effective, efficient and transparent tender process;
- there is a prescribed timeframe and clear criteria for decisions on the trigger and the SESSM Award; and
- it mitigates the potential for the use of market power.

3.2 Project stages

3.2.1 Policy analysis and proposals - ESS

This stage will include reviewing:

- the ESS Process and Standards and the basis for setting the ESS requirement; and
- the performance and efficiency of the FCESS markets over the period from 1 October 2023, to identify whether the processes, design and rule obligations are fit for purpose and meet the WEM Objectives.

It will also include jurisdictional comparison of standards and governance frameworks.

This will incorporate:

- addressing the requirements of clause 3.15.1C of the WEM Rules as discussed in section 3.1.1; and
- developing the metrics to be used for the ongoing monitoring of ESS (as required by Clause 3.15.2);
- developing and consulting on policy positions and design solutions to address issue arising from the Review.

3.2.2 Policy analysis and proposals – SESSM

This stage will include reviewing the operation of the SESSM to identify whether the core processes and design elements and the consequent rule obligations are fit for purpose and work as intended given the proposed changes arising from the proposals developed for the ESS Framework.

⁴ The State Electricity Objective, once implemented, will be to: promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity in relation to:

- the quality, safety, security and reliability of supply of electricity; and
- the price of electricity; and
- the environment, including the reduction in greenhouse gas emissions.

3.2.3 Consultation

EPWA intends to consult with the MAC and a Working Group established under the MAC throughout the policy analysis and proposal stages, however will carry out consultation on both the proposals for the ESS Process and Standards and SESSM in one consultation paper in May 2025.

3.2.4 Rule drafting

The final step will be to draft and consult on the rules to give effect to the policy positions and detailed design. Changes will also be required to the relevant WEM Procedures.

3.3 Guiding Principles

The guiding principles for the Review is that any of the outcomes should:

- be consistent with the future State Electricity Objective, which is expected to be operational by the time this Review is finalised;
- be cost-effective, simple, flexible and sustainable,
- enable the orderly transition to a low emissions energy system characterised by higher levels of intermittent and distributed generation;
- allocate risks and responsibility to those who can manage them best;
- provide investment signals and technical capability requirements that support the reliable and secure operation of the power system; and
- ensure the FCESS providers are not over or under compensated for their participation in ESS markets or the SESSM.

3.4 Stakeholder engagement

The Review will be undertaken in close consultation with the MAC, directly through MAC meetings and through the establishment of a MAC Working Group, the ESS Framework Review Working Group (ESSFRWG). Participation in the ESSFRWG will not be limited to MAC members.

Energy Policy WA will develop consultation papers based on the outcomes from the ESSFRWG and MAC meetings and invite feedback from all stakeholders.

3.5 Out of Scope

The following is out of scope for the Review:

- a review of the fundamentals of the WEM established by the Energy Reform Taskforce. Any issues that are identified that relate to the fundamental principles of the WEM will be logged but will not be addressed in this Review; and
- matters already covered by other market development reviews.

4. Project Schedule

The following is a high-level project schedule for the Review.

Tasks/Milestones	Timing
Project inception	
Consult with the MAC on the Scope of Work and Terms of Reference for a MAC Working Group for the ESS Framework Review	2 May 2024
Commence the Review	1 July 2024
Engage a consultant to assist with the Review	July 2024
Nominations open for MAC ESS Framework Review Working Group (ESSFRWG)	1 July 2024
Inaugural meeting of MAC ESSFRWG	July 2024
Assess operation of the current ESS Process and Standards	
Undertake analysis of the current ESS Process and Standards against the State Electricity Objective to identify any market design issues and/or deficiencies, including the: <ul style="list-style-type: none"> basis for setting the ESS requirements; and the performance and efficiency of the FCESS markets over the period from 1 October 2023 	July - Sep 2024
Jurisdictional comparison of ESS Processes and Standards (or equivalent) using 3 electricity systems (to be agreed with EPWA) to inform assessment of the WEM framework	July - Sep 2024
Develop proposals for improved ESS Process and Standards for discussion with the ESSFRWG	Oct - Dec 2024
ESSFRWG monthly meetings and MAC update	As required and in accordance with MAC meeting schedule
Develop ESS metrics	
Develop proposed metrics to be used for the ongoing monitoring of ESS (as required by Clause 3.15.2) for discussion with the ESSFRWG	Dec - Jan 2025
Consultation with the MAC and ESSFRWG	Dec - April 2025
Assess existing SESSM provisions	
Undertake analysis of the existing SESSM WEM Rules against the State Electricity Objective to identify whether the core processes and design elements, and the relevant rule obligations are fit for purpose and work as intended.	Jan – Feb 2025
Jurisdictional comparison of similar frameworks/mechanisms in 3 electricity systems (to be agreed with EPWA) to inform assessment of the SESSM framework	Jan – Feb 2025
Develop proposals for improvements to the SESSM framework for discussion with ESSFRWG	Mar - Apr 2025
ESSFRWG monthly meetings and MAC update	As required and in accordance with MAC meeting schedule

Tasks/Milestones	Timing
Consultation on analysis and proposals for improvements to the ESS and SESSM frameworks and relevant WEM Rules	
Develop Consultation Paper with proposed outputs from the Review	Apr - May 2025
Review and consolidate submissions received on the Consultation Paper, propose responses and changes to address comments, and undertake any further assessment required	June 2025
Develop and publish an Information Paper outlining the final review outcomes with a summary of stakeholder consultation.	June - July 2025
ESSFRWG monthly meetings and MAC update	As required and in accordance with MAC meeting schedule
Rule Drafting	
Develop Exposure Draft of WEM Amending Rules to give effect to the outcomes of the Review for stakeholder consultation	June - July 2025
Assess submissions in response to the WEM Amending Rules Exposure Draft, and propose any necessary changes to the Draft WEM Amending Rules to address comments	August 2025