

2023 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 and present.**

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

| Time | Item |
|---------------|------------------------------|
| 10:30 – 10:35 | Welcome and introductions |
| 10:35 – 10:50 | Pre-requisites & Background |
| 10:50 – 11:20 | CRC Application Requirements |
| 11:20 – 11:25 | Additional RCM Processes |
| 11:25 – 11:45 | Lessons Learnt (Discussion) |
| 11:45 – 12:30 | Q&A |

Supporting Information

- [WEM Procedure: Certification of Reserve Capacity for the 2022 and 2023 Reserve Capacity Cycles](#) (WEM Procedure).
- [2023 WEM Procedure](#) consultation and [WEM Reform Implementation Group presentation](#) (upcoming changes) Note :Consultation closure date is 19 May 2023.
- [2023 Reserve Capacity Cycle timetable](#) (deferred)
- [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.

Key Changes to the WEM Procedure



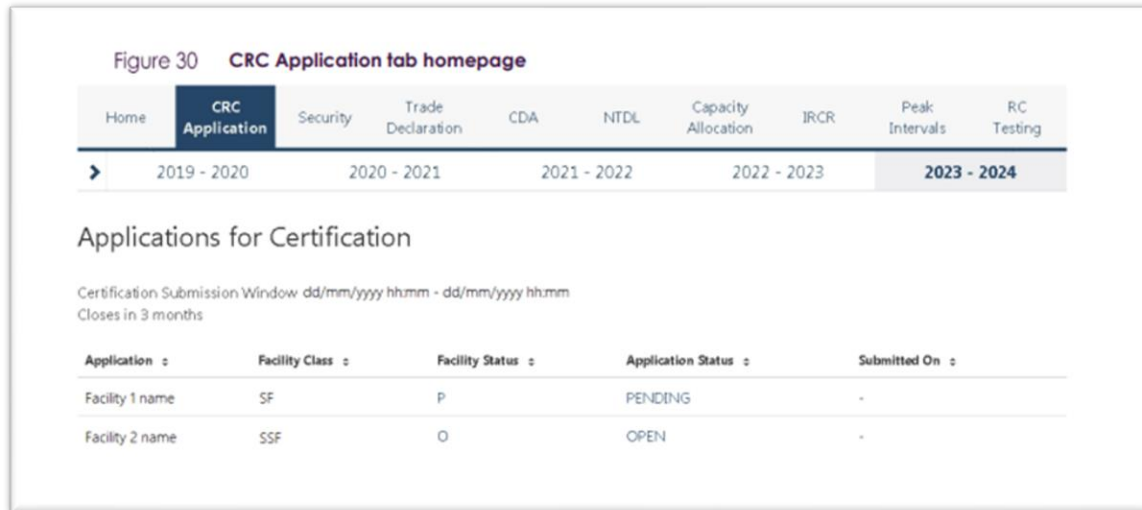
Historical fuel supply and
transport information + risk
mitigation
(see approved [procedure
change](#))



Definition of Firm and Non-Firm
(see draft [procedure change](#))

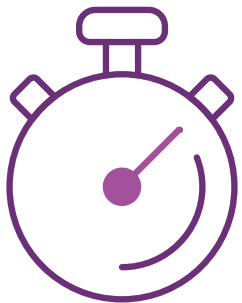
CRC application requirements

WEMS MPI



WEM Procedure:

- No new or updated supporting documentation can be submitted after 14 July 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)
- All information in support of your CRC application has to be submitted via the RCM Portal



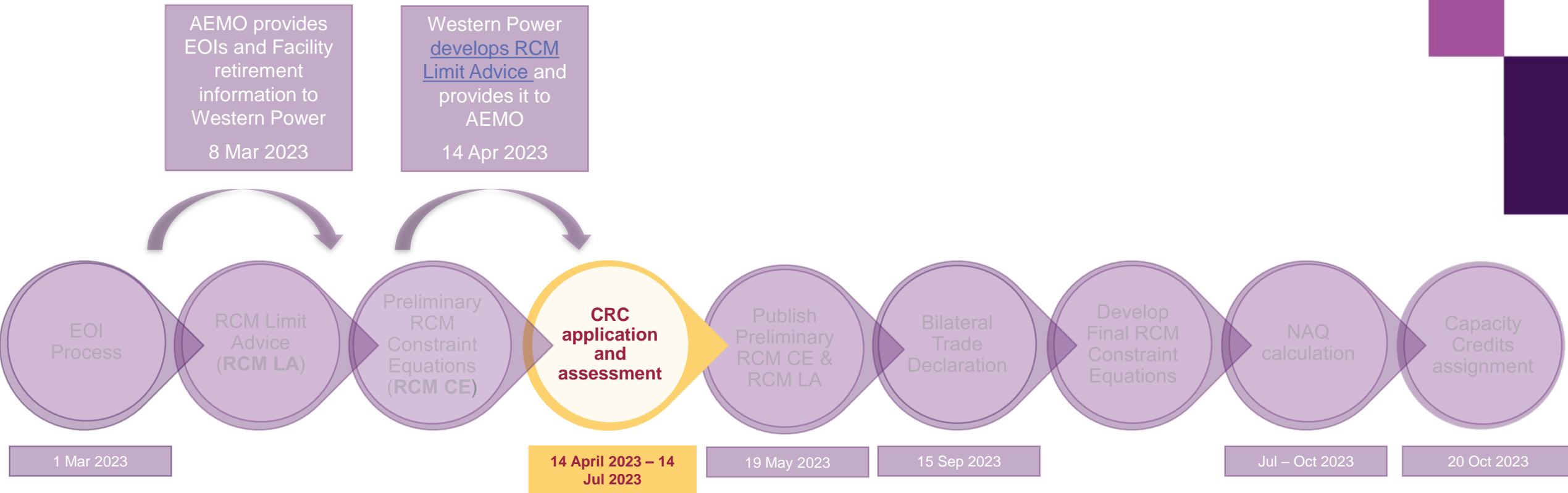
9:00 AM 14 April 2023 to
5:00 PM 14 July 2023
MR 4.9.1



Supporting Documentation
MR 4.10

Background


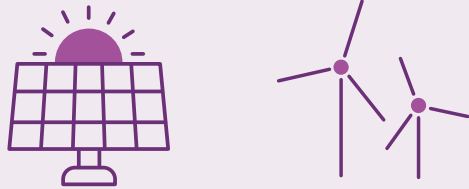


Key RCM processes- 2023 Reserve Capacity Cycle



CRC application window closes **5:00pm on Friday 14 July 2023.**

Absolute firm date for CRC applications and supporting documents.

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.

CRC Applications Requirements

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.
- 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 |
| 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. Additionally, historical fuel supply data in relation to contractual entitlement quantities and deliveries must be provided, addressing risks (historical and foreseeable). AEMO will assess Firm and Non-firm fuel supplies and restrictions.</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. Additionally, historical fuel transport data in relation to contractual entitlement quantities and deliveries must be provided, addressing risks (historical and foreseeable).</p> | <p>Mandatory</p> |
| Fuel availability (min 14 hours on Business Days) | <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 (and actual output if available) of the Facility from 1 April 2018 to 1 April 2023 and the 5% probability of exceedance (POE). Note the 5% POE is used to calculate the Required Level of a Facility. | 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
- Estimated output (and actual output where available) 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 | MR 4.10.1(fA) or MR 4.10.1(fB) 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. | Mandatory |
| Sent out capacity over 4 hours for each year of the ESR's expected life | MR 4.10.1(fA)(iii) or MR 4.10.1(fB)(iii) 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. | Mandatory |
| Charge Level capability | MR 4.10.1(fA)(iv) or MR 4.10.1(fB)(iv) 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 | Mandatory |
| Outage rates supporting documents | MR 4.10.1(fA)(v) or MR 4.10.1(fB)(v) Supporting information from the ESR's manufacturer that shows the expected forced and unforced outage rates, accounting for the Electric Storage Resource Obligation Duration. | Mandatory |

Non-Scheduled Facilities

| 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, and any other factors that may prevent the Facility from operating during peak periods in the relevant Capacity Year.</p> | 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 | 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. | 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 | <p>MR 4.10.1(g)</p> <p>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.</p> | Mandatory |
| Loads associated with the DSP | <p>WEM Procedure: Paragraph 8</p> <p>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.</p> | Mandatory |
| Contracts for curtailment | <p>WEM Procedure: Paragraph 8</p> <p>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.</p> | 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 WEM 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 WEM 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 Network Augmentation Funding Facilities (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 | Curtailment capability of Associated Loads |

* 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** (30 June 2023) before 14 July 2023.
- Remember to **hit the “Submit”** button!



The screenshot shows the AEMO application portal interface. At the top, there is a navigation menu with options: Home, **CRC Application**, Security, Trade Declaration, CDA, NTDL, Capacity Allocation, IRCR, Peak Intervals, and RC Testing. Below the menu, a timeline shows years from 2019-2020 to 2023-2024, with 2023-2024 selected. The main heading is 'Application for Certification' with a 'Withdraw' button. A message states: 'Your application has been submitted with the following components: [redacted]'. Below this, application details are listed:

| | | |
|---------------------|-----------------------|-------------------------------------|
| 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



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 Status: OPEN

| Facility | Assigned | Traded | Unavailable | Remaining | TradedCRC |
|---|--|----------------------|----------------------|-----------|-------------------------------------|
| Committed (23/11/2022) Scheduled Facility | 24 | - | - | 24 | - |
| | <input type="checkbox"/> Fixed Price Candidate | | | | |
| Facility_ESR_01 Electric Storage Resource | 12 | <input type="text"/> | <input type="text"/> | 12 | |
| Facility_ESR_01_UPG Proposed Electric Storage Resource | 12 | <input type="text"/> | <input type="text"/> | 12 | MinCCQuantity* <input type="text"/> |

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.


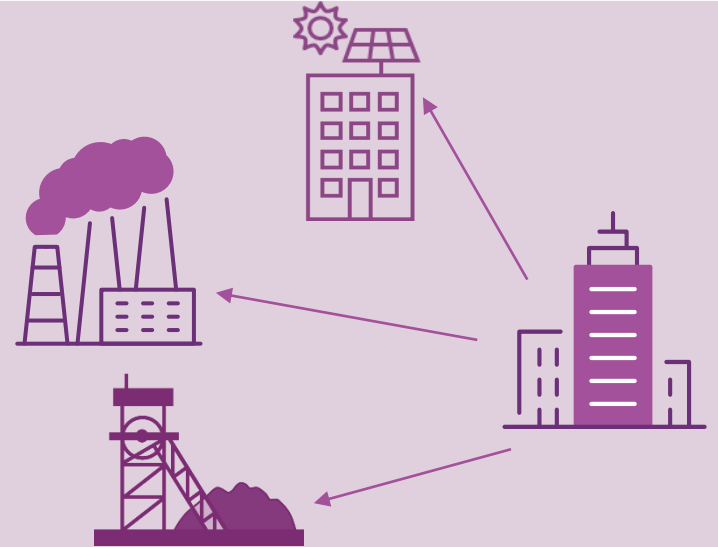
Some examples of supporting documentation include:

- 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 CRC'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 & Updates

- 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.

The proposed deferred dates are set out in the 2023 Reserve Capacity Cycle timetable below.

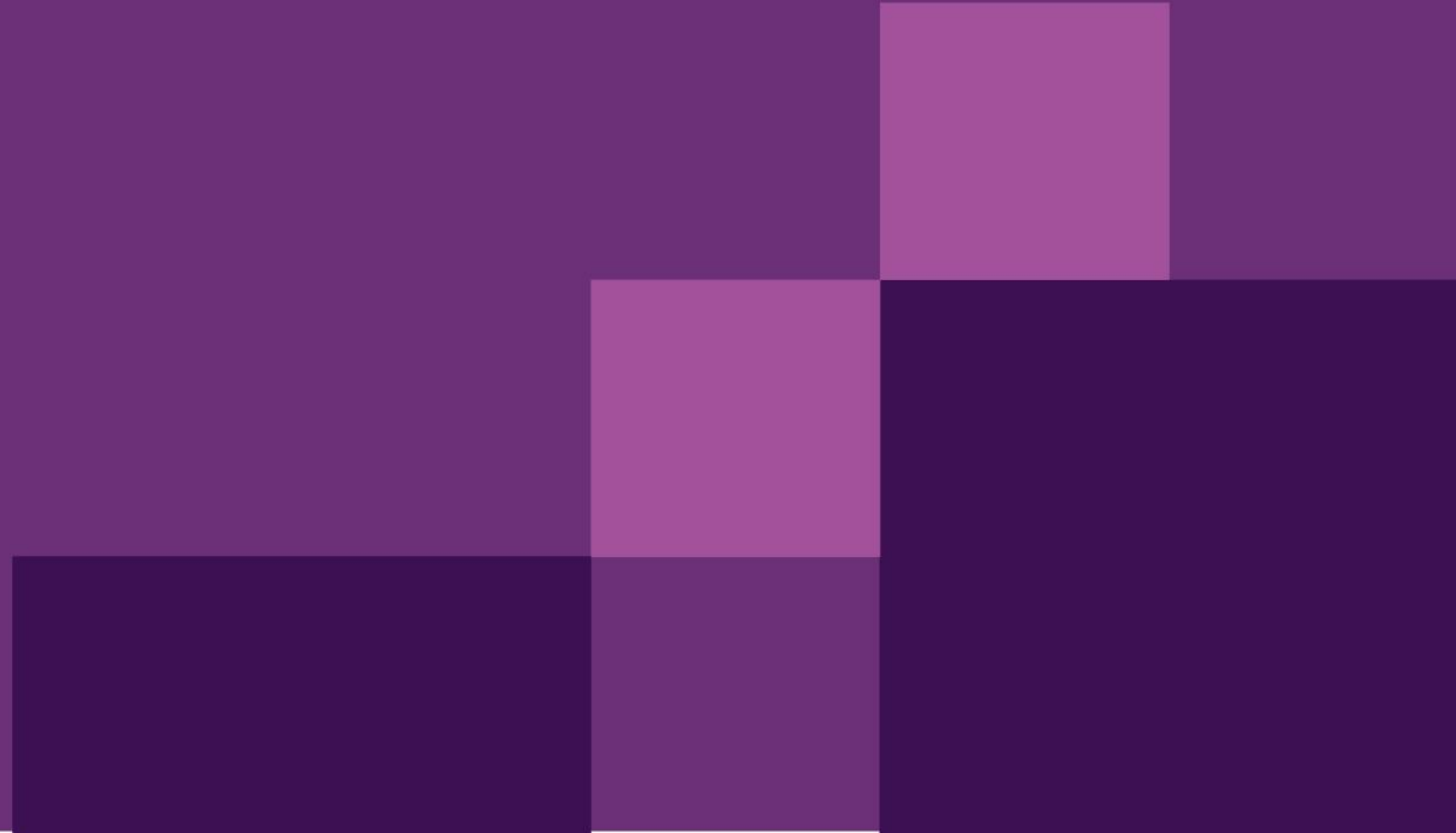
Current and Deferred 2023 Reserve Capacity Timetable

For Reserve Capacity to be provided between 1 October 2025 and 1 October 2026

| Current Date | Deferred Date | Action |
|------------------------|---------------------------|---|
| Friday 13 January 2023 | <i>Not deferred</i> | AEMO publishes the Request for Expression of Interest (EOI) and Benchmark Reserve Capacity Price. |
| Wednesday 1 March 2023 | <i>Not deferred</i> | EOI submissions close. |
| Wednesday 8 March 2023 | <i>Not deferred</i> | AEMO provides information about EOIs, Facility retirements, and Early Certified Reserve Capacity (CRC) applications to Western Power. |
| Monday 3 April 2023 | <i>Not deferred</i> | AEMO publishes a summary of the results of the EOI. |
| Thursday 14 April 2023 | <i>Not deferred</i> | Market Participants may apply for CRC. |
| Thursday 14 April 2023 | <i>Not deferred</i> | Western Power must develop and provide the following information to AEMO: <ul style="list-style-type: none"> • Estimated proportion of peak demand at each Electrical Location on the network. • Thermal Network Limits. • Electrical Location and identity of new loads larger than 10 MW. RCM Limit Advice and an explanation of any changes from previous RCM Limit Advice. |
| Friday 19 May 2023 | <i>Not deferred</i> | AEMO publishes information from Western Power and the Preliminary RCM Constraint Equations. |
| Monday 19 June 2023 | Monday 10 July 2023 | AEMO publishes the 2023 WEM ESOO and Reserve Capacity Information Pack. |
| Friday 23 June 2023 | Friday 14 July 2023 | CRC applications close. |
| Friday 11 August 2023 | Friday 1 September 2023 | AEMO advises assignment of CRC. |
| Friday 25 August 2023 | Friday 15 September 2023 | 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. |
| Monday 28 August 2023 | Monday 18 September 2023 | AEMO confirms the quantity of CRC that can be traded bilaterally. |
| Tuesday 29 August | Tuesday 19 September 2023 | AEMO publishes CRC for each Facility. |

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Lessons Learnt (Discussion) and Q&A



Further Questions

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