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Dear Rajat

### MARGIN VALUES AND COST\_LR PARAMETERS FOR THE 2021/22 FINANCIAL YEAR

In accordance with the Wholesale Electricity Market Rules (**WEM Rules**), the Australian Energy Market Operator (**AEMO**) is pleased to provide the Economic Regulation Authority (**ERA**) with its proposals for:

- the Margin\_Peak and Margin\_Off-Peak values (**margin values**) to apply during the 2021/22 Financial Year [clause 3.13.3A(a)]; and
- the updated Cost\_LR value to apply during the 2021/22 Financial Year [clause 3.13.3C(a)].

### PROPOSED MARGIN VALUES AND LOAD REJECTION RESERVE COST

AEMO proposes that the margin values and Load Rejection Reserve Service component (i.e. the L component) of the Cost\_LR parameter determined for 2020/21 be retained for 2021/22. This is aligned with the approach discussed between the ERA and AEMO in May 2020<sup>1</sup>.

AEMO considers that this approach is reasonable, and that continuing the 2020/21 parameters into 2021/22 will result in values that reflect the margin Synergy could reasonably have been expected to earn in forgone sales due to the provision of Spinning Reserve Services and to cover the cost for providing Load Rejection Reserve Services.

AEMO submits that the modelling that informed the 2020/21 parameters used robust input assumptions that are equally applicable to the current energy sector environment. The 2020/21 modelling reflects recommendations that the ERA made during its 2019/20 review. The ERA's 2020/21 determination acknowledged "*the substantial improvement in AEMO's modelling and quality assurance processes in the 2020/21 proposal*".<sup>2</sup>

AEMO considers it prudent to use the same much-improved modelling for 2021/22, and that the modelling outputs from 2020/21 remain a reasonable basis for determining Synergy's likely forgone sales and costs during 2021/22. Moreover, the sensitivity analysis conducted for the ERA's 2020/21 determination provides a reasonable range and sufficient discretion for the ERA and Market Participants to assess and refine the 2021/22 parameters as necessary.

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<sup>1</sup> Letter correspondence has been published on the ERA's website here: <https://www.erawa.com.au/electricity/wholesale-electricity-market/regulatory-papers/covid-19-aemo-review-of-regulatory-activities>

<sup>2</sup> ERA, March 2020, Ancillary service parameters: spinning reserve margins, load rejection reserve and system restart costs for 2020/21: Determination, page 15.

Consequently, AEMO considers that this proposal provides sufficient detail to enable the ERA to determine the margin values and the updated Cost\_LR value for the 2021/22 Financial Year, and meets the requirements of clauses 3.13.3A(a) and 3.13.3C(a) of the WEM Rules.

In the 2020/21 proposal, AEMO did not have access to detailed inputs from Synergy regarding Synergy's delivered gas price, and instead used back-casting to form an estimate. Recognising the potential limitations of back-casting, AEMO included sensitivity analysis on Synergy's delivered gas price to help inform the ERA's determination.

Though the ERA raised some concerns about using back-casting, the ERA was able to use AEMO's modelled sensitivities, which it considered in combination with publicly-available information, to determine Synergy's delivered gas price:

*The ERA has based its determination on margin values and load rejection reserve costs on the sensitivity study results from the scenario where Synergy's delivered gas price was set at \$5.25/GJ delivered because this gas price is both supported by publicly available information and consistent with gas price information provided by other market participants.<sup>3</sup>*

AEMO has used this same approach to assess the gas price inputs for 2021/22. Publicly-available information on fuel prices indicates that the modelled sensitivities on gas prices provided for 2020/21 remain appropriate in the current energy sector environment. In particular, the modelled sensitivity of \$5.25/GJ<sup>4</sup>, which the ERA adopted for 2021/22, reflects a reasonable gas price assumption for 2021/22.

AEMO has reviewed the other data inputs and assumptions used to determine the 2020/21 parameters, and provided a high-level assessment of any expected changes (provided in Attachment 1). AEMO's assessment finds there are no changes in any of the data inputs or assumptions that would cause the 2020/21 modelling to be an inappropriate basis for determining the margin values or L component of the Cost\_LR parameter for 2021/22.

AEMO submits that the 2020/21 inputs are consistent with current market conditions. As a result, AEMO (and Market Participants) can avoid incurring considerable resourcing and financial costs in connection with another end-to-end modelling process.<sup>5</sup>

Consequently, no additional modelling has been undertaken at this time. AEMO considers that the parameters as determined for 2020/21 satisfy the requirements of clauses 3.13.3A(a) and 3.13.3C(a) of the WEM Rules, and remain appropriate for 2021/22. By retaining the 2020/21 parameters, Synergy will have a reasonable opportunity to recover forgone revenue (in potential sales) when providing Spinning Reserve Services. The 2020/21 parameters also provide an appropriate basis to cover Synergy's costs of providing Load Rejection Reserve Services.

### PROPOSED SYSTEM RESTART COST

Pursuant to clause 3.11.8A of the WEM Rules, AEMO has entered into Ancillary Service Contracts with Market Participants for the System Restart Service. AEMO proposes to update the System Restart Service component (i.e. the R component) of the Cost\_LR parameter for 2021/22 based on the best available

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<sup>3</sup> ERA, March 2020, Ancillary service parameters: spinning reserve margins, load rejection reserve and system restart costs for 2020/21: Determination, page 3.

<sup>4</sup> Sensitivity 1A in the 2020/21 sensitivity analysis.

<sup>5</sup> The modelling undertaken by AEMO to develop the 2020/21 parameters cost around \$300,000 plus significant internal resourcing costs. These costs are recovered from Market Participants via the Market Fee. The ERA also incurred costs related to its review of AEMO's proposal and its determination. These costs are recovered from Market Participants via the Regulator Fee. AEMO also highlights there are additional stakeholder costs incurred through participation in the consultation process.

information, which has resulted in a System Restart Services cost that is not materially different to 2020/21.

The following assumptions have been used to determine the proposed R component of Cost\_LR for 2021/22:

- the continuing contract for the South Country area is adjusted for inflation; and
- the contracts for the North and South Metropolitan areas, which expire on 30 June 2021, will be renegotiated under similar pricing, terms and conditions.

AEMO has started the procurement process to replace the contracts that expire on 30 June 2021 and will provide an updated R component of Cost\_LR for consideration by the ERA by 30 November 2020. More information is included in Attachment 2.

### PROPOSED MARGIN VALUES AND COST\_LR PARAMETERS

AEMO proposes the following margin values to apply for the 2021/22 financial year:

Reporting metric	Unit	Approved (2020/21)	Proposed (2021/22)
Margin_Peak	%	25.46	25.46
Margin_Off-Peak	%	21.42	21.42
SR_Capacity_Peak	MW	252.03	252.03
SR_Capacity_Off-Peak	MW	240.66	240.66
Arithmetic average balancing price, peak trading intervals	\$/MWh	40.47	40.47
Arithmetic average balancing price, off-peak trading intervals	\$/MWh	37.36	37.36
Average annualised availability cost, peak trading intervals	\$m	5.042	5.042
Average annualised availability cost, off-peak trading intervals	\$m	3.353	3.353

The expected total average annualised availability cost for Spinning Reserve Service payments to Synergy remains as \$8.395 million in 2021/22.

AEMO proposes the following components of the Cost\_LR value to apply for the 2021/22 financial year:

Financial Year	Load Rejection Reserve (L) Cost			System Restart (R) Cost		
	2019 Proposed	2019 Approved	2020 Proposed	2019 Proposed	2019 Approved	2020 Proposed
2020/21	\$721,000	\$1,167,000	-	\$3,277,661	\$2,868,473	-
2021/22	N/A <sup>6</sup>	N/A	\$1,167,000	N/A <sup>5</sup>	N/A	\$3,277,165 <sup>7</sup>

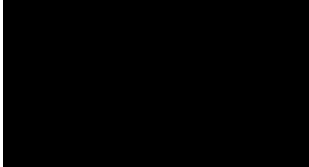
Therefore, the proposed Cost\_LR value to apply for the 2021/22 financial year is \$4,444,165.

<sup>6</sup> Clause 3.13.3C of the WEM Rules requires AEMO to submit an updated Cost\_LR proposal if it determines the Cost\_LR value for the following financial year to be materially different than the costs provided under clause 3.13.3B. AEMO is therefore required to submit an updated Cost\_LR proposal to the ERA under clause 3.13.3C(a) by 30 November 2020.

<sup>7</sup> AEMO has noted the ERA's feedback regarding System Restart Service contracts, and is in the process of procuring new contracts to provide System Restart Services in the future, including for 2021/22. It will continue to provide updates to the ERA regarding the System Restart Services procurement process, and will provide an updated R component of Cost\_LR to the ERA.

Please contact Mark Katsikandarakis on (08) 9469 9932 or Teresa Smit on (08) 9469 9992 if you have any queries or would like to discuss further.

Yours sincerely



Cameron Parrotte  
**Executive General Manager, Western Australia**

## ATTACHMENT 1: ASSESSMENT OF EXPECTED CHANGES

### 1. Why is the 2020/21 modelling and analysis sufficient?

The margin values and L component of the Cost\_LR parameter that will apply during 2020/21 were developed in November 2019. The estimates were developed with support from an independent expert (Ernst & Young), using the latest inputs provided by Market Participants (for the purposes of the margin values and Cost\_LR review), as well as other publicly-available information, and applying a considerably improved approach to modelling the Spinning Reserve Service and the Load Rejection Reserve Service requirements and costs compared with previous years.<sup>8</sup>

AEMO's November 2019 proposal was subject to rigorous review by the ERA and interested Market Participants.<sup>9</sup> The revised modelling approach was generally supported by Market Participants and the ERA, and represented a marked improvement in rigor, quality assurance and sensitivity analysis. The sensitivity analysis provided by AEMO, in particular, was used as the basis of the ERA's 2020/21 determination, and AEMO considers that it is equally applicable for 2021/22.

### 2. The modelling approach and quality assurance conducted to establish the 2020/21 margin values and L component of Cost\_LR incorporated improvements, including those recommended by the ERA

As part of the development of the 2020/21 margin values and L component of the Cost\_LR parameter, AEMO implemented a number of improvements to address expected market developments, known issues, and the ERA's recommendations from previous reviews. This included:

- a new dynamic approach to calculating the Load Rejection Reserve requirement and LFAS volumes, consistent with the current Ancillary Services Report approved by the ERA in August 2019<sup>10</sup> and AEMO's proposed Ancillary Services Report submitted to the ERA on 29 May 2020<sup>11</sup>, and to account for the expected uptake in distributed energy resources and the connection of two significant Intermittent Generators in the North Country area<sup>12</sup>;
- accommodating known generation constraints, including credible network contingency events and the operation of the Generator Interim Access solution, which affect dispatch outcomes;
- updates to reflect changes in market participation resulting from the introduction of a 'full-runway' cost allocation for Spinning Reserve Services, which has affected facility bidding behaviour and dispatch outcomes in the Balancing Market;
- modelling a least-cost mix of LFAS providers as part of preliminary dispatch to ensure results were consistent with operational practice; and
- integrating the optimisation of the Spinning Reserve Service and the Load Rejection Reserve Service in a single model to reflect the inherent relationship between these two services.

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<sup>8</sup> ERA, March 2020, Ancillary service parameters: spinning reserve margins, load rejection reserve and system restart costs for 2020/21: Determination, page 1.

<sup>9</sup> Submissions on AEMO's November 2019 margin values and Cost\_LR proposal were lodged by Alinta Energy, Bluewaters Power, Perth Energy and Synergy.

<sup>10</sup> ERA, August 2019, Decision on the Australian Energy Market Operator's 2019/20 Ancillary Services Requirements, page 15.

<sup>11</sup> AEMO, May 2020, Ancillary Services Report for the WEM 2020, page 20.

<sup>12</sup> AEMO included an estimate of the impact of the connection of these new Facilities on the Ancillary Service requirements in the modelling for the 2020/21 margin values and Cost\_LR parameters. AEMO does not have any additional information on the impacts of the new Facilities as they have not yet commenced operations. AEMO therefore considers that the 2020/21 estimate remains a reasonable estimate for the Ancillary Service requirements to apply for the 2021/22 margin values and Cost\_LR parameters.

The resulting modelling and quality assurance processes delivered parameters that were reasonable and compliant with the requirements of clauses 3.13.3A(a) and 3.13.3C(a) of the WEM Rules as determined by the ERA.

AEMO is not aware of any necessary changes to the modelling approach used to determine the 2020/21 parameters that would result in significantly different parameters to warrant it undertaking another end-to-end modelling process to determine new parameters for 2021/22.

Whilst AEMO always strives to use the best available information and modelling approaches that can be justified, AEMO notes the inherent uncertainties in the accuracy of assumptions and the modelling process itself will always result in modelled outcomes that are a proxy to the actual Ancillary Service provision costs.

### 3. Despite recent changes in fuel costs (including as a result of COVID-19) the gas prices put forward in the 2020/21 determination process remain reasonable input assumptions

In the 2020/21 proposal, AEMO did not have access to detailed inputs from Synergy regarding its delivered gas price. AEMO's independent expert (Ernst & Young) conducted a thorough assessment of the publicly-available information in relation to gas commodity and transport prices to determine a reasonable future outlook and resulting forecast. It also conducted a sensitivity analysis and provided the outcomes under three different gas prices, one of which the ERA used for its determination.

In March 2020, AEMO commenced the process of reviewing the Energy Price Limits under clause 6.20.6 of the WEM Rules. It commissioned an independent consultant (Marsden Jacob Associates) to conduct a review of the Energy Price Limits to apply in the WEM for 2020/21<sup>13</sup>.

The Energy Price Limits process includes an analysis of the outlook for distillate and gas prices, and accounts for fuel costs expected to be incurred by Market Participants. Similarly to the margin values and L component of the Cost\_LR parameter, AEMO must develop a reasonable estimate for fuel prices based on the information available. This includes a commodity component based on the prevailing spot price, and a transport component.

Most Market Participants have long-term contracts with agreed fuel prices in place, and these prices are likely to differ from spot fuel prices. However, in the absence of forecasts of fuel costs or visibility of contract prices, AEMO relies on spot prices as a reasonable basis on which to base administered prices.

AEMO considered it prudent to benchmark the gas price used in its determination of the proposed margin values and L component of the Cost\_LR parameter against the price recently assessed as part of the Energy Price Limits review.

During the consultation process, a substantial decrease in the distillate price from the March 2020 input data cut-off date (presumably resulting from the reduced oil demand as a result of COVID-19) was identified. As a result, AEMO reviewed the fuel price outlooks, with a view to determining the likely impact of the recent changes in world oil and liquid natural gas prices on operating costs in the WEM and the resulting Energy Price Limits.

Marsden Jacob Associates conducted further modelling in relation to recent and future potential changes in fuel prices, including reviewing the outlook for distillate and gas prices. It found that, while the distillate

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<sup>13</sup> AEMO published the initial version of this report on 9 April 2020, and an updated report on 21 May 2020.

price has decreased significantly since its April 2020 report, the gas price is unchanged. Marsden Jacob Associates stated that it:

*already incorporated a low gas price outlook (reflecting the existing pre-COVID-19 oversupply conditions).<sup>14</sup>*

*continues to consider that \$2/GJ remains a reasonable approximation of the floor.<sup>15</sup>*

*consider[s] the average of the past year to provide the best estimate of the expected value for the coming year.<sup>16</sup>*

On this basis, Marsden Jacob Associates has assumed a gas commodity price of \$2.92/GJ, (\$4.87/GJ fully delivered using the Dampier to Bunbury Natural Gas Pipeline) for the determination of Energy Price Limits, which covers the same period.

This more recent gas price forecast of \$4.87/GJ is between the sensitivities of \$3.50/GJ in the base case proposed by AEMO and \$5.25/GJ in sensitivity 1A used in the ERA’s determination for the margin values and the L component of the Cost\_LR parameter for 2020/21. With the gas price forecast being within the range of the sensitivities being determined for 2020/21, and given the limitations of gas prices forecasts and the relatively small impact of the gas price on final prices, AEMO considers that the scenarios developed during the last review remain appropriate sensitivities and provide a reasonable framework for determining Synergy’s delivered gas price in 2021/22.

AEMO has therefore used the same approach as the ERA used in its 2020/21 determination to select which of the various sensitivities best represents the gas price inputs for the 2021/22 parameters.

AEMO has assessed the various sources considered by the ERA in its 2020/21 determination, including the information gathered as part of the Energy Price Limits review (including information on spot prices provided by gasTrading). AEMO notes that the price information from the Department of Mines, Industry Regulation and Safety’s weighted average domestic gas price does not appear to have been updated since the ERA’s 2020/21 determination.

Using this previously accepted process of considering the previously modelled sensitivities, and in light of publicly-available information on fuel prices, AEMO considers that the sensitivities modelled by AEMO for the 2020/21 parameters remain relevant reference points for the ERA’s 2021/22 determination. AEMO has therefore retained the use of the sensitivity 1A used in the ERA’s determination.

#### 4. The input assumptions used in the 2019 review remain reasonable

AEMO has considered each of the market modelling assumptions used to determine margin values and L component of Cost\_LR in 2020/21, and considers they provide a reasonable basis for these parameters in 2021/22, as follows:

Input assumption (relevant section of the 2019 report)	Assessment
Energy, rooftop PV, behind-the-meter storage, electric vehicles	The 2020/21 parameters were developed using AEMO’s forecast of expected demand under the ‘expected case’ in the 2019 WEM Electricity Statement of Opportunities (ESOO). Forecasts published in the 2020 WEM ESOO under the equivalent ‘central case’ for the 2021/22 financial year show comparable demand forecasts, including:

<sup>14</sup> Marsden Jacob Associates, May 2020, 2020-21 Energy Price Limits Review – Draft Report V2, page 10.

<sup>15</sup> Ibid, page 36.

<sup>16</sup> Ibid.



Input assumption (relevant section of the 2019 report)	Assessment
and industrial demand (Sections A.1 – A.5)	<ul style="list-style-type: none"> <li>• forecast operational demand of 17,467 GWh per annum sent out for 2021/22 in the 2020 WEM ESOO, compared to 18,289 GWh per annum sent out for 2020/21 from the 2019 WEM ESOO, which was used in developing the 2020/21 parameters; and</li> <li>• forecast annual peak demand (50% probability of exceedance) of 3,782 MW for 2021/22 in the 2020 WEM ESOO, compared to 3,813 MW for 2020/21 from the 2019 WEM ESOO, which was used in developing the 2020/21 parameters.</li> </ul> <p>While the forecasts for 2021/22 are lower than those used in the 2020/21 modelling, AEMO considers that the daily demand profile is likely to remain relatively consistent and, as a result, the lower forecasts are unlikely to result in a material difference to dispatch outcomes. Moreover, a variance of <math>\pm 5\%</math> is within the overall forecast tolerance for energy consumption, factoring in highly-volatile variables such as weather.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
New entrant market generators (Section A.6)	<p>The 2020/21 parameters were based on publicly-available information and information provided as part of the certification process, including the 214 MW Yandin Wind Farm and the 180 MW Warradarge Wind Farm. AEMO has assigned 20 MW of Capacity Credits to Bluewaters' Demand Side Program (DSP) and 33 MW to the new Phoenix Kwinana waste-to-energy plant for 2021/22. However, the inclusion of these new Facilities is unlikely to materially affect the outcomes of the market modelling undertaken in relation to the 2020/21 parameters, because:</p> <ul style="list-style-type: none"> <li>• DSPs are not dispatched through the Balancing Merit Order, and therefore would not affect general, bidding or outage assumptions, or the resulting dispatch outcomes; and</li> <li>• the addition of the waste-to-energy facility is not likely to significantly change the dispatch outcomes, as the impact is within the margin of error resulting from the heuristic unit commitment modelling approach used.</li> </ul> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
Generation retirements (Section A.7)	<p>The 2020/21 parameters were based on based on publicly-available information and information provided as part of the certification process.</p> <p>AEMO did not assign Capacity Credits to Tronox's Tiwest cogeneration plant for 2021/22. However, this generator has historically operated 24/7 as AEMO understands it is an integral part of the Tronox Kwinana operations. As there has been no public announcement about changes to the Tronox Kwinana operations (or the generator) AEMO would assume this generator would continue to operate materially the same in 2021/22 as it has in previous years. AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>



Input assumption (relevant section of the 2019 report)	Assessment
Fuel prices (gas and coal) (Sections A.8 – A.12)	<p>The 2020/21 parameters were based on contract fuel prices developed using information provided by Market Participants where it was made available. Where information was not provided, modelling was undertaken using a combination of information provided and publicly-available information.</p> <p>As noted in Section 3 of this Attachment, AEMO has assessed the forecast gas price developed by Marsden Jacob Associates as part of the Energy Price Limits review, and tested it against the scenarios in the 2020/21 sensitivity analysis.</p> <p>AEMO considers that the approach of developing scenarios and testing sensitivities continues to provide a robust framework. It allows the ERA to adopt a different value if it considers that the proposed value for the Synergy delivered gas price does not reflect the price that will actually occur. The sensitivity analysis highlighted the relatively small impact on final prices as a result of changing the gas price.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
Planned maintenance (Sections A.13 – A.14 and Appendix D)	<p>The 2020/21 parameters were developed using:</p> <ul style="list-style-type: none"> <li>• a Monte Carlo simulation to capture the impact of forced (unplanned) outages, assigning random outages to each generating unit; and</li> <li>• scheduled outages in AEMO’s Medium Term Projected Assessment of System Adequacy in combination with typical maintenance schedules for technology types.</li> </ul> <p>While a simulation of random factors will necessarily produce different results each time it is run, AEMO considers it unlikely that these input assumptions will materially change year-on-year.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
Spinning Reserve and Load Rejection Reserve contracts (Section 3.7)	<p>The procurement of non-Synergy contracts occurs after AEMO proposes the new parameters to the ERA. As the quantity of contracted services for 2020/21 was unknown at the time when the parameters were determined, AEMO assumed there would be a continuation of the 2019/20 contracts for 2020/21.</p> <p>As outlined in AEMO’s 2020 Ancillary Services Report, AEMO has not identified any change to the contracted quantity of the Spinning Reserve Service or the Load Rejection Reserve Service for 2021/22.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
LFAS assumptions (Section 3.2 and Appendix B)	<p>To account for variability from increasing penetration of behind-the-meter PV facilities and other non-scheduled generation in the SWIS, AEMO has transitioned towards a time-of-day profile for the LFAS requirement. AEMO highlights the following continuous improvements that have been made:</p> <ul style="list-style-type: none"> <li>• The LFAS requirement approved for 2019/20 was 85 MW LFAS Upwards and Downwards between 5:30 AM and 7:30 PM, and 50 MW at other times to be enabled for each Trading Interval.</li> <li>• In the review of the margin values and the L component of the Cost_LR parameter for 2020/21, AEMO assumed a requirement of 116 MW LFAS Upwards and Downwards from 5:30 AM to 7:30 PM and 70 MW at other times. This was based on preliminary, simplified analysis, and included AEMO’s best estimate of the impacts of the</li> </ul>

Input assumption (relevant section of the 2019 report)	Assessment
	<p>connection of new large intermittent Facilities and additional rooftop PV<sup>17</sup>. AEMO and the ERA considered these modelling updates to be a material improvement, and a reasonable estimate of LFAS requirements.</p> <ul style="list-style-type: none"> <li>The LFAS requirement proposed in AEMO's 2020 Ancillary Services Report submitted to the ERA on 29 May 2020<sup>18</sup> remain unchanged from that approved in 2019.<sup>19</sup> However, operational experience after the connection of the new Facilities will allow AEMO to propose new requirements and a possible transitional arrangement, which is likely to better align with the assumptions used to determine the 2020/21 margin values and the L component of the Cost_LR parameter.</li> </ul> <p>Based on the current status of the connection of the new Facilities and the relative impact of additional rooftop PV on the LFAS requirement, AEMO considers that the assumed requirement of 116MW from 5:30 AM to 7:30 PM and 70MW at other times remains a reasonable estimate for the requirements to apply in 2021/22.</p> <p>There have been no material changes in generation or load input assumptions that would warrant further changes to the method or inputs.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>
Facility-related assumptions (Appendix C)	<p>The 2020/21 parameters were developed based on an assessment of certain technical and financial facility-related assumptions. The assumptions used in the modelling are based on information provided by Market Participants, information provided for previous years' reviews, and publicly-available data. The assumptions relate to:</p> <ul style="list-style-type: none"> <li>Heat rates [GJ/MWh]</li> <li>Auxiliary factor [%]</li> <li>Variable operation and maintenance (VOM) costs [\$]</li> <li>Fuel Cost [\$/GJ]</li> <li>Fuel transport cost [\$/GJ]</li> <li>Marginal Loss Factors</li> <li>Unit shutdown cost [\$/shutdown]</li> <li>Ancillary Service capabilities (Including SRAS, LRR and LFAS) [MW]</li> </ul> <p>AEMO does not expect these input assumptions to materially change year-on-year.</p> <p>AEMO therefore considers that the 2020/21 input assumptions are appropriate to retain for 2021/22.</p>

<sup>17</sup> AEMO's estimate of the impact of these new connections included in the 2020/21 assumptions remain the best estimate at the time of this proposal.

<sup>18</sup> Ibid.

<sup>19</sup> AEMO included an estimate of the impact of the connection of these new Facilities on the Ancillary Service requirements in the modelling for the 2020/21 margin values and Cost\_LR parameters. AEMO does not have any additional information on the impacts of the new Facilities as they have not yet commenced operations. AEMO therefore considers that the 2020/21 estimate remains a reasonable estimate for the Ancillary Service requirements to apply for the 2021/22 margin values and Cost\_LR parameters.

5. The modelling and sensitivity analysis conducted as part of the 2019 review showed that changing the gas price does not have a material effect on the margin values or the L component of the Cost\_LR parameter

Fuel is the largest input into a generator's short run marginal cost. Synergy's delivered gas price therefore provides the foundation for estimating the margin values and the L component of the Cost\_LR parameter.

In determining the margin values and the L component of the Cost\_LR parameter for 2020/21, AEMO sought actual input data from Market Participants to improve the accuracy of its modelling exercise. While most Market Participants (including Synergy) provided information, Synergy did not provide fuel cost input assumptions.

Without actual Synergy fuel costs, AEMO's independent expert (Ernst & Young) conducted a thorough assessment of the publicly-available information in relation to gas commodity and transport prices to determine a reasonable future outlook and resulting forecast. Recognising the importance of the gas price in determining the margin values and the L component of the Cost\_LR parameter (and the potential limitations of back-casting), AEMO conducted sensitivity analysis on fuel costs, modelling three scenarios:

1. A base case assuming a Synergy delivered gas price of \$3.50/GJ;
2. Sensitivity 1A assuming a Synergy delivered gas price of \$5.25/GJ; and
3. Sensitivity 1B assuming a Synergy delivered gas price of \$7.00/GJ.

As shown in Table 2 of the ERA's March 2020 determination (replicated below), changing the gas price assumption has a relatively small impact on Synergy's total availability costs.

**Table 2: Spinning reserve and load rejection reserve modelled results - base case and fuel price sensitivities - for 2020/21 financial year**

	Base case \$3.50/GJ Synergy gas	Sensitivity 1A \$5.25/GJ Synergy gas	Sensitivity 1B \$7.00/GJ Synergy gas
<b>Margin value parameters (%)</b>			
Spinning reserve margin peak	39.65	25.46	20.60
Spinning reserve margin off-peak	23.24	21.42	20.24
<b>Modelled balancing market price (\$/MWh)</b>			
Average balancing price - peak	35.15	40.47	43.63
Average balancing price off-peak	31.16	37.36	40.87
<b>Spinning reserve (\$ million)</b>			
Synergy's availability cost - peak	5.06	5.04	4.92
Synergy's availability cost - off-peak	2.42	3.35	3.80
Synergy's total availability cost	7.48	8.40	8.72
<b>Load rejection reserve (\$ million)</b>			
Load rejection reserve availability cost – peak	0.175	0.274	0.430
Load rejection reserve availability cost – off-peak	0.546	0.893	1.349
Total annualised load rejection cost	0.721	1.167	1.779

Sources: AEMO's proposal for 2020/21 and Table 10 of Ernst & Young's Ancillary services parameter review 2019 final report, public version, 6 December 2019

AEMO submitted that the base case was a reasonable indicator of fuel costs, and proposed it as the foundation of the margin values and the L component of the Cost\_LR parameter. The ERA acknowledged the improved rigour and quality of AEMO's modelling<sup>20</sup>, and welcomed the sensitivity analysis provided.

Though the base case was (and remains) an appropriate scenario, the ERA considered that Sensitivity 1A provided a better representation of Synergy's costs, stating:

*The ERA supports basing its determination on the sensitivity study results from the scenario where Synergy's delivered gas price was set at \$5.25/GJ because this gas price is supported by publicly available information and is consistent with gas price information provided by other market participants.*<sup>21</sup>

The ERA therefore adopted the parameters resulting from Sensitivity 1A in its March 2020 determination of the margin values and the L component of the Cost\_LR parameter.

Importantly, the approach of developing scenarios and testing sensitivities provides a robust framework that allows the ERA to adopt a different value if it considers that the proposed value for the Synergy delivered gas price does not reflect the price that will actually occur. The sensitivity analysis also highlights the relatively small impact on final prices as a result of changing the most critical input (the gas price). AEMO therefore considers that applying the same gas price assumptions and sensitivities for 2021/22 will enable the ERA to make a determination that satisfies the WEM Rule requirements.

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<sup>20</sup> ERA, March 2020, Ancillary service parameters: spinning reserve margins, load rejection reserve and system restart costs for 2020/2: Determination, page 8.

<sup>21</sup> Ibid, page 14.

## ATTACHMENT 2 – SUMMARY OF SYSTEM RESTART SERVICE COST

The System Restart Service is defined in clause 3.9.8 of the WEM Rules as:

*the ability of a Registered Facility which is a generation system to start without requiring energy to be supplied from a Network to assist in the re-energisation of the SWIS in the event of system shut-down.*

The System Restart Service is only required when there is a shutdown of the SWIS. Ideally, the service will never be required. However, if a shutdown event were to occur and the service were to fail, then the SWIS may be without power for several days.

AEMO requires at least three Facilities to provide the System Restart Service to ensure reliability during contingency events, including Planned and Forced Outages affecting two out of the three Facilities concurrently. In addition, to mitigate the risk of common failure, Facilities providing the System Restart Service should not be located in the same geographical or electrical area, and should have the capability and be in a location where they can re-energise other generation to enable restart of the system.

Consequently, the requirement for the System Restart Service is a Facility providing restart capability in each of the North Metropolitan, South Metropolitan and South Country areas.

AEMO currently has three Ancillary Service Contracts<sup>22</sup> with Market Participants for System Restart Services under clause 3.11.8A of the WEM Rules:

- A contract for services in the South Country area that expires on 23 October 2028.
- A contract for services in the North Metropolitan area that expires on 30 June 2021.
- A contract for services in the South Metropolitan area that expires on 30 June 2021.

AEMO has started the procurement process to replace the two expiring contracts, however, it is not yet complete. AEMO will conduct negotiations on a commercial basis to ensure those contracts entered into are prudent and efficient, and represent the best value for end-use customers. AEMO will continue to involve the ERA in this process, and will provide an updated R component of the Cost\_LR parameter for its consideration by 30 November 2020, based on information available at that time.

For the purposes of this proposal, AEMO has assumed that pricing, terms and conditions similar to those in the expiring contracts will continue to apply for 2021/22, as follows:

Ancillary Service Contract	Annual cost
North Metropolitan Area – Assumption based on current contract	[REDACTED]
South Metropolitan Area – Assumption based on current contract	
South Country Area – Actual contract price with CPI estimate as at March 2020	
<b>Total estimated cost for 2021/22</b>	<b>\$3,277,165</b>

<sup>22</sup> Under these contracts, service providers are paid monthly. The contracts provide a payment adjustment mechanism to address periods when the System Restart Service is, or is taken to be, unavailable.

<sup>23</sup> The review period for the South Country Area System Restart Service is from October to September and the actual costs will be based on CPI adjustments from September.