Request for Expressions of Interest for the 2019 Reserve Capacity Cycle

31 January 2019

Important notice

PURPOSE

AEMO has prepared this document to invite proponents to provide Expressions of Interest for the provision of new generation and/or Demand Side Management capacity into the Wholesale Electricity Market in Western Australia, as at the date of publication.

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VERSION CONTROL

Version	Release date	Changes
#1	31/01/2019	

Executive summary

This *Request for Expressions of Interest* (EOIs) invites proponents to provide information to AEMO regarding new generation and/or Demand Side Management (DSM) capacity that will be available for commercial service in the South West interconnected system (SWIS) for the 2021–22 Capacity Year[1].

EOIs with supporting documentation are due to be submitted to the Australian Energy Market Operator (AEMO) by 5:00 PM on 1 May 2019.

The main purpose of this *Request for EOIs* is to inform prospective investors about the Reserve Capacity Mechanism (RCM) and allow proponents to provide information to AEMO regarding projects under consideration for the 2019 Reserve Capacity Cycle for the 2021–22 Capacity Year. Submitting an EOI ensures the proponent receives all information and updates relating to the RCM process.

In addition to submitting an EOI, proponents are encouraged to engage with AEMO to understand the various aspects of the Reserve Capacity Cycle and to commence processes required to secure all approvals. In particular, AEMO encourages engagement regarding network access requirements, which is critical to the assignment of Certified Reserve Capacity (CRC).

The RCM ensures sufficient capacity is available to meet future peak demand, plus a reserve margin. An important part of this process is to forecast peak demand for the relevant Capacity Year. For the 2021–22 Capacity Year, the total capacity required to meet the forecast peak demand, plus a reserve margin, is determined through the Long Term Projected Assessment of System Adequacy, which is expected to be published in the upcoming Wholesale Electricity Market (WEM) Electricity Statement of Opportunities (ESOO) in June 2019.

Capacity Credit assignments for the 2020–21 Capacity Year will not be finalised until May 2019[2], because the window for CRC applications relevant to the 2018 Reserve Capacity Cycle was extended by eight months to 28 February 2019[3]. The latest information on the capacity available in the SWIS is from the Capacity Credit assignment for the 2017 Reserve Capacity Cycle (for the 2019–20 Capacity Year). Hence, the information about the three previous Reserve Capacity Cycles required for inclusion in this report (according to clause 4.3.1(c) of the Wholesale Electricity Market Rules (WEM Rules))[4] is for the 2017–18, 2018–19, and 2019–20 Capacity Years.

The preliminary Reserve Capacity Requirement (RCR) for the 2021–22 Capacity Year is 4,600 MW[5]. Based on the 2018 WEM ESOO forecasts, it is estimated that there will be 288 megawatts (MW) of excess capacity for the 2021–22 Capacity Year. This assumes the level of Capacity Credits assigned for the 2019–20 Capacity Year remains unchanged at 4,888 MW.

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[1] The 2021–22 Capacity Year is for capacity available from 1 October 2021 to 1 October 2022.

[2] Unless an auction is required, in which case it will be finalised in June 2019.

[3] AEMO. *2018 Reserve Capacity Timetable*. Available at http://www.aemo.com.au/-/media/Files/Electricity/WEM/Reserve_Capacity_Mechanism/Timetable/2018-Reserve-Capacity-timetable.pdf.

[4] Economic Regulation Authority (WA) 2019. *Wholesale Electricity Market Rules – 11 January 2019 (WA)*, Available at https://www.erawa.com.au/rule-change-panel/wholesale-electricity-market-rules.

[5] Key references for data in this document can be found under the "References, measures and abbreviations" section.

A total of 250 MW of new renewable capacity (65 MW Capacity Credits) is expected to enter the SWIS for the 2019–20 Capacity Year. In December 2018, Western Power announced it has offered network access under the Generator Interim Access arrangement to eight renewable energy projects (900 MW nameplate capacity) in the SWIS[6].

According to the 2018 WEM ESOO forecast, energy consumption in the SWIS is expected to grow at approximately 0.9% per annum between 2018–19 and 2027–28, while peak electricity demand is forecast to grow around 0.6% per annum under the 10% Probability of Exceedance scenario for the same period.

AEMO will update the demand forecasts and publish the Reserve Capacity Requirement (RCR) for the 2021–22 Capacity Year in the 2019 WEM ESOO.

For information on any aspect of the RCM, proponents are encouraged to contact Reserve Capacity (WA)[7] at wa.capacity@aemo.com.au.

Wholesale Electricity Market reform

In August 2017, the WA Minister for Energy requested the Public Utilities Office (PUO) to undertake a comprehensive work program to improve the operation of the Wholesale Electricity Market[8], including initiatives that will impact the RCM, particularly:

- Moving to a constrained network model for access to Western Power's network, which will require the implementation of security-constrained market and dispatch arrangements, and changes to the consideration of network congestion in the RCM.
- Reviewing Reserve Capacity pricing arrangements.

Security-constrained economic dispatch is expected to commence in 2022. In August 2018, the PUO published a draft recommendations report detailing proposed changes to Reserve Capacity pricing[9].

The continued WEM reforms to the RCM will have substantial impacts on current and future Reserve Capacity Cycles. Further information about the proposed electricity industry reforms, including proposed timeframes, can be found on the PUO's website[10].

[6] See https://westernpower.com.au/community/news-opinion/western-power-green-lights-900mw-of-new-green-energy/.

[7] Previously called System Capacity.

[8] PUO. *Electricity Sector Reform Initiatives*. Available at https://www.treasury.wa.gov.au/Public-Utilities-Office/Industry-reform/Wholesale-Electricity-Market-reform-work-program/. Viewed: 28 December 2018.

[9] For further information, see https://www.treasury.wa.gov.au/Public-Utilities-Office/Industry-reform/Improving-Reserve-Capacity-pricing-signals/.

[10] See https://www.treasury.wa.gov.au/Public-Utilities-Office/.

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1. Introduction

This *Request for Expressions of Interest* (EOIs) relates to the Wholesale Electricity Market (WEM) which operates in the South West interconnected system (SWIS). The SWIS covers the south-west of Western Australia (WA), extending north to Kalbarri, south to Albany, and east to Kalgoorlie (Figure 1).

Figure 1 Map of the SWIS

1.1 Reserve Capacity Mechanism

The SWIS is an isolated system with a high summer peak demand relative to the average load. To ensure sufficient generation and Demand Side Management (DSM) capacity is available to meet future peak demand in the SWIS, the WEM includes a capacity market, the Reserve Capacity Mechanism (RCM).

The RCM is built around the concept of a 'Capacity Credit', a notional unit of capacity that can be traded among Market Participants, and between Market Participants and the Australian Energy Market Operator (AEMO). Capacity Credits are assigned to individual generation and DSM Facilities and are valid for a single Capacity Year[11]. All types of generation and DSM capacity that can meet the timelines and requirements outlined in the WEM Rules[12] may participate in the RCM.

Obligations are imposed on Capacity Credit holders in return for receiving payments for Capacity Credits. The most significant obligation is that capacity must be offered into the SWIS at all times unless the Facility is subject to an approved Planned Outage. If capacity is not offered into the SWIS, such as during a Forced Outage, the Capacity Credit holder is required to pay Reserve Capacity refunds to the market.

Market Customers must purchase Capacity Credits based on their consumption at system peak times in the previous year, through the Individual Reserve Capacity Requirement (IRCR). Market Customers can either purchase Capacity Credits through bilateral contracts with capacity providers or through AEMO at the administered Reserve Capacity Price (RCP).

[11] A Capacity Year is defined in Chapter 11 (Glossary) of the WEM Rules as a period of 12 months commencing on the start of the Trading Day on 1 October and ending on the Trading Day ending on 1 October of the following calendar year.

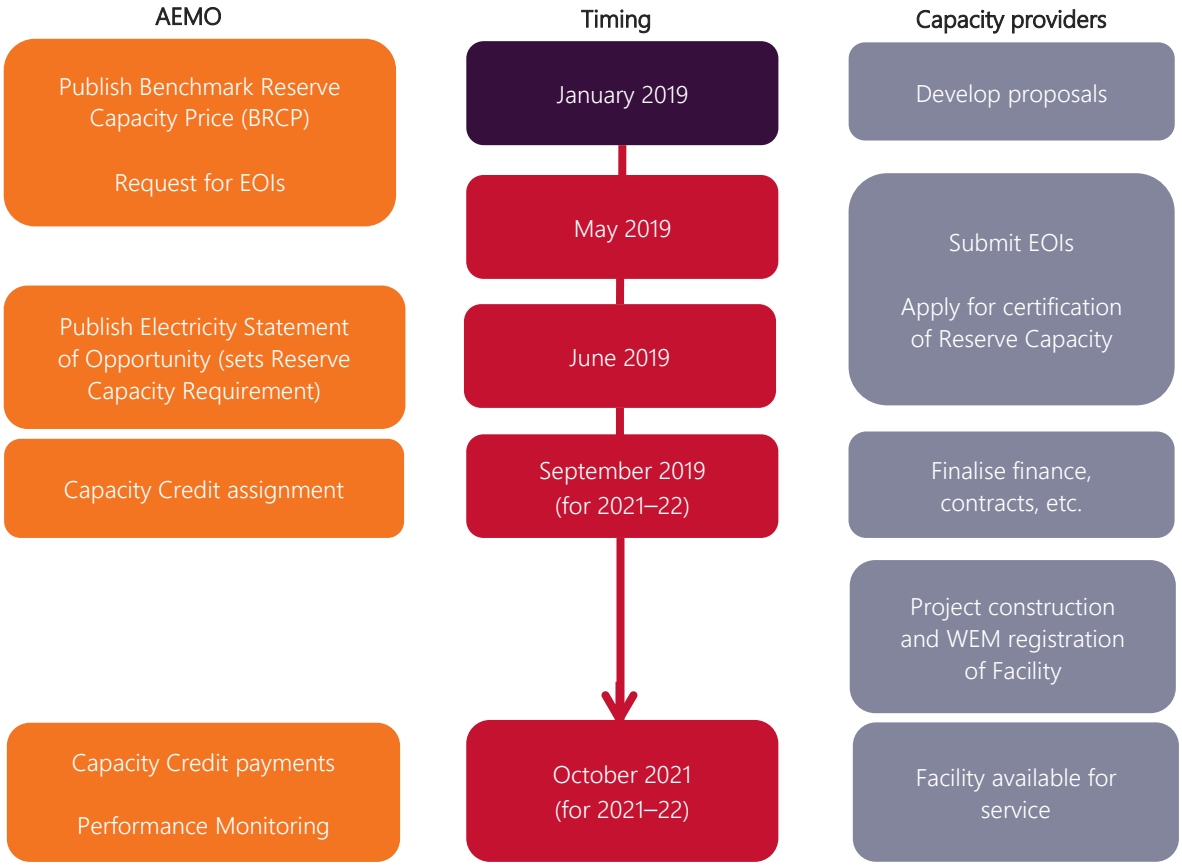
[12] Economic Regulation Authority (ERA) 2018. *Wholesale Electricity Market Rules – 18 October 2018 (WA)*.

If the level of capacity offered through bilateral trades, or settled via AEMO, is insufficient to meet the Reserve Capacity Requirement (RCR) for a Reserve Capacity Cycle, AEMO may conduct a Reserve Capacity Auction to procure additional capacity.

Each year, AEMO forecasts the Reserve Capacity Target (RCT)[13] required to meet forecast peak demand while ensuring system reliability criteria are met for the following 10 years. This RCT is calculated as the peak demand forecast of 'one-in-10-year' conditions[14], plus a margin to cover any unplanned Facility outages and provide frequency stability.[15]

A summary timeline for the process of the 2019 Reserve Capacity Cycle is shown in Figure 2.

Figure 2 Timeline for bringing new capacity to the SWIS for the 2021–22 Capacity Year



Assuming there are no further deferrals, the RCR for the 2019 Reserve Capacity Cycle will be published in the 2019 WEM ESOO by 17 June 2019.

[13] The RCR for a Reserve Capacity Cycle is the Reserve Capacity Target for the Capacity Year commencing on 1 October of Year 3 of the Reserve Capacity Cycle as reported in the WEM ESOO for that Reserve Capacity Cycle.

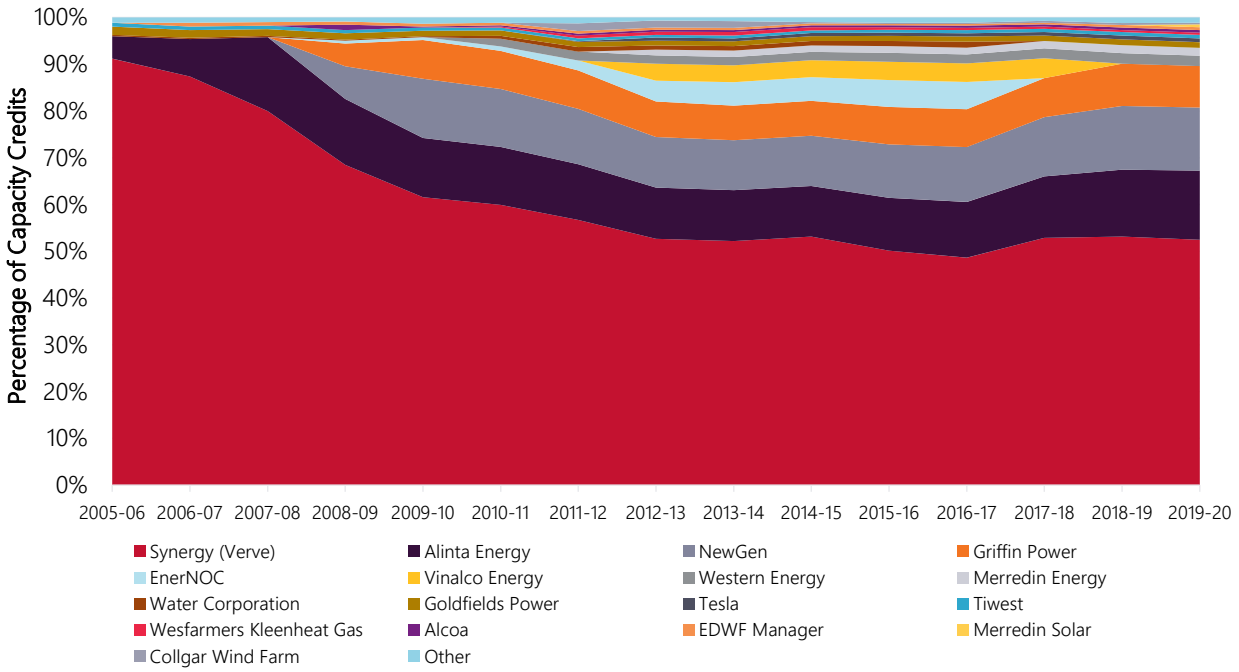
[14] One-in-ten-year demand conditions are a common benchmark in electricity markets when considering reserve margin levels, including in the National Electricity Market and major US electricity markets including PJM, New York Independent System Operator, and New England Independent System Operator.

[15] As specified in clause 4.5.9 of the WEM Rules.

1.2 Existing generation and DSM capacity

The number of Market Participants has increased more than three-fold since the commencement of the WEM in 2005[16]. The proportion of capacity provided by Synergy[17] has fallen from 91% in 2005–06 to 52% of the total SWIS capacity in 2019–20 (Figure 3). Capacity Credits shares for most Market Participants have been maintained at similar levels in the 2019–20 Capacity Year compared to the 2018–19 Capacity Year, except for Synergy (-0.7%) and Alinta Energy (+0.5%).

Figure 3 Proportion of Capacity Credits by Market Participant, 2005–06 to 2019–20 Capacity Years



Source: AEMO 2018. *Capacity Credits since market start up to 2019–20.* Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Assignment-of-capacity-credits.

1.3 Future electricity demand and supply-demand balance

The historical assigned Capacity Credits and the forecast RCT are shown in Figure 4.

Excess capacity in the WEM reached its maximum level of 1,061 MW (23% of the RCR) for the 2016–17 Capacity Year. This level dropped significantly to 199 MW (4.3% of the RCR) for the 2018–19 Capacity Year, when Synergy retired Facilities with a total nameplate capacity of 437 MW in line with a Ministerial Direction[18]. For the 2019-20 Capacity Year, the excess increased to 228 MW (4.9% of the RCR), primarily due to 65 MW of non-scheduled generation capacity entering the market.

Capacity Credits have not yet been assigned for the 2020-21 Capacity Year, as the 2018 Reserve Capacity Cycle has been deferred. Given the most recently assigned level of Capacity Credits, it is estimated that the excess will increase to 307 MW (6.7% of the RCR) for the 2020-21 Capacity Year. This rise in excess capacity is due to lower peak demand and operational consumption forecasts published in the 2018 WEM ESOO, compared to those published in the 2017 WEM ESOO. The change is largely due to the lower economic and population growth outlook that drives underlying growth in peak demand and operational consumption used in the 2018 WEM ESOO.

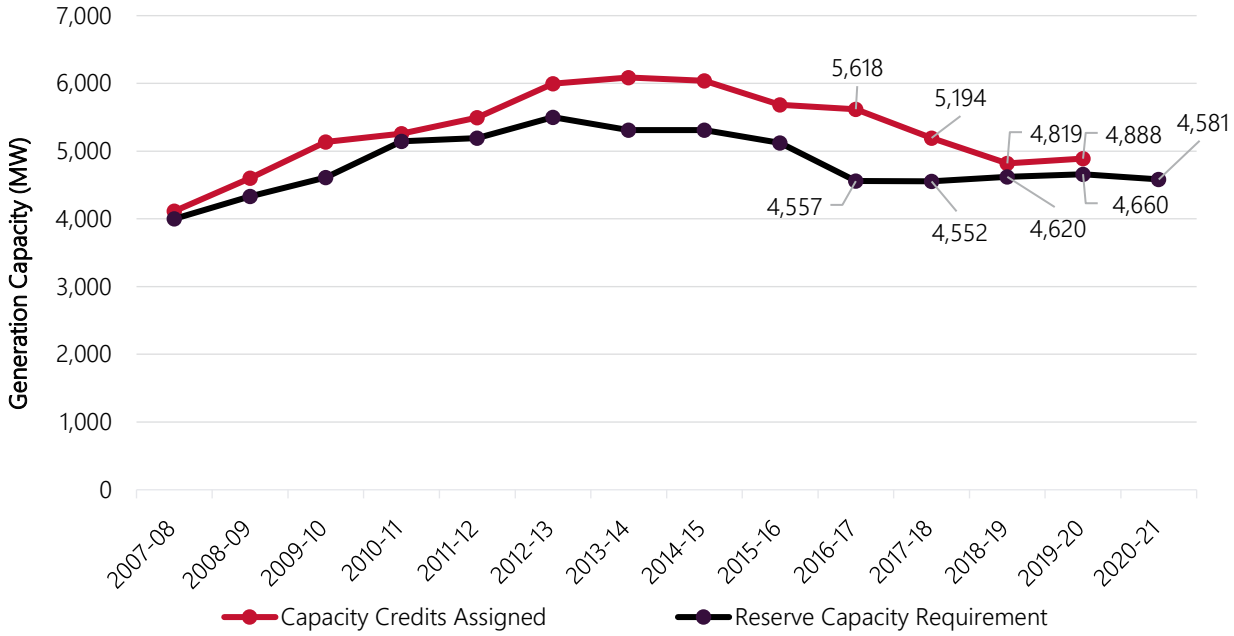
[16] For Capacity Credits by fuel type since market start, see *2018 Request for EOI* at: http://aemo.com.au/-/media/Files/Electricity/WEM/Reserve_Capacity_Mechanism/EOI/2018/2018-Request-for-Expressions-of-Interest.pdf.

[17] This includes the generation capacity previously provided by Verve Energy and DSM capacity provided by Synergy. The two entities merged on 1 January 2014.

[18] Government of Western Australia 2017. "Synergy to reduce electricity generation cap by 2018", Media statement, 5 May. Available at https://www.mediastatements.wa.gov.au/Pages/McGowan/2017/05/Synergy-to-reduce-electricity-generation-cap-by-2018.aspx.

Total capacity in the SWIS is expected to increase over the next year due to new renewable generation connecting to the SWIS, as indicated by Western Power's announcement of network access to eight renewable energy projects under the Generator Interim Access arrangement.

Figure 4 Assigned Capacity Credits and the RCR, 2005 to 2017 Reserve Capacity Cycles



Note: Capacity Credits have not yet been assigned for the 2020-21 Capacity Year due to the deferral of the 2018 Reserve Capacity Cycle. Capacity Credits may be reduced from the originally assigned level due to certain circumstances, such as Reserve Capacity Tests or a voluntary Capacity Credit reduction request.
Source: AEMO. *2005–2018 WEM ESOO.*

The RCR decreased between the 2019-20 and 2020-21 Capacity Years (Figure 4), due to lower forecast peak demand growth as a result of:

- Continuing rapid uptake of rooftop photovoltaics (PV).
- Increased customer IRCR response.
- Variation in weather patterns.
- Potential uptake of battery storage and electric vehicles in the future.

The preliminary estimated RCR for the 2021–22 Capacity Year is 4,600 MW, as reported in the 2018 WEM ESOO. Assuming the level of Capacity Credits assigned for the 2019-20 Capacity Year remains unchanged[19] for the 2021–22 Capacity Year, approximately 4,888 MW of capacity is expected to be in service in that Capacity Year. This includes 4,822 MW of generating capacity (expected to be traded bilaterally between Market Participants) and 66 MW of DSM capacity (traded with AEMO).

Assuming there are no changes to the current level of installed and committed capacity, based on forecast demand, excess capacity is forecast to increase to 288 MW for the 2021-22 Capacity Year, 6.3% of the RCR. This is down from an estimated 307 MW, 6.7% of the RCR, for the 2020-21 Capacity Year[20]. However, the quantity of excess capacity is likely to differ from the preliminary value due to changes in forecast electricity demand, new generation and DSM capacity being considered, or retirement of Facilities.

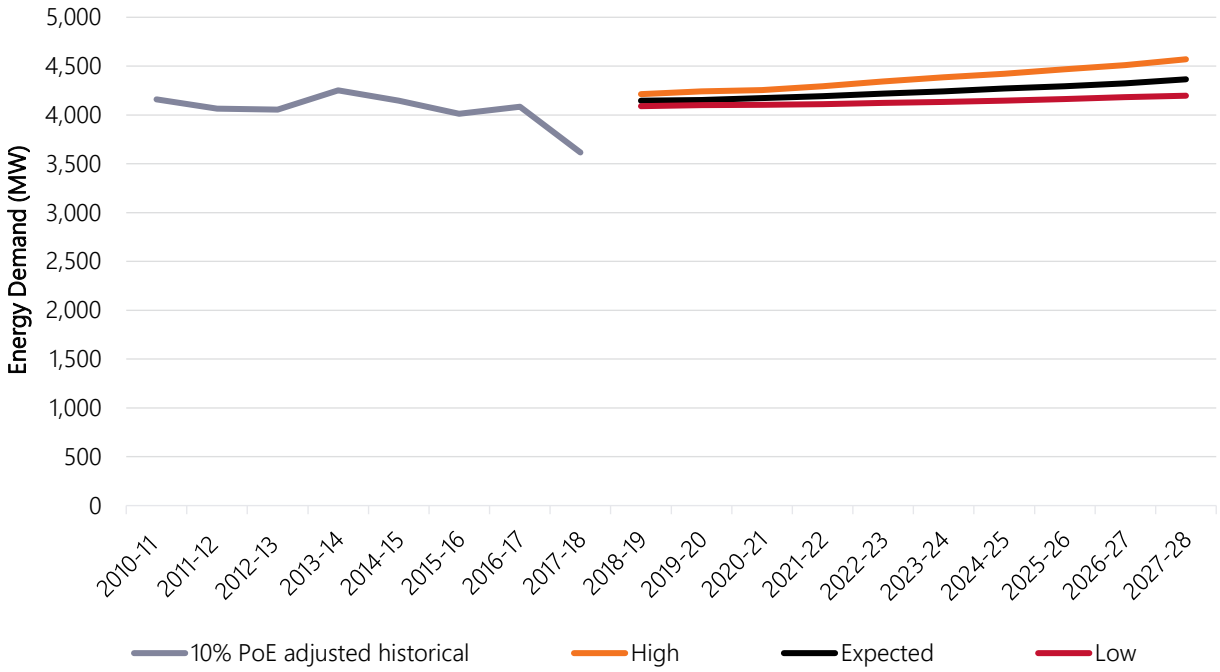
Both the historical and the 10% POE forecast peak demand for different demand growth scenarios are shown in Figure 5. The low, expected and high scenarios reflect different economic growth forecasts as well as changes in rooftop PV and battery storage assumptions.

[19] Due to the deferral of the 2018 Reserve Capacity Cycle, Capacity Credits for the 2020-21 Capacity Year have not yet been assigned.

[20] Assuming that the level of Capacity Credits assigned for the 2019-20 Capacity Year remains unchanged.

The 2018 WEM ESOO forecast that the 10% POE peak demand in the expected demand growth scenario will increase at an average annual rate of 0.6% between 2018–19 and 2027–28. It increases from 4,146 MW in 2018–19 to 4,365 MW in 2027–28, a 5.3% increase over the 10-year forecast period. For 2021–22, the peak demand is forecast to be 4,193 MW.

Figure 5 Historical and forecast peak demand, 10% POE, under different demand growth scenarios

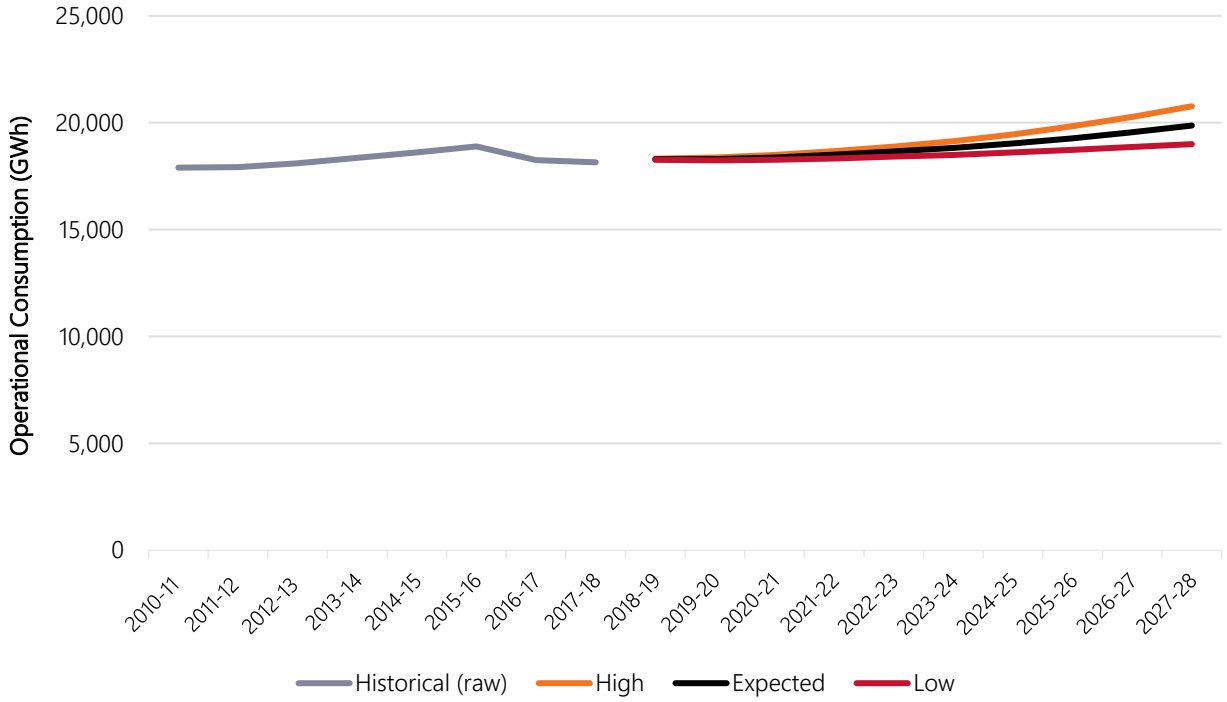


Source: AEMO. *2018 WEM ESOO*.

The operational consumption forecasts under different demand growth scenarios are presented in Figure 6. The 2018 WEM ESOO forecasts suggest that annual operational consumption in the expected demand growth scenario will grow at a rate of 0.9% per annum on average for the 2018–19 to 2027–28 period.

The 2018 WEM ESOO forecast that energy output supplied by the grid in the expected demand scenario will increase 8.6% over the forecast period, from 18,296 gigawatt hours (GWh) in the 2018–19 Capacity Year to 19,871 GWh in the 2027–28 Capacity Year. The energy output is forecast to be 18,549 GWh in the 2021-22 Capacity Year.

Figure 6 Operational consumption[a] forecasts under different demand growth scenarios



[a] Operational consumption refers to electricity used over a period of time that is supplied by the transmission grid.
Source: AEMO. *2018 WEM ESOO*.

Proposed projects will be included in future supply-demand balance determinations in the 2019 WEM ESOO, based on data provided as part of this *Request for EOIs* process.

2. Key CRC requirements

AEMO undertakes an annual certification process to confirm that:

- An existing Facility can deliver the capacity (in MW) that the Market Participant has applied for.
- A new Facility (or additional capacity at an existing Facility) that is yet to commence operation will be able to provide capacity to the SWIS by 1 October, at the latest, in the Capacity Year it starts operating.

All Market Participants (new and existing) wishing to receive Capacity Credits must apply for certification of their Facility during the application window. The principles AEMO applies to assess the level of Certified Reserve Capacity (CRC) assigned to a Facility are outlined in clause 4.11.1 of the WEM Rules.

Typically, the quantity of Capacity Credits assigned to a Facility is equal to the quantity of CRC assigned by AEMO to a Facility. Capacity Credits are assigned through either the trade declaration process or the Reserve Capacity Auction if one is held (see section 2.4.1).

A Market Participant may apply to AEMO for CRC for the 2021–22 Capacity Year between 1 May 2019 and 1 July 2019. To be eligible for CRC, new Facilities must be capable of meeting Reserve Capacity Obligations no later than 1 October 2021 for the 2021–22 Capacity Year.

Sections 4.9 to 4.11 of the WEM Rules describe the CRC application process and the process for determining the quantity of CRC to be assigned to Facilities. Information that must be provided for the CRC application process[21] is listed in clause 4.10.1 of the WEM Rules and the Market Procedure: Certification of Reserve Capacity[22]. Details of registration as a Rule Participant with AEMO, network access, and environmental approvals are provided in the following sections.

2.1 Participant Registration and Facility creation

To be eligible for CRC:

- The proponent must be registered as a Market Participant in the WEM. The Market Participant registration process, including the application for WEMS access available on the AEMO website, is outlined in the Market Procedure: Rule Participant Registration and De-Registration[23].
- The Facility must have been created in the Wholesale Electricity Market System (WEMS). It is important to note that Facility creation is different from Facility registration – Facility creation merely creates a Facility name in WEMS and reflects the Market Participant's intention to register a Facility under the WEM Rules in the future. The Facility creation process is outlined in Section 4.1 of the Market Procedure: Facility Registration, De-Registration and Transfer[24].

Market Participant registration and Facility creation must be completed before applying for CRC.

Satisfying these registration conditions, from the lodgement of an application for WEMS access to the creation of a Facility, generally takes between 15 to 30 business days. However, this process can take longer, depending on the information provided by the proponent. AEMO encourages project proponents to contact the Market Operations (WA) team at wa.operations@aemo.com.au as early as possible to ensure they can satisfy these requirements prior to submitting a CRC application.

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[21] AEMO. *Certification of Reserve Capacity*. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Certification-of-reserve-capacity.

[22] AEMO. *Market Procedure: Certification of Reserve Capacity*. Available at https://www.aemo.com.au/-/media/Files/Electricity/WEM/Procedures/2017/Certification-of-Reserve-Capacity.pdf.

[23] AEMO. *Procedures*. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Procedures.

[24] AEMO. *Market Procedure: Facility Registration, De-Registration and Transfer*. Available at https://www.aemo.com.au/-/media/Files/Electricity/WEM/Procedures/2017/MOMarket-Procedure-Facility-Registration-DeRegistration-and-Transfer--clean--18Apr2017.pdf.

2.2 Network Access

For CRC applications for a Scheduled Generator or a Non-Scheduled Generator, a proponent is required to provide evidence of access to Western Power's network for each Facility.

The documentation must outline the terms and timing of access and details of any constraints, such as runback schemes or Declared Sent Out Capacity arrangements that apply, as required by clause 4.10.1(bA) of the WEM Rules. It must contain information that validates the ability of the network to accommodate the connection of the Facility to the SWIS grid. In general, the network access requirements can be satisfied by providing an executed Electricity Transfer Access Contract (ETAC) and an Interconnection Works Contract (IWC)[25].

The timeframe for a proponent to receive network access varies with the type of generation, location, and existing queue of applicants. Network access is a critical pre-condition for CRC. In many cases, access to the network may take longer than the two-year time horizon of the RCM. For this reason, AEMO encourages project proponents to contact Western Power as early as possible to ensure that their project can progress through the RCM process.

2.3 Environmental approvals

Clause 4.10.1(c)(ii) of the WEM Rules requires a CRC application to include evidence with respect to any necessary environmental approvals.

Developers of generation Facilities must conduct environmental impact assessments and determine whether referrals to the Environmental Protection Authority (EPA) are required for their projects as the first step in securing environmental approvals. The EPA provides information that may help in making this assessment on its website. Proponents are encouraged to read this information and to allow sufficient time to obtain any necessary environmental approvals[26].

2.4 Key steps following the CRC process

2.4.1 Trade declaration and Capacity Credit assignment

Following the CRC process, Market Participants with Facilities other than DSM that have been assigned CRC must declare whether they intend to enter into bilateral contracts for their CRC, withdraw their capacity, or offer it into the Reserve Capacity Auction. Market Participants with DSM Facilities that have been assigned CRC must declare the quantity of CRC they intend to supply to AEMO, and the quantity that they intend to withdraw.

The window for trade declarations for the 2019 Reserve Capacity Cycle closes on 2 September 2019. When submitting trade declarations, Market Participants are only required to declare whether they intend to trade Capacity Credits and are not required to have bilateral contracts in place at that time. Market Participants must register new Facilities prior to the Capacity Year in which their Reserve Capacity Obligations commence.

A Market Participant with a Facility that is subject to a Network Control Service contract cannot submit a trade declaration. These Facilities are assigned Capacity Credits under clause 4.20.5B(a) of the WEM Rules and are not included in the prioritisation methodology detailed in Appendix 3 of the WEM Rules.

[25] Refer to the notice on AEMO's website regarding network access requirements at: http://aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Certification-of-reserve-capacity.

[26] EPA. *Environmental Protection Agency, Government of Western Australia*. Available at http://www.epa.wa.gov.au. Viewed: 28 December 2018.

Once trade declarations are complete, AEMO assigns Capacity Credits to Facilities in accordance with clause 4.20.5A of the WEM Rules. This involves a prioritisation methodology (as detailed in Appendix 3 of the WEM Rules) with the following steps:

1. Capacity Credits are assigned to all committed and operating capacity intended to be traded bilaterally (or, for Demand Side Programmes (DSP), supplied to AEMO).
2. If the total quantity of committed and operating capacity is sufficient to meet the RCR, no additional Capacity Credits are assigned.
3. If the RCR has not been met, AEMO assigns Capacity Credits to proposed Facilities (not yet committed) where the Market Participant has indicated its intention to trade bilaterally or supply capacity to AEMO.

If further capacity is required for a Capacity Year, AEMO runs a Reserve Capacity Auction in accordance with sections 4.15 to 4.19 of the WEM Rules. No Reserve Capacity Auction has been required since the commencement of the WEM.

2.4.2 Capacity Credit payments

Proponents should note that Reserve Capacity pricing arrangements are currently under review as part of the State Government's electricity market reform program. The PUO has proposed changes to the RCP formula which may commence for the 2019 Reserve Capacity Cycle. Further information can be found in chapter 3.

For the 2019 Reserve Capacity Cycle[27], if no Reserve Capacity Auction is required, all uncontracted Capacity Credits are paid the administered RCP calculated using the following formula:

$$\text{RCP} = \text{MIN}\left\{\left(\frac{BRCP \times 1.159}{1 - \left((surplus + 0.03) \times -5.3\right)}\right), BRCP \times 1.1\right\}$$

where

- BRCP is the Benchmark Reserve Capacity Price determined in accordance with section 4.16 of the WEM Rules.
- surplus is the pro rata excess capacity calculated as follows:

$$surplus = \frac{CC - RCR}{RCR}$$

- where
  - CC is the total number of Capacity Credits assigned by AEMO in accordance with clause 4.20.5A for the Reserve Capacity Cycle.
  - RCR is the Reserve Capacity Requirement for the Reserve Capacity Cycle.

Table 1 outlines the Benchmark Reserve Capacity Prices (BRCP) for the 2016-17 to 2021-22 Capacity Years.

Table 1 BRCPs and Capacity Credit prices in the WEM

Applicable Capacity Year	Reserve Capacity Auction Requirement	BRCP ($/MW/year)	RCP ($/MW/year)	Monthly Reserve Capacity Price ($/MW/month)
2017-18	No Auction	$164,800	$111,752.53	$9,312.71
2018-19	No Auction	$159,800	$138,760.39	$11,563.37
2019-20	No Auction	$149,800	$126,683.47	$10,556.96
2020-21	Not Applicable	$153,600	To be determined	To be determined
2021-22	Not Applicable	$154,200	To be determined	To be determined

[27] The RCP formula changes each Capacity Year (see clause 4.29.1 of the WEM Rules for the formulae for other Capacity Years).

Payments for Capacity Credits not traded bilaterally are made monthly, equal to the number of Capacity Credits assigned to a Market Participant multiplied by the monthly Reserve Capacity Price.

2.4.3 DSM Dispatch Quantity and Activation Price

A separate pricing mechanism for DSM Facilities commenced on 1 October 2017[28]. This requires AEMO to calculate the Expected DSM Dispatch Quantity and the DSM Activation Price in accordance with a Market Procedure[29]. These are then used to determine the DSM RCP as follows:

$$DSM\ RCP = (Expected\ DSM\ Dispatch\ Quantity + 0.5) \times DSM\ Activation\ Price$$

The Expected DSM Dispatch Quantity is estimated based on clause 4.5.14E of the WEM Rules[30] and the Market Procedure: Determination of Expected DSM Dispatch Quantity and DSM Activation Price[31]. The DSM Activation Price is based on clause 4.5.14F and the Market Procedure: Determination of Expected DSM Dispatch Quantity and DSM Activation Price[32]. The Expected DSM Dispatch Quantity and the DSM Activation Price for the 2019 Reserve Capacity Cycle will be published in the 2021 WEM ESOO as required by clause 4.5.13(h) and (k) of the WEM Rules.

The results of this calculation are shown in Table 2. AEMO has assumed that the 66 MW of Capacity Credits assigned to DSM for the 2019–20 Capacity Year will stay the same in the 2021–22 Capacity Year. The DSM RCP for the 2018 Reserve Capacity Cycle will be published in the 2020 WEM ESOO. For the 2021–22 Capacity Year, AEMO has determined that a Value of Customer Reliability (VCR) Study is not required. As a result, the preliminary DSM Activation Price is $33,460/MWh[33] and the preliminary Expected DSM Dispatch Quantity is 0.0144.

Table 2 Expected DSM Dispatch Quantity and DSM RCP

Reserve Capacity Cycle	Capacity Year	Total Unserved Energy deemed to be avoided by dispatch of Facilities with DSM Capacity Credits (MWh)*	Expected DSM Dispatch Quantity (MWh)	DSM Activation Price ($/MWh)	Estimated DSM RCP ($/MW)
2015	2017–18	1.01	0.0096	33,460	17,049.74
2016	2018–19	11.8443	0.2063	33,460	23,631.25
2017	2019–20	0.9484	0.0144	33,460	17,210.81

*Calculated as the 'Expected unserved energy (EUE) no DSM dispatched' less the 'EUE DSM dispatched for 200 hr'. Sources: AEMO. *2017 WEM ESOO*, Tables 21 and 25; AEMO. *2018 WEM ESOO,* Tables 16 and 19.

[28] Clauses 4.5.14A to 4.5.14F of the WEM Rules.

[29] AEMO. *Market Procedure: Determination of Expected DSM Dispatch Quantity and DSM Activation Price*. Available at https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/WA_WEM_Consultation_Documents/2017/PCP/Determination-of-Expected-DSM-Dispatch-Quantity-and-DSM-Activation-Price.pdf.

[30] Where the Expected DSM Dispatch Quantity for Capacity Year is calculated by dividing the Total Unserved Energy deemed to be avoided by dispatch of Facilities with DSM Capacity Credits (MWh) by the total of all DSM Capacity Credits assigned to DSM as at 1 October of Year 3 of the relevant Reserve Capacity Cycle.

[31] AEMO. *Market Procedure: Determination of Expected DSM Dispatch Quantity and DSM Activation Price*. Available at https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/WA_WEM_Consultation_Documents/2017/PCP/Determination-of-Expected-DSM-Dispatch-Quantity-and-DSM-Activation-Price.pdf.

[32] Ibid.

[33] The DSM Activation Price represents the Value of Customer Reliability (VCR) for a given Capacity Year. A VCR study is yet to be undertaken, so AEMO has determined the DSM Activation Price to be $33,460/MWh in accordance with clause 4.5.14F of the WEM Rules.

2.4.4 Reserve Capacity Security

When AEMO assigns Capacity Credits to a Facility that has not entered service (or is yet to re-enter service after significant maintenance or having been upgraded), the Market Participant must provide AEMO with Reserve Capacity Security (RCS).

RCS covers the risk of new capacity not coming online by 1 October of each Capacity Year. RCS can be provided in the form of a bank guarantee or a cash deposit and is set at 25% of the BRCP for each Capacity Credit assigned to that Facility.

RCS is required at the time of:

- Bilateral Trade Declarations, for capacity that will be traded bilaterally or supplied to AEMO.
- Offers being submitted for the Reserve Capacity Auction, for capacity offered into the auction.

RCS is returned to the Market Participant:

- If the Facility fails to secure Capacity Credits.
- During the Capacity Year, if the Market Participant applies for the return of the RCS, and the Facility has been assessed to be in Commercial Operation and reached 100% of the required output level, thus satisfying its capacity obligations[34].
- At the end of the Capacity Year if the Facility has been assessed as in Commercial Operation and achieved 90% of the required output level[35].

Alternatively, the RCS may be drawn upon by AEMO if the Facility fails to achieve 90% of the required output level after the end of the Capacity Year. If AEMO draws on the RCS, it is used to offset the cost of any Supplementary Reserve Capacity required. The remainder is refunded to Market Customers in proportion to their IRCR. Information on RCS is in section 4.13 of the WEM Rules and in the Market Procedure: Reserve Capacity Security[36].

2.4.5 Obligations on Facilities receiving Capacity Credits

All Facilities that have been assigned Capacity Credits must make their capacity available during the periods specified at the time of certification. Scheduled Generators are required to demonstrate this by offering their capacity into the Short Term Energy Market.

In addition, Facilities holding Capacity Credits are required to:

- Submit to regular Facility tests undertaken by AEMO.
- Participate in the centralised outage planning arrangements, where applicable.

Holding Capacity Credits does not guarantee that a Facility will be dispatched in the energy market.

A Facility that fails to meet its availability obligation (except for approved Planned Outages) will be required to pay Reserve Capacity refunds to the market in accordance with section 4.26 of the WEM Rules.

[34] See clause 4.13.10 of the WEM Rules. Economic Regulation Authority 2018. *Wholesale Electricity Market Rules – 18 October 2018 (WA)*.

[35] See clause 4.13.13 of the WEM Rules. *Ibid*.

[36] AEMO. *Procedures*. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Procedures.

3. Proposed changes to the RCM

3.1 WA Government's electricity industry reform program

In August 2017, the Minister for Energy announced an electricity industry reform program to be completed by the PUO. There are two key elements of the reform program that are relevant to the RCM:

4. Moving to a constrained network model for access to Western Power's network, which will require the implementation of security-constrained market and dispatch arrangements and changes to the consideration of network congestion in the RCM.
5. Reviewing Reserve Capacity pricing arrangements.

Security-constrained market and dispatch arrangements are expected to commence from 2022. Therefore, changes to the RCM to include an assessment of network constraints will be required for the 2020 Reserve Capacity Cycle.

In August 2018, the PUO published a draft recommendations report[37] detailing the proposed changes to RCM pricing.

The continued WEM reforms to the RCM will have substantial impacts on current and future Reserve Capacity Cycles. Further information about the proposed electricity industry reforms, including proposed timeframes, can be found on the PUO's website[38].

3.2 WEM reviews

The Economic Regulation Authority (ERA) must complete several five-yearly reviews of methods that underlie various processes and calculations in the WEM Rules, including:

- Relevant Level methodology (used to assign CRC to intermittent generators).
- Benchmark Reserve Capacity Price.
- Planning Criterion and peak demand forecasting.

The Relevant Level methodology review is due to be completed in April 2019. In December 2018, the ERA released a draft report outlining the findings of this review of the Relevant Level methodology[39]. Following a period of stakeholder consultation, the ERA intends to finalise its view and publish a final report by 1 April 2019. Any recommendation to change the Relevant Level methodology will need to be developed as a Rule Change Proposal.

Further information on the five-yearly reviews is expected to be made available on the ERA's website[40] at the appropriate time.

[37] PUO. *Improving Reserve Capacity pricing signals – a proposed capacity pricing model.* Available at: https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Public_Utilities_Office/Industry_reform/Draft-Recommendations-Report-Improving-Reserve-Capacity-pricing-signals.PDF.

[38] See https://www.treasury.wa.gov.au/Public-Utilities-Office/.

[39] See https://www.erawa.com.au/cproot/19984/2/Relevant%20level%20method%20review%202018%20-%20%20Draft%20report.PDF.

[40] See https://www.erawa.com.au/electricity/wholesale-electricity-market/methodology-reviews.

3.3 Rule Change Proposals

There are multiple Rule Change Proposals currently under development that may affect the RCM, including:

- Formalisation of the process for maintenance applications (RC_2015_03).
- Capacity Credit allocation methodology for intermittent generators (RC_2018_03).
- Reduction of the prudential exposure in the Reserve Capacity Mechanism (RC_2017_06).
- Removal of Resource Plans and Dispatchable Loads (RC_2014_06).

Further information about these Rule Change Proposals can be found on the Rule Change Panel's website[41].

[41] See https://www.erawa.com.au/rule-change-panel/market-rule-changes.

4. Proponent requirements

4.1 Submitting an EOI for the 2019 Reserve Capacity Cycle

To submit an EOI for the 2019 Reserve Capacity Cycle, the proponent is required to develop a proposal outline for a specific Facility (generation or DSP) for the 2021-22 Capacity Year.

The proponent's EOI must be submitted by 5:00 PM (Australian Western Standard Time) on 1 May 2019, as required by clause 4.1.5 of the WEM Rules.

The EOI submission must include:

- A completed EOI form for each Facility, available in Appendix A of this Request for EOIs and in Microsoft Excel format on the AEMO website[42].
- Relevant supporting documentation.

Proponents who wish to submit an EOI are advised to read the Important Notice in Appendix A of this Request for EOIs.

EOI forms must be submitted:

a) Electronically to wa.capacity@aemo.com.au; or

b) Via mail to

Manager, Reserve Capacity (WA)

Australian Energy Market Operator

PO Box 7096

Cloisters Square

PERTH WA 6850

AUSTRALIA.

4.2 Certified Reserve Capacity applications

The current timeline for the 2019 Reserve Capacity Cycle is shown in Table 3 and on the AEMO website[43].

Applications for CRC for the 2019 Reserve Capacity Cycle may be submitted through WEMS from 1 May 2019, and must be lodged by 1 July 2019, in accordance with clause 4.9.1 of the WEM Rules. A Market Participant applying for CRC must provide all the information specified in clause 4.10.1 of the WEM Rules before the CRC window closes.

An application for a Non-Scheduled Generator that is yet to enter service must include an independent expert report[44] as described in clause 4.10.3 of the WEM Rules.

[42] AEMO. *Expressions of Interest.* Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Expressions-of-interest.

[43] AEMO. *Reserve Capacity Timetable*. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Reserve-capacity-timetable.

[44] See Relevant Level Methodology information. AEMO. *Certification of Reserve Capacity*. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Certification-of-reserve-capacity.

Table 3 2019 Reserve Capacity Cycle timetable for the WEM

Date	Time	Action
Thursday 31 January 2019	5:00 PM	AEMO publishes REOIs.
Wednesday 1 May 2019	9:00 AM	Participants may apply for CRC.
Wednesday 1 May 2019	5:00 PM	EOI submissions close.
Wednesday 15 May 2019	5:00 PM	Announcement of the results of the EOI.
Monday 17 June 2019	5:00 PM	AEMO publishes the: • WEM ESOO. • Reserve Capacity Information Pack.
Monday 1 July 2019	5:00 PM	CRC applications close.
Monday 19 August 2019	5:00 PM	AEMO advises assignment of CRC.
Monday 2 September 2019	5:00 PM	Market Participants: • Provide RCS for new capacity that they intend to trade bilaterally or is subject to a Network Control Services contract. • Provide RCS for new DSP capacity that they intend to trade through AEMO. • Advise how much of their CRC will be traded bilaterally and how much will be offered into the auction.
Tuesday 3 September 2019	5:00 PM	AEMO confirms to Market Participants the amount of CRC that can be traded bilaterally.
Wednesday 4 September 2019	5:00 PM	AEMO: • Publishes CRC for each Facility. • Advises whether the Reserve Capacity Auction is required or cancelled. • Assigns Capacity Credits (if Reserve Capacity Auction is cancelled). • Determines whether the RCR has been met or exceeded with Capacity Credits for which no RCS was required to be provided.
Thursday 5 September 2019	9:00 AM	Lodgement of Reserve Capacity Offers opens (if Reserve Capacity Auction is required).
Friday 13 September 2019	5:00 PM	• Market Participants provide RCS for new capacity entered into the Reserve Capacity Auction. • Lodgement of Reserve Capacity Offers closes.
Monday 16 September 2019	5:00 PM	AEMO runs the Reserve Capacity Auction (if required) and publishes the results.
Friday 20 September 2019	5:00 PM	Market Participants advise AEMO how many Capacity Credits each Facility will provide and of any Long Term Special Price Arrangements to be accepted (if Reserve Capacity Auction is required).
Tuesday 24 September 2019	5:00 PM	• Market Participants may apply to AEMO for a recalculation of the amount of RCS required to be held for a Facility (applications may be received after this date/time). • If the Reserve Capacity Auction is required, AEMO: – Assigns Capacity Credits. – Determines whether the RCR has been met or exceeded with Capacity Credits for which no RCS was required.

This timetable is intended to confirm dates for Year 1 of this Reserve Capacity Cycle only. Refer to clause 4.1 of the WEM Rules for key events occurring in years 2, 3 and 4 of this Reserve Capacity Cycle. AEMO may amend certain dates in the Reserve Capacity timetable pursuant to clause 4.1.32 of the WEM Rules.

A1. Expression of Interest form

Important Note: As part of your EOI submission, please provide additional accompanying documentation and relevant information that supports your project, in addition to the completed EOI form.

Proponent	Response	Option
Application date		
Proponent name		
Contact person		
Contact person's position		
Address of company		
Phone		
Email		
Fax		
Registered in WEMS?		Yes
(Please cross the option which applies)		No
Facility	**Response**	
Facility name		
Location of Facility		
Is the Facility:		An intermittent generator.
(Please cross (X) the option which applies)		A non-intermittent generator serving an intermittent load.
		A non-intermittent generator not serving an intermittent load.
		A form of demand side management.
Primary fuel to be used in the facility		
Quantity of primary fuel expected to be available to the facility (number of days)		
Back-up fuel to be used by the facility (if any)		
Quantity of back-up fuel expected to be available to the facility (if any)		
Hours during a typical week when the facility will not be available to be dispatched		
Maximum capacity available (MW)		
For non-intermittent generators: capacity at 41°C (MW)		
For non-intermittent generators serving an intermittent load: capacity required to serve intermittent load (MW)		
For intermittent generators, anticipated Capacity Credit assignment (MW)		
For demand side management, expected hours of availability per year		
Expected earliest date that the facility will be available to be fully operational		
Offer for network access:		Has been made by Western Power Networks.
(Please cross the option which applies)		Has been applied for and is being processed.
		Has not been applied for.
Environmental approvals:		Have been granted.
(Please cross the option which applies)		Have been applied for and are being processed.
		Have not been applied for.

A2. Results from previous Reserve Capacity Cycles

The following information is presented in accordance with clause 4.3.1(c) of the WEM Rules. Table 4 shows Availability Curve information.

Two Availability Classes are defined in accordance with clause 4.11.4 of the WEM Rules, as follows:

- Availability Class 1 – all generation capacity, and any other capacity that is expected to be available to be dispatched for all Trading Intervals in a Capacity Year, under clause 4.11.4(a) of the WEM Rules.
- Availability Class 2 – capacity that is not expected to be available to be dispatched for all Trading Intervals in a Capacity Year, under clause 4.11.4(b) of the WEM Rules.

Table 4 Availability Curve data for the relevant Capacity Years for the last three Reserve Capacity Cycles

Availability Curve Information Clause 4.5.12(b) of the WEM Rules	2018–19 (MW) (2017 WEM ESOO)*	2019–20 (MW) (2017 WEM ESOO)	2020–21 (MW) (2018 WEM ESOO)
Capacity associated with Availability Class 1	3,955	3,823	3,946
Capacity associated with Availability Class 2	665	837	635

* The 2017 WEM ESOO report contained an additional year of data covering two Long Term Projected Assessment of System Adequacy (PASA) Study Horizons and set the RCR for both the 2016 and 2017 Reserve Capacity Cycles.

The figures presented for each year are for the relevant Reserve Capacity Cycles. The latest Availability Curve data can be found in the 2018 WEM ESOO (p. 46).

References, measures and abbreviations

Key references for data in this document

Topic	Source
RCR/RCT	2018 WEM ESOO, p. 46. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Planning-and-forecasting/WEM-Electricity-Statement-of-Opportunities.
Capacity Credits assigned	Capacity Credits since market start up to 2019-20. Available at https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Reserve-capacity-mechanism/Assignment-of-capacity-credits
Energy consumption forecasts for the SWIS	2018 WEM ESOO, p. 4
Peak electricity demand forecasts for the SWIS	2018 WEM ESOO, p. 5
Estimated excess capacity	2018 WEM ESOO, p. 49 and p. 61
Total Unserved Energy, expected DSM dispatch quantity, activation price, estimated RCP	2017 WEM ESOO, Tables 21 and 25 and 2018 WEM ESOO, Tables 16 and 19
Availability Curve data	2017 WEM ESOO, Table 20, p. 58 and 2018 WEM ESOO, Table 15, p. 46

Units of measure

Abbreviation	Unit of measure
MW	Megawatts
GWh	Gigawatt hours

Abbreviations

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
BRCP	Benchmark Reserve Capacity Price
CRC	Certified Reserve Capacity
DSM	Demand Side Management
DSP	Demand Side Programme
EOI	Expressions of Interest
EPA	Environmental Protection Authority
ERA	Economic Regulation Authority
ESOO	Electricity Statement of Opportunities

Abbreviation	Expanded name
IRCR	Individual Reserve Capacity Requirement
POE	Probability of Exceedance
PUO	Public Utilities Office
PV	Photovoltaics
RCM	Reserve Capacity Mechanism
RCP	Reserve Capacity Price
RCR	Reserve Capacity Requirement
RCT	Reserve Capacity Target
RCS	Reserve Capacity Security
SWIS	South West interconnected system
WA	Western Australia
WEM	Wholesale Electricity Market
WEMS	Wholesale Electricity Market System