AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Under Frequency Load Shedding Requirements

August 2026





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 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

This document has been prepared by AEMO as required by clause 3.6.1 of the Electricity System and Market Rules (ESM Rules) and has effect only for the purposes set out in the ESM Rules. The ESM Rules prevail over this document to the extent of any inconsistency.

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 ESM 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.

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Version control

Version	Release date	Changes
1.0	01/06/2022	-
2.0	03/05/2023	-
3.0	18/08/2026	UFLS Requirements reviewed in accordance with clause 3.6.11 of the ESM Rules. No changes required; minor formatting updates only.

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1 Introduction

1.1 Purpose and scope

The Under Frequency Load Shedding Requirements (UFLS Requirements) are determined by AEMO under section 3.6 of the Electricity System and Market Rules (ESM Rules) and provide guidance to Network Operators in accordance with clause 3.6.2 of the ESM Rules.

The purpose of this document is to establish a set of requirements to enable each Network Operator whose Network is impacted by the UFLS Requirements to design and implement automatic Under Frequency Load Shedding (UFLS) schemes that support Power System Security in respect of its Network.

In accordance with clause 3.6.1 of the ESM Rules, AEMO must:

(a) subject to clause 3.6.3 of the ESM Rules, determine the UFLS Requirements, taking into account the SWIS Frequency Operating Standards; and

(b) publish the UFLS Requirements, and any amendments to them, on the WEM Website.

In accordance with clause 3.6.2 of the ESM Rules, the UFLS Requirements must include the following guidance:

(a) the quantity of load required for shedding, or guidance on how to determine the required quantities;

(b) prioritisation of load types;

(c) details of any staging requirements;

(d) initiation criteria;

(e) speed of operation;

(f) any required variation in settings or functional requirements based on conditions in the SWIS; and

(g) any other relevant matters required to support Power System Security.

1.2 Glossary

Terms defined in the ESM Rules and WEM Procedures have the same meanings in this document.

2 UFLS Requirements

2.1 Network Operator requirement

Each Network Operator must install and maintain an automatic UFLS scheme and associated processes to meet the requirements set out in this document.

2.2 Load quantity and staging requirements

The Network Operator must use reasonable endeavours to ensure that its UFLS scheme:

(a) in aggregate, targets 75% of the system load available at any time for interruption, where system load is the sum of generation injection into the SWIS, measured at the generator terminals;

(b) has five stages, each targeting 15% of the system load; and

(c) has a relay time delay setting of 0.4 second for each stage with the maximum clearance time minimised[1].

Load allocated to the UFLS scheme for shedding may also include large individual load connections, where it is possible to do so, provided that the Network Operator has considered the associated impacts of losing that individual load.

2.3 Prioritisation

The Network Operator must use reasonable endeavours to assign sufficient loads to the required stages of the UFLS scheme. In doing so, the Network Operator may take into account the nature of an individual load and assign loads to a lower or higher stage, depending on the impact of shedding that load. In general, the Network Operator must prioritise the allocation of the available load to the earlier stages, i.e. stage 1 has the highest priority.

The Network Operator must also consider auxiliary supplies to substations, power stations and communications infrastructure supporting the real-time operation of the SWIS, and either avoid shedding or give a lower priority compared to other loads.

Where the Network Operator becomes aware that it is unlikely to meet the aggregate load shedding requirement specified in paragraph 2.2(a) of this document, and the shortfall is significant enough to represent a potential risk to Power System Security, the Network Operator must notify AEMO as soon as practicable after it becomes aware of the shortfall, and must coordinate with AEMO to implement any mitigation steps, as agreed with AEMO, in order to manage any identified risks to Power System Security arising from the shortfall.

[1] The actual clearance time will be greater than 0.4 seconds, as it includes (among other matters) any relay processing times, communications latency, and circuit breaker operation times.

2.4 Initiation requirements

The Network Operator must ensure that each stage of the UFLS scheme initiates shedding at the frequencies listed in Table 1, where the frequency is measured by the UFLS scheme at a point on the Network Operator's Network that is electrically close to where the scheme initiates the load shedding.

Table 1 UFLS scheme initiation requirements

Stage	Initiation Threshold (Hz)	Load Shed Quantity (%)
1	48.75	15
2	48.50	15
3	48.25	15
4	48.00	15
5	47.75	15

Individual loads allocated to the UFLS scheme for shedding as described in paragraph 2.2 may also have individual initiation thresholds separate to those described in Table 1, provided that the Network Operator has considered the associated impacts of losing that individual load at that initiation threshold in meeting the overall UFLS Requirements.

2.5 Additional UFLS scheme requirements

The Network Operator must use reasonable endeavours to ensure that the South West Interconnected System (SWIS), and islandable parts of the SWIS where practicable, remain stable following operation of the UFLS scheme, and that system voltages remain within permissible ranges[2].

The UFLS scheme must be designed such that, where possible, the Network Operator is able to monitor when critical elements of the scheme are unavailable (e.g. a particular relay in a particular substation).

The Network Operator must be able to reasonably establish whether the scheme operated correctly, including (where possible) measuring or estimating:

(a) the frequency that initiated the scheme at each applicable location;

(b) the timing of actual load shedding at each applicable location, including measurements as applicable:

- activation of the scheme;
- relay pickup times;
- communication times; and
- circuit breaker operation times;

(c) a reasonable estimate of the quantity of load shed.

[2] System voltages may not be kept within permissible ranges in some operational scenarios, including multiple and/or non-credible contingencies.

The Network Operator must ensure that the quantity of load available at any point in time on each stage is able to be measured or estimated with a reasonable degree of accuracy, such that it can be sent to AEMO via a SCADA ICCP interface and updated at least every 30 seconds.