



Economic Regulation Authority

# Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025

Issues paper

07 February 2022

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## Invitation to make submissions

**Submissions are due by 4:00 pm WST, Monday, 7 March 2022**

The ERA invites comment on this paper and encourages all interested parties to provide comment on the matters discussed in this paper and any other issues or concerns not already raised in this paper.

We would prefer to receive your comments via our online submission form <https://www.erawa.com.au/consultation>

You can also send comments through:

Email: [publicsubmissions@erawa.com.au](mailto:publicsubmissions@erawa.com.au)

Post: Level 4, Albert Facey House, 469 Wellington Street, Perth WA 6000

Please note that submissions provided electronically do not need to be provided separately in hard copy.

All submissions will be made available on our website unless arrangements are made in advance between the author and the ERA. This is because it is preferable that all submissions be publicly available to facilitate an informed and transparent consultative process. Parties wishing to submit confidential information are requested to contact us at [info@erawa.com.au](mailto:info@erawa.com.au).

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## Executive summary

The Australian Energy Market Operator (AEMO) provides services to the electricity and gas markets in Western Australia. The Wholesale Electricity Market (WEM) Rules and Gas Service Information (GSI) Rules specify that the Economic Regulation Authority determines the allowable revenue and forecast capital expenditure that AEMO recovers for these services, through fees charged to market participants.

AEMO is seeking the ERA's approval of AEMO's proposed allowable revenue and forecast capital expenditure for the sixth allowable revenue period (AR6), from 1 July 2022 to 30 June 2025, submitted to the ERA on 17 December 2021. AEMO is proposing:

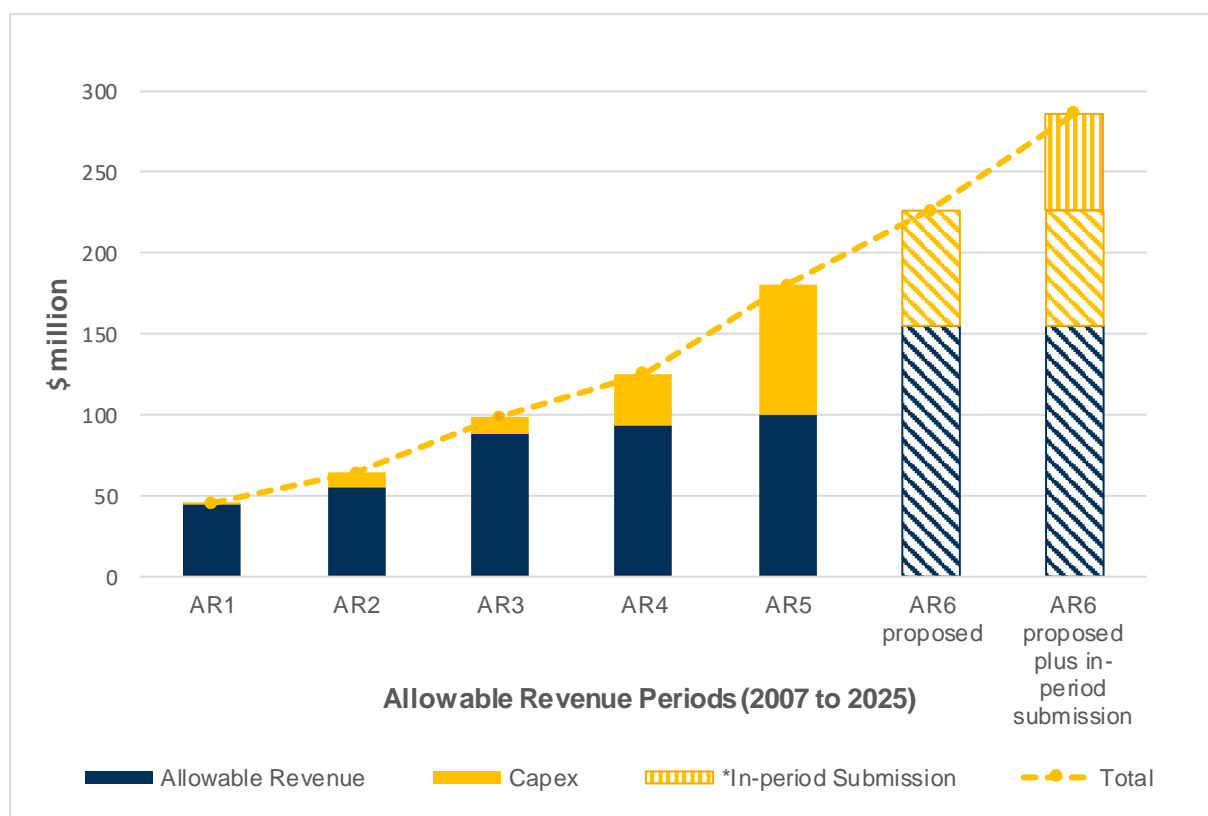
- Total allowable revenue for AEMO's WEM functions of \$156.2 million and forecast capital expenditure of \$69.4 million, which comprises \$54.0 million for WEM and Distributed Energy Resources (DER) reforms, and \$15.4 million in other, business-as-usual capital. This is a 57 per cent increase in allowable revenue compared to the \$99.5 million allowable revenue approved by the ERA for AR5.
- Total allowable revenue for AEMO's GSI functions of \$15.3 million and forecast capital expenditure of \$0.4 million.

AEMO has also flagged the possibility that additional capital costs from \$35 million to \$60 million may be required during the AR6 period (see section 2.1.2.4 below).<sup>1</sup> AEMO's forecast allowable revenue for AR6 represents a significant increase compared to the allowable revenue approved and expended in the previous review periods.

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<sup>1</sup> Market Rule 2.22A.14 (see Appendix 3) allows AEMO to make a submission within the review period for additional funding for a project or activity to fulfil an obligation under the market rules.

**Figure 1 Comparison of proposed and likely AR6 allowable revenue and capital expenditure to previous review periods**

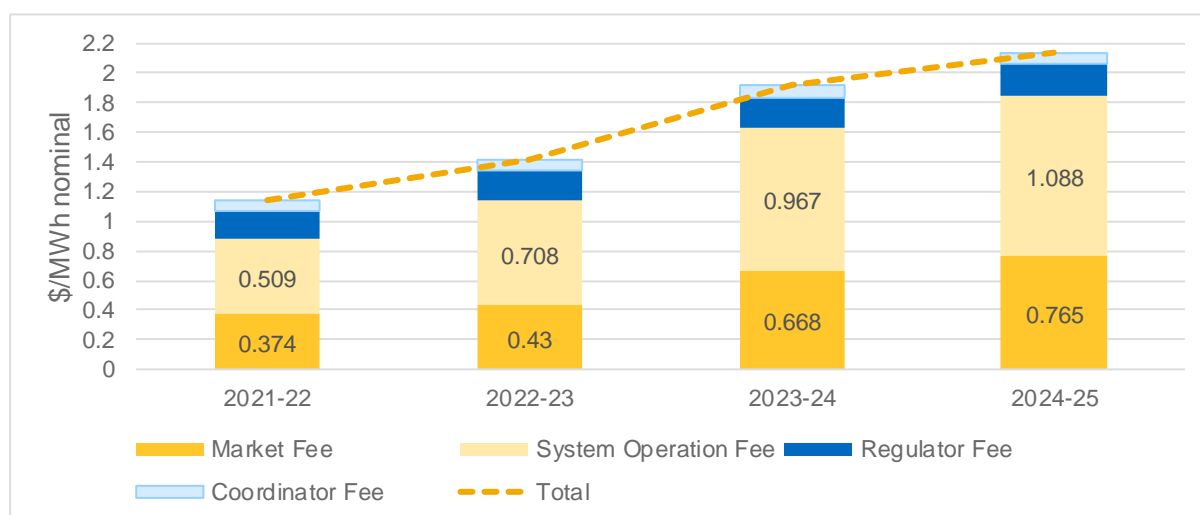


AEMO expects that average WEM market fees will increase from \$1.143 per MWh over the AR5 review period to \$1.823 per MWh during AR6, an average increase of 60 per cent. AEMO estimates that if this increase is passed through to residential customers, the part of the annual residential electricity bill that represents market fees will increase from \$10.11 in AR5 to approximately \$16.56 in AR6.<sup>2</sup> This equates to an increase of \$6.45 per year on the average annual residential customer bill.<sup>3</sup>

<sup>2</sup> AEMO calculates the AR5 average tariff as \$1.066/MWh/ 1000 x (13 kWh per day) x 2, as the fee is charged to both generation and load.

<sup>3</sup> AEMO notes that this is an indicative calculation only, as AEMO has no control or visibility of how market participants absorb or pass-through costs to end use customers.

**Figure 2: AEMO's estimate of the effect of its proposed costs on market fees.**



Source: ERA chart based on AEMO data

This issues paper provides an outline of the main aspects of AEMO's proposal and some preliminary matters that the ERA has identified in its initial review of the proposal. To help with its determination, the ERA has sought more information from AEMO on the:

- Governance processes used to challenge the funding proposal, to understand how rigorously the cost forecasts were tested within AEMO prior to submission.
- Labour cost calculations used to determine the required number of new positions and their remuneration, to understand why AEMO has proposed an increase of 31 new permanent staff alongside capital projects expected to increase automation of market operations and system management. The ERA is also interested in understanding what alternative options were considered prior to proposing new roles.
- Project contingency calculations used to manage project uncertainty, to understand the reliability and validity of AEMO's approach to calculating, managing, and then expending project contingency. The ERA view will be informed by how AEMO has utilised project contingency approved for AR5.
- Cost allocation arrangements for allocating shared system costs to Western Australia, to ensure only efficient costs are passed through to WA and that these allocations have been tested against the costs of developing WA standalone solutions.
- Purchasing and market testing processes used by AEMO to understand what discipline is placed on project managers to estimate and test that proposed costs are efficient and prudent.
- Proposed scope of the projects identified in the proposal, to understand how project scopes are sufficient to deliver AEMO's obligations under the WEM and GSI Rules and why the proposal contains a couple of projects that appear outside of these obligations.

The ERA is seeking comment from stakeholders on these matters, any questions raised in this paper, or any other aspect of AEMO's AR6 proposal. Questions to guide stakeholder feedback are provided in section 4.

The ERA will use feedback from stakeholders to inform its draft determination, which has a revised legislative deadline of 31 March 2022. After considering further feedback from stakeholders, the ERA will publish a final determination on AEMO's allowable revenue and forecast capital expenditure for the review period on its website by 31 May 2022.

# 1. Introduction

The Economic Regulation Authority determines the allowable revenue and forecast capital expenditure that the Australian Energy Market Operator (AEMO) recovers, through fees charged to market participants, for the services AEMO provides in the electricity and gas markets in Western Australia.

The ERA received a submission on 17 December 2021 from AEMO seeking approval for its proposed allowable revenue and forecast capital expenditure for the sixth allowable revenue period (AR6), from 1 July 2022 to 30 June 2025.<sup>4</sup> AEMO's proposal covers its functions set out in the Wholesale Electricity Market (WEM) Rules and Gas Service Information (GSI) Rules.

This issues paper summarises AEMO's proposal, the ERA's assessment process, and the initial areas where the ERA has requested AEMO to provide further justification in support of its proposal. The issues paper is intended to assist interested parties to make submissions on any aspect of AEMO's proposal, which is available on [the ERA website](#).

## 1.1 AEMO's functions under the WEM Rules and GSI Rules

AEMO is responsible for system and market operations in the South West Interconnected System (SWIS). The WEM Rules, clauses 2.1A.1A and 2.1A.2, place obligations on AEMO to provide specific functions (see Appendix 2 and Appendix 3). AEMO administers the reserve capacity mechanism and operates and settles the short-term energy market, load following ancillary service market and the real-time balancing market. AEMO has a role in preparing for and facilitating the implementation of WEM reforms and constrained network access reforms.

AEMO system management undertakes a long-term system planning function and the day-to-day management of the electricity system in the SWIS to ensure that it operates in a secure and reliable manner. AEMO is responsible for procuring adequate ancillary services where Synergy cannot meet the ancillary service requirements or where system restart and spinning reserve are available at a lower cost.

AEMO also has information release and market administration functions, such as proposing and changing market procedures. It provides advice to the Technical Rules Committee and the network operator, and support for the Minister for Energy, Coordinator of Energy, and the ERA. AEMO is required to publish the Western Australian Electricity Statement of Opportunities and develops, maintains, and updates a congestion information resource and a Distributed Energy Resources register.

## 1.2 Changes to the AR6 review process and timeline

On 18 December 2021, the Minister for Energy gazetted changes to the WEM Rules and GSI Rules that established a revised review process and timeline for AEMO's AR6 funding proposal.

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<sup>4</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 21, ([online](#)).



Consistent with the new rule requirements, the ERA published a funding proposal guideline (see Appendix 4) on 29 October 2021, to assist AEMO to prepare its submission for the upcoming allowable revenue period.<sup>5</sup> The guideline sets out:

- the information to be provided in a funding submission
- the process the ERA will follow to make its determination.

AEMO's proposal notes that AEMO has reviewed and updated its proposal to meet the guidelines where practicable.<sup>6</sup>

### **1.2.1 AEMO's obligations in the WEM review process**

AEMO's obligations in the WEM and GSI Rules are presented in Appendix 3. The WEM is transitioning to low carbon technologies and the State Government's market reform program intends to address this change.

The revised review process in the WEM Rules allows for a staged approach to funding as clarity and certainty develops around different projects and specifies the process by which AEMO can submit in-period funding proposals. It also specifies what costs can be included in AEMO's proposal, requirements for publication of budgets and financial reports, the true-up process for when there are differences between annual budgets and the ERA's determined allowable revenue and forecast capital expenditure. Similar changes were made to the GSI Rules.

### **1.2.2 Revised timeline for the AR6 funding proposal**

Clause 2.22A.2B of the WEM Rules sets out a revised timeline for the AR6 funding proposal (see Appendix 6).<sup>7</sup>

The ERA will conduct a two-stage consultation process for reviewing the AR6 proposal. Interested parties are invited to provide feedback on the proposal through submissions in response to this issues paper. The ERA will then publish a draft determination by 31 March 2022, inviting further submissions. The ERA will consider all information received in response to both papers when making its final determination.

The various activities in the review process for the initial proposal in 2022 is summarised in Table 1.

**Table 1 AR6 dates and milestones**

Due Dates	Milestone
31 October 2021	ERA published funding proposal guideline
17-18 December 2021	AEMO submitted its AR6 funding proposal to the ERA
*31 December 2021	AEMO must have submitted its AR6 funding proposal to the ERA by this date

<sup>5</sup> Economic Regulation Authority, 31 October 2021, *Guideline to inform AEMO funding submissions under the WEM Rules and GSI Rules*, ([online](#)).

<sup>6</sup> AEMO, December 2021, *Proposal to the Economic Regulation Authority, Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 21, ([online](#)).

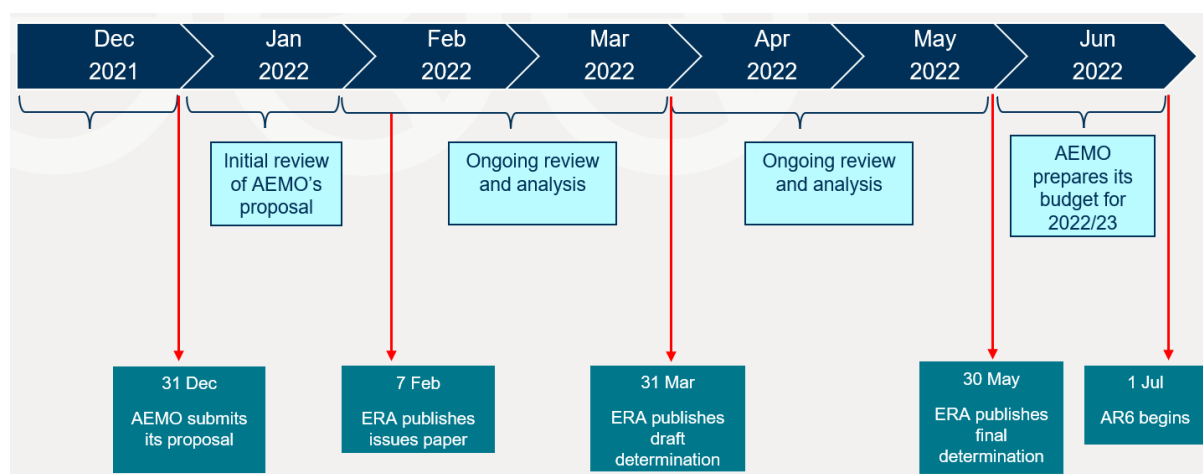
<sup>7</sup> Wholesale Electricity Market Rules (WA), 18 December 2021, ([online](#)).

Due Dates	Milestone
7 February 2022	ERA publishes the issues paper for four weeks consultation
7 March 2022	Consultation on the issues paper closes
*31 March 2022	ERA publishes the draft determination for four weeks consultation
28 April 2022	Consultation on the draft determination closes
*31 May 2022	ERA publishes its final determination on AEMO's AR6 submission

*\*Note: These dates are fixed in the WEM and GSI Rules.*

The revised timeline for the review process from the date of AEMO's submission of its proposal is depicted in Figure 2.

**Figure 3 Revised timeline for AR6 review**



The ERA asks that interested parties review AEMO's proposal within the context of the proposal guideline and provide the ERA with comments on the matters that it has identified for consideration in the ERA's issues paper, responses to the ERA's specific questions in section 4, or comments on any other aspect of AEMO's AR6 proposal.<sup>8</sup>

<sup>8</sup> Economic Regulation Authority, 31 October 2021, *Guideline to inform AEMO funding submissions under the WEM Rules and GSI Rules*, ([online](#)).

## 2. AEMO's AR6 funding proposal

AEMO's funding proposal acknowledges that the costs of delivering the State Government's energy market reform program are "substantial" and that market participants are "concerned about the cost."<sup>9</sup> In response to these concerns, AEMO notes that it has "applied additional rigour in its forecasting and governance process."<sup>10</sup> The changes AEMO has undertaken from the last review process to this one include:

- Reviewing cost estimates against historical estimates, market testing and benchmarking.
- Refreshing some processes, such as those used to estimate labour costs and project contingencies.
- Subjecting the costs to top-down challenges by management, the AEMO executive leadership team and the AEMO board.

AEMO's forecast allowable revenue for AR6 represents a significant increase compared to the allowable revenue approved and expended in the previous review periods. Although forecast capital costs for AR6 are lower than the total approved for AR5, forecast capital costs for individual programs of work, such as WEM reform projects, have increased substantially from the levels AEMO forecast in AR5. Changes to forecast capital expenditure in the WEM are covered in section 2.1.2.

The cost of AEMO fulfilling its gas market obligations under the GSI Rules has historically been much lower than its costs to operate in the WEM. AEMO's forecast GSI costs remain small and there is limited change from actual AR5 GSI costs, as noted in section 1.2.

A summary of AEMO's annual funding proposal is presented in Table 2 below.

**Table 2: AEMO's proposed funding for AR6 (\$ million)**

Expenditure category	WEM	GSI	Total
Allowable revenue	156.2	5.3	161.5
Total forecast capital expenditure	69.4	0.4	69.8
- WEM and DER reform capital	54.0	-	54.0
- Other (business as usual) capital	15.4	0.4	15.8

Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25.

<sup>9</sup> AEMO, December 2021, AEMO's Proposal to the Economic Regulation Authority, for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25, pp. 6, ([online](#)).

<sup>10</sup> Ibid.

## 2.1 WEM forecast

AEMO is proposing allowable revenue of \$156.2 million and forecast capital expenditure of \$69.4 million for its WEM functions over the next three financial years.

### 2.1.1 WEM total forecast allowable revenue

As shown in Table 3, AEMO's proposed allowable revenue is \$56.7 million (57 per cent) higher for AR6 than the ERA approved for AR5. The main reasons for the increase are higher labour costs (a 50 per cent increase) and increased depreciation and amortisation charges (an over 100 per cent increase). These increases represent a step change in costs that will persist at high levels through AR6 and the next allowable revenue period AR7, because of the increase in permanent staff and because depreciation and amortisation is dependent on spending on capital expenditure.

**Table 3: Allowable revenue approved for AR5 compared to allowable revenue proposed for AR6 (\$ million)**

	AR5 approved	AR6 proposed	Variance
<b>Total allowable revenue</b>	<b>99.5</b>	<b>156.2</b>	<b>56.7</b>
Labour	48.7	73.2	24.5
Accommodation	1.6	5.2	3.6
IT and Telecommunications	8.2	11.0	2.8
Supplies and Services	17.3	13.0	(4.3)
Borrowing	-	5.2	5.2
Depreciation and amortisation	23.6	50.9	27.3
Adjustment for over/under recovery	-	(2.3)	(2.3)

*Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25.*

AEMO's reasoning for the cost estimates for the components of the allowable revenue are provided in the subsections below.

#### 2.1.1.1 Labour

At 46.9 per cent, labour costs are the largest proportion of overall allowable revenue costs in AR6. AEMO is estimating labour costs of \$73.2 million in AR6, an increase of \$24.5 million (50 per cent) over approved labour costs in AR5. This increase is primarily due to a forecast increase in permanent staff.

AEMO's proposal identifies two main categories of staff: those in Western Australian specific departments, namely market operations and system management, and those providing

support to AEMO's Western Australian operations, such as IT, external affairs, human resources, and finance. Both categories of staff are forecast to increase in AR6:

- Specific Western Australian department full time equivalent (FTE) staff numbers increase from 57.3 in AR5 to 75.7 in AR6, an increase of 18.4 FTEs (or 32 per cent).
- Western Australian support function FTEs increase from 27.8 in AR5 to 40.6 in AR6, an increase of 12.8 FTEs (or 46 per cent).

AEMO's reasons for the increased staff numbers are summarised in Table 4 below.

**Table 4: Components of FTE increases from AR5 to AR6 identified by AEMO**

Activity and reason provided for additional staff <sup>11</sup>	FTE increase (\$ million)
<p>Energy transformation strategy:</p> <p>Increased volume and complexity of activities resulting from new market arrangements from October 2023 and DER Roadmap actions.</p>	11.7
<p>New obligations:</p> <p>Relating to network access quantity (NAQ) and reserve capacity cycle changes, Generator Performance Standards (GPS) and network constraint modelling.</p>	3.7
<p>Power system requirements:</p> <p>New processes and increased power system modelling required to address load and changing generation mix issues. AEMO must also uplift its operational forecasting capabilities to keep pace with changing energy system characteristics and consumer trends. AEMO requires an increase in control room operators to mitigate succession planning risks.</p>	4.3
<p>Ongoing market development:</p> <p>AEMO has an ongoing obligation to implement market development activities, including WEM/GSI Rule changes, and to support further government policy initiatives.</p>	2.5
<p>Operational requirements:</p> <p>Increase in support function costs associated with growth in systems, process, and data management over the period. For example, the increase in the number of IT applications utilised by AEMO WA requires an uplift in IT resources to support the systems.</p>	9.2
<b>Total</b>	<b>31.4</b>

Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25.

<sup>11</sup> AEMO, December 2021, AEMO's Proposal to the Economic Regulation Authority, for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25, pp. 57, ([online](#)).

As well as the increase in staffing numbers, AEMO's proposal indicates that unit labour costs will also increase over AR6 in line with "inflation, remuneration reviews and terms of the enterprise bargaining agreement (EBA)."<sup>12</sup>

### *2.1.1.2 Depreciation and amortisation*

AEMO's depreciation and amortisation costs are the second highest component of allowable revenue in AR6, at 32.6 per cent. AEMO estimates its depreciation and amortisation costs at \$50.9 million in AR6.

Depreciation and amortisation expenses are determined by the capital expenditure on an asset and the expected useful life of that asset. Depreciation and amortisation commence once the asset delivered by the capital project goes into service and is charged over the useful life of the asset. AEMO has calculated the depreciation and amortisation expense for AR6 based on:

- The costs and useful lives of the assets, and the dates when the capital assets went into service in AR5.
- The forecast capital costs, estimated useful lives, and expected dates that assets will go into service in AR6.

Consequently, the magnitude of the depreciation and amortisation charge in AR6 is directly influenced by the increase in AEMO's actual capital expenditure in AR6 and forecast capital expenditure in AR6. Depending upon when capital assets are delivered, some of the capital expenditure in AR6 will be charged through allowable revenue in future funding periods.

### *2.1.1.3 Other cost categories*

AEMO's other operating cost estimates represent less than 20 per cent of total allowable revenue for AR6. AEMO estimates its accommodation, IT and telecommunications costs, and supplies and services costs, at \$29.7 million for AR6. This is an increase of 7.7 per cent on approved costs for the same categories in AR5.

Although AEMO increased its staffing numbers during AR5 and has indicated that it will need to increase numbers further in AR6, AEMO does not expect to increase its accommodation requirements. Instead, AEMO has indicated that it will use "more flexible working arrangements, placing an emphasis on working from home where practicable."<sup>13</sup> From 1 July 2021, AEMO changed its accounting treatment of accommodation costs. In AR6, they will be treated as an operating cost as and when they are incurred, rather than capitalising accommodation as part of capital project costs.<sup>14</sup>

AEMO forecast IT and telecommunications costs at \$11 million for AR6 to cover anticipated "IT support costs, software support contract costs, telecommunications, IT leased assets and cloud costs." This is a 34 per cent increase on the same costs approved in AR5. AEMO has attributed the increase to greater software support and cloud costs, given the number of new IT systems that were added during AR5.

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<sup>12</sup> AEMO, December 2021, AEMO's Proposal to the Economic Regulation Authority, for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25, pp. 57, ([online](#)).

<sup>13</sup> Ibid, pp. 60.

<sup>14</sup> In reviewing AEMO's in-period submission for the DER Roadmap, it was identified that AEMO was incorrectly capitalising property costs of \$4/FTE hour to each project. This incorrect accounting treatment of leased property has now been correctly accounted for under Australian Accounting Standard AASB116 since July 2021.

Supplies and service costs cover licences, training, travel, printing, and stationery. AEMO's expected spend at the end of the AR5 period of \$12.4 million is less than the amount approved for AR5 of \$17.3 million. AEMO has attributed much of this difference to the end of the \$3 million per year service level agreement that AEMO had with Western Power for the use of Western Power's system management software. The functionality was transferred to AEMO during AR5.<sup>15</sup> AEMO has forecast supply and service cost expenditure for AR6 at \$13 million, similar to actual expenditure levels in AR5.

AEMO uses financing facilities to fund its investments in non-current assets. To calculate borrowing costs in AR6, AEMO applies the average cost of finance from its central borrowing facility to both capital projects when they are in flight and operating expenses once the project is complete. Borrowing costs included in the AR6 proposal that relate to completed projects and therefore form part of the allowable revenue calculation are estimated at \$5.2 million. Capitalised financing costs in the AR6 proposal are \$1.6 million.

### 2.1.2 WEM forecast capital expenditure

AEMO is proposing forecast capital expenditure of \$69.4 million over the next three financial years, which is 13.7 per cent lower for AR6 than the ERA approved for AR5.

**Table 5 AR5 approved and AR6 proposed forecast capital expenditure (\$ million)**

	AR5 approved	AR6 proposed	Variance	Percentage (%)
<b>Total forecast capital expenditure</b>	<b>80.4</b>	<b>69.4</b>	<b>(11.0)</b>	<b>(13.7)</b>
WEM reform	47.2	44.6	(2.6)	(5.5)
DER roadmap	14.6	9.4	(5.2)	(35.6)
Other capital projects	18.6	15.4	(3.2)	(17.2)

Source: AEMO's *Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25*.

Note: Other projects includes any capital project not identified as contributing to WEM reform or DER Roadmap activities. In AR5 this was a combination of 'business as usual' projects, In AR6 these projects are termed "WEM sustaining capital projects," see section 2.1.2.3.

#### 2.1.2.1 WEM reform

The WEM reform program spans three funding periods: AR4 (2016/17 to 2018/19), AR5 (2019/20 to 2021/22) and AR6.

Overall, AEMO is forecasting an increase in the total cost of the WEM reform program from \$61 million, its forecast at the beginning of AR5, to \$91.2 million (including contingency) in the AR6 proposal, an increase of 50 per cent.<sup>16 17</sup>

<sup>15</sup> This was the System Management System Transition (SMST) project in AR5.

<sup>16</sup> AEMO, December 2021, *Proposal to the Economic Regulation Authority, Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 77, ([online](#)).

<sup>17</sup> The \$91.2 million total capital cost of the WEM reform program is allocated over the three funding periods: \$1.5 million incurred in AR4, anticipated actual and forecast costs of \$45.1 million by the end of AR5, and forecast capital costs of \$44.6 million in AR6.



Through 2021, AEMO undertook two main revisions of its WEM reform forecast capital costs as more information became available on the detailed operation of the new market design, through publication of new WEM Rules. In each revision, the overall cost of the program increased:

- In March 2021, AEMO revised its WEM reform forecast to \$80 million, comprising \$69 million base forecast plus an \$11 million (16 per cent) contingency.
- In August 2021, AEMO further revised its forecast to \$91.2 million, of which \$75.5 million was base capital and \$15.7 million (21 per cent) was contingency.<sup>18</sup>

AEMO's explanation for the overall increased costs for AR6, including WEM reform, was:

Since the original estimates were made, the scope and rules for the new markets have largely been defined. AEMO, EPWA and market participants also have a greater understanding of the complexity and volume of data, system and processing requirements, as well as the business change activities necessary to ensure the new market can commence with manageable risk. These new assumptions have been built into the revised AR6 forecast and represent the full cost of delivering the new markets by 1 October 2023 based on the information to date.<sup>19</sup>

Forecast WEM reform expenditure for the AR6 period is \$44.6 million: a base capital forecast of \$33.2 million, with \$11.4 million (34 per cent) contingency. AEMO is increasing the contingency amount for the WEM reform program during AR6 to 34 per cent, compared to the average percentage contingency applied in AR5 of 22 per cent. The contingency is to recognise stated delivery risks and draws on AEMO's experience of "lessons learned" through projects in the National Electricity Market.

The contingency assumptions draw on experience from recent transformational projects such as PSO and SMST, and most significantly, implementing 5MS in the NEM. Implementation of 5SM in the NEM delivered system changes of a comparable scale to the WEM Reform project and relied heavily on detailed design inputs from third parties and development of bespoke IT systems.<sup>20</sup>

AEMO's submission states that around 30 per cent of the proposed contingency will be held by the Chief Executive Officer and Managing Director and not released without "detailed justification, consideration of options to avoid contingency, and express permission from him." AEMO has previously identified that some project contingency is not released without prior agreement. How AEMO retains and then expends contingency is discussed in section 3.2.3.1.

In AR5, the ERA approved the full amount requested by AEMO, \$48.5 million (including \$9.3 million in contingency), to fund its WEM reform activities. At the time, AEMO was in the early stages of planning the WEM reform activities and had not allocated the forecast capital expenditure to individual capital projects. In its AR6 funding proposal, AEMO has allocated the proposed expenditure across seven workstreams and 24 individual projects. Of these projects, two have no costs allocated through AR6, as they are complete: the generator performance standards project and the settlements enhancements project. Expenditure by workstream is shown in Table 6.

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<sup>18</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 90, ([online](#)).

<sup>19</sup> Ibid, pp. 13.



**Table 6: Allocation of forecast WEM reform capital expenditure by workstream**

Workstream	AR6 forecast capital (\$ million)	Overall WEM reform program (%)
Integration	16.1	36.2
Design, planning and maintenance	8.2	18.3
Security constrained economic dispatch	6.6	14.7
System planning	5.1	11.4
Legacy systems	4.6	10.4
Settlement	2.7	6.1
Registrations	1.3	2.9
<b>Total</b>	<b>44.6</b>	<b>100</b>

Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25.

Just over 80 per cent of the WEM forecast capital expenditure for AR6 is contained in the first four workstreams identified in Table 6.

The integration workstream covers four costed projects that enable implementation of the WEM reform program. Two projects account for approximately 70 per cent of the proposed expenditure in the workstream. These are the:

- Digital platform project (\$6.4 million) to “implement standard system environments and methods” and “software, infrastructure, testing and cloud costs directly attributable to enabling WEM Reform projects.”
- Integration and market trial project (\$5.1 million), including costs “associated with market trial activities.”<sup>21</sup>

The design, planning and maintenance workstream includes one main project, the WEM reform core project (\$8 million). AEMO states that this project provided “leadership, direction and oversight across all other workstreams.” The project predominantly comprises program management staff and cross program resources, such as the market readiness advisor.<sup>22</sup>

Three projects in the security constrained economic dispatch workstream cost around \$2 million each. AEMO has separate projects to build the new dispatch engine, develop a user interface with the new dispatch engine to view and control the operation of the dispatch engine, and offline but linked tools to provide support and training systems for the system controllers.<sup>23</sup>

The system planning workstream contains six separate projects to help “forecast risks to the power system security and reliability in a security constrained network.” The two highest cost

<sup>21</sup> AEMO, December 2021, AEMO's Proposal to the Economic Regulation Authority, for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25, pp. 108, ([online](#)).

<sup>22</sup> Ibid, pp. 110.

<sup>23</sup> Ibid, pp. 96.

individual projects, at \$1.5 million each, are a project to reform commissioning testing and a project to revise AEMO's approach to forecasting short-term power system adequacy.<sup>24</sup>

The remaining three workstreams (comprising \$8.6 million forecast capital expenditure in total) concern changes to existing systems, such as the reserve capacity mechanism to account for new types of facilities such as storage, the short-term energy market, and the settlements system.

### 2.1.2.2 *DER roadmap*

In 2019, the Minister of Energy launched the Distributed Energy Resources (DER) roadmap to facilitate the integration of growing levels of DER into the power system.<sup>25</sup> AEMO developed its Western Australian DER program to deliver action items defined by the roadmap. This included establishing the DER register, DER orchestration (Project Symphony), design work for DER participation and commencing technology integration.

To fund these new activities, AEMO applied to the ERA, through an in-period submission, for additional forecast capital expenditure of \$18.9 million in September 2020, which it then revised down to \$17.9 million in November 2020.<sup>26</sup> The ERA approved an additional forecast capital expenditure of \$14.6 million in December 2020, of which \$12.7 million (87 per cent) was to cover additional labour costs to support AEMO's DER roadmap obligations.<sup>27</sup>

AEMO estimated that it spent \$14.1 million over AR5 on its Western Australian DER program. This included completing the DER register project fully, and under budget, without using the contingency allocation.

AEMO's AR6 proposal forecasts an additional \$9.4 million capital expenditure to continue its DER program. This includes funding for three projects continuing from AR5 and four new projects to commence in AR6.

### 2.1.2.3 *WEM sustaining capital expenditure*

AEMO has identified \$15.4 million forecast capital expenditure in AR6 as WEM sustaining capital expenditure. AEMO's proposal divided this forecast expenditure into two main areas:

- Western Australian technology: \$9.7 million to enable "upgrades and lifecycle replacement to WEM-specific IT systems."
- Enterprise systems: \$5.8 million representing Western Australia's share of the cost of maintaining AEMO-wide systems, such as the energy management system and finance and human resources systems.

Within the two main capital expenditure areas, AEMO identifies workstreams and, within each workstream, individually costed projects.

There are three workstreams in the Western Australian technology forecast capital expenditure. The largest by far is the Lifecycle workstream (\$7.1 million). This is a collection

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<sup>24</sup> AEMO, December 2021, AEMO's Proposal to the Economic Regulation Authority, for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25, pp. 101, ([online](#)).

<sup>25</sup> Energy Transformation Taskforce, 2019, *Distributed Energy Resources Roadmap*, ([online](#)).

<sup>26</sup> AEMO, 2020, *Adjustment to 2019-22 Forecast Capital Expenditure – DER Roadmap Implementation Costs*, ([online](#)).

<sup>27</sup> ERA, 2020, *AEMO in-period funding submission for implementation of the DER Roadmap actions – Determination report*, ([online](#)).

of six individual projects to undertake upgrades to IT hardware and software applications, such as a refresh of the hardware hosted in the Perth Data Centre.<sup>28</sup>

Enterprise system expenditure comprises four workstreams: energy management system (\$1.4 million), cyber (\$3.0 million), operational forecasting (\$1.1 million) and updates to IT infrastructure at the Norwest Data Centre (\$0.2 million). These are all AEMO-wide projects and Western Australia is allocated a proportion of the total AEMO costs based on different cost allocation methods.

#### 2.1.2.4 *Additional forecast capital funding proposal anticipated during AR6*

Although AEMO's proposal identifies a lower level of forecast capital expenditure in AR6 than was approved by the ERA in AR5, AEMO also flags its plan to make an in-period funding submission. This would be a request for additional funding to cover the costs of the following projects:

- 5-Minute settlement (5MS) – this increases the frequency at which market transactions are settled from every 30 minutes to every 5 minutes, consistent with the increased frequency of dispatch in the WEM.<sup>29</sup>
- DER participation implementation – builds on the DER orchestration pilot (Project Symphony) and the DER participation project design program to fully implement DER participation in the WEM once the detail of key policy decisions and new market arrangements are in place.<sup>30</sup>
- Possible reforms to AEMO's systems and processes following Energy Policy WA's review of the reserve capacity mechanism in 2022 and its review of cost allocation in the WEM beginning in 2022.<sup>31</sup>

AEMO's proposal states that "insufficient information is available at the time of preparing the AR6 proposal to inform a robust capex forecast."<sup>32</sup> However, in industry briefings in advance of submitting its AR6 proposal AEMO stated that additional high level forecast capital costs of between \$35 million to \$60 million may be required during AR6 for the projects identified above.<sup>33</sup>

## 2.2 GSI expenditure forecast

For AR6, AEMO is proposing allowable revenue of \$5.3 million and forecast capital expenditure of \$0.38 million for its GSI projects and functions.

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<sup>28</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 120-125, ([online](#)).

<sup>29</sup> In December 2019 the WA Government's Energy Transformation Taskforce indicated that the WEM should move to 5MS. Energy Transformation Taskforce, 2019, *Market Settlement: Implementation of five-minute settlement, uplift payments and Essential System Services settlement*. ([online](#)).

<sup>30</sup> Ibid, pp. 80.

<sup>31</sup> Market Advisory Committee, 14 December 2021, 'Item 8. Cost Allocation Review – Scope of Work and Working Group Formation.' *Combined Meeting Papers*, Project Schedule, pp. 36, ([online](#)).

<sup>32</sup> Ibid, pp. 78.

<sup>33</sup> AEMO, 2021, *Allowable Revenue and Forecast Expenditure (AR6) – July 2022 to June 2025, Presentation slides for industry engagement session – 13 October 2021*, Presentation to WA Electricity Consultative Forum ([online](#)). See also WAECF, 20 October 2021, Meeting 33, *Meeting Minutes*, Item 6, ([online](#)).

**Table 7: GSI expenditure approved in AR6 and proposed for AR6 (\$ million nominal)**

	AR5 approved	AR5 actual and forecast	AR6 proposed	Variance AR6 to AR5 approved
Total allowable revenue	6.1	4.8	5.3	0.5
Total forecast capital expenditure	0.5	0.4	0.4	-

Source: AEMO's *Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25*.

AEMO's funding proposal indicates an increase of \$0.5 million in GSI forecast allowable revenue for AR6 to \$5.3 million, compared to the expected actual expenditure in AR5 of \$4.8 million. The main reasons for the increase in allowable revenue forecast are:

- An increase in labour costs to recognise annual remuneration increases and additional cyber security support over AR6.
- An increase in consultancy costs to support the mandatory five-yearly review of the Gas Statement of Opportunities.<sup>34</sup>

GSI forecast capital expenditure has remained constant between AR5 and AR6. The capital expenditure in AR6 is for a project to rewrite the Gas Bulletin Board code in 2023/24 and then to move the board to be hosted on AEMO's cloud-based digital platform. There is also an allocation of 0.6 percent to AEMO's gas costs from its company-wide cyber security project.<sup>35</sup>

## 2.3 Changes in market fees

AEMO's proposal indicates that average WEM market fees will increase by \$0.679 MWh over the AR6 review period compared to the AR5 period (excluding Coordinator fees, which only apply from 2022), an annual average increase of 60 per cent.<sup>36</sup> If passed through to residential customers, the wholesale market fee increase for AR6 for the WEM component would rise to approximately \$16.56, equating to an increase of \$6.45 per year on the average annual bill.

**Table 8: Average WEM fees for AR5 and AR6 and percentage change in average fees across review periods**

WEM Fee (\$/MWh)	AR5 average fee	AR6 average fee	Change in average fee (%)
Market fee	0.374	0.621	66
System operation fee	0.509	0.921	81
Regulator fee	0.183	0.203	11
Coordinator fee		0.078	
<b>Total</b>	<b>1.141</b>	<b>1.823</b>	<b>60<sup>37</sup></b>

<sup>34</sup> AEMO, December 2021, *Proposal to the Economic Regulation Authority, Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 132-133, ([online](#)).

<sup>35</sup> Ibid, pp. 134-135.

<sup>36</sup> Ibid, pp. 10.

<sup>37</sup> AEMO reported this value as 64% in its proposal (see Table 1 on page 11).

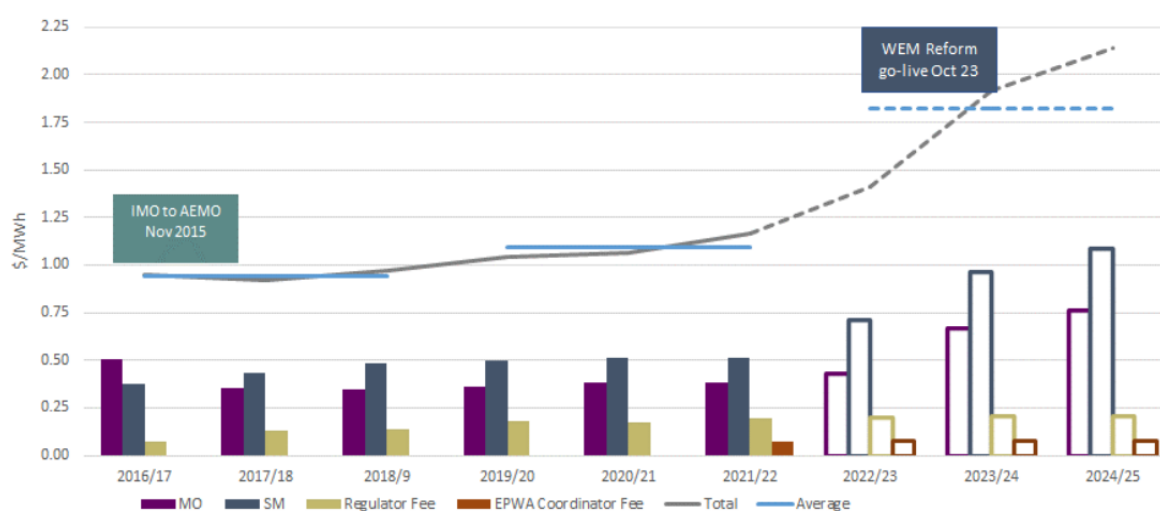
Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25.

According to AEMO, the higher overall WEM fee is due to the inclusion of financing, and depreciation and amortisation costs from prior investments. Depreciation and amortisation accounts for 30 percent of the fee uplift (\$0.204/MWh) and reflects the capital costs incurred to date for implementing WEM Reform and DER Roadmap assets.

These costs are to be recovered over five to ten years, affecting fees throughout AR6 and AR7. However, the effect will vary depending on actual expenditure and energy consumption, which AEMO notes is forecast to decline by 1 percent per annum over the AR6 period.

AEMO's depiction of the progression of fees over the AR4, AR5 and AR6 periods is replicated below.

**Figure 4: WEM fee, AR4 period to end of AR6 (\$/MWh nominal)**



Source: AEMO's Proposal to the Economic Regulation Authority for the Allowable Revenue and Forecast Capital Expenditure for 2022-23 to 2024-25. Figure 3, pp. 11.

### **3. The ERA's review**

The ERA's statutory obligations, processes for submission, assessment and determination, and preliminary matters for consideration, are summarised below.

#### **3.1 ERA's obligations in the review process**

The ERA's obligations and matters for consideration by the ERA in the review process are set out in the WEM and GSI Rules. The ERA's obligations under the WEM Rules are listed below. Analogous obligations exist in the GSI Rules (Appendix 6).

When determining the allowable revenue and forecast capital expenditure for AEMO or undertaking a reassessment of AEMO's allowable revenue and forecast capital expenditure, the ERA must ensure that:

- The allowable revenue is sufficient to cover the forward-looking costs of AEMO performing its functions.
- The allowable revenue and forecast capital expenditure includes only those costs that would be incurred by a prudent provider of AEMO's services, acting efficiently, to achieve the lowest practicably sustainable cost of performing AEMO's functions.

Where possible, the ERA should benchmark the allowable revenue and forecast capital expenditure against the costs of providing similar functions and/or projects in other jurisdictions.

The ERA can take into account any other matters it considers relevant to its determination.

When making its determination, the ERA may do any or all of the following:

- Approve the costs of any project or of AEMO performing its functions.
- Reject the costs fully or partially or substitute those costs with costs the ERA considers meets the requirements.
- Recommend to AEMO that some of the costs be considered through an in-period application for additional funds or in a subsequent review period.

#### **3.2 Preliminary matters for consideration**

The ERA's assessment and review process is presented in Appendix 5. The ERA has undertaken a high-level review of the processes AEMO used to develop its proposal. These processes include how AEMO initiates, scopes and costs projects, the activities AEMO undertakes to consider whether the forecast costs are reasonable, and how shared costs are allocated to Western Australia. If the processes are robust, used consistently, and continuously improved, then the ERA and market participants can have greater confidence in AEMO's proposed costs.

The ERA's initial review of AEMO's AR6 submission has identified several areas where more information will help the ERA to determine whether the project or function, as described and costed in AEMO's proposal, is efficient. Matters for consideration, as set out below, relate to governance processes, labour costs, AEMO's choice of options for dealing with project



uncertainty, cost allocation arrangements for central systems, purchasing and market testing arrangements and project scoping.

The ERA has shared these matters with AEMO, which is working on providing additional or more focussed justification in support of its proposal. This approach is consistent with the ERA's proposal guideline, which reinforces that the burden of proof for justifying funding allowances lies with AEMO.<sup>38</sup>

### 3.2.1 Governance processes

AEMO's proposal provides information on the governance process used to develop forecast costs for AR6.<sup>39</sup> Key points from this governance process are summarised in the box below.

#### Key points from AEMO's AR6 governance process

- Benchmarking was undertaken to test whether estimates were reasonable. This included an independent assessment of AEMO's corporate costs to demonstrate that the costs were lower than many comparable businesses.
- Key members of the leadership team sat on the AR6 steering committee, which was appointed to ensure sufficient scrutiny and challenge of forecast expenditure, with a particular focus on the WEM reform and DER programs.
- AEMO's forecast was subjected to top-down challenge by Western Australian management, the leadership team and the AEMO board. Each project owner and management considered a list of questions to ensure that the project owner only put forward capital expenditure that would be incurred by a prudent provider of AEMO's functions, acting efficiently to achieve the lowest practicably sustainable cost of delivering the services.
- The leadership team and board challenged AEMO's detailed bottom-up labour forecast and applied a 5 per cent efficiency target to the original bottom-up build of labour costs in the final year of the forecast.

Challenge sessions are important in cost estimation to ensure participants in the process take account of all relevant information, the opportunity is provided for all to arrive at a common understanding of what is being assessed, and biases arising from limited information or from unrealistic optimism or pessimism are addressed.<sup>40</sup>

In its proposal, AEMO states that it is generally more beneficial to market participants and AEMO to slightly overestimate the forecast capex amount in each period.<sup>41</sup> This suggests a tendency on AEMO's part to be more conservative in its cost estimation (i.e., to overestimate the likelihood of adverse events occurring). However, AEMO reports that the AR6 proposal is founded on a more exhaustive governance process than prior reviews, with multiple assessments, validations, and challenges undertaken in the development of the proposal.

<sup>38</sup> Economic Regulation Authority, 31 October 2021, *Guideline to inform AEMO funding submissions under the WEM Rules and GSI Rules*, ([online](#)).

<sup>39</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 30-42, ([online](#)).

<sup>40</sup> Transport and Infrastructure Council, 2018, *Australian Transport Assessment and Planning Guidelines*, 02 *Optimism Bias*, pp. 10, ([online](#)).

<sup>41</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 24, ([online](#)).

Some information is provided in the proposal on the challenges for the bottom up-build of FTEs. The ERA is working with AEMO to better understand AEMO's governance process and intends to further assess the challenge process by seeking answers to questions such as:

- What was challenged and to what degree by senior management in each project.
- What the challenge focussed on and how effective it was.
- Whether and how the individual challenge events affected or influenced cost forecasts for both allowable revenue and capital expenditure.

### 3.2.2 *Labour costs*

In its AR6 submission, AEMO identifies its reliance on staff with specialised skillsets employed to operate the power system and keep the market functional and operating within the required legislative and technical tolerances. AEMO's approach to forecasting labour costs is summarised in the box below.

#### **Key points on AEMO's labour cost estimation**

- For operating expenditure, where possible, AEMO estimated the costs of roles based on the cost of existing internal resources. Existing roles were based on current costs, with base salaries, superannuation and other staffing costs adjusted for expected changes. New roles within existing teams with well-defined responsibilities were based on the average actual cost of equivalent roles.
- Capital expenditure labour requirements were derived from a bottom-up assessment of the project scope.
- The project manager identified the number, skill set, and types of personnel required, and the number of days for each resource, which was then tested, usually by a member of the AEMO leadership team. Labour costs for the project were estimated by applying the appropriate daily rate for each resource through a tier system.
- AEMO reviewed and improved its approach to labour cost estimation in the AR5 period by moving to a more granular 10-tier system, with five tiers for permanent employees and five tiers for fixed-term contractors. All AEMO roles were mapped to one of the tiers, with daily labour rates calculated from the actual average costs for all roles within each resourcing tier.<sup>42</sup>

AEMO identified a requirement for 31 new FTE positions in its AR6 proposal (see section 2.1.1.1). AEMO notes that:

- Some of the additional FTE resources are to expand the size of existing AEMO teams, such as the market operations, reserve capacity mechanism and power system operation.
- Other staff increases relate to the introduction of different market systems, such as security constrained economic dispatch supported by new or revised IT systems. These systems will allow for some automation of complex market processes, but the required analysis and input to enable the automation has not reduced.

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<sup>42</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 46, ([online](#)).



The ERA notes AEMO's improvements to its tiered labour cost forecasts, including separate tiers for permanent and contract staff, to recognise their different costs (e.g., contract staff are not entitled to performance incentives or long service leave). In addition, the tiered costs have been created based on rates for permanent employees who capitalised their time to projects in 2021, rather than the entire AEMO workforce, ensuring the cost estimates better reflect current labour market costs and conditions.

The ERA considers that AEMO's forecast costs should be based on AEMO's actual staff costs where AEMO has information on the cost of current staff employed on existing and upcoming capital projects. For new positions, the ERA will consider the labour cost estimates from the tiered approach and compare them against other sources of labour cost data, including benchmarking.

The ERA further plans to investigate the following matters:

- Whether AEMO undertook a review of existing teams, to identify possible efficiencies prior to forecasting new resources.
- Why resourcing requirements, particularly of permanent staff, are rising despite increased automation of its processes.
- What alternative options were considered (such as redeploying staff from other teams, hiring contract staff or consultants for short periods) prior to the decision to create new permanent roles to manage time critical processes, such as certifying capacity as part of the reserve capacity timeline.
- Why AEMO considers succession planning is important particularly for the AR6 period.

The ERA has asked AEMO to provide reasoning and evidence in support of the flagged increase in power system operators to “mitigate resourcing and succession planning risk during the AR6 period.”<sup>43</sup>

### **3.2.3 AEMO's options for dealing with project uncertainty**

The WEM reform program continues from AR5 into AR6, with the detail and scope of some projects still evolving or remaining unknown. The regulatory framework in the WEM offers some flexibility for ensuring that funding allowances are flexible to changing circumstances. This protects regulated entities and consumers from unforecastable risks and events that are outside of AEMO's control and allows for adjustments in funding in response to changing developments.

For example, for each project, the regulatory framework provides AEMO with the discretion to:

- Include a contingency in its forecast for a project.<sup>44</sup> In its proposal, AEMO includes a contingency amount in its cost estimate for all capital expenditure projects, reflecting its level of confidence in its base cost estimate and an assessment of project-specific risks.
- Access the lower of 10 per cent or \$10 million greater than the ERA's determination at the end of the review period.<sup>45</sup>

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<sup>43</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 10, ([online](#)).

<sup>44</sup> Economic Regulation Authority, 31 October 2021, *Guideline to inform AEMO funding submissions under the WEM Rules and GSI Rules*, ([online](#)).

<sup>45</sup> Wholesale Electricity Market Rules (WA), 18 December 2021, Rule 2.22A.13.

- Request part funding (a relatively smaller sum of money, for example \$1 million to \$2 million), for regulatory planning and initial implementation of a project.<sup>46</sup>
- Make an in-period submission for additional funding for a project or activity to fulfil an obligation under the market rules.<sup>47</sup>

It is important that stakeholders are confident that the right balance has been struck between the various uncertainty mechanisms used by AEMO to address the uncertainty surrounding each project, and that the combined effect of uncertainty measures employed for each project is efficient and prudent and does not lead to excessive fees for consumers.

The ERA has requested information from AEMO on the process it uses to achieve an appropriate balance in the use of differing uncertainty mechanisms to meet its efficiency and prudence obligations under the market rules.

### 3.2.3.1 *Project contingencies*

The ERA has undertaken some preliminary analysis on AR5 expenditure to understand how AEMO uses project contingency once it has been approved by the ERA.

In its review of AR5, the ERA noted that:

- Historically, in some instances, AEMO has included high project contingencies of up to 56 per cent for its capital projects.
- Typically, AEMO's spend falls below its estimates and project contingencies are not always used.
- AEMO uses a risk-based approach to setting contingencies, but there is no demonstrated feedback loop between AEMO's actual experience of managing project risk and its estimation of contingencies for new projects.<sup>48</sup>

For AR5, the ERA approved \$80.4 million in total, of which \$11.4 million was identified as contingency to mitigate identified and project-specific risks. The ERA has calculated that, during AR5, AEMO used \$5.1 million of the approved contingency for the identified AR5 projects. The remaining \$6.3 million contingency was not required on the projects it was identified for, as these projects came in under budget or were undertaken in AR5.

Overall, AEMO anticipates spending \$82.4 million by the end of the AR5 period. This is \$2.4 million above the forecast capital costs approved for AR5. While within the threshold allowed by the market rules, it appears that the approved project contingency was used against projects other than what it was approved for.

AEMO is not required to spend up to its approved forecast amount in each period, and once the forecast capital expenditure is approved by the ERA, the ERA has no regulatory oversight of whether or how the funds are spent.

AEMO notes that it holds contingency amounts in reserve to cover and alleviate the risk of cost exposure and uncertainty and it is only released when a defined risk or issue is realised, subject to senior management approval and a formal change request process.<sup>49</sup> The ERA has asked AEMO to provide information on when, how much, and why, project contingency is

<sup>46</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 9, ([online](#)).

<sup>47</sup> Wholesale Electricity Market Rules (WA), 18 December 2021, Rule 2.22A.14.

<sup>48</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 32, ([online](#)).

<sup>49</sup> Ibid, pp. 24.

approved for release to projects, including projects that are not part of its proposal. This will help inform the ERA's assessment of project contingency calculations for AR6.

In its AR6 proposal, AEMO indicates a change in its assessment of project contingency so that rather than relying on a standard contingency factor as the base estimate, the new approach places more emphasis on quantifying project risks and, ideally, reducing contingency as the project matures. These changes are summarised in the box below.

#### **Key points on AEMO's estimation of project contingency**

- AEMO tailors contingency amounts to the project's lifecycle stage, level of established design detail (including project size) and risk profile:
  - Projects with a narrow scope and fewer dependencies on third parties and external factors will have a smaller contingency.
  - A project that is dependent on external factors and is subject to greater uncertainty and a shifting scope, will have a larger contingency.
- AEMO employs three methods for contingency calculation, fixed and risk-based methods, and a combination of the two:
  - Fixed method - contingency is calculated as a fixed percentage of the base cost estimate, based on the risk profile of the project, developed through the level of certainty about key project parameters.
  - Risk-based method – contingency is calculated using a specific tool developed by AEMO that multiplies the estimated probability of a specific risk occurring and by the estimated impact of that risk occurring.
  - Combined method - the fixed method is used for a project that is at the idea stage, with the expectation that the risk-based method is applied once the project enters the planning to execution stage and the project risks are better understood and identified.
- AEMO notes that project contingencies calculations at a program level range from 10 per cent to 33 per cent, with an average of 26 per cent. AEMO considers that this is reasonable and efficient when compared to AEMO's past performance, when reflecting on internal models and studies of project cost overruns, and when compared to estimations from other estimating tools.

AEMO considers that building in project contingency reduces the need for making substantially costly in-period adjustments to the forecast, through in-period submissions.<sup>50</sup>

The ERA has reviewed AEMO's revised approach to calculating project contingency and intends to seek more information on:

- Whether the base capital forecast is a low, best, or high, estimate (as was indicated in AR5 base capital estimates). Certainty in the base cost forecast may influence the level of contingency assigned to that project and, if not clearly and uniformly applied, may impact the consistency of estimates among projects.

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<sup>50</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 32, ([online](#)).

- How the contingency amounts have tracked over the lifetime of each major project, which may make it difficult to meaningfully compare contingencies of major projects that span the AR5 and AR6 periods.
- How checking the correlations between risks, using the risk-based method, influences the final calculation of total exposure, which appears to simply sum the expected monetary value of risks.

AEMO's project contingency calculation tool is new, and as such project managers will have had limited experience in using the model prior to calculating contingencies for AR6 cost forecasts. The ERA has sought further clarification from AEMO on the reliability and validity of its testing methods for measuring project contingencies, and whether the methods employed by AEMO for forecasting contingencies are tested and subject to continuous improvement based on this testing.

### 3.2.4 ***Cost allocation arrangements for central systems***

AEMO, as a national organisation, has several central systems and services shared across all jurisdictions, including its energy management system (e-terra) and various accounting and HR systems. Funding for these systems is sourced through a cost allocation arrangement, as summarised in the box below.

#### **Key points on AEMO's cost allocation arrangements**

- AEMO prefers to use shared systems and IT platforms, as this:
  - Helps reduce software, hardware, support, and lifecycle costs.
  - Eliminates duplication of effort.
  - Provides states access to critical IT systems and expertise at lower cost, as being part of a larger organisation provides economies of scale and scope, and greater purchasing power than standalone businesses.<sup>51</sup>
- Costs for using these systems in Western Australia are allocated on a causer or beneficiary pays basis, to the WEM cost centres. The method of allocation for AR6 varies. For example:
  - Energy management system – Cost estimates for e-terra were provided by the vendor and allocated to the WEM at 18 per cent, based on use of system.
  - Cyber security program – WEM was allocated 11.8 per cent of the total forecast cost based on the proportional average use of the system in the WEM compared to the National Electricity Market.
  - Infrastructure (Norwest data centre) – Western Australia was allocated 11.7 per cent of the forecast project cost, based on the number of WEM servers (218) relative to the total number of operational servers (1860).<sup>52</sup>

The ERA has reviewed AEMO's cost allocation arrangements for central systems and intends to further examine:

<sup>51</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 125, ([online](#)).

<sup>52</sup> Ibid, pp. 130.

- Whether AEMO undertakes a quantitative analysis comparing the risks, benefits, and costs of providing standalone solutions for WA's enterprise systems to national solutions.
- How AEMO has determined that projects undertaken at the national level, over which the ERA has no regulatory oversight, are undertaken prudently or efficiently, so that the costs allocated to AEMO WA are also prudent and efficient.

The ERA will assess the cost allocation arrangements in more detail and employ benchmarking to determine whether the costs allocated to AEMO represent the lowest practicably sustainable cost of providing the systems to Western Australia.

### **3.2.5 *Purchasing and market testing arrangements***

AEMO purchases a range of goods and services to be able to fulfil its functions under the WEM and GSI Rules. Key points on AEMO's purchasing and market testing arrangements are summarised in the box below.

#### **Key points on AEMO's purchasing and market testing arrangements**

- AEMO has a structured purchasing policy and suite of processes for all purchasing activities, to help drive value and encourage competition among suppliers.
- AEMO's standard practice when sourcing goods and services is to go to market for quotes. The number and frequency depend on the nature of goods and services being sourced.
- AEMO uses a preferred supplier when an arrangement is available, allowing for quotes for certain spend categories to come from a select group of suppliers without requiring an exemption for purchase totalling less than \$200,000.
- AEMO must meet the following minimum requirements when purchasing:
  - \$500,000 plus – a full tender process using the online tendering system, with at least three suppliers, irrespective of any preferred supply arrangements. This must be endorsed by a member of the procurement team, that is also part of the evaluation and negotiation team.
  - \$200,000 to \$499,999 – distribution and evaluation of at least three written quotes, via AEMO's online tendering system, with the sourcing strategy endorsed by the procurement team.
  - \$75,000 to 199,999 - distribution and evaluation of at least two written quotes, which are stored in AEMO's contract management system.
  - \$0 to \$4,999 – one written quote, with no purchase order required.
- Where practicable, AEMO uses the market to test the cost of goods and services.
- Where AEMO prepares a forecast for a project or piece of work that has not yet been fully scoped, or is towards the end of the AR6 period, cost estimates are based on historical costs for projects of a similar nature and the AEMO purchasing policy and associated processes are applied at point of purchase.

The ERA has requested more detail from AEMO about how the requirements of AEMO's purchasing policy have been met when developing each project, including:

- The process employed by AEMO to determine whether it is practicable for it to test the cost of goods and services using the market.
- What discipline is placed on project managers to make sure they are meeting the requirements of AEMO’s purchasing policy when costing funding proposals.
- How AEMO determines whether the cost of AEMO providing services internally, is a more efficient and prudent option than going out to tender to other suppliers to provide these services.

### **3.2.6 Project scope**

More than a third (\$3.6 million) of AEMO’s cost estimate to fund its DER capital expenditure program (\$9.4 million) is not directly related to AEMO’s obligations arising from the DER roadmap. Two of the four new projects from the DER Roadmap are not directly related to AEMO’s obligations, including:

- Market Visibility – aims to reduce barriers to entry for DER aggregators by providing improved visibility of market conditions and outcomes, and participation requirements.
- DER Data Access and Management - aims to increase visibility of the distribution network through access to additional DER and distribution network data and will be integrated with existing tools to inform operational decisions.

At a high level, these two projects aim to expand the current suite of data to include specific information to enable more accurate analysis of DER activity. AEMO forecasts \$3.6 million cumulatively on these two projects, which is 38 per cent of its total funding request for the DER program over the AR6 period. AEMO notes that these projects are not directly arising from an action obliged by the DER roadmap but are “driven by market need”.<sup>53</sup>

The ERA acknowledges that there are benefits to increasing awareness of, and access to, market data, particularly for new and potential entrants to the DER market. However, given that these costs are driven by AEMO’s own initiative, the ERA is interested in participants’ views on AEMO including these costs in its proposal.

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<sup>53</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 113, ([online](#)).



## 4. Questions for stakeholders

The ERA is interested in hearing stakeholders' views on any of the preliminary matters identified in this issues paper as well as the following specific questions.

### Questions

1. Which, if any, aspects of AEMO's proposal are of most concern to stakeholders and why?
2. Do stakeholders have any comments on the reasonableness of AEMO's estimate of the number and cost of the additional resources required to undertake its functions over the AR6 period?
3. Do stakeholders have any comments on the key assumptions underlying AEMO's proposal of its allowable revenue and/or forecast capital expenditure for AR6?
4. AEMO estimates market fees will increase by 64 per cent on average annually compared to the AR5 period. What effect, if any, will this have on market participants?
5. AEMO states it has worked with market participants in testing projects. Please describe and evaluate this process?
6. Are all projects listed in AEMO's proposal expected, given the stated reforms? If not, which projects are beyond scope and require the ERA's consideration?
7. Is the process by which AEMO can seek more funding for incomplete projects in AR5, through AR6 appropriate? If not, why not?
8. Is the process by which AEMO can use contingency funds to complete non-specified projects appropriate? If not, why not?
9. Where cost estimates for projects have significantly increased from the AR5 estimate, how should the ERA test this and why?
10. What are stakeholder's views on the process by which the level of uncertainty in a project can be deferred to an in-period submission to prevent significant expenditure?
11. Do stakeholders have any feedback on AEMO's governance processes to test, challenge and scrutinise its proposal, as outlined in section 3.2.1 of this paper?

**Are there any other issues the ERA should consider in making its determination on AEMO's allowable revenue and forecast capital expenditure for AR6?**

The ERA will consider any additional information received from AEMO and stakeholders on these or other matters when making its draft and final determinations.

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## Appendix 2 AEMO's functions under the WEM Rules and GSI Rules

### *WEM Rules*<sup>54</sup>

The functions conferred on AEMO in the WEM under the WEM Regulations and AEMO Regulations, as set out in the WEM Rules, are presented below.

#### **2.1A. Australian Energy Market Operator**

2.1A.1A. The function of ensuring that the SWIS operates in a secure and reliable manner for the purposes of the WEM Regulations is conferred on AEMO.

2.1A.2. The WEM Regulations also provide for the WEM Rules to confer additional functions on AEMO. The functions conferred on AEMO are:

- (a) to operate the Reserve Capacity Mechanism, the Short Term Energy Market, the LFAS Market, and the Balancing Market;
- (b) to settle such transactions as it is required to under these WEM Rules;
- (c) to carry out a Long Term PASA study and to publish the Statement of Opportunities Report;
- (cA) to procure adequate Ancillary Services where Synergy cannot meet the Ancillary Service Requirements;
- (d) to do anything that AEMO determines to be conducive or incidental to the performance of the functions set out in this clause 2.1A.2;
- (e) to process applications for participation, and for the registration, de-registration, transfer and Essential System Services accreditation of facilities;
- (f) to release information required to be released by these WEM Rules;
- (g) to publish information required to be published by these WEM Rules;
- (h) to develop WEM Procedures, and amendments and replacements for them, where required by these WEM Rules;
- (i) to make available copies of the WEM Procedures, as are in force at the relevant time;
- (iA) to monitor Rule Participants' compliance with WEM Rules relating to dispatch and Power System Security and Power System Reliability;
- (j) to support:
  - i. the Economic Regulation Authority's monitoring of other Rule Participants' compliance with the WEM Rules;

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<sup>54</sup> WEM Rules, 1 February 2022, ([online](#)).

- ii. the Economic Regulation Authority's investigation of potential breaches of the WEM Rules (including by reporting potential breaches to the Economic Regulation Authority); and
  - iii. any enforcement action taken by the Economic Regulation Authority under the Regulations and these WEM Rules;
- (k) to support the Economic Regulation Authority in its market surveillance role, including providing any market related information required by the Economic Regulation Authority;
- (l) to support the Coordinator and the Economic Regulation Authority in their roles of monitoring market effectiveness, including providing any market related information required by the Coordinator or the Economic Regulation Authority;
- (lA) to contribute to the development and improve the effectiveness of the operation and administration of the Wholesale Electricity Market, by:
  - i. developing Rule Change Proposals;
  - ii. providing support and assistance to other parties to develop Rule Change Proposals;
  - iii. providing information to the Coordinator as required to support the Coordinator's functions under these WEM Rules; and
  - iv. providing information and assistance to the Coordinator and the Economic Regulation Authority as required to support the reviews they carry out under the WEM Rules;
- (lB) to develop and maintain a Congestion Information Resource;
- (lC) to establish, maintain and update a DER Register in accordance with clause 3.24;
- (lD) to participate in the Technical Rules Committee and provide advice on Technical Rules Change Proposals as required by the Economic Regulation Authority under the Access Code, to provide submissions as part of the public consultation process in respect of Technical Rules Change Proposals and to develop and submit Technical Rules Change Proposals relating to System Operation Functions;
- (lE) to support each Network Operator in relation to the standard or technical level of performance in respect of a Technical Requirement applicable to Transmission Connected Generating Systems and perform the associated functions set out in Chapter 3A of these WEM Rules;
- (lF) to advise and consult with each Network Operator in respect of AEMO's System Operation Functions as contemplated under the Technical Rules applicable to the Network; and
- (ll) to support the Coordinator's role, and to facilitate and implement decisions by the Coordinator and the Minister regarding the evolution and development of the Wholesale Electricity Market and the WEM Rules,

and the management of Power System Security and Power System Reliability in the SWIS; and

- (m) to carry out any other functions conferred, and perform any obligations imposed, on it under these WEM Rules.

## ***GSI Rules***<sup>55</sup>

### **8 Functions and powers of the Coordinator, AEMO and ERA**

- (1) AEMO has the following functions and powers:
  - (a) to establish, operate and maintain the GBB;
  - (b) to register or deregister certain Gas Market Participants as Registered Participants;
  - (c) to register or deregister certain Facilities and to exempt certain facilities from the requirement to be registered;
  - (d) to prepare and publish the GSOO;
  - (e) [Blank];
  - (f) Procedure making functions, to the extent to which the Procedures relate to its functions under the Rules;
  - (g) [Blank];
  - (h) [Blank];
  - (i) [Blank];
  - (j) information gathering and disclosure functions, to the extent to which the information gathering and disclosure functions relate to its other functions conferred on AEMO under the GSI Act, the GSI Regulations and the Rules;
  - (ja) to support:
    - (i) the ERA's monitoring of persons' compliance with the Rules or Procedures;
    - (ii) the ERA's investigation of breaches or possible breaches of the Rules or the Procedures (including by reporting possible breaches to the ERA); and
    - (iii) any enforcement action taken by the ERA under the GSI Regulations or Rules;
  - (jb) to provide information to and assist the Coordinator as required to support the Coordinator's functions under the Rules;

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<sup>55</sup> GSI Rules, 17 December 2021, clause 8, ([online](#)).

- (jc) to support the Coordinator's role, and to facilitate and implement decisions by the Coordinator and the Minister, regarding the evolution and development of the GSI Rules; and
- (k) any other functions conferred on AEMO under the GSI Act, the GSI Regulations and the Rules.

## Appendix 3 AEMO's obligations under the WEM Rules and GSI Rules

### *WEM Rules*<sup>56</sup>

#### **2.22A. Determination of AEMO's budget**

- 2.22A.1. Subject to the requirements of this section 2.22A, AEMO may recover its costs for performing its functions under the WEM Regulations and the WEM Rules.
- 2.22A.2. For the Review Period, AEMO must seek the determination of its Allowable Revenue and Forecast Capital Expenditure from the Economic Regulation Authority for its functions, in accordance with the proposal guideline referred to in clause 2.22A.9.
- 2.22A.3. AEMO's proposal under clause 2.22A.2A(a) or clause 2.22A.2B(a) or AEMO's application for reassessment under clause 2.22A.12 or clause 2.22A.13 must, to the extent practicable, identify proposed costs that are associated with a specific project or where that is not practicable, one or more specific functions.
- 2.22A.4. If AEMO appoints a Delegate, then its proposal for, or application for reassessment of, its Allowable Revenue and Forecast Capital Expenditure must separately itemise the amount payable to the Delegate.
- 2.22A.7. By 30 June each year, AEMO must publish on the WEM Website a budget for the costs AEMO will incur in performing its functions for the coming Financial Year (including, without limitation, the amount to be paid to a Delegate). AEMO must ensure that its budget is:
- (a) consistent with the Allowable Revenue and Forecast Capital Expenditure determined by the Economic Regulation Authority for the relevant Review Period and any reassessment; and
  - (b) reported in accordance with the Regulatory Reporting Guidelines issued by the Economic Regulation Authority from time to time in accordance with clause 2.22A.9.
- 2.22A.8. By 31 October each year, AEMO must publish on the WEM Website a financial report showing AEMO's actual financial performance against its budget for the previous Financial Year (including, without limitation, the actual amount paid to a Delegate compared to the budgeted amount). The report must be in accordance with the Regulatory Reporting Guidelines issued by the Economic Regulation Authority from time to time in accordance with clause 2.22A.9.
- 2.22A.11. Where the revenue earned for the functions performed by AEMO via Market Fees in the previous Financial Year, is greater than or less than AEMO's expenditure for that Financial Year, AEMO's current year's budget must take into account any difference between AEMO's Market Fees revenue and AEMO's expenditure in the previous Financial Year by:

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<sup>56</sup> WEM Rules, 1 February 2022, ([online](#)).

- (a) decreasing the budgeted revenue by the amount of any revenue surplus;  
or
  - (b) increasing the budgeted revenue by the amount of any revenue shortfall.
- 2.22A.12. Where, taking into account any adjustment under clause 2.22A.11, AEMO's budget is likely to result in revenue recovery, over the relevant Review Period, being at least the lower of 10% of the Allowable Revenue or \$10 million, greater than the Allowable Revenue determined by the Economic Regulation Authority, AEMO must apply to the Economic Regulation Authority to reassess the Allowable Revenue.
- 2.22A.13. AEMO must apply to the Economic Regulation Authority to determine the adjusted Forecast Capital Expenditure for the current Review Period if the capital expenditure, over the relevant Review Period, is likely to be at least the lower of 10% of the Forecast Capital Expenditure or \$10 million, greater than the Forecast Capital Expenditure determined by the Economic Regulation Authority.
- 2.22A.13A. If AEMO underspends on the Allowable Revenue and/or Forecast Capital Expenditure determined by the Economic Regulation Authority in a Review Period, then, for the next Review Period, the \$10 million threshold in clause 2.22A.13 is to be increased to the amount equal to 30 percent of the underspend plus \$10 million.
- 2.22A.14. AEMO may apply to the Economic Regulation Authority, at any time during a Review Period, for additional costs to be considered by the Economic Regulation Authority as part of the Allowable Revenue and Forecast Capital Expenditure for that Review Period:
  - (a) for the Allowable Revenue:
    - i. costs previously rejected by the Economic Regulation Authority pursuant to clause 2.22A.6;
    - ii. new costs for new projects or new functions conferred on AEMO since AEMO's proposal for its Allowable Revenue for the current Review Period was submitted; and
    - iii. costs which were not able to be estimated with reasonable confidence at the time the Allowable Revenue for the current Review Period was submitted; and
  - (b) for the Forecast Capital Expenditure:
    - i. costs previously rejected by the Economic Regulation Authority pursuant to clause 2.22A.5;
    - ii. new costs for new projects or new functions conferred on AEMO since AEMO's proposal for its Forecast Capital Expenditure for the current Review Period was submitted; and
    - iii. costs which were not able to be estimated with reasonable confidence at the time of the Forecast Capital Expenditure for the current Review Period was submitted.

- 2.22A.16. AEMO must make an application under clauses 2.22A.12 or 2.22A.14(a) by 31 March for the Economic Regulation Authority to make a determination before the commencement of the Financial Year to which it relates.

## **GSI Rules<sup>57</sup>**

### **107 AEMO functions for determination of Allowable Revenue by ERA**

- (1) Subject to the requirements of this Part, AEMO may recover its costs for performing its functions under the GSI Act, the GSI Regulations and GSI Rules.

...

### **111A Determination of AEMO's Budget**

- (1) AEMO must—
- (a) by 30 June each year, publish on the GSI Website the AEMO Budget for the AEMO costs AEMO will incur in performing its functions for the coming Financial Year; and
  - (b) by 31 October each year, publish on the GSI Website a financial report showing AEMO's actual financial performance against its budget for the previous Financial Year, in accordance with the regulatory reporting guidelines issued by the ERA in accordance with subrule 109(7)(b).
- (2) AEMO must ensure its budget is:
- (a) consistent with the Allowable Revenue and Forecast Capital Expenditure determined by the ERA for the relevant Review Period and any adjustment; and
  - (b) reported in accordance with the regulatory reporting guidelines issued by the ERA in accordance with subrule 109(7)(b).
- (3) Where the revenue earned for the functions performed by AEMO via GSI Fees in the previous Financial Year is greater than or less than AEMO's expenditure for its functions for that Financial Year, the AEMO Budget must take into account any difference between GSI Fees revenue and AEMO's expenditure in the previous Financial Year by:
- (a) decreasing the budgeted revenue by the amount of any revenue surplus; or
  - (b) increasing the budgeted revenue the amount of any revenue shortfall.
- (4) Where, taking into account any adjustment under subrule (3), the AEMO Budget is likely to result in revenue recovery, over the relevant Review Period, being at least the lower of 10% of the Allowable Revenue or \$0.5 million greater than the Allowable Revenue determined by the ERA, AEMO must apply to the ERA to reassess AEMO's Allowable Revenue for the Review Period.

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<sup>57</sup> GSI Rules, 17 December 2021, ([online](#)).

- (5) Where the AEMO Budget is likely to result in capital expenditure, over the relevant Review Period, being at least the lower of 10% of the Forecast Capital Expenditure or \$0.5 million, greater than AEMO's Forecast Capital Expenditure determined by the ERA, AEMO must apply to the ERA to reassess AEMO's Forecast Capital Expenditure for the Review Period.
- (6) AEMO must make an application to the ERA under subrule 4 or with respect to Allowable Revenue under subrule 110(2) by 31 March for the ERA to make a determination of the Allowable Revenue before the commencement of the Financial Year to which the relevant AEMO Budget relates.

...

#### **114 AEMO may recover AEMO's functions, costs Regulator Fees and Coordinator Fees**

For each Financial Year, AEMO may recover from Registered Shippers and Registered Production Facility Operators:

- (a) an amount equal to the AEMO Budget;
- (b) an amount equal to the Regulator Fees, which amount must be consistent with the amount notified by the ERA in accordance with subrule 110A(3) or, where such amount has not been notified by the ERA in accordance with subrule 110A(3), published by AEMO in accordance with subrule 110A(5) or subrule 110A(6); and
- (c) an amount equal to the Coordinator Fees, which amount must be consistent with the amount notified by the Coordinator in accordance with subrule 110B(3) or, where such amount has not been notified by the Coordinator in accordance with subrule 110B(3), published by AEMO in accordance with subrule 110B(5) or subrule 110B(6).



## Appendix 4 Requirement for Proposal Guideline and Reporting Guideline

In the WEM Rules, as part of the revised review process, the ERA is required to produce a proposal guideline and a regulatory reporting guideline, as set out below.<sup>58</sup>

- 2.2A.2. For the Review Period, AEMO must seek the determination of its Allowable Revenue and Forecast Capital Expenditure from the Economic Regulation Authority for its functions, in accordance with the proposal guideline referred to in clause 2.22A.9.
- 2.22A.9. The Economic Regulation Authority must issue guidelines, following public consultation, in relation to this section 2.22A, including:
- (a) proposal guidelines, which must consider how future projects that carry a risk of not proceeding or for which the associated costs are not able to be quantified may be dealt with, and provide clarity and guidance to AEMO and Market Participants regarding the level of detail about projects, functions and costs expected in AEMO's proposal; and
  - (b) regulatory reporting guidelines, which:
    - i. must contain annual reporting obligations and provide clarity and guidance to AEMO and Market Participants about the scope of reporting and how AEMO should annually report to the Economic Regulation Authority and Market Participants; and
    - ii. are aimed at providing transparency and accountability in relation to AEMO's functions and Allowable Revenue and Forecast Capital Expenditure.
- 2.22A.10. The Economic Regulation Authority may amend guidelines issued under clause 2.22A.9 at any time, following public consultation which allows a reasonable opportunity for relevant stakeholders to present their views.

The GSI Rules include a similar requirement.<sup>59</sup>

The ERA must consult on and issue guidelines in relation to this Division<sup>60</sup>, including:

- a. proposal guidelines, which must consider how uncertain future projects may be dealt with, including any required approvals before the initiation of new projects, and provide clarity and guidance to AEMO and Gas Market Participants about the level of detail regarding projects, functions and costs expected in AEMO's proposal under rule 108A(2) or rule 110(1); and
- b. regulatory reporting guidelines, which:
  - i. must contain annual reporting obligations and provide clarity and guidance to AEMO and Gas Market Participants about the scope of reporting and how AEMO should annually report to the ERA and Gas Market Participants; and
  - ii. are aimed at providing transparency and accountability in relation to AEMO's functions and Allowable Revenue and Forecast Capital Expenditure.

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<sup>58</sup> WEM Rules, 1 February 2022, ([online](#)).

<sup>59</sup> GSI Rules, 17 December 2021, clause 109(7), ([online](#)).

<sup>60</sup> That is, Division 2, Powers of ERA to determine Allowable Revenue.

The ERA may amend guidelines issued under subrule 109(7) at any time, following consultation, which allows a reasonable opportunity for relevant stakeholders to present their views.

## Appendix 5 ERA's assessment and determination process

AEMO has provided considerable information in support of its AR6 funding proposal. This includes the written proposal itself, published on the ERA's website, and an additional 98 spreadsheets and documents provided to the ERA on a commercial in confidence basis.

The ERA has undertaken an initial review of AEMO's proposal to inform this issues paper. The ERA will consider any additional information AEMO provides as the ERA prepares the AR6 draft determination. However, WEM Rule 2.22A.6(c) (section 3.1) provides options for the ERA to consider if AEMO ultimately fails to provide sufficient detail for the ERA to make a reliable and valid assessment of AEMO's funding proposal. The ERA may use any of the following options when making its draft and final determinations:

- Fully reject the proposed costs.
- Partially approve the proposed costs.
- Substitute AEMO's proposed costs with costs that the ERA considers meet the approval requirements set out in WEM Rule 2.22A.6(c) (section 3.1).
- Provide limited or "seed" funding to AEMO to begin work on a new project initiated in response to a known obligation, but where limited information is available.

Seed funding would enable AEMO to develop the project scope and estimate more robust costs as additional information becomes available. Where the ERA approves seed funding, the ERA may suggest that AEMO delays the project to a later funding period or makes an in-period submission when more information becomes available so that a robust timeline, forecast cost and assessment of project risks and mitigations can be prepared.

There is a trade-off if AEMO does choose to make an in-period funding proposal. Although not generally as complex as a triennial funding proposal and review, there are still costs incurred by AEMO, the ERA and the market, should an in-period funding review and approval take place. The ERA must balance its decision to not approve funds that do not currently meet the funding approval criteria in the WEM and GSI Rules, with the additional costs that will be incurred when funding proposals are made in-period.

AEMO states that its proposal "has been developed on a reasonable basis, that its proposed expenditure is prudent, and that the cost estimates reflect the lowest practicably sustainable cost of delivering services."<sup>61</sup> In assessing whether this is the case, the ERA will need to consider the inherent uncertainty in AEMO's estimation of its project costs.

Uncertainty in estimates of AEMO's project costs results from AEMO's funding proposal being prepared and determined in advance of the start of the three-year funding period. Consequently, AEMO is required to forecast costs for some projects and activities that have not begun or that may not begin for some time.

Uncertainty around cost estimates is not just related to future timing. For example, AEMO may forecast costs for a project that is not due to start until 2024/25, the final year of the AR6 period. However, if AEMO has undertaken a similar project previously and the scope and actual costs of the previous project are known, then the future costs of such a project can be forecast with some degree of certainty. An example of this may be where AEMO is required to undertake a periodic hardware or software update for an IT system.

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<sup>61</sup> AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, pp. 7, ([online](#)).

Uncertainty in project costing is also created when AEMO is required to scope and forecast costs for a completely new project. The WEM reform project in AR5 is an example of this. Although AEMO was fully funded for WEM reform in AR5, AEMO's forecast was high level, as similar work had not been undertaken previously. AEMO's proposal details how the forecast costs for the WEM program changed as the details of the reform program became clearer (see section 2.1.2.1).

Although AEMO forecasts its costs for AR6, some of the proposals are still at an early stage. In its AR6 proposal, AEMO provides information on the stage of development for each of the projects that comprise the WEM reform program:

- Just over 40 per cent (\$18 million) of WEM reform forecast costs are at the project initiation stage, where ideas are developed into a proposal for a project.
- 20 per cent (\$8.9 million) is for forecast expenditure that is in the planning phase. In this phase AEMO gains a better understanding of what, how and when the project will deliver, and the benefits to be achieved. AEMO also evaluates and selects vendors.
- Just under 40 per cent (17.6 million) of forecast expenditure is at the execution stage where the project is underway and being actively managed.<sup>62</sup>

### ***ERA's proposed approach to addressing project uncertainty***

The ERA must determine and approve the proportion of proposed allowable revenue that meets the funding approval criteria. To do this, when reviewing AEMO's forecasts the ERA will undertake a project-by-project analysis, which may vary for different projects, given their respective stage of development.

The ERA has identified some examples of project uncertainty and considered how its review process may differ in each case. The examples of uncertainty are as follows.

- The project is well underway, fairly advanced and on time and budget. The project scope is sufficiently defined.
  - Costs for projects in this category should be well known, particularly if projects are on track and AR6 costs were flagged in AR5, allowing for a top-down approach to assessment by the ERA. An exception to the general approach may be where a project has exceeded its estimated costs plus contingency. Here, the ERA may undertake a bottom-up analysis as well.
- The project is underway, and the scope is sufficiently defined, but there are cost or time overruns, or the project has just started.
  - The ERA will review all cost categories for projects in train that have cost or time overruns, using a bottom-up approach to understand why the costs have increased and if the revised estimates are reasonable, supported by robust evidence, and meet the approval criteria.
- The project has not yet begun but there are strong indicators of scope and likely project costs from other similar projects.
  - This category is for new projects that will begin in AR6 that have likely comparators to projects undertaken in the NEM, allowing for benchmarking and bottom-up

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<sup>62</sup> See Figure 10. AEMO, December 2021, Proposal to the Economic Regulation Authority, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 34, ([online](#)).

assessment of the proposed projects. The ERA's technical consultants can also provide advice given their experience of similar capex projects

- The project has not yet begun, but the WEM or GSI rules are known, and scoping and planning is completed.
  - This category is also for new projects that will begin in AR6. The ERA will use a bottom-up approach to understand how AEMO has derived its project scope and cost estimates, what evidence is provided in support of these estimates, and if the proposed funding meets the approval criteria set out in the market rules.
- The project has not started and has not been undertaken previously and is in the very early initiation stage. The scope is not sufficiently defined.
  - The ERA will use a top-down approach to test how the forecasts have been estimated and whether they meet the approval criteria set out in the market rules. Projects in this category may attract approval of seed-funding, so that AEMO can undertake some exploratory work. The remaining project cost could then be included in an in-period submission.

Based on the examples of project uncertainty above, the ERA will then apply either a top-down analysis, benchmarking, or a bottom-up analysis, to assess the proposed expenditure for each AR6 capital project.

Using the top-down approach, the ERA will consider the estimation and review processes AEMO has used to forecast costs. The usefulness of this approach will be dependent on the confidence the ERA has in AEMO's underlying processes. If there are concerns with these processes, then the ERA may choose to either benchmark the costs, if meaningful project comparisons are available, or to undertake more detailed analysis of the underlying numerical elements and assumptions underpinning the forecasts.

For the benchmarking approach, the ERA will compare proposed costs with similar projects in AR5, similar NEM projects, or any comparable project costs that the ERA's consultants (see below) can provide.

With the bottom-up approach, the ERA will seek to develop a detailed understanding of how AEMO has built up its cost estimates. The ERA's review and analysis will include assessment of such matters as:

- The number and cost of staff to be used in the project and the skillsets that these staff will provide.
- How AEMO has scoped the project to ensure AEMO:
  - Delivers AEMO's obligations under the WEM and GSI rules.
  - Does not overestimate the costs of any systems or solutions.
- How AEMO minimises costs through recruitment and procurement to ensure the proposed costs meet the approval criteria.

The ERA intends to use its proposed framework for assessment of individual AR6 capital projects as a guide only. The ERA may vary the approach once it has assessed the details of the individual projects and considered the contribution of each project to total costs.

## ***ERA's consultants***

The ERA will seek expert technical advice from two consultants to assist in the determination:

- The Lantau Group will benchmark AEMO's costs of providing its services against the costs of system and market operators in other jurisdictions providing similar services.
- Intelligent Energy Systems (IES) are IT capital project specialists and will provide technical advice on AEMO's proposed IT costs.

Both consultants worked on the ERA's AR5 determination and are already familiar with AEMO's cost structure and many of the projects that will carry over from AR5 to AR6.

The ERA will consider advice from its technical consultants and submissions received in response to the issues paper before making its draft and final determinations. The ERA will publish any consultant reports it has relied on to make either determination, when the determination is published.

## Appendix 6 ERA's obligations under the WEM Rules and GSI Rules

### *WEM Rules*<sup>63</sup>

#### **2.22A. Determination of AEMO's budget**

...

2.22A.2B Notwithstanding clause 2.22A.2A, for the Review Period from 1 July 2022 to 1 July 2025 the following applies:

- (a) the Economic Regulation Authority must publish a proposal guideline by 31 October 2021;
- (b) AEMO must submit a proposal for its Allowable Revenue and Forecast Capital Expenditure to the Economic Regulation Authority for the Review Period by 31 December 2021;
- (c) the Economic Regulation Authority must publish on its website a draft determination of AEMO's Allowable Revenue and Forecast Capital Expenditure for the Review Period for public consultation by 31 March 2022; and
- (d) the Economic Regulation Authority must prepare and publish on its website its final determination of AEMO's Allowable Revenue and Forecast Capital Expenditure for the Review Period by 31 May 2022.

...

2.22A.5. The Economic Regulation Authority must take the following into account when determining AEMO's Allowable Revenue and Forecast Capital Expenditure or an application for reassessment to the Allowable Revenue or Forecast Capital Expenditure:

- (a) the Allowable Revenue must be sufficient to cover the forward looking costs of performing AEMO's functions in accordance with the following principles:
  - i. recurring expenditure requirements and payments are recovered in the year of the expenditure; and
  - ii. capital expenditure is to be recovered through the depreciation and amortisation of the assets acquired by the capital expenditures in a manner that is consistent with generally accepted accounting principles;
- (b) the Allowable Revenue and Forecast Capital Expenditure must include only costs which would be incurred by a prudent provider of the services provided by AEMO in performing its functions, acting efficiently, to achieve the lowest practicably sustainable cost of performing AEMO's functions, while effectively promoting the Wholesale Market Objectives;

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<sup>63</sup> WEM Rules, 1 February 2022, ([online](#)).

- (c) where possible, the Economic Regulation Authority should benchmark the Allowable Revenue and Forecast Capital Expenditure against the costs of providing similar functions and/or projects in other jurisdictions;
- (d) where costs incurred by AEMO relate to both the performance of functions in connection with the WEM Rules, and the performance of AEMO's other functions, the costs must be allocated on a fair and reasonable basis between:
  - i. costs recoverable as part of AEMO's Allowable Revenue and Forecast Capital Expenditure; and
  - ii. other costs not to be recovered under the WEM Rules; and
- (e) any other matters the Economic Regulation Authority considers relevant to its determination.

2.22A.6. The Economic Regulation Authority may do any or all of the following in respect to AEMO's proposal under clause 2.22A.2A(a) or clause 2.22A.2B(a):

- (a) approve the costs of any project;
- (b) approve the costs of AEMO performing its functions;
- (c) if the Economic Regulation Authority considers that some costs do not meet the requirements of clause 2.22A.5, reject the costs fully or partially, or substitute those costs with costs the Economic Regulation Authority considers meets the requirements of clause 2.22A.5; and
- (d) recommend to AEMO that some of the costs be considered in a subsequent Review Period or in accordance with clause 2.22A.14.

...

2.22A.15. The Economic Regulation Authority may request information from AEMO in relation to the performance of its functions under this section 2.22A. AEMO must provide the information to the Economic Regulation Authority by the time specified in a request, which must be reasonable.

...

2.22A.17. The Economic Regulation Authority may amend a determination under clause 2.22A.2(c) if AEMO makes a reassessment application under clauses 2.22A.12 or 2.22A.13 or 2.22A.14 and the Economic Regulation Authority: (a) must take the matters referred to in clause 2.22A.5 into account in determining any reassessment; (b) may consider as part of its amended determination any earlier determined costs where the Economic Regulation Authority reasonably considers it necessary to review those earlier determined costs as part of the reassessment; (c) is not required to reassess earlier determined costs in making its redetermination of the Allowable Revenue or Forecast Capital Expenditure; and (d) must complete such public consultation as the Economic Regulation Authority considers appropriate in the circumstances.



**108A ERA to determine Allowable Revenue and Forecast Capital Expenditure for AEMO**

- (1) The ERA must determine the Allowable Revenue and Forecast Capital Expenditure for AEMO for each Review Period for performing its functions, in accordance with this Part.
- (2) By 31 October of the year prior to the start of a Review Period, AEMO must submit a proposal to the ERA for its Allowable Revenue and Forecast Capital Expenditure for the performance of its functions over that Review Period, in accordance with the proposal guidelines referred to in subrule 109(7)(a).
- (3) By 31 March of the year in which the Review Period commences, the ERA must publish on its website a draft determination of AEMO's proposed Allowable Revenue and Forecast Capital Expenditure for public consultation.
- (4) The ERA must prepare and publish on its website its final determination of the Allowable Revenue and Forecast Capital Expenditure of AEMO by 30 April of the year in which the Review Period commences.
- (5) Where the ERA does not determine the Allowable Revenue and Forecast Capital Expenditure of AEMO by the date in subrule 108A(4) or 108B(1)(d), the GSI Fees calculated under Division 4 of Part 7 of the Rules for the current Financial Year continue to apply until the ERA makes a determination.
- (6) AEMO's proposal under subrule 108A(2) or 108B(1)(b) or application for adjustment under subrule 111A(4) or 111A(5) must, to the extent practicable, identify proposed costs that are associated with a specific project or where not practicable, a specific function or functions.

**108B Transitional provisions for the Review Period from 1 July 2022 to 1 July 2025**

- (1) Notwithstanding rule 108A the following apply:
  - (a) the ERA must publish a proposal guideline by 31 October 2021;
  - (b) AEMO must submit a proposal for its Allowable Revenue and Forecast Capital Expenditure to the ERA for the Review Period by 31 December 2021;
  - (c) the ERA must publish on its website a draft determination of AEMO's Allowable Revenue and Forecast Capital Expenditure for the Review Period for public consultation by 31 March 2022; and
  - (d) the ERA must prepare and publish on its website its final determination of AEMO's Allowable Revenue and Forecast Capital Expenditure for the Review Period by 31 May 2022.

**109 Matters for consideration by ERA in determining Allowable Revenue and Forecast Capital Expenditure**

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<sup>64</sup> GSI Rules, 17 December 2021, ([online](#)).

- (1) The ERA must take the matters set out in this rule into account, and any other matters the ERA considers relevant to its considerations when—
  - (a) determining the Allowable Revenue and Forecast Capital Expenditure of AEMO under rule 108A and 108B; and
  - (b) approving adjustments to the current Allowable Revenue and Forecast Capital Expenditure for AEMO under rule 110.
- (2) The Allowable Revenue of AEMO must be sufficient to cover the forward looking costs of performing AEMO's functions in accordance with the following principles—
  - (a) recurring expenditure requirements and payments are recovered in the year of the expenditure; and
  - (b) capital expenditures are to be recovered through the depreciation and amortisation of the assets acquired by the capital expenditures in a manner that is consistent with generally accepted accounting principles.
- (3) The Allowable Revenue and Forecast Capital Expenditure for AEMO must include only costs which would be incurred by a prudent provider of the services provided by AEMO in performing its functions, acting efficiently, seeking to achieve the lowest practicably sustainable cost of delivering AEMO's functions, while effectively promoting the GSI Objectives.
- (4) Where possible, the ERA should benchmark the Allowable Revenue and Forecast Capital Expenditure for AEMO against the costs of providing similar functions and/or projects in other jurisdictions.
- (5) Where costs incurred by AEMO relate to both the performance of functions in connection with the Rules, and the performance of AEMO's other functions, the costs must be allocated on a fair and reasonable basis between—
  - (a) costs recoverable as part of AEMO's Allowable Revenue and Forecast Capital Expenditure; and
  - (b) other costs not to be recovered under the Rules.
- (6) The ERA may approve project and/or function costs or, if some costs do not meet the requirements of this rule 109, reject fully or partially or substitute those costs and recommend to AEMO that some of the costs be considered in a subsequent Review Period and/or in a reassessment.

#### **110 ERA may adjust Allowable Revenue or Forecast Capital Expenditure**

- (1) The ERA must reassess and may adjust the Allowable Revenue and/or Forecast Capital Expenditure for the current Review Period for AEMO where—
  - (a) AEMO applies to the ERA to reassess the Allowable Revenue under subrule 111A(4); and/or
  - (b) AEMO applies to the ERA to reassess the Forecast Capital Expenditure under subrule 111A(5).

- (2) During a Review Period, AEMO may apply to the ERA for approval of an adjustment to its Allowable Revenue and/or Forecast Capital Expenditure for that Review Period:
  - (a) costs previously rejected pursuant to rule 109;
  - (b) new costs for project and/or functions since AEMO'S proposal for its Allowable Revenue and Forecast Capital Expenditure for the current Review Period; and
  - (c) costs which were not able to be estimated with reasonable confidence at the time of the relevant Allowable Revenue and Forecast Capital Expenditure review process.
- (3) If the ERA receives an application from AEMO under subrule (2), the ERA may make a determination to adjust the Allowable Revenue and Forecast Capital Expenditure for the Review Period for AEMO.
- (4) The ERA may seek information from AEMO in relation to the performance of its functions under this Division 2.
- (5) The ERA must undertake such consultation as the ERA considers appropriate in the circumstances, in relation to applications for adjustment of the current Allowable Revenue and Forecast Capital Expenditure for AEMO referred to in subrule (1), and may do so in relation to an application for adjustment under subrule (2).