



Wholesale Electricity Market

Flexible Capacity minimum eligibility requirements for the 2025 Reserve Capacity Cycle: FCMER_2025

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Australian Energy Market Operator Ltd ABN 94 072 010 327

Notice of call for submissions

Clause 4.10.1A(c) of the Wholesale Electricity Market (WEM) Rules

Closing date for submissions

20 December 2024

This notice informs all Rule Participants and interested parties that AEMO has published a consultation paper in respect of the minimum eligibility requirements of Flexible Capacity. AEMO invites submissions on this consultation, including any alternative options you consider may better meet the Wholesale Market Objectives set out in section 122(2) of the *Electricity Industry Act 2004* (WA) (and clause 1.2.1 of the WEM Rules).

All submissions must be provided in PDF or Microsoft Word format by email to WA.FutureSystemDesign@aemo.com.au. Please send any queries about this consultation to the same email address.

AEMO is not obliged to consider submissions received after the closing date and time. Any late submissions should explain the reason for lateness and the detriment to person making the submission if AEMO does not consider their submission.

All submissions will be published on the WEM Website, with the exception of any content that is identified as confidential. A person making a submission must identify any parts of the submission that they believe should remain confidential and explain why that content cannot be published. AEMO may still publish the information if it does not consider it to be confidential but will consult with the relevant parties before doing so.

Consultation summary

Consultation name:	FCMER_2025
What is proposed to be changed?	Initial minimum eligibility requirement as required by clause 4.10.1A(a) of the WEM Rules (as gazetted).
Why are the changes being made?	<p>Clause 4.10.1A(a) of the WEM Rules requires AEMO to determine, in Year 1 of a Reserve Capacity Cycle, the minimum eligibility requirements for receiving Flexible Certified Reserve Capacity.</p> <p>Clause 4.10.1A was gazetted in late 2023¹ and comes into operation at a time specified by the Minister in a notice published in the Government Gazette. AEMO expects a commencement notice to be gazetted prior to the date specified in clause 4.1.4 of the WEM Rules for the 2025 Reserve Capacity Cycle (15 January 2025).</p>
What are the anticipated outcomes and impact?	Determination of the Flexible Capacity minimum eligibility requirements allows AEMO to certify Flexible Certified Reserve Capacity for the 2025 Reserve Capacity Cycle.
How do the changes achieve the Wholesale Market Objectives?	<p>AEMO considers that the proposed minimum eligibility requirements are consistent with the:</p> <ul style="list-style-type: none"> • Electricity Industry Act 2004 (WA); • WEM Regulations; • WEM Rules; and • Wholesale Market Objectives. <p>Further discussion of the alignment with the Wholesale Market Objectives appears in section 3.2.</p>

¹ See https://www.wa.gov.au/system/files/2023-12/wholesale_electricity_market_amendment_reserve_capacity_reform_rules_2023.pdf.

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1. Consultation and publication process

1.1. Consultation

Clause 4.10.1A was gazetted in late 2023² and comes into operation at a time to be specified by the Minister in a notice published in the government gazette. AEMO expects a commencement notice to be gazetted prior to the date specified in clause 4.1.4 of the WEM Rules for the 2025 Reserve Capacity Cycle (15 January 2025).

Clause 4.10.1A(c) of the WEM Rules requires that AEMO must consult with Market Participants on the proposed minimum eligibility requirements for receiving Flexible Certified Reserve Capacity before publishing them, except if AEMO does not propose changes to the eligibility requirements last published. AEMO's consultation must include:

1. a statement of how the minimum eligibility requirements meet the market objectives; and
2. responses to Market Participant submissions.

Paragraph 5.1.1 of the WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity³ requires that where AEMO proposes changes to the minimum eligibility requirements, AEMO must:

1. publish a call for submissions from Market Participants on the proposed minimum eligibility requirements at least 35 Business Days prior to the date and time specified in clause 4.1.4 for the relevant Reserve Capacity Cycle; and
2. ensure the due date for submissions is not less than 15 Business Days from the date of publication of the call for submissions.

AEMO intends to publish the determination by 14 January 2025.

1.2. Publication

Paragraph 6.1.1 of the WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity requires that AEMO must publish the following information on the WEM Website by the date and time specified in clause 4.1.4 of the WEM Rules for the relevant Reserve Capacity Cycle:

1. the final minimum eligibility requirements;
2. where AEMO has undertaken consultation:
 - (a) a statement of how the minimum eligibility requirements meet the Wholesale Market Objectives;
 - (b) the technical parameters associated with the Benchmark Flexible Capacity Provider used in the determination of the proposed minimum eligibility requirements;
 - (c) the reason for any changes from the proposed minimum eligibility requirements published in the consultation;

² See https://www.wa.gov.au/system/files/2023-12/wholesale_electricity_market_amendment_reserve_capacity_reform_rules_2023.pdf.

³ The WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity is currently undergoing consultation and is expected to be approved in December 2024. The Procedure Change Proposal for this Procedure is available here: <https://aemo.com.au/energy-systems/electricity/wholesale-electricity-market-wem/procedures-policies-and-guides/procedures/ongoing-procedure-change-proposals>.

- (d) the reason for any changes to the minimum eligibility requirements published for the previous Reserve Capacity Cycle;
- (e) a summary of the submissions received and a response to the issues raised in those submissions; and
- (f) any other information AEMO considers relevant in the determination of the final minimum eligibility requirements.

1.3. Consultation timeline

AEMO’s indicative timeline for this consultation is outlined below. Dates may be adjusted depending on the number and complexity of issues raised in submissions and any meetings with stakeholders.

Process Stage	Indicative date
Publication of consultation	22 November 2024
Closing date for submissions	20 December 2024
Publication of consultation outcomes	14 January 2025
Publication of the minimum eligibility requirements	14 January 2025

Before the closing date for submissions, stakeholders may request a meeting with AEMO to discuss the issues and proposed changes raised in this consultation.

2. Regulatory requirements

2.1. Requirements for consultation

Clause 4.10.1A(c) of the WEM Rules requires AEMO to consult with Market Participants on the proposed minimum eligibility requirements for receiving Flexible Certified Reserve Capacity where the proposed minimum eligibility requirements vary from the previous year.

This consultation sets the initial minimum eligibility requirements.

Paragraph 5.1.1 of the WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity requires that, where AEMO proposes changes to the minimum eligibility requirements, AEMO must publish the following information as part of the consultation:

1. the proposed minimum eligibility requirements;
2. the reason for any adjustments to the minimum eligibility requirements published for the previous Reserve Capacity Cycle;
3. a statement of how the minimum eligibility requirements meet the Wholesale Market Objectives;
4. the technical parameters associated with the Benchmark Flexible Capacity Provider used in the determination of the proposed minimum eligibility requirements; and
5. any other information AEMO considers relevant in the determination of the proposed minimum eligibility requirements.

2.2. Requirements for the minimum eligibility requirements

Clause 4.10.1A(a) of the WEM Rules requires that AEMO determine the minimum eligibility requirements for receiving Flexible Certified Reserve Capacity which, as at the time of this consultation, can be summarised as:

Requirement	Non-Intermittent Generating System	Intermittent Generating System	Electric Storage Resource	Demand Side Programme	Relevant sub-clause of 4.10.1A(a)
The maximum allowed minimum stable loading level expressed as a percentage of nameplate capacity	Y	Y	N/A	N/A	(i)1, (ii)1,
The minimum allowed ramp up rate expressed in percent of nameplate capacity per minute	Y	Y	Y	Y	(i)2, (ii)2, (iii)3, (iv)1.
The minimum allowed ramp down rate expressed in percent of nameplate capacity per minute	Y	Y	Y	Y	(i)3, (ii)3, (iii)4, (iv)2.
The maximum time (in minutes) allowed between receiving a Dispatch Instruction when in a particular state and operating in a specific way	From cold state to the minimum stable loading level	From being fully curtailed to the minimum stable loading level	N/A	Must be no more than five minutes	(i)4, (ii)4, (iv)3.
Capable from switching from charging to discharging (and vice versa) in a single Dispatch Interval	N/A	N/A	Y	N/A	(iii)1, (iii)2,
Fast Start Facility	Y	Y	Y	N/A	(i)5, (ii)5, (iii)5, and also clause 4.11.1(bH)

To assist with this consultation, an excerpt of clause 4.10.1A(a) of the WEM Rules appears in Appendix A. Note that AEMO’s understanding is that the Coordinator of Energy intends to amend parts of these requirements – particularly the requirement for Fast Start for Intermittent Generating Systems and Electric Storage Resources.

Clause 4.10.1A(b) of the WEM Rules sets additional requirements such that AEMO determines the minimum eligibility requirements:

1. taking into account the technical parameters of the Benchmark Technology Provider for Flexible Capacity determined under clause 4.16.12(b);
2. such that each Facility holding Flexible Certified Reserve Capacity will be capable of providing all of its capacity promptly and flexibly in the four-hour period ending in the Trading Interval used to determine the expected highest forecast Four-Hour Demand Increase under clause 4.5.10(bA)(ii); and
3. so as to minimise costs while maintaining Power System Security and Power System Reliability.

Paragraph 4.1.1 of the WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity states that AEMO may consider the following factors in proposing and determining the minimum eligibility requirements:

1. the requirements of a Dispatch Inflexibility Profile for a Fast Start Facility in accordance with clause 7.4.45 of the WEM Rules;
2. the forecast Four-Hour Demand Increase published in the most recent Statement of Opportunities Report for the relevant Reserve Capacity Cycle; and
3. the capabilities of the current fleet of Fast Start Facilities.

3. Consultation requirements

3.1. The reason for any adjustments to the minimum eligibility requirements published for the previous Reserve Capacity Cycle

This is the first time AEMO will set the minimum eligibility requirements.

3.2. Statement of how the minimum eligibility requirements meet the Wholesale Market Objectives

The Wholesale Market Objectives are outlined in section 122(2) of the *Electricity Industry Act 2004* (WA) and are repeated in clause 1.2.1 of the WEM Rules.

AEMO considers that the proposed minimum eligibility requirements meet the Wholesale Market Objectives as follows:

Objective	Comment
Promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system	The proposed minimum eligibility requirements are not inconsistent with this objective.
Encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors	The proposed minimum eligibility requirements encourage competition by minimising cost and maximising the opportunity for current Facilities which manage ramping events to participate, and equivalent Facilities to participate in future.
Avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions	The proposed minimum eligibility requirements do not discriminate between energy options and technologies, other than to the extent required by the WEM Rules.
Minimise the long-term cost of electricity supplied to customers from the South West interconnected system	The proposed minimum eligibility requirements minimise long term costs by setting the minimum eligibility requirements such that no current Fast Start Facilities are excluded.
Encourage the taking of measures to manage the amount of electricity used and when it is used	The proposed minimum eligibility requirements are not inconsistent with this objective.

In addition, AEMO contends that compliance with clause 4.10.1A(b) of the WEM Rules indicates alignment with the Wholesale Market Objectives. AEMO has complied with clause 4.10.1A(b) in the following manner:

Requirement of clause 4.10.1A(b)	Comment
Take into account the technical parameters of the Benchmark Technology Provider for Flexible Capacity determined under clause 4.16.12(b)	This requirement has been taken into account and is discussed in section 3.3.

Requirement of clause 4.10.1A(b)	Comment
Ensure that each Facility holding Flexible Certified Reserve Capacity will be capable of providing all of its capacity promptly and flexibly in the four-hour period ending in the Trading Interval used to determine the expected highest forecast Four-Hour Demand Increase under clause 4.5.10(bA)(ii)	This requirement has been taken into account and is discussed in section 3.4.1.
Minimise costs while maintaining Power System Security and Power System Reliability	This requirement has been taken into account and is discussed in sections 3.4.3, 3.4.4 and 3.4.5.

3.3. Technical parameters associated with the Benchmark Flexible Capacity Provider used in the determination of the proposed minimum eligibility requirements

The Coordinator of Energy sets the Benchmark Technology Provider for Flexible Capacity determined under clause 4.16.12(b) of the WEM Rules. The last determination was made in December 2023.⁴

The technical parameters associated with the Benchmark Flexible Capacity Provider used in the determination of the proposed minimum eligibility requirements are a lithium battery energy storage system with:

1. 200 MW injection;
2. 800 MWh energy storage; and
3. a 330 kV connection near Kwinana or Pinjar.

Assuming linear ramping over the entire Electric Storage Resource discharge of 4 hours, the minimum allowed ramp up rate and ramp down rate expressed as a percentage of nameplate capacity per minute would be 0.42% (or 0.83 MW/min for a 200 MW Electric Storage Resource). This is discussed further in section 3.4.5.

As Electric Storage Resources are generally able to transition from Withdrawal to Injection without any inflexibility, and in fact are required to in order to receive Flexible Capacity Credits⁵, AEMO considers that the Benchmark Technology Provider for Flexible Capacity should not inform the determination of minimum stable loading level.

3.4. Other relevant information

3.4.1. 4-hour delivery

Clause 4.10.1A(b) of the WEM Rules requires AEMO to ensure that each Facility holding Flexible Certified Reserve Capacity will be capable of providing all of its capacity promptly and flexibly in the four-hour period ending in the Trading Interval used to determine the expected highest forecast Four-Hour Demand Increase.

Given the impacts of the Benchmark Technology Provider for Flexible Capacity, this requirement does not seem to add additional limitations.

⁴ Available at https://www.wa.gov.au/system/files/2023-12/coordinator_of_energy_determination_-_benchmark_capacity_provider.pdf.

⁵ Clause 4.10.1A(a)(iii)(2) requires that that and Electric Storage Resource must be capable of switching from discharging to charging within a single Dispatch Interval.

3.4.2. Fast Start Facility requirements

Clause 4.10.1A(a) of the WEM Rules requires that a Separately Certified Component of a Scheduled Facility or Semi-Schedule Facility that is a Non-Intermittent Generator, Intermittent Generator or Electric Storage Resource must have Fast Start capability.

In the current WEM Rules, a Fast Start Facility is a Scheduled Facility or Semi-Scheduled Facility that is capable of:

1. synchronising and changing its rate of Injection or Withdrawal within 30 minutes of receiving a Dispatch Instruction from AEMO; and
2. shutting down within 60 minutes from the time the Dispatch Instruction to synchronise was issued.

The requirement for those Facilities to be capable of providing Fast Start capability means:

Requirement	Value
Maximum time (in minutes) allowed between receiving a Dispatch Instruction when in a cold state and operating at the minimum stable loading level:	30

3.4.3. Current fleet of Fast Start Facilities

Paragraph 4.1.1 of the WEM Procedure: Minimum eligibility requirements for Flexible Certified Reserve Capacity states that AEMO may consider the capabilities of the current fleet of Fast Start Facilities.

AEMO’s assessment indicates that current committed Facilities would meet the Flexible Reserve Capacity Requirement in the 2024-25 Reserve Capacity Year. Clause 4.10.1A(b)(iii) of the WEM Rules requires AEMO determine the minimum eligibility requirements so as to minimise costs while maintaining Power System Security and Power System Reliability. As such the current fleet of Fast Start Facilities sets the upper boundary on all relevant minimum eligibility requirements, and therefore the requirement for all Facility Technology Types and Facility Classes is:

Requirement	Value
Maximum minimum stable loading level as a percentage of nameplate capacity:	46%

The minimum ramp up and ramp down rates for the current fleet of Fast Start Facilities (expressed as a percentage of nameplate capacity per minute) is 3% MW/min which is discussed further in section 3.4.5.

3.4.4. Demand Side Programme

Clause 4.10.1A(a)(iv)(3) of the WEM Rules requires that, for a Demand Side Programme, the maximum time (in minutes) allowed between receiving a Dispatch Instruction and beginning to change output, must be no more than five minutes.

Clause 4.10.1A(b)(iii) of the WEM Rules requires AEMO determine the minimum eligibility requirements so as to minimise costs while maintaining Power System Security and Power System Reliability. Therefore:

Requirement	Value
Maximum time (in minutes) allowed between receiving a Dispatch Instruction and beginning to change output, which must be no more than five minutes:	5

3.4.5. Ramp rates

Based on clauses 4.10.1A(b)(i) and 4.10.1A(b)(iii) of the WEM Rules, the minimum ramp rates for Flexible Capacity (expressed as a percentage of nameplate capacity per minute) must be between:

1. 0.42% – based on the technical parameters of the Benchmark Technology Provider for Flexible Capacity (as discussed in section 3.3) which is an Electric Storage Resource; and
2. 3% – based on the current fleet (as discussed in section 3.4.3).

Clause 4.10.1A(b)(iii) of the WEM Rules requires AEMO to determine the minimum eligibility requirements so as to minimise costs while maintaining Power System Security and Power System Reliability. Therefore, the minimum ramp rates for Flexible Capacity (expressed as a percentage of nameplate capacity per minute) for all Facility Technology Types and Facility Classes should be 3% as:

1. current Electric Storage Resources have ramp rates far in excess of 3%;
2. future Electric Storage Resources are not expected to have a ramp rate less than 3%; and
3. a ramp rate less than 3% may require more Facilities in the future to meet the Flexible Reserve Capacity Requirement and maintain Power System Security.

Which means:

Requirement	Value
Minimum allowed ramp up rate expressed as a percentage of nameplate capacity per minute:	3%
Minimum allowed ramp down rate expressed in percent of nameplate capacity per minute:	3%

3.4.6. Intermittent Generating System

Standing Data for Intermittent Generating Systems in Appendix 1 of the WEM Rules allows for a minimum stable loading level. However, for all existing Intermittent Generating Systems, the minimum stable loading level is zero.

As Intermittent Generating Systems have no capability to ramp up, the only situation where an Intermittent Generating System could have a non-zero minimum stable loading level and return to that level following curtailment to zero, is where the fuel resource (such as wind or sun) allows. As such, following the release of the constraint to zero, the return to the minimum stable loading level would be instantaneous (allowing for standard response times to Dispatch Instructions).

The standard response time to Dispatch Instructions is less than one Dispatch Interval. Therefore, for consistency with Demand Side Programmes:

Requirement	Value
Maximum time (in minutes) allowed between receiving a Dispatch Instruction when fully curtailed and operating at the minimum stable loading level:	5

3.5. Proposed minimum eligibility requirements

Based on the above, AEMO proposes that the minimum eligibility requirements for Flexible Capacity are:

Requirement	Non-Intermittent Generating System	Intermittent Generating System	Electric Storage Resource	Demand Side Programme
The maximum allowed minimum stable loading level expressed as a percentage of nameplate capacity	46%	46%	N/A	N/A
The minimum allowed ramp up rate expressed as a percentage of nameplate capacity per minute	3%	3%	3%	3%
The minimum allowed ramp down rate expressed as a percentage of nameplate capacity per minute	3%	3%	3%	3%
The maximum time (in minutes) allowed between receiving a Dispatch Instruction when in a particular state and operating in a specific way ⁶	30	5	N/A	5
Capable from switching from charging to discharging (and vice versa) in a single Dispatch Interval	N/A	N/A	Y	N/A
Fast Start Facility	Y	Y	Y	N/A

⁶ The relevant particular states are: for a Non-Intermittent Generating System, from a cold state to operating at the minimum stable loading level; for an Intermittent Generating System from fully curtailed to operating at the minimum stable loading level; and for a Demand Side Programme, from receiving the Dispatch Instruction and beginning to change output.

Appendix A. Excerpt of clause 4.10.1A(a)

As of this consultation document, clause 4.10.1A(a) requires that AEMO must determine in Year 1 of a Reserve Capacity Cycle the minimum eligibility requirements for receiving Flexible Certified Reserve Capacity which are:

i. for a Non-Intermittent Generating System:

1. the maximum allowed minimum stable loading level of the Non-Intermittent Generating System expressed as a percentage of nameplate capacity;
2. the minimum allowed ramp up rate expressed as a percent of nameplate capacity per minute;
3. the minimum allowed ramp down rate expressed as a percent of nameplate capacity per minute;
4. the maximum time (in minutes) allowed between receiving a Dispatch Instruction when in a cold state and operating at the minimum stable loading level; and
5. if the Non-Intermittent Generating System is part of a Scheduled Facility or Semi-Scheduled Facility, that Facility is to be classed as a Fast Start Facility;

ii. for an Intermittent Generating System:

1. the maximum allowed minimum stable loading level of the Intermittent Generating System expressed as a percentage of nameplate capacity;
2. the minimum allowed ramp up rate expressed as a percent of nameplate capacity per minute;
3. the minimum allowed ramp down rate expressed as a percent of nameplate capacity per minute;
4. the maximum time (in minutes) allowed between receiving a Dispatch Instruction when fully curtailed and operating at the minimum stable loading level; and
5. if the Intermittent Generating System is part of a Scheduled Facility or Semi-Scheduled Facility, that Facility is to be classed as a Fast Start Facility;

iii. for an Electric Storage Resource:

1. that the Electric Storage Resource is capable of switching from charging to discharging within a single Dispatch Interval;
2. that the Electric Storage Resource is capable of switching from discharging to charging within a single Dispatch Interval;
3. the minimum allowed ramp up rate expressed as a percent of nameplate capacity per minute;
4. the minimum allowed ramp down rate expressed as a percent of nameplate capacity per minute; and
5. if the Electric Storage Resource is part of a Scheduled Facility or Semi-Scheduled Facility, that Facility is to be classed as a Fast Start Facility;

iv. for a Demand Side Programme:

1. the minimum allowed ramp up rate expressed as a percent of Certified Reserve Capacity per minute;
2. the minimum allowed ramp down rate expressed as a percent of Certified Reserve Capacity per minute; and
3. the maximum time (in minutes) allowed between receiving a Dispatch Instruction and beginning to change output, which must be no more than five minutes.