

NCESS SERVICE SPECIFICATION: FAST FREQUENCY RESPONSE SERVICE

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1. INTRODUCTION

1.1. Purpose and scope

- 1.1.1. This NCESS Service Specification has been prepared in accordance with clauses 3.11B.4(b) and 3.11B.5 of the Wholesale Electricity Market Rules (WEM Rules). It includes:
- (a) the service requirements;
 - (b) the expected technical capability of a facility or equipment that may be able to provide the service;
 - (c) where applicable, the likely network location where the service is to be provided;
 - (d) the maximum quantity of the service required;
 - (e) the timing and duration of the service;
 - (f) any operational requirements or limitations;
 - (g) the material contractual terms associated with the NCESS, including required pricing structure;
 - (h) the selection criteria that may apply to the NCESS Submissions; and
 - (i) any other relevant matters.

1.2. Definitions

- 1.2.1. Terms defined in the *Electricity Industry Act 2004*, the WEM Regulations and the WEM Rules have the same meanings in this document unless the context requires otherwise.
- 1.2.2. The following definitions apply in this document unless the context requires otherwise.

Table 1 Definitions

Term	Meaning
Availability Period	The period specified in paragraph 2.5.2 of this document.
Continuous Response	Has the meaning given in the FCESS Accreditation Procedure. ¹
FCESS	Has the meaning given to “Frequency Co-optimised Essential System Service” in the Wholesale Electricity Market Amendment (Tranches 2 and 3 Amendments) Rules 2020. ²
FCESS Accreditation Procedure	The WEM Procedure: Frequency Co-optimised Essential System Services Accreditation ³ .
FFR Service	Has the meaning given in paragraph 2.1.1 of this document.

¹ Continuous Response definition: “A manner of providing a Contingency Reserve Raise or Contingency Reserve Lower where that response delivers a variable amount of service commensurate with the size of the frequency disturbance (including using Droop Response)”.

² Frequency Co-optimised Essential System Service definition: “Means an Essential System Service as defined in clause 3.9.1 to clause 3.9.7”. The Amending Rules for clauses 3.9.1 to 3.9.7 (for the purposes of the Frequency Co-optimised Essential System Service definition) have been made, but no commencement date has been specified.

³ https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2021/frequency-co-optimised-ess-accreditation-wem-procedure-v10.pdf

Term	Meaning
High-Resolution Time Synchronised Data Recorder	Has the meaning given in the FCESS Accreditation Procedure. ⁴
Maximum NCESS Contract Amount	The maximum amount payable to the NCESS provider under the NCESS Contract, based on an assumption that the NCESS provider makes the FFR Service available, and is required to enable the FFR Service, for each Trading Interval in the Availability Period.
Performance Requirements	Has the meaning given in the FCESS Accreditation Procedure. ⁵

⁴ High-Resolution Time Synchronised Data Recorder definition: “Measurements of the following types of data but not limited to: 1. Substation busbar voltage, current, real and Reactive Power output (MW and MVAR) and frequency; and 2. Circuit breaker and protection devices status”.

⁵ Performance Requirements definition: “FCESS requirements which must be met for a Facility to be accredited in accordance with paragraph 3 and must be met by a Facility when enabled for a FCESS.

1. for Regulation Raise and Regulation Lower, the relevant Performance Requirements detailed in paragraph 4.1;
2. for Contingency Reserve Raise, the relevant Performance Requirements detailed in paragraph 4.2;
3. for Contingency Reserve Lower, the relevant Performance Requirements detailed in paragraph 4.2; and
4. for RoCoF Control Service, the relevant Performance Requirements detailed in paragraph 4.3”.

2. NCESS SERVICE SPECIFICATION (TECHNICAL)

2.1. Service requirements

2.1.1. This NCESS Service Specification is for a fast frequency response service, measured in MW of response capability, that enables a facility or equipment to adjust injection or withdrawal to raise the SWIS Frequency.

2.2. Expected technical capability of facility or equipment that may be able to provide service

2.2.1. The expected technical capability of a facility or equipment that may be able to provide the FFR Service is that it satisfies all of the following requirements:

- (a) the Performance Requirements for Contingency Reserve Raise specified in the FCESS Accreditation Procedure;
- (b) the requirements specified in the WEM Procedure: Communications and Control Systems, as applicable to Contingency Reserve Raise, including the requirements to install and maintain a suitable High Resolution Time Synchronised Data Recorder and to maintain SCADA data; and
- (c) the following additional requirements:
 - (i) the speed of response for the facility or equipment (which must be determined in a manner that is consistent with the process for determining a Facility Speed Factor under paragraph 7.2 of the FCESS Accreditation Procedure) must be less than the equivalent of a Facility Speed Factor of 0.2 seconds (equivalent to full response in under 1 second to a step frequency change); and
 - (ii) (subject to any instruction from AEMO to the NCESS provider under the NCESS Contract to delay enablement) the FFR Service must be capable of being re-enabled for the contract quantity within 15 minutes after the SWIS Frequency Recovers⁶ following a Contingency Event.

2.3. Likely network location where service to be provided

2.3.1. The FFR Service may be provided at any location in the SWIS, excluding the following areas:

- (a) locations east of Merredin terminal;
- (b) within the Cunderdin and Narrogin South 220 kV network; and
- (c) locations north of Northern terminal.

2.4. Maximum quantity of service required

2.4.1. The maximum quantity of the FFR Service required (for all NCESS Contracts) is 100 MW.

2.4.2. The minimum quantity of the FFR Service required (for each NCESS Contract) is 25 MW.

⁶ The WEM Rules define "Recover" in relation to SWIS Frequency Operating Standards as "the time at which the SWIS Frequency returns to the applicable Normal Operating Frequency Band, provided it does not go outside that range at any time over the following 1 minute".

2.4.3. An NCESS Submission may specify any quantity of the FFR Service up to a maximum quantity. The maximum quantity must be determined using a process that is consistent with the process for determining a maximum quantity of Contingency Reserve Raise specified in paragraph 7.1 of the FCESS Accreditation Procedure, at temperatures up to 45°C.

2.5. Timing and duration of service

2.5.1. Subject to the NCESS Contract, during the Availability Period, the NCESS provider must make the FFR Service available and (when required to do so by AEMO) must enable the FFR Service.

2.5.2. The Availability Period is:

- (a) between 08:00 and 16:00 on each Trading Day from 1 October 2022 to 31 May 2023 (summer and shoulder seasons); and
- (b) between 10:00 and 14:00 on each Trading Day from 1 June 2023 to 30 September 2023 (winter season).

2.5.3. The duration of the FFR Service (when required to be enabled in accordance with paragraph 2.6) is each 30-minute Trading Interval in the enablement period. The enablement period may be any one or more Trading Intervals in the Availability Period.

2.6. Operational requirements and limitations

2.6.1. AEMO may require the NCESS provider to enable the FFR Service for any quantity up to the contract quantity by notifying the NCESS provider up to 3 hours in advance of the enablement period. The notice will specify the Trading Intervals in the enablement period and the enablement quantity.

2.6.2. AEMO will require the NCESS provider to enable the FFR Service when AEMO considers other actions it may take under the WEM Rules may be insufficient to maintain system frequency within the Credible Contingency Event Frequency Band under forecast system conditions and Credible Contingencies. AEMO's enablement decision will be based on the following factors:

- (a) forecast system load;
- (b) minimum demand threshold;
- (c) percentage of underlying load forecast to be met by distributed energy resources;
- (d) available scheduled generation and anticipated dispatch outcomes;
- (e) available Spinning Reserve Service quantities; and
- (f) any other information that AEMO considers relevant.

3. NCESS SERVICE SPECIFICATION (COMMERCIAL)

3.1. Material contract terms

3.1.1. The following table summarises material contract terms in the NCESS Contract.

Contract	Description
Contract term	The contract term must commence no later than 1 February 2023 and end on 30 September 2023.
Conditions precedent	<p>The NCESS provider must satisfy the following conditions precedent by 1 October 2022 or (in AEMO’s sole discretion) by a later date determined by AEMO:</p> <ul style="list-style-type: none"> • The NCESS provider must be registered as a Market Participant or Ancillary Service Provider. • The facility or equipment must demonstrate compliance with the service requirements specified in paragraph 2.2 of this document by (to AEMO’s satisfaction) completing all tests required by AEMO in accordance with the Frequency Co-optimised Essential System Service Testing Guideline referred to in paragraph 9.1.1 of the FCESS Accreditation Procedure, subject to any modifications agreed by AEMO, having regard to the characteristics of the facility or equipment.
Service	Subject to the NCESS Contract, during the Availability Period, the NCESS provider must make the FFR Service available and (when required to do so by AEMO) must enable the FFR Service.
Payment	<p>The payment consists of an availability payment and an enablement payment.</p> <p>The availability payment is payable for all Trading Intervals in the Availability Period⁷ except for Trading Intervals during which:</p> <ul style="list-style-type: none"> • the facility or equipment is: <ul style="list-style-type: none"> ○ subject to a Commissioning Test Plan; ○ subject to a Planned Outage or a Forced Outage that reduces its ability to provide the FFR Service to less than the contract quantity; or ○ affected by a Consequential Outage that reduces its ability to provide the FFR Service to less than the contract quantity; or • AEMO reasonably determines (based on energy or fuel storage information or other relevant information available to AEMO) that the facility or equipment is unable to provide the contract quantity. <p>The enablement payment is payable for all relevant Trading Intervals in the Availability Period⁸ except for Trading Intervals during which:</p> <ul style="list-style-type: none"> • the facility or equipment is <ul style="list-style-type: none"> ○ subject to a Commissioning Test Plan; ○ subject to a Planned Outage or a Forced Outage that reduces its ability to provide the FFR Service to less than the enablement quantity; ○ affected by a Consequential Outage that reduces its ability to provide the FFR Service to less than the enablement quantity; or ○ affected by a binding Network Constraint that reduces its ability to provide the FFR Service to less than the enablement quantity;

⁷ The NCESS Contract will define the Availability Period as the period specified in paragraph 2.5.2 of this document (or an adjusted period if the contract term commences after 1 October 2222).

⁸ The NCESS Contract will define the Availability Period as the period specified in paragraph 2.5.2 of this document (or an adjusted period if the contract term commences after 1 October 2222).

Contract	Description
	<ul style="list-style-type: none"> AEMO reasonably determines (based on energy or fuel storage information or other relevant information available to AEMO) that the facility or equipment is unable to provide the enablement quantity; or AEMO reasonably determines (based on relevant information available to AEMO and subject to any instruction from AEMO to the NCESS provider to delay enablement) that the facility or equipment is not capable of being re-enabled for the contract quantity within 15 minutes after the SWIS Frequency Recovers⁹ following a Contingency Event. <p>The payment will be monthly in accordance with the WEM Rules. AEMO will make appropriate adjustments as required under clause 5.3.1 of the WEM Rules.</p>
<p>Minimum availability requirement</p>	<p>A minimum availability requirement applies for the FFR Service.</p> <p>For the purposes of determining whether the minimum availability requirement for the FFR Service has been met, and the extent of any shortfall, the availability of the FFR Service is calculated as $A/B \times 100$, expressed as a percentage, where:</p> <p style="padding-left: 40px;">A = the number of Trading Intervals in the Availability Period¹⁰ as at the date of the calculation during which the FFR Service was available (including any periods of Planned Outage); and</p> <p style="padding-left: 40px;">B = the total number of Trading Intervals in the Availability Period¹¹ as at the date of the calculation.</p> <p>The minimum availability requirement for the FFR Service is 95%.</p>
<p>Maintenance and reliability</p>	<p>The NCESS provider must:</p> <ul style="list-style-type: none"> maintain the facility or equipment in accordance with good electricity industry practice; and notify AEMO as soon as the NCESS provider becomes aware of any requirement for unplanned maintenance that affects or could reasonably be expected to affect the ability of the facility or equipment to provide the contract quantity. <p>The NCESS provider must notify AEMO promptly after changing or modifying the facility or equipment in a way that reduces or could reasonably be expected to reduce the availability of the FFR Service. AEMO may require the NCESS provider (at the NCESS provider's cost) to conduct a test of the facility or equipment (in its changed or modified configuration) to demonstrate that the FFR Service is available.</p>
<p>Liability</p>	<p>Separate maximum liability amounts apply for AEMO and the NCESS provider.</p> <p>For AEMO:</p> <ul style="list-style-type: none"> AEMO's liability is limited to the prescribed maximum amount for the purposes of section 126 of the Electricity Industry Act and regulation 52 of the WEM Regulations. AEMO is not liable for: <ul style="list-style-type: none"> indirect damages or losses; loss of market, opportunity or profit (whether direct or indirect); or damages or losses to the extent that they arise from the NCESS provider's failure to act in accordance with the NCESS Contract, a law (including the WEM Rules) or

⁹ The WEM Rules define "Recover" in relation to SWIS Frequency Operating Standards as "the time at which the SWIS Frequency returns to the applicable Normal Operating Frequency Band, provided it does not go outside that range at any time over the following 1 minute".

¹⁰ The NCESS Contract will define the Availability Period as the period specified in paragraph 2.5.2 of this document (or an adjusted period if the contract term commences after 1 October 2222).

¹¹ The NCESS Contract will define the Availability Period as the period specified in paragraph 2.5.2 of this document (or an adjusted period if the contract term commences after 1 October 2222).

Contract	Description
	<p>good electricity industry practice.</p> <p>For the NCESS provider:</p> <ul style="list-style-type: none"> The total amount recoverable from the NCESS provider in respect of any and all claims arising out of any one or more events during the contract term with respect to, arising from, or in connection with, the NCESS Contract or the provision of the FFR Service is limited to the Maximum NCESS Contract Amount. The NCESS Provider is not liable for: <ul style="list-style-type: none"> indirect damages or losses; loss of market, opportunity or profit (whether direct or indirect); or damages or losses to the extent that they arise from AEMO’s failure to act in accordance with the NCESS Contract, a law (including the WEM Rules) or good electricity industry practice.
Termination	<p>AEMO may immediately terminate the NCESS contract if:</p> <ul style="list-style-type: none"> the FFR Service is unavailable for a continuous period of more than 1 month during the contract term; or the NCESS provider fails to meet the minimum availability requirement over any 3-month period.

4. SELECTION CRITERIA

4.1.1. AEMO will apply the following selection criteria (consistently with clauses 3.11B.8, 3.11B.9 and 3.11B.11 of the WEM Rules) when assessing NCESS Submissions:

Criteria	Description	Weighting
Compliance	<p>The NCESS Submission:</p> <ul style="list-style-type: none"> is made in accordance with the NCESS Submission form and contains any other information requested; includes the cost information and any assumptions used to calculate the proposed NCESS payment structure; and meets the NCESS Service Specification: <ul style="list-style-type: none"> Assessed on the basis of sufficient supporting information provided to demonstrate compliance with the NCESS Service Specification. 	Pass/Fail (1/0)
Value for money	The estimated total cost of the service over the Availability Period represents value for money to Market Participants compared to the counterfactual scenario (AEMO does not procure the service).	Pass/Fail (1/0)
Service	<p>AEMO will assign a greater weighting to a service that provides proportionality and configurability.</p> <p>The ideal service has a synchronous droop-like response characteristic. It creates a proportional response to the size of the system event, adding no complexity in trigger grading or risk of over-correction.</p> <p>A facility that offers an overall response comprised of smaller block sizes and remote-configurable tripping thresholds is preferred.</p>	Moderate (30%)

Criteria	Description	Weighting
	A tripped response that approximates a droop using several small blocks (~3-4 MW each) is essentially the same as a proportional droop response.	
Network location	<p>AEMO will assign a greater weighting to a service that is provided in a network area that is free from congestion. AEMO will consider (among other things) the following matters:</p> <ul style="list-style-type: none"> • whether the service is reliant on any critical circuits in the generator interim access scheme; and • whether there are redundant connections to ensure the service is generally not restricted by network outages. 	Moderate (30%)
Availability	AEMO will assign a greater weighting to a service that can commence earlier (ideally from 1 October 2022) than the latest allowable commencement date (1 February 2023).	Moderate (30%)
Cost	AEMO will assign a greater weighting to a service with a lower estimated total cost compared to other proposals (weighted for consistent comparison of quantity, duration, and proportionality).	Low (10%)