

2022 Certified Reserve Capacity Workshop



Presented by:

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We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past, present and emerging.

Disclaimer

This presentation has been developed in line with the current version of the [Wholesale Electricity Market \(WEM\) Rules](#) and the [WEM Procedure: Certification of Reserve Capacity for the 2022 and 2023 Reserve Capacity Cycles](#) (WEM Procedure).

AEMO has taken all due care in preparing this material, but accepts no liability for any errors it may contain.

The information may be subject to specific exceptions or may not apply to particular factual circumstances.

To fully understand their obligations, Market Participants should refer to the WEM Rules and WEM Procedure.

Agenda

1. Pre-requisites & Background
2. CRC Application Requirements
3. Additional RCM Processes
4. Lessons Learnt (Discussion)
5. Q&A

Pre-Readings

- [WEM Procedure: Certification of Reserve Capacity for the 2022 and 2023 Reserve Capacity Cycles](#) (WEM Procedure).
- [WEM Reform Implementation Group \(WRIG\) presentation](#) on the changes implemented in the WEM Procedure.
- [WEMS MPI User Guide](#) (Section 7.3) steps applicants through the CRC application pages in the RCM Portal.

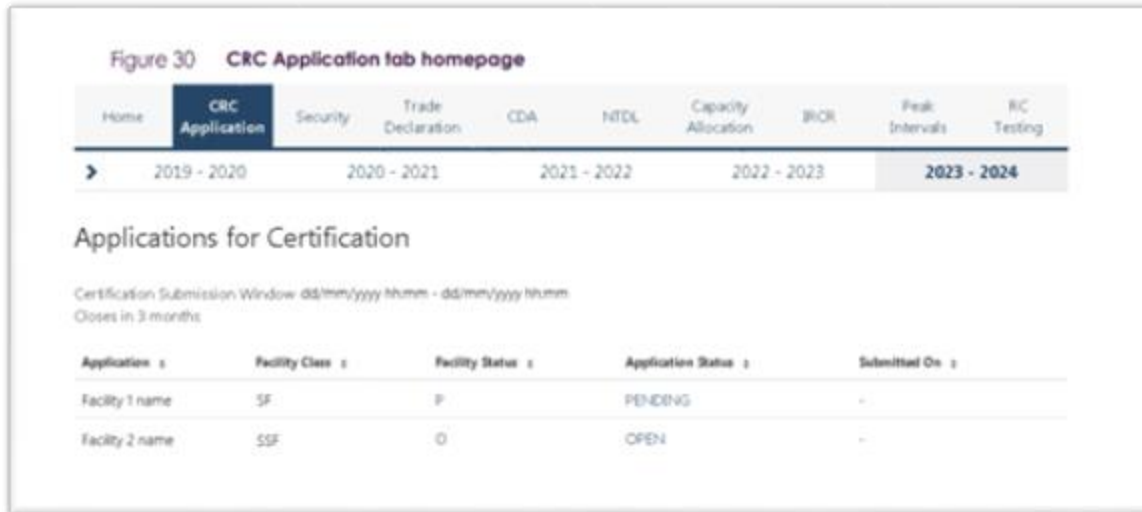
CRC application requirements

- Market Participants must have [WEMS MPI access](#). Contact wa.operations@aemo.com.au.
- An indicative Facility Class (or RCM Facility Class) and one or more associated indicative Technology Types associated with each Facility.

Note: AEMO will **not** assign CRC to a Facility that is not expected to be a registered Facility by the time its Reserve Capacity Obligations commence for the 2022 Reserve Capacity Cycle (8:00 AM on 1 October 2024).

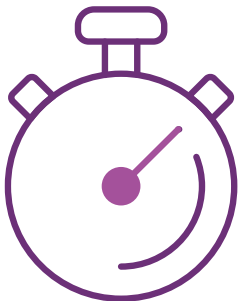
CRC application requirements

WEMS MPI



WEM Procedure:

- No new or updated supporting documentation can be submitted after 14 Feb 2023 (paragraph 4.2.5).
- AEMO **will reject** an application that does not include all information required under MR 4.10 (paragraph 4.2.4)



9:00 AM 18 October 2022 to
5:00 PM 14 February 2023
MR 4.9.1



Supporting Documentation
MR 4.10
MR 4.10A.6 (NAFF)

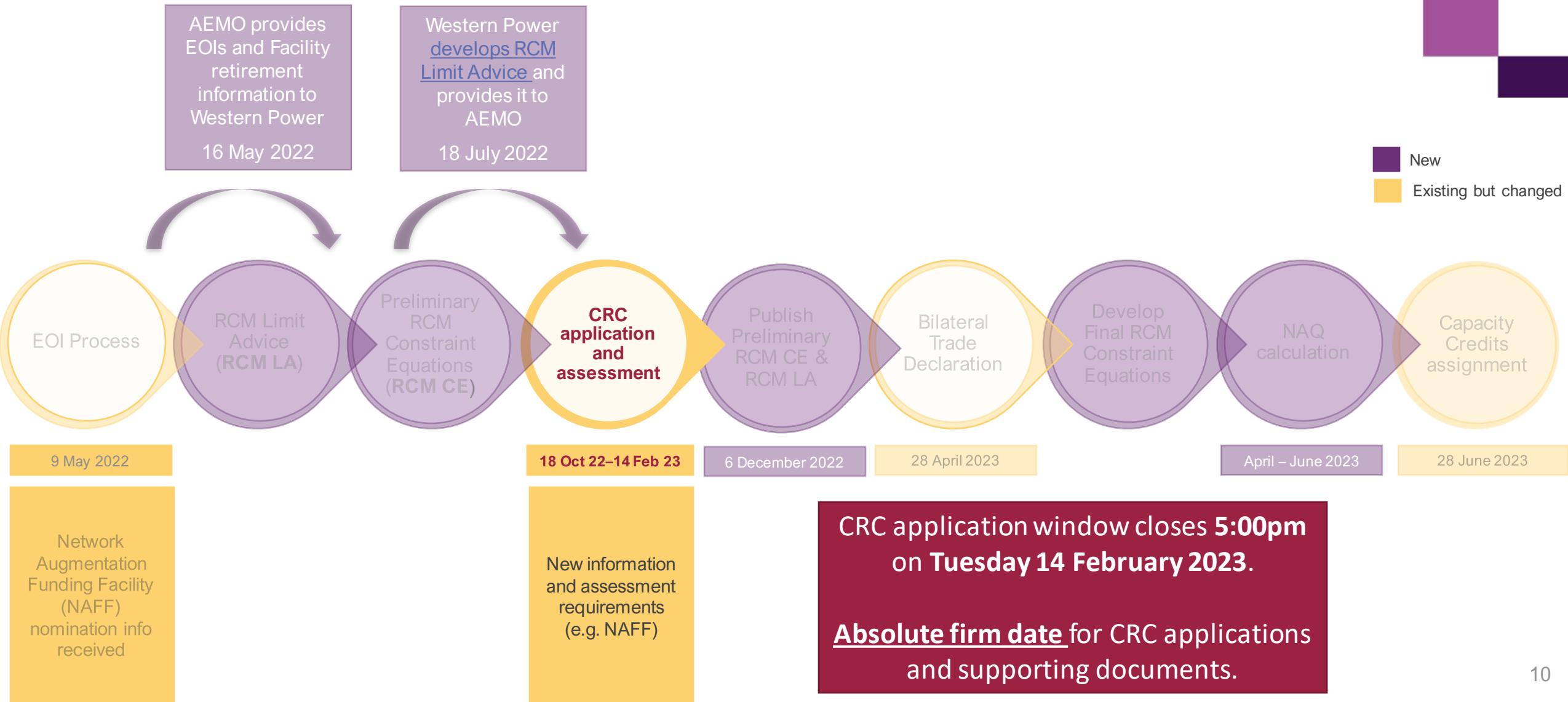
Changes to expect

- AEMO has recently triggered the Supplementary Reserve Capacity (SRC) process after identifying a shortfall of capacity for the 2023-24 Capacity Year.
- The SRC has historically only been triggered once (2008) and has the potential to be a relatively expensive alternative to securing capacity as apposed to securing capacity via the CRC process.
- AEMO is assessing ways to manage the current situation and to alleviate the risks of shortfalls in the future, and may propose changes to the CRC WEM Procedure to address risks such as fuel supply, etc.
- Participants are strongly encouraged to submit as much information as possible to support their CRC application
 - For example, fuel supply evidence should consider information around fuel supply arrangements including interruptions to this supply (either known or foreseeable), contracted fuel quantity and actual delivery quantity, etc.


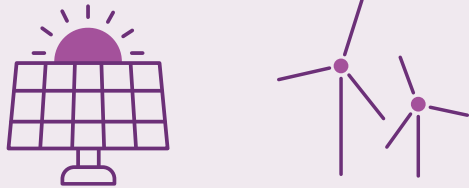


Background

Bindi Shah

What are the key changes to RCM processes from the 2022 Reserve Capacity Cycle (Year 1)?



Indicative Facility Class and Facility Technology Type

Indicative Facility Class	Indicative Facility Technology Type	
Scheduled Facility (SF) (≥ 10 MW)	Non-Intermittent Generating System (NIGS)	
Semi-Scheduled Facility (SSF) (≥ 10 MW)	Intermittent Generating System (IGS)	
Non-Scheduled Facility (NSF) (<10MW)	Electric Storage Resource (ESR)	
Demand Side Programme (DSP)	Load	

Facility and component information

SF and SSF applications consist of:

- Facility level information (e.g. network access confirmation).
- Component level information (e.g. fuel contracts for NIGS components).
- At least one component (ESR, NIG, IGS) must be included in the application.

- NSF and DSP: all information is provided at the Facility level.
- NSF: components are displayed but cannot be selected.

Key Changes to the WEM Procedure

- Removal of Constrained Access Entitlement.
- Introduction of Network Augmentation Funding Facilities (NAFF) + application and assessment process.
- Facility Upgrade definition updated to align with amendments to Appendix 3.

Facility Upgrade

Is either:

- Works that have increased the nameplate capacity of a Facility and were completed after the date and time specified in clause 4.1.11 for the previous Reserve Capacity Cycle; OR
- Works expected to be completed that will increase the nameplate capacity or available capacity of a Facility, which is yet to be demonstrated through normal market operations or a Reserve Capacity Test.

CRC Applications

Manus Higgins

General requirements for documents

Supporting documentation (paragraph 3.1.7 of the WEM Procedure) must:

- Relate to the Facility or component and cover the entire relevant Capacity Year.
- Be duly executed by an **Authorised Officer** of the Market Participant and all other parties.
- Be complete, with the exception that commercially sensitive information may be redacted.
- If applicable, include evidence that any contract conditions precedent have been satisfied or waived.

SF & SSF – Facility level information

Supporting information	What AEMO requires	Requirement
Network access	<p>MR 4.10.1(bA)</p> <p>Evidence that the Facility has a network access arrangement with Western Power that states the level of unconstrained capacity the Facility can offer into the network from a specified date. The contract must be attached in full and may be in the form of an Electricity Transfer Access Contract (ETAC) or Network Access Agreement (NAA). All documents must clearly show the expiry date, the Declared Sent Out Capacity (DSOC), and include all amendments and other changes. All documents must be executed by both Western Power and the entity responsible for the Facility.</p>	Mandatory
Description of Facility	<p>MR 4.10.1(dA)</p> <p>Description and configuration of the main components of the Facility. This must include generator nameplate rating and age along with any major upgrades that have been performed.</p>	Mandatory
Operating restrictions	<p>MR 4.10.1(g)</p> <p>Note any restrictions on the availability of the Facility. This may include staffing restrictions, lease conditions, operating licences and any other factors that may prevent the Facility from operating during peak periods in the relevant Capacity Year.</p>	Mandatory

SF & SSF – Facility level information



Supporting information	What AEMO requires	Requirement
NCESS Contract	<p>MR 4.10.1(j)</p> <p>If applicable, provide evidence of an NCESS Contract, specifying the terms and conditions. Price information may be redacted.</p>	For Facilities that are subject to an NCESS contract.
Offtake agreement or Power Purchase Agreement	<p>WEM Procedure: Declaration of Bilateral Trades - Appendix B</p> <p>Where a Facility is being built primarily to supply energy to one or more foundation customers, evidence that relevant power supply contracts are in place.</p>	Optional
Balancing Facility status	<p>WEM Procedure: Balancing Facility Requirements</p> <p>If the Facility is Balancing Active, evidence to what extent the Facility meets the Balancing Facility Requirements</p>	Mandatory
Minimum stable loading level	<p>MR 4.10.1 (dB)</p> <p>Required as an input into the NAQ model</p>	Mandatory (New Facility)
Other	Any other documentation to support the application.	Optional

Non-Intermittent Generating Systems



Supporting information	What AEMO requires	Requirement
Temperature Dependence information	<p>MR 4.10.1(e)(i)</p> <p>Provided on a Sent Out basis (please note that information in Standing Data must be As Generated). Must be supported by the manufacturer's technical specifications or as determined by an independent engineer.</p>	<p>Mandatory</p>
Fuel supply	<p>MR 4.10.1(e)(v) and Paragraph 5.3 of the WEM Procedure.</p> <p>Evidence that the Market Participant has secured sufficient fuel supplies (diesel, coal or gas) to operate the Facility and, if applicable, its fleet of Facilities. This may include demonstrated ability to procure additional fuel through the spot market. Full contracts must be provided which include full details of the fuel quantity to be delivered, signatory pages, expiry dates as well as any restrictions on quantities (for example, take or pay clauses, maximum contract quantities). Price information may be redacted. AEMO will assess firm and non-firm fuel supplies.</p>	<p>Mandatory</p>
Fuel transport	<p>MR 4.10.1(e)(v) and Paragraph 5.3 of the WEM Procedure.</p> <p>Evidence that the fuel being procured by the Market Participant is able to be delivered to the Facility. Full contracts must be provided and include contract expiry dates and delivery lead times. A Market Participant may demonstrate its ability to source transport through the spot market. Price information may be redacted.</p>	<p>Mandatory</p>
Fuel availability (min 14 hours with one day resupply)	<p>MR 4.10.1(e)(v) and Paragraph 5.3 of the WEM Procedure.</p> <p>Evidence that the Facility has sufficient fuel supplies, either through an on or off-site storage facility or delivered through a gas pipeline, to operate continuously for 14 hours at maximum output. This may include evidence of fuel storage tanks along with volumetric quantities, minimum stockpile levels and data on fuel used per hour of operation (for example, GJ/MWh). Where the Facility has primary and alternative fuels, outline the process for changing from one fuel to another and the fuel(s) which the Facility is to use in respect of an application for CRC.</p>	<p>Mandatory</p>

Intermittent Generating Systems

Supporting information	What AEMO requires	Requirement
Accredited expert report	MR 4.10.3 and MR 4.10.3A Independent Expert Report (IER) and supporting data required under clause 4.10.3 of the WEM Rules (the data submission template is available in the RCM portal). The IER must include the expected output of the Facility from 1 April 2017 to 1 April 2022 and the 5% probability of exceedance (POE). Note the 5% POE is used to calculate the Required Level of a Facility. A new Facility must meet the Required Level up to 1 October 2025 to ensure Capacity Credit payments.	For a Facility that has been in operation for <5 years or an Upgrade

The 'Information guide for IERs in the Reserve Capacity' (to be updated) and a list of accredited independent experts can be found on the [WEM Website](#).

Information related to specific cases of certification of reserve capacity

The following sections contain information relating to specific cases of certification of reserve capacity.

- Relevant Level Methodology**
- Conditional certified reserve capacity
- Early certified reserve capacity
- New small generators

Independent Expert Report

AEMO expects that a reasonable estimate of the expected energy (as required under Clause 4.10.3A(a)) includes a reasonable estimate of loss factors that are applicable to the Facility. The estimates of loss factors should be reflective of industry accepted typical loss categories and calculation standards, such as for:

- **Wind farms:** availability loss, electrical loss, turbine degradation (temperature, mechanical, etc).
- **Solar farms:** soiling loss, module quality loss, light induced degradation etc.
- **Biogas and landfill:** availability loss etc.

AEMO expects an IER to include assumptions and explanations on the loss factors used in the development of the IER.

- Provided for a component that is <5 years old
- Estimates output over the 5-year period
- Used in place of actual data to calculate Relevant Level
- Replaced with actual meter data (not SCADA) when the component starts operating

Electric Storage Resources

Supporting information	What AEMO requires	Requirement
Temperature dependence information	<p>MR 4.10.1(fA) or MR 4.10.1(fB)</p> <p>The temperature dependence of the nameplate capacity, Maximum Charge level capability, and Minimum Charge level capability. Must be supported by the manufacturer's technical specifications or as determined by an independent engineering firm.</p>	Mandatory
Sent out capacity over 4 hours for each year of the ESR's expected life	<p>MR 4.10.1(fA)(iii) or MR 4.10.1(fB)(iii)</p> <p>The maximum sent out capacity, net of Parasitic Loads, that can be guaranteed to be available for supply across the Electric Storage Resource Obligation Duration, to the relevant network when the ESR is operated where ambient temperature is 41 °C, over each year of its expected life. Must be supported by manufacturer's data.</p>	Mandatory
Charge Level capability	<p>MR 4.10.1(fA)(iv) or MR 4.10.1(fB)(iv)</p> <p>Manufacturer nameplate capacity and maximum Charge Level capability and minimum Charge Level capability data of the ESR for each year of its expected remaining life</p>	Mandatory
Outage rates supporting documents	<p>MR 4.10.1(fA)(v) or MR 4.10.1(fB)(v)</p> <p>Supporting information from the ESR's manufacturer that shows the expected forced and unforced outage rates, accounting for the Electric Storage Resource Obligation Duration.</p>	Mandatory

Non-Scheduled Facilities

Supporting information	What AEMO requires	Requirement
Network access	MR 4.10.1(bA) Evidence that the Facility has a network access arrangement with Western Power that states the level of unconstrained capacity the Facility can offer into the network from a specified date. The contract must be attached in full and may be in the form of an Electricity Transfer Access Contract (ETAC) or Network Access Agreement (NAA). All documents must clearly show the expiry date, the Declared Sent Out Capacity (DSOC), and include all amendments and other changes. All documents must be executed by both Western Power and the entity responsible for the Facility.	Mandatory
Description of Facility	MR 4.10.1(dA) Description and configuration of the main components of the Facility. This must include generator nameplate rating and age along with any major upgrades that have been performed.	Mandatory
Operating restrictions	MR 4.10.1(g) Note any restrictions on the availability of the Facility. This may include staffing restrictions, lease conditions, and any other factors that may prevent the Facility from operating during peak periods in the relevant Capacity Year.	Mandatory

Non-Scheduled Facilities

Supporting information	What AEMO requires	Requirement
Accredited expert report	MR 4.10.3 and MR 4.10.3A IER and supporting data required under clause 4.10.3 of the Market Rules (the data submission template is available in the RCM portal). The IER must include the expected output of the Facility from 1 April 2017 to 1 April 2022 and the 5% probability of exceedance (PoE). Note the 5% PoE is used to calculate the Required Level of a Facility. A new Facility must meet the Required Level up to 1 October 2025 to ensure Capacity Credit payments.	For a Facility that has been in operation for less <5 years or an Upgrade
NCESS Contract	MR 4.10.1(j) If applicable, provide evidence of an NCESS Contract, specifying the terms and conditions. Price information may be redacted.	For Facilities that are subject to an NCESS contract.
Offtake agreement or Power Purchase Agreement	WEM Procedure: Declaration of Bilateral Trades - Appendix B Where a Facility is being built primarily to supply energy to one or more foundation customers, evidence that relevant powersupply contracts are in place.	Optional
Balancing Facility status	WEM Procedure: Balancing Facility Requirements If the Facility is Balancing Active, evidence to what extent the Facility meets the Balancing Facility Requirements	Mandatory
Other	Any other documentation to support the application.	Optional

Demand Side Programmes

Supporting information	What AEMO requires	Requirement
Operating Restrictions	MR 4.10.1(g) Note any restrictions on the availability of the Facility. This may include staffing restrictions, lease conditions, and any other factors that may prevent the Facility from operating during peak periods in the relevant Capacity Year.	Mandatory
Loads associated with the DSP	WEM Procedure: Paragraph 8 A list of all loads, including the National Meter Identifier (NMI), associated to the DSP. Where contracts are not in place, a list of loads (with NMIs) that are intended to be included.	Mandatory
Contracts for curtailment	WEM Procedure: Paragraph 8 Evidence of capacity already procured (for example, contracts for load curtailment) or evidence of capacity procurement activity (on a per load basis). Full contracts must be provided and include commencement and end dates, terms outlining curtailment and signatory pages. Price information may be redacted.	Mandatory

Additional information for new Facilities and upgrades

Supporting information	What AEMO requires	Requirement
Project plan	MR 4.10.1(c)(iii) Key project dates as outlined in clause 4.10.1(c)(iii) of the Market Rules.	For New Facility or Upgrade only
Environmental approvals	MR 4.10.1(c)(ii) Evidence that any necessary environmental approvals have been granted or evidence supporting the Market Participant’s expectation that any necessary environmental approvals will be granted in time to have the Facility meet its Reserve Capacity Obligations by the date specified in clause 4.10.1(c)(iii)(7) of the Market Rules.	For New Facility or Upgrade only
Financial commitment and funding arrangements	MR 4.10.1(c)(iii) Evidence of funding arrangements for the Facility, financial commitment by the Market Participant to a primary equipment supplier (this would usually take the form of a signed contract indicating purchase of the main plant equipment, including penalty clauses associated with non-compliance of the purchase agreement), and formal commitment, including financial approval, on behalf of the company in respect to the project (for example, Board approval).	For New Facility or Upgrade only

Additional information for new Facilities and upgrades

Supporting information	What AEMO requires	Requirement
Local government approvals	MR 4.10.1(c)(iii) Details of relevant local government approvals to operate a power station.	For New Facility or Upgrade only
Land leases	MR 4.10.1(c)(iii) Details of access rights to land, either through ownership or an appropriate leasing agreement. Leasing arrangements to include duration of tenure, renewal options and signatory pages.	For New Facility or Upgrade only

NAFF Facility Requirements

If a Facility or upgrade was nominated as a NAFF in the EOI:

- A written notice must be provided to AEMO (MR 4.10.1(m)(i))
- The CRC application must include evidence requested in MR 4.10A.6 and may include (not limited to):
 - Interconnection Works Contract (IWC) with Western Power, demonstrating that relevant conditions precedent have been/will be satisfied or waived
 - ETAC with Western Power, demonstrating that relevant conditions precedent have been/will be satisfied or waived.

Different CRC assessment methodologies

Facility Technology Type (component)	Facility Class	Certification methodology
Non-Intermittent Generating System	Scheduled Facility Semi-Scheduled Facility	Capability at 41°C
Intermittent Generating System	Semi-Scheduled Facility	Relevant Level Methodology
Electric Storage Resource	Scheduled Facility Semi-Scheduled Facility	Linearly De-rating Capacity
Non-Intermittent Generating System Intermittent Generating System Electric Storage Resource*	Non-Scheduled Facility	Relevant Level Methodology
Load	Demand Side Programme	Relevant Demand

* Except for Non-Scheduled Facilities comprising only of an Electric Storage Resource that has been in operation for less than five years. These Facilities will be assessed using the Linearly De-rating Capacity methodology.

Other Items

- AEMO (in its sole discretion) may carry out a preliminary screening review of a CRC application and provide feedback if it has been submitted **at least 10 Business Days** (31 January 2023) before 14 February 2023.
- Remember to **hit the “Submit”** button!



Home **CRC Application** Security Trade Declaration CDA NTDL Capacity Allocation IRCR Peak Intervals RC Testing

> 2019 - 2020 2020 - 2021 2021 - 2022 2022 - 2023 **2023 - 2024**

Application for Certification Withdraw

Your application has been submitted with the following components:

Participant:	Capacity Year:	2023 - 2024
Facility Name:	Certification Window:	01/12/2021 09:00 - 10/02/2022 17:00
Facility Class:	Scheduled Facility	
Facility Status:	Commercial Operation	
Application Status:	SUBMITTED	
Assigned CRC:	-	
Application Type:	Existing	

Steps Following CRC Application Submission



Bindi Shah

Trade declarations



Market Participants:

- May nominate a new generation Facility as a Fixed Price Facility (if it meets certain conditions).
- Specify in their bilateral trade declaration the minimum number of Capacity Credits to be assigned to a Facility for it to participate in the RCM.

Trade Declaration Dates: dd/mm/yyyy to dd/mm/yyyy
Closes in X days

Assigned CRC	Traded CRC	Bilaterally Traded	Unavailable	Remaining
100	0	100	0	0

Figure 43 Edit a trade declaration for a Scheduled Facility or Semi-Scheduled Facility

Trade Declaration Status: OPEN

Facility name	Assigned	Traded	Unavailable	Remaining	TradedCRC
Proposed	50	50	-	0	-
Facility Class	<input checked="" type="checkbox"/> Fixed Price Candidate				

Component name

Component name	Assigned	Traded	Unavailable	Remaining
Technology type	50	50		0

Cancel Save

Figure 44 Edit a trade declaration for a Non-Scheduled Facility or Demand Side Programme

Trade Declaration Status: OPEN

Facility name	Assigned	Traded	Unavailable	Remaining	TradedCRC
Commercial Operation	5	5		0	-
Facility Class					

Cancel Save

Committed status

- New Facilities and Upgrades need to be obtain Committed Status and choose the Reserve Capacity Price (floating price) to be assured Capacity Credits*.
- Made as a separate application to CRC.
- The submission must present a case as to how the project has progressed further than a “Proposed” Facility and what irrevocable financial commitments have been made.
- **AEMO’s approval decision is made prior to the trade window close.**
- An NCESS Facility is exempt from applying for Committed Status (and submitting a trade declaration).

How to demonstrate committed status

Assessed by AEMO on a case-by-case basis.



Some examples of supporting documentation include:

- Construction contracts
- Site works contracts
- Financial commitment (e.g. Board approval)
- Evidence that the Facility is under construction (e.g. photos)
- Power purchase agreements with a customer

Guidelines for assessing Reserve Capacity Facility status are in Appendix B of [WEM Procedure: Declaration of Bilateral Trades](#).

* Fixed Price Facilities will only be assigned Capacity Credits if there is insufficient capacity from other capacity providers. See Appendix 3 of the WEM Rules for further detail on the prioritisation order.

Provision of Reserve Capacity Security (RCS)

	Generators	Demand Side Management (DSM)
Who is required to provide? <ul style="list-style-type: none"> • New Facilities • DSPs • Upgrades • Existing Facility undergoing significant maintenance 		
How to calculate?	Equals 25% of the BRCP X MW of CC's assigned.	
When is it returned?	Facility achieves output of >90% of the Required Level for two Trading Intervals.	Dynamic process. Retained by AEMO if DSP fails to achieve curtailment of >90% of Required Level for two Trading Intervals
What happens if the RCS is not returned?	<ul style="list-style-type: none"> • AEMO uses funds for Supplementary Capacity Contracts if required. • Any left over is then rebated back to Market Customers. 	

Reminders

- Keep an eye on the 2022 Reserve Capacity Cycle [dates and times](#).
- Additional information can be found on the [WEM Website](#).
- The WEM Procedure (and other linked documents) should be read in conjunction with the WEM Rules!

2022 Reserve Capacity Cycle timetable		
Date	Time	Action
Tuesday 14 February 2023	5:00 pm	CRC applications close.
Friday 14 April 2023	5:00 pm	AEMO advises assignment of CRC.
Friday 28 April 2023	5:00 pm	Market Participants who hold CRC must notify AEMO as to how their Reserve Capacity will be dealt with as follows: <ul style="list-style-type: none"> • Advise the total amount of Reserve Capacity they intend will be traded bilaterally; or • Advise the total amount of Reserve Capacity that they have decided will not now be made available to the market. If required, Market Participants must provide Reserve Capacity Security (RCS) or DSM RCS. Market Participants may nominate an eligible Facility as a Candidate Fixed Price Facility.
Thursday 11 May 2023	5:00 pm	AEMO confirms the quantity of CRC that can be traded bilaterally.
Friday 12 May 2023	5:00 pm	AEMO publishes CRC for each Facility.
Wednesday 28 June 2023	5:00 pm	AEMO: <ul style="list-style-type: none"> • Assigns Capacity Credits and Network Access Quantities. • Determines whether the Reserve Capacity Requirement (RCR) has been met or exceeded with the Capacity Credits for which no RCS was required. • Publishes Reserve Capacity Price Information.
Wednesday 28 June 2023	5:00 pm	Market Participants may apply to AEMO for a recalculation of the amount of RCS or DSM RCS required to be held for a Facility (applications may be made after this date/time).

© 2022 AEMO | 2022 Reserve Capacity Cycle timetable

Lessons Learnt (Discussion) and Q&A



Manus Higgins and Bindi Shah

Further Questions



Please direct any questions on the CRC process to the Reserve Capacity(WA) team at wa.capacity@aemo.com.au.