

Reserve Capacity Mechanism Frequently Asked Questions

The Reserve Capacity Mechanism (RCM) is designed to ensure that there is sufficient capacity to meet demand in the South West interconnected system (SWIS) in Western Australia (WA). This document provides answers to questions that are commonly asked about the RCM. The information provided in this document is of a general nature. Further information regarding the RCM, and WA's Wholesale Electricity Market, is available on AEMO's website. A table of acronyms is at the end of this document.

Q1. Why is there a capacity market?

The SWIS is a geographically isolated electricity network and has a strong summer peak demand. Due to its isolation, the SWIS cannot receive electricity from neighbouring states, unlike the National Electricity Market for the east coast of Australia. Therefore, there is a requirement for the SWIS to be self-sufficient in terms of its energy needs. The RCM is designed to ensure that sufficient generation and/or demand side capacity is available to meet peak demand. Power generators and demand side management providers are paid to make capacity available to meet demand.

Q2. What is demand in the context of electricity and peak demand?

Demand is the amount of electrical power that all loads within the SWIS are consuming at any given point in time. It is an important concept because, in an electricity network, the supply of electricity (that is, the amount of electrical power generated) must always equal the demand for electricity. Demand in the SWIS is measured in megawatts (MW). Consumption is measured in megawatt hours (MWh), and is a measure of average demand over a period of time.

Peak demand is the highest demand from all loads in the SWIS in a given year. It is predominantly driven by demand from air conditioning, and typically occurs during a hot period in summer.

Note: the demand forecasts published in the [Wholesale Electricity Market Electricity Statement of Opportunities](#) (WEM ESOO) are for operational demand. Operational demand is the demand that needs to be met by power plants. There is another type of demand called underlying demand, which is operational demand plus the demand met by rooftop solar PV.

Q3. What are Capacity Credits and how do I get them?

Capacity Credits represent the MW capacity that a generator or Demand Side Programme (DSP) can deliver to the SWIS. A generator or DSP (Facility) that holds Capacity Credits will receive payments for its capacity either at the administered Reserve Capacity Price or through bilateral contracts. Capacity Credits can be traded. To receive Capacity Credits, a generator or DSP must apply for Certified Reserve Capacity ([CRC](#)) with AEMO. This is the [first step to participate in the RCM](#).

Q4. Who can provide capacity?

Registered Market Participants can provide electrical generation, or demand reduction capacity after they apply for, and successfully meet, the technical and contractual requirements of the CRC process. For further information, refer to the [CRC](#) page of the AEMO Website.

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Q5. How does the RCM operate?

The RCM operates over a four-year period known as a [Reserve Capacity Cycle](#)¹.



In every Reserve Capacity Cycle, AEMO undertakes the following activities:

Year 1

- Forecast and publish a [Reserve Capacity Requirement](#) (RCR) for the relevant Capacity Year in the [WEM ESOO](#) report. The relevant Capacity Year commences on 1 October of Year 3 and ends on 1 October of Year 4 of the Reserve Capacity Cycle.
- Assess [CRC](#) applications and allocate [Capacity Credits](#) for the relevant [Capacity Year](#).
- Calculate the [RCP](#) and [Benchmark Reserve Capacity Price \(BRCP\)](#) for the relevant [Capacity Year](#).

Year 2

Assess [Progress Reports](#) submitted by Market Participants who hold Capacity Credits with respect to new Facilities that are yet to commence operation.

Year 3-4

- Conduct Reserve Capacity performance monitoring including [Reserve Capacity Tests](#) during the Capacity Year.
- Assign an [Individual Reserve Capacity Requirement \(IRCR\)](#) to Market Customers, to allocate the cost of Capacity Credits based on their share of the system peak consumption.

Market Participants who hold Capacity Credits with respect to Facilities must comply with their [Reserve Capacity Obligations](#) in the relevant Capacity Year, otherwise they may be subject to capacity payment refunds and/or reduction in Capacity Credits.

The diagram below illustrates the key aspects of the RCM for a Reserve Capacity Cycle. Please refer to the [RCM](#) section for further information on IRCR.

¹ This is an example cycle. Details of the [current Reserve Capacity Cycle](#) are published on AEMO's website.

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Q6. How are Capacity Providers remunerated?

Capacity providers are paid based on the number of [Capacity Credits](#) assigned for a given [Capacity Year](#). AEMO determines the [RCP](#) (per MW of Capacity Credit) based on the Reserve Capacity Requirement, the [BRCP](#), and the amount of Reserve Capacity available.

The RCP represents the economic value of supply of one additional Capacity Credit to the market. The greater the capacity surplus (the amount of Capacity Credits that exceeds the RCR), the lower the value of each Capacity Credit and consequently the RCP.

[Demand Side Management \(DSM\)](#) capacity receives the [DSM RCP](#) for each Capacity Credit assigned. The DSM RCP is calculated based on AEMO's estimates of the contribution of total DSM capacity to avoiding [expected unserved energy](#).

For the 2019-20 Capacity Year, 4,822 MW of generation capacity received an RCP of AU\$126,684/MW, and 66 MW of DSM capacity received a DSM RCP of AU\$16,990/MW.

Q7. How is the RCM funded?

Market Customers have an obligation to pay for capacity based on how much they consume during system peak known as their [IRCR](#).

Q8. How does AEMO determine the Reserve Capacity Requirement (RCR), and what is the difference between this and the Reserve Capacity Target (RCT)?

The [Long Term Projected Assessment of System Adequacy](#) (LT PASA) is a forecasting study that determines peak demand and sets the RCT for each year of the ten-year study horizon. The LT PASA results are published in the WEM ES00. The RCT determined for the Reserve Capacity Cycle sets the RCR for the corresponding Capacity Year, i.e. the 2019 Long Term PASA study was conducted to set ten RCTs for each of the 2019-20 to 2028-29 Capacity Years. The RCR determined for the 2019 Reserve Capacity Cycle was the RCT set for the 2021-22 Capacity Year.

Q9. What information does AEMO consider when preparing peak demand forecasts?

Information that AEMO may consider when developing the peak demand forecasts includes:

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- Historical [half-hourly demand data](#).
- Historical weather data.
- Historical economic and population data.
- Historical rooftop solar PV installations.
- Residential and commercial behind-the-meter battery and rooftop solar PV forecasts.
- Electric vehicle forecasts.
- Economic and population growth forecasts.

Q10. I'm developing a new generation Facility and would like to receive capacity payments. Where should I start?

Contact AEMO Market Operations (wa.operations@aemo.com.au) to start the registration process to become an approved candidate for registration in the Wholesale Electricity Market System (WEMS) and obtain access to the WEMS Market Participant Interface (WEMS MPI). Once you have access to the WEMS MPI, you can commence your application for Certification of Reserve Capacity (CRC) for your generator via the WEMS MPI. Refer to the [New Generators participating in the WEM factsheet](#) for further information.

Q11. What are the key documents required for certification?

To be certified, you must provide documents that demonstrate the progress of your project under clauses 4.9, 4.10 and 4.11 of the WEM Rules. Please refer to the [New Generators participating in the WEM factsheet](#) for further information.

Q12. What is the Reserve Capacity status? How does it impact my Facility?

There are three Reserve Capacity statuses:

1. Proposed: the new Facility is still under development and its progress to construction, commissioning and completion is not yet confirmed.
2. Committed: the new Facility is under development and its progress to construction, commissioning and completion is highly likely or confirmed.
3. Commercial Operation: the Facility has been completed and is now generating energy into the network.

Only Facilities that have Committed or Commercial Operation status, [CRC](#) and paid [Reserve Capacity Security](#) (for a new Facility) are eligible to receive Capacity Credits for their capacity (subject to meeting all relevant WEM Rules requirements).

Note: any Facility that has a Network Control Service contract (such as a Facility that entered under the [Generator Interim Access](#) solution) does not need Committed status to be eligible for Capacity Credits. Further information on Reserve Capacity status can be found in the [Market Procedure: Declaration of Bilateral Trades and the Reserve Capacity Auction](#).

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Q13. What obligations are there once Capacity Credits are assigned to my Facility?

When your Facility is assigned Capacity Credits, it is subject to several obligations:

- For a new Facility, it must provide a regular [Progress Report](#) to AEMO until its [Reserve Capacity Security](#) has been returned.
- It must pass regular [Reserve Capacity Tests](#) in both the summer and winter testing periods for Scheduled Generators, and in the summer testing period for Demand Side Programmes.
- It must make capacity available for all Trading Intervals during the relevant Capacity Year to avoid paying [refunds](#) (for Scheduled Generators). It must offer its capacity up to its [Reserve Capacity Obligation Quantity](#) into the Short Term Energy Market for every Trading Interval in the relevant Capacity Year, unless it is on a Planned Outage as approved by AEMO.

Q14. What is Reserve Capacity Security?

On receiving [CRC](#) for new Facilities, upgrades to existing Facilities, or Facilities that have undergone significant maintenance, provision of [Reserve Capacity Security](#) to AEMO, equivalent to $0.25 \times$ Capacity Credits assigned to your Facility \times [BRCP](#) is a prerequisite to being assigned Capacity Credits. For Reserve Capacity Security to be returned, two conditions must be fulfilled before or during the relevant Capacity Year (starting 1 October):

- a) Your Facility must meet its [Required Level](#) before the end of the relevant Capacity Year.
- b) Your Facility must be in [Commercial Operation](#).

If you do not meet these conditions by the end of the relevant [Capacity Year](#) (30 September of the calendar year following 1 October) you may lose your RCS and be required to [pay refunds](#).

Q15. Is there a financial penalty if I do not meet my Reserve Capacity obligations?

Yes. You must meet your [Reserve Capacity obligations](#) or you may be liable for financial penalties, including the loss of your [Reserve Capacity Security](#) (for new or upgraded Facilities) and the payment of [refunds](#).

Q16. What is the Required Level?

For an [Intermittent](#) Non-Scheduled Generator (NSG) (most renewable generators) assigned [Capacity Credits](#) under clause 4.11.2(b) of the WEM Rules, the Required Level (in MW) is the 5% Probability of Exceedance (PoE) of your Facility's generation (i.e. your Facility has a 5% chance of generating above this MW level, and a 95% chance of generating below this MW level in any given [Trading Interval](#)). The Required Level will hence be close to the installed capacity of your Facility. The independent expert report provided as part of the [certification process](#) will need to include the 5% PoE Required Level for your Facility. Refer to clause 4.10.3A of the WEM Rules and [the independent expert report guide](#) for further information regarding the requirements for the independent expert report.

For a DSP, the Required Level (in MW) is your Facility's Relevant Demand (clause 4.26.2CA of the WEM Rules) minus its assigned Capacity Credits.

For a [Scheduled Generator](#) (most thermal generators) assigned Capacity Credits under clause 4.11.1(a) of the WEM Rules, the Required Level (in MW) is the value of Capacity Credits assigned to the Facility, adjusted for temperature. The temperature

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adjustment is made based on the Facility's temperature dependence data, which must be provided as part of the CRC application. Generally, for temperatures less than 41°C the Required Level will be greater than the value of Capacity Credits assigned (clause 4.11.3B of the WEM Rules).

If your Facility does not meet its Required Level, and is a [NSG](#), it might also be liable to pay [refunds](#). The Required Level is also used to determine the target output (or curtailment) to pass a Reserve Capacity Test for a Scheduled Generator or DSP.

The following acronyms have been used in this document:

Term	Definition
(BRCP) Benchmark Reserve Capacity Price	The price is determined in accordance with the Market Procedure: Maximum Reserve Capacity Price . It represents the marginal cost of providing additional Reserve Capacity for a Reserve Capacity Cycle.
(CRC) Certified Reserve Capacity	The quantity of Reserve Capacity that AEMO has assigned to a Facility for the Reserve Capacity Cycle in accordance with clauses 4.11 or 4.28B of the WEM Rules.
(DSM) Demand Side Management	A type of capacity held in respect of a Facility connected to the SWIS, specifically, the capability of a Facility to reduce its consumption of electricity through the SWIS as measured at the connection point of the Facility to the SWIS.
(DSP) Demand Side Programme	A Facility registered in accordance with clause 2.29.5A of the WEM Rules.
(IRCR) Individual Reserve Capacity Requirement	The proportion of the total cost of Capacity Credits paid by each Market Customer. Determined based on each Market Customer's contribution to peak demand during 12 peak Trading Intervals over the previous summer period (December to March).
(LT PASA) Long Term Projected Assessment of System Adequacy	A study conducted in accordance with clause 4.5 of the WEM Rules to determine the Reserve Capacity Target for each year in the Long Term PASA Study Horizon and prepare the Wholesale Electricity Market Electricity Statement of Opportunities report.
(MW) Megawatt	A unit of power equal to one million watts.
(MWh) Megawatt hour	A megawatt hour is one million watts of electrical power used for 1 hour.
(NSG) Non-Scheduled Generator	A generation system that can be self-scheduled by its operator (with the exception that System Management can require it to decrease its output subject to its physical capabilities) and which is registered as a Non-Scheduled Generator in accordance with clauses 2.29.4(a) or 2.29.4(d) of the WEM Rules.
(RCM) Reserve Capacity Mechanism	The capacity market in the SWIS that ensures sufficient capacity is available to meet peak demand.
(RCP) Reserve Capacity Price	The administrative price for capacity paid to Capacity Credit holders and determined in accordance with clause 4.29.1 of the WEM Rules.
(RCR) Reserve Capacity Requirement	The RCR for a Reserve Capacity Cycle is the Reserve Capacity Target for the cycle-related Capacity Year as reported in the Wholesale Electricity Market Electricity Statement of Opportunities report for that cycle.

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Term	Definition
(RCT) Reserve Capacity Target	AEMO's estimate of the total quantity of generation or DSM capacity required in the SWIS to satisfy the Planning Criterion.
(SWIS) South West Interconnected System	The SWIS is the network, associated loads and generators that cover the most populous region of WA, the south western region. The WEM operates in the SWIS.
WA	Western Australia
WEM	Wholesale Electricity Market
(WEM ESOO) WEM Electricity Statement of Opportunities	The Wholesale Electricity Market Electricity Statement of Opportunities is prepared annually and presents AEMO's Long Term Projected Assessment of System Adequacy for the SWIS in WA.

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Where can I find more information?

Further information can be found in the [Reserve Capacity Market Procedures](#) and the relevant WEM Rules.

For any further enquiries, please contact AEMO's:

Reserve Capacity team

- E: wa.capacity@aemo.com.au

Market Operations team

- E: wa.operations@aemo.com.au
- P: 1300 989 797

You can also register to attend the [RCM training course](#) to learn more about the RCM.