



**Economic Regulation Authority**

# AEMO AR6 in-period forecast capital expenditure adjustment

Draft determination

19 July 2023

## **Economic Regulation Authority**

Level 4, Albert Facey House

469 Wellington Street, Perth WA 6000

**Telephone** 08 6557 7900

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

**Website** [www.erawa.com.au](http://www.erawa.com.au)

This document can also be made available in alternative formats on request.

National Relay Service TTY: 13 36 77

© 2023 Economic Regulation Authority. All rights reserved. This material may be reproduced in whole or in part provided the source is acknowledged

## Invitation to make submissions

**Submissions are due by 4:00 pm WST, 2 August 2023**

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).

For further information please contact

### **General Enquiries**

Julian Fairhall

Ph: 08 6557 7900

[Julian.Fairhall@erawa.com.au](mailto:Julian.Fairhall@erawa.com.au)

### **Media Enquiries**

Danielle Asarpota

Ph: +61 428 859 826

[media@erawa.com.au](mailto:media@erawa.com.au)

# Contents

<b>Executive summary .....</b>	<b>ii</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 In-period review process and timeline .....	1
1.2 ERA's obligations under the market rules .....	1
1.2.1 Application of legal test.....	2
<b>2. AEMO's proposal cost breakdown .....</b>	<b>4</b>
2.1 Costs by program .....	4
2.2 Costs by category .....	6
2.3 Projected changes to market fees .....	7
<b>3. AEMO's costs for WEM reform.....</b>	<b>9</b>
3.1 Historical context .....	9
3.2 Factors driving AEMO's forecast capital expenditure proposal .....	11
3.2.1 Labour cost.....	12
3.2.2 Finance costs .....	13
3.2.3 Reform uncertainty and cost .....	13
3.3 AEMO's response to cost escalation.....	15
3.4 The ERA's determination on AEMO's WEM reform costs .....	16
<b>4. Sustaining capital expenditure and GSI.....</b>	<b>19</b>
4.1 Assessment of AEMO's forecast sustaining capital expenditure proposal .....	19
4.1.1 Oracle upgrade.....	20
4.1.2 Application programming interface management.....	20
4.1.3 WEM EMS GPS Clock .....	21
4.1.4 Trucked LNG .....	21
<b>5. Draft determination.....</b>	<b>22</b>
 <b>List of appendices</b>	
<b>Appendix 1 List of Tables.....</b>	<b>23</b>
<b>Appendix 2 List of Figures .....</b>	<b>24</b>
<b>Appendix 3 Approach to labour costs .....</b>	<b>25</b>
<b>Appendix 4 The role of decision making to mitigate uncertainty .....</b>	<b>27</b>
<b>Appendix 5 AEMO's functions under the WEM and GSI Rules.....</b>	<b>29</b>
<b>Appendix 6 AEMO's obligations under the WEM Rules and GSI Rules .....</b>	<b>33</b>
<b>Appendix 7 ERA's obligations under the WEM Rules and GSI Rules .....</b>	<b>38</b>

## Executive summary

AEMO is seeking an additional \$47.11 million of forecast capital expenditure on top of the \$61.5 million already approved for the sixth allowable revenue period from 2022/23 to 2024/25 (AR6). The forecast capital expenditure is predominantly for cost over-runs in the Wholesale Electricity Market (WEM) reform program, with the remainder being for sustaining capital expenditure for the WEM and gas services information platform.

The ERA has provisionally approved most of the additional forecast capital expenditure. In doing so, the ERA has conducted an evaluation on whether the expenditure meets the standard of a prudent market operator acting efficiently to achieve the lowest practical sustainable cost.

Most of the expenditure relates to WEM reform. This is a large and complex work program with many interacting parts. It has involved building new market systems, adapting existing market systems, and integrating new system security mechanisms. Most of the proposed expenditure request relates to increase in existing projects which were considered and approved in AR6. For these projects, the question of whether AEMO should be undertaking the specific projects within the program has been substantively addressed either through regulatory processes or rules amendments. AEMO must be appropriately resourced to deliver on the reform agenda.

The ERA has examined AEMO's proposal and reviewed it in comparison to past proposals for the work program. A large part of the increase in expenditure is due to delays in delivery of the projects that had been approved in AR6. Given the imminent start date of the new market on 1 October, significant resources are required to be deployed to ensure AEMO's readiness for new market start. Given the urgency, these additional resources come at a premium. Project uncertainty and the budgeted reserve to mitigate contingencies also remains high.

The ERA's assessment of costs and decision to provisionally approve AEMO's request evaluates the risk of overfunding with the risk of underfunding. Underfunding at this time risks stalling the WEM reform program at a critical point. This could potentially result in significantly higher costs to the market and further delays.

Overfunding AEMO may allow it to repurpose unused forecast capital expenditure to other projects that may not otherwise meet the regulatory test. AEMO anticipates making an additional in-period submission by March next year which will provide the ERA with an additional opportunity to review AEMO's expenditure. This mitigates the risk of overfunding as the ERA will have oversight on both existing and new projects. Any unused forecast capital expenditure can be applied to offset this anticipated future request.

Considering the relative risks and their impact, the ERA has determined that the risk of being unprepared for the new market start outweighs the potential for spending inefficiency by AEMO. The ERA has therefore approved \$46.94 million. The ERA has made modest adjustments to sustaining capex projects to conform with the funding proposal guidelines on contingency and labour costs.

# 1. Introduction

The ERA determines the allowable revenue and forecast capital expenditure for AEMO for the functions and services AEMO provides to the Western Australian electricity and gas markets under the Wholesale Electricity Market (WEM) Rules and the Gas Services Information (GSI) Rules. AEMO recovers its allowable revenue and forecast capital expenditure through fees charged to market participants.

This draft determination covers an in-period proposal from AEMO to adjust the forecast capital expenditure for the sixth allowable revenue period (AR6).

## 1.1 In-period review process and timeline

Under the WEM and GSI Rules, AEMO may make an application at any time within a revenue period to adjust the forecast capital expenditure. The ERA received a proposal from AEMO on 26 April 2023 to adjust the forecast capital expenditure amount.<sup>1</sup> The ERA published the proposal on 28 April 2023.

AEMO has advised it engaged third parties to review its proposal against the funding proposal guidelines.<sup>2</sup> However, AEMO's compliance with the ERA's funding proposal guidelines and timeliness of provision of supporting information remain works in progress. Timely provision of supporting information and conformity with the funding proposal guidelines reduces the burden and time necessary to review funding proposals.

The proposal is due to cost overrun for the WEM reform program and some new sustaining capital works projects. Collectively the cost of these projects exceeds the threshold for AEMO's overspend allowance as set by the Rules. All forecast capital expenditure numbers in this draft determination include a contingency allowance unless otherwise stated.<sup>3</sup>

This draft determination is published for consultation from interested parties. Consultation closes on 2 August 2023. Secretariat staff are also available to meet with interested parties on AEMO's proposal and the draft determination during the consultation period.

## 1.2 ERA's obligations under the market rules

The WEM Rules and GSI Rules set out the ERA's obligations and the matters the ERA will consider when making its determination. The ERA's obligations under the WEM Rules, which are similar to the GSI Rules (see Appendix 5), are set out below.

The ERA must ensure that, when determining or reassessing the allowable revenue and forecast capital expenditure for AEMO:

- The allowable revenue is sufficient to cover the forward-looking costs of AEMO performing its functions in accordance with specified principles.
- The allowable revenue and forecast capital expenditure include only those costs that would be incurred by a prudent provider of AEMO's services, acting efficiently, to achieve

<sup>1</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, ([online](#)).

<sup>2</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 12, ([online](#)).

<sup>3</sup> All figures in this paper are nominal.

the lowest practicably sustainable cost of performing AEMO's functions while promoting the WEM or GSI objectives.

The ERA is required, where possible, to benchmark the allowable revenue and forecast capital expenditure against the costs of providing similar functions and/or projects in other jurisdictions. The ERA can consider any other matters it regards as 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.
- Where the costs do not meet the relevant legal test, reject the costs fully or partially, or substitute those costs with costs the ERA considers meet 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.

### **1.2.1 Application of legal test**

To determine AEMO's forecast capital expenditure, the WEM Rules and the GSI Rules require the ERA to only approve proposed costs that would be incurred by a prudent provider acting efficiently to achieve the lowest practicably sustainable cost of performing AEMO's functions, while effectively promoting the market objectives. As a result, the ERA expects AEMO to demonstrate how its proposed expenditure will achieve the lowest practicably sustainable costs of delivering AEMO's functions.

The ERA's proposal guideline outlines a two-pronged approach to assess the prudence and efficiency of AEMO's costs, as required by the WEM Rules and GSI Rules. AEMO is required to ensure its proposal is in accordance with the proposal guideline.

To assist the ERA in its assessment of the prudence of AEMO's proposed costs (prudence test), the guideline requires AEMO to provide evidence that a project is necessary, that there is a clear connection between the proposed costs and AEMO's functions, and that the scope of the project aligns with, but does not exceed, the functions as described in the WEM Rules and/or GSI Rules.

To assist the ERA in its assessment of the efficiency of AEMO's proposed costs (efficiency test), the proposal guideline requires AEMO to ideally provide evidence that demonstrates:

- A consistent model/approach to estimating project costs.
- A competitive procurement process.
- A thorough governance process to challenge project scope, delivery mechanism, and cost estimates.
- How it has compared estimated project costs against the actual costs of similar projects.
- How resources will be optimised across the capital program.
- That proposed costs are consistent with current market costs for comparable labour resources, services and products.
- Any options analysis undertaken to evaluate whether the chosen solution is the lowest practicably sustainable cost approach.

When reviewing AEMO's proposal, the ERA has applied the two-pronged test outlined in the procedure guideline, as required by the WEM Rules and GSI Rules. As part of the test, the ERA also considers how the proposed costs will effectively promote the market objectives and any other matters that the ERA considers relevant to its determination. Relevant excerpts of the WEM Rules and GSI Rules relating to the ERA's and AEMO's obligations are provided in Appendices 5, 6, and 7.

Most of the funding in the proposal relates to cost overruns for projects within the WEM reform work program that has already been subject of previous forecast capital expenditure reviews.



## 2. AEMO's proposal cost breakdown

AEMO is seeking a \$47.11 million increase in the forecast capital expenditure for WEM reform and sustaining capital expenditure for both the WEM and GSI platforms. Values presented in this chapter are based on AEMO's proposal and the summary information in the proposal templates. Further analysis was conducted on the more detailed supporting information.

The ERA engaged the Western Australian Treasury Corporation (WATC) to support the numerical analysis of AEMO's proposal. The WATC's methods are consistent with those used by the ERA in the original AR6 proposal. Synergies Economics Consultants were also engaged to review elements of AEMO's proposal.

### 2.1 Costs by program

Nearly all of the request relates to expenditure on the WEM reform program (Figure 1) with the remainder being for sustaining capital expenditure.

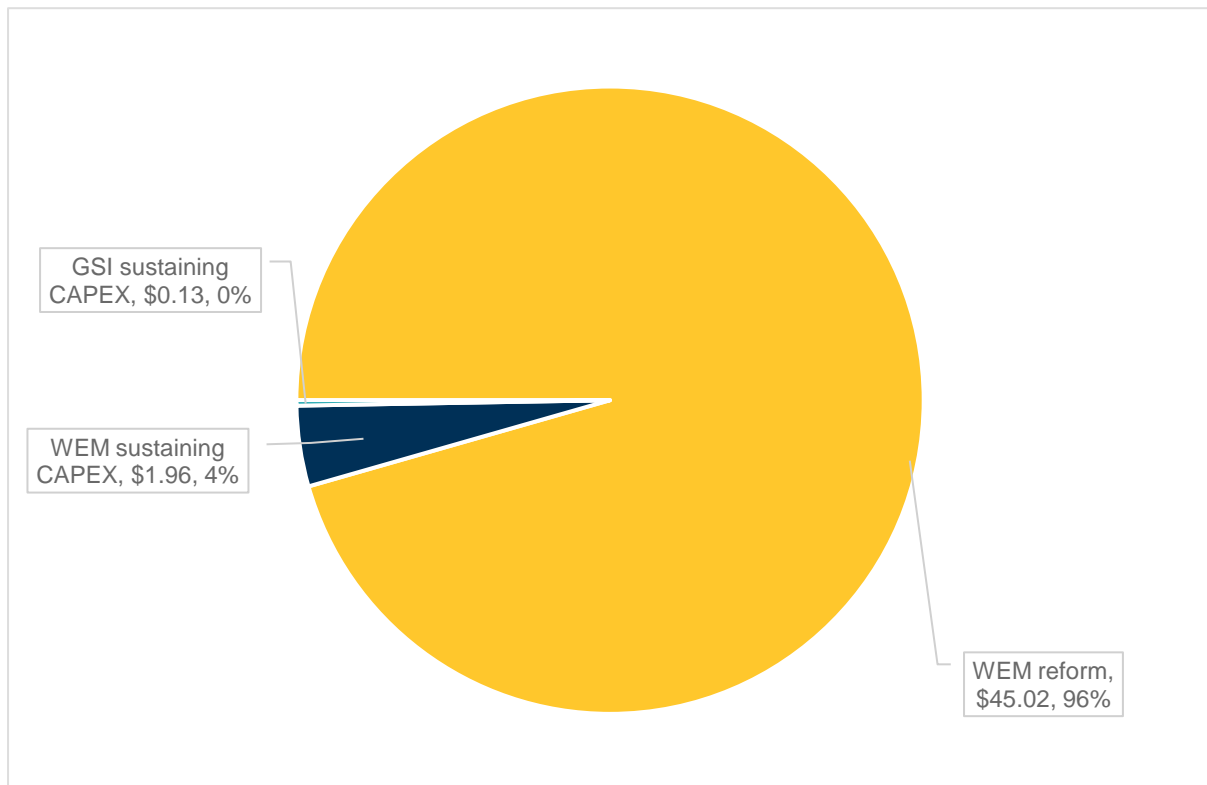
Sustaining capital expenditure is that required to ensure the software being used is current and meets a suitable operating standard, and to fund capital works necessary for AEMO's day to day functions. The projects included relate to both the Gas Services Information platform and the WEM.

Sustaining capital expenditure is divided into two subsets: GSI and WEM.

The GSI expenditure relates to a rule change for trucked LNG already incurred but not accounted for in the original AR6 proposal. As the cost of this rule change implementation exceeded the forecast capital expenditure overspend threshold, AEMO has included it in the funding request.

The majority of WEM sustaining capital expenditure is for an update to the Oracle database, with the residual covering replacing the global positioning system clock, and some cyber security works.

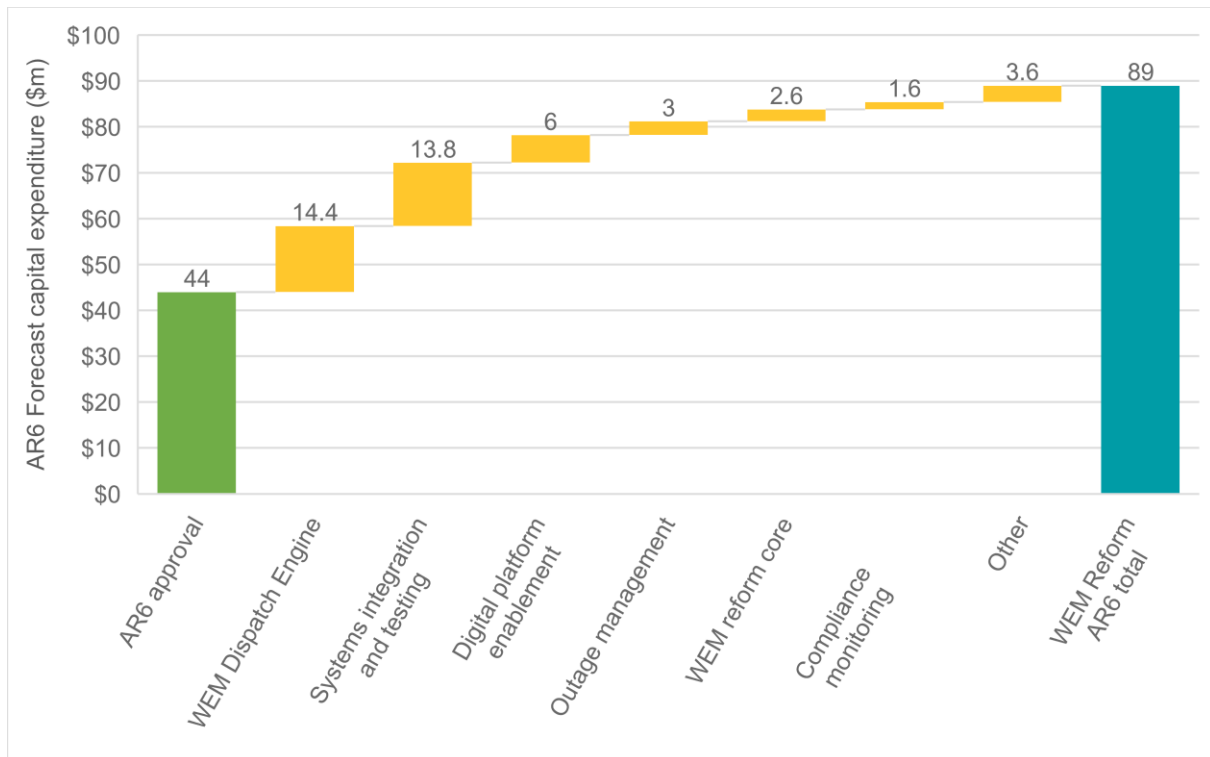
**Figure 1** Breakdown of proposed forecast capital expenditure increase by work program (\$m)



Source: AEMO Proposal

The remaining 96 per cent of the expenditure relates to increases in the cost of WEM reform. Figure 2 shows a waterfall of changes to the cost of WEM reform by program for the remainder of the AR6 period.

**Figure 2 Breakdown of proposed WEM reform related forecast capital expenditure increase**



Source: AEMO Proposal

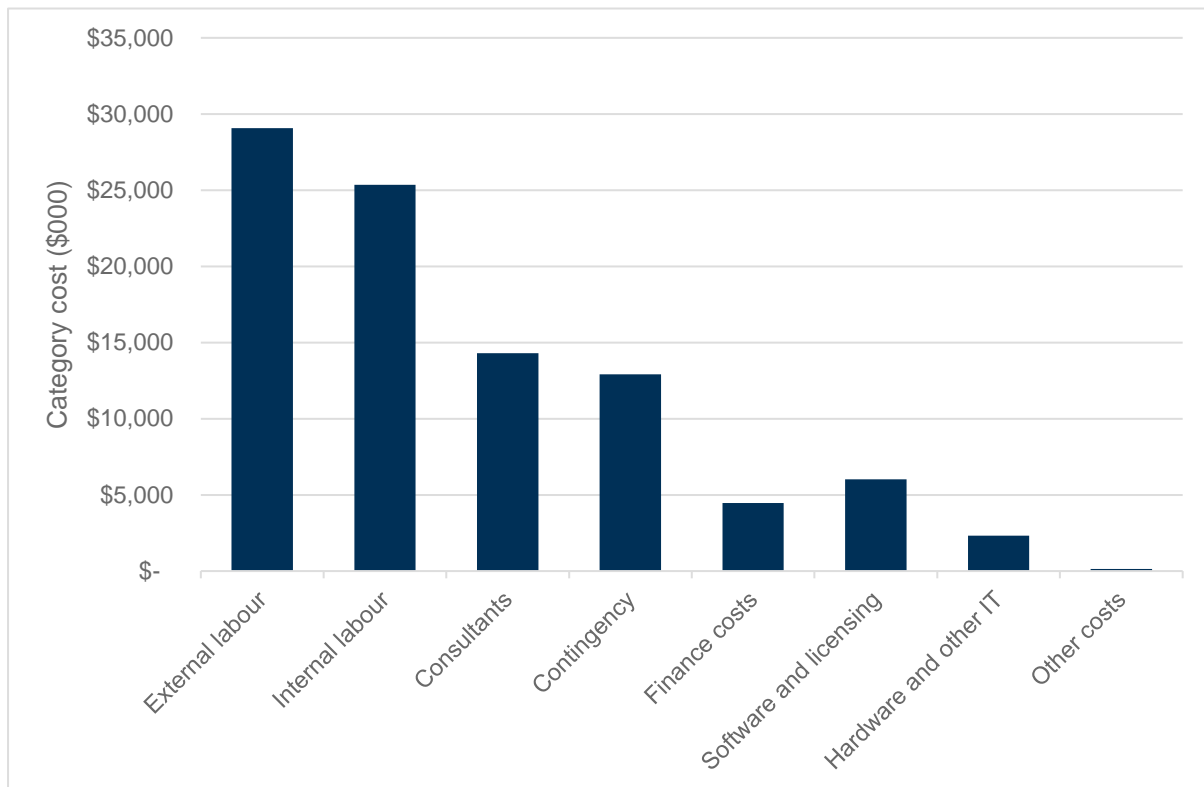
Three projects comprise around three quarters of the WEM reform related expenditure. These are the dispatch engine (the engine proper and the user interface), systems integration and testing, and digital platform enablement. Other variations of note include the project management expenditure for the reform, outage management, and the development of the compliance and monitoring tools to provide EPWA and the ERA with data needed to undertake their functions.

## 2.2 Costs by category

With most of the projects underway, it is not straightforward (or necessarily meaningful) to unpick the incremental differences between the original workplan and the revised workplan. AEMO's supporting information provided reforecast costs over the whole of the AR6 period.

The ERA analysed how AEMO calculated its build of the forecast capital expenditure requirement, using financial tracking sheets as a primary 'source of truth' for individual projects within work programs.

Figure 3 provides a categorisation of expenses by type for AEMO's proposal – noting this figure aggregates AEMO's total revised WEM reform costs over AR6 with the new sustaining capital expenditure projects included in AEMO's in-period submission with a total cost of \$94.5 million.

**Figure 3: Breakdown of AEMO's proposal by expenditure category**

Source: AEMO proposal, funding templates, and other supporting information

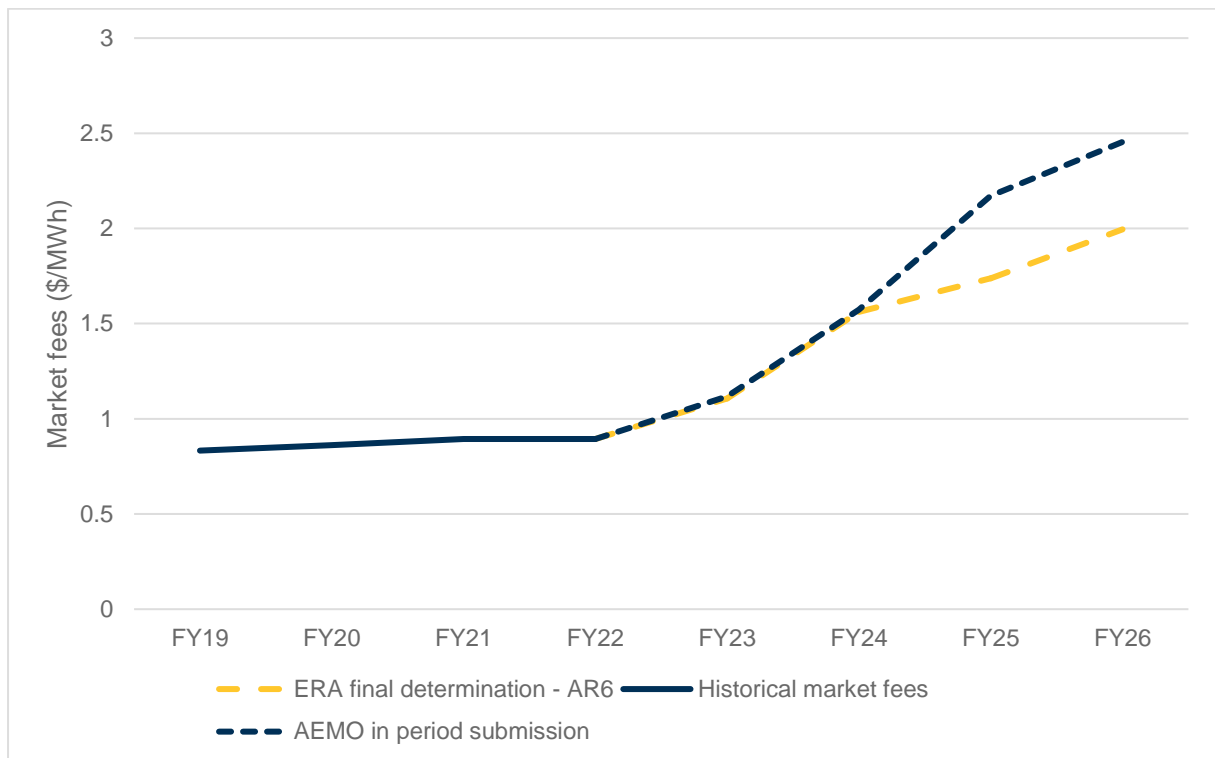
## 2.3 Projected changes to market fees

Capitalising projects defers recovery of expenditure over the economic lifespan of the assets. The depreciation component of the assets is a line item in the allowable revenue which is recovered from market fees.<sup>4</sup> Assets can only be depreciated once they come into service. To date, reform program projects (both the substantive market reforms and the DER roadmap reforms) are only partially reflected in market fees as most of the projects are not yet complete. Most of the reform costs will flow through to market fees following commencement of the new market.

AEMO has estimated an increase in market fees of \$0.30 per MWh (around a 17 per cent increase) on top of a projected near doubling of market fees from AR5. This value reflects only a single point in time rather than a longer projection.

Figure 4 depicts the uplift in market fees due to changes to the capitalisation cost as it would be realised through depreciation and amortisation when applied to AEMO's ESOO expected demand forecast.

<sup>4</sup> Wholesale Electricity Market Rules (WA), 1 July 2023, Rule 2.22A.5 (a) (ii), ([online](#))

**Figure 4: Projection of effect of in-period submission on market fees**

Source: WATC and ERA analysis of AEMO proposal and supporting documentation

The fees themselves are dependent on projections of electricity consumption. At the time of writing this draft determination, AEMO had not yet published the authoritative source of demand projections for the WEM for the period in question. The ERA will publish a revised indicative fee trajectory with the final determination.

### 3. AEMO's costs for WEM reform

WEM reform comprises the bulk of the in-period request and attracted the majority of the ERA's focus. When discussing WEM reform, references to the 'program' refer to the work program in its entirety. References to 'projects' refer to components within the work program.

The underlying cost driver for WEM reform program is a large software development program. The individual components of the request are described in section 2.1. At a high level, the WEM reform program has required more resources (both financial and human) and more time, than anticipated in both the original AR5 proposal and subsequently in the AR6 funding proposal to deliver a modified scope by the projected go live date.<sup>5</sup>

The ERA's role is to assess whether the proposed forecast capital expenditure meets the standards for funding – that is, the costs that would be incurred by a prudent provider of the services in performing its functions, acting efficiently, to achieve the lowest practicably sustainable cost.<sup>6</sup>

In conducting its review of AEMO's funding the request, the ERA has considered variances from previous anticipated expenditure patterns to identify or confirm the particular drivers for the additional funding request. Two major questions arose during the ERA's assessment:

1. Why have expected delivery costs changed and why relatively late in the project delivery cycle?
2. Why does contingency remain a material proportion of the WEM reform cost when the projects are so close to completion?

In answering these questions, this chapter will first explore the historical context for the request and how this context influences the evaluation of the request against the funding standard established in the market rules.

#### 3.1 Historical context

Figure 5 shows a timeline of the evolution of AEMO's understanding of the costs of WEM reform and the associated funding requirements.

AEMO sought funding for WEM reform at the onset of AR5 in March 2019, estimating a cost for the whole of the program of \$60.7 million. This was based on AEMO's understanding, at the time, of the tasks required to deliver the reform program.

AEMO later considered it had underestimated the complexity of the task to deliver the reform program.<sup>7</sup> As a result, AEMO decided to defer market start.

In the third quarter of 2021, following the deferral of market start, AEMO re-evaluated the reform program and made structural changes to the program management and increased

<sup>5</sup> Economic Regulation Authority, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, pp 74-75, ([online](#)).

and

Economic Regulation Authority, 2019, *Australian Energy Market Operator Allowable Revenue and Forecast Capital Expenditure 2019/20 to 2021/2022 – Final Determination*, p. 39, ([online](#)).

<sup>6</sup> Wholesale Electricity Market Rules (WA), 1 July 2023, 2.22A.5 (b), ([online](#))

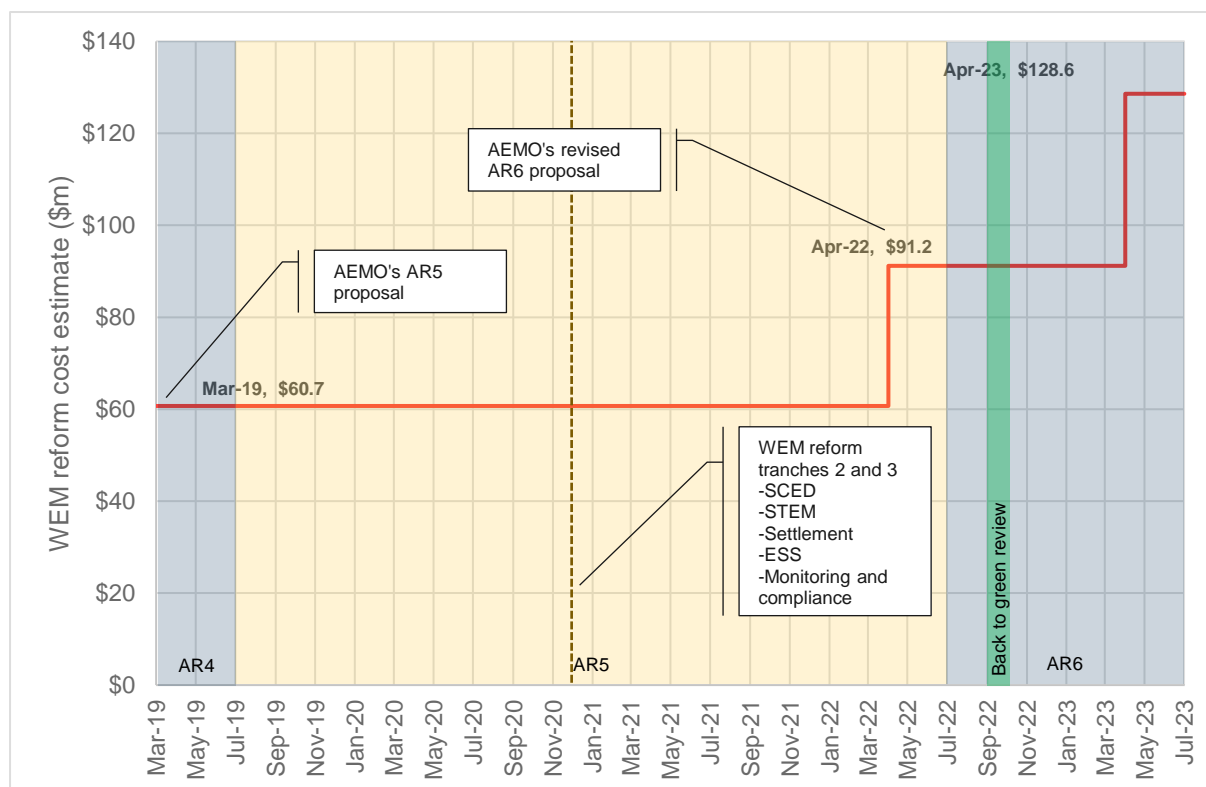
<sup>7</sup> AEMO, 2021, *Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25*, p. 13, ([online](#))

program resourcing including access to specialised resources to ensure it could deliver reforms.<sup>8</sup>

AEMO acknowledged this increased understanding, and resultant changes to program management, in its AR6 proposal in December 2021:

“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>9</sup>

**Figure 5: Timeline of WEM reform funding requirements**



Source: AR5 and AR6 proposals and determinations, AEMO supporting information.

Between the first proposal in December 2021 and the revised proposal in April 2022, AEMO reprofiled around \$6 million in costs from the AR5 period into the AR6 period for work that would not occur during the AR5 period.<sup>10</sup> In early 2022, AEMO revised its resourcing strategy to enable it to increase delivery pace.<sup>11</sup> This led to a change in emphasis from internal resources – either permanent or contract – to external parties, contractors and consultants.

<sup>8</sup> AEMO, 2023, Adjustment to 2022-2025 Forecast Capital Expenditure, p. 13, ([online](#))

<sup>9</sup> AEMO, 2021, Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25, p.13, ([online](#))

<sup>10</sup> AEMO, 2022, Response to the ERA's AR6 Draft Determination, p. 48, ([online](#))

<sup>11</sup> AEMO, 2022, WEM reform program sourcing strategy, Internal memo 30 March 2022

Following the AR6 final determination, AEMO reforecast program delivery and costs. AEMO's internal estimate in July of 2022 suggested it would likely exceed the approved budget. It also identified a risk it may not meet the deferred new market commencement date.<sup>12</sup>

This awareness instigated a deep review of the project delivery scope, known as the 'back to green' review, to identify a 'minimum viable product'.<sup>13</sup> This culminated in a descoping and deferral program with a residual tail of work to remedy workarounds necessary to meet the go-live date and put downward pressure on cost increases. External contractors were engaged to deliver large parts of the work program, including some core project management functions.

AEMO's cost estimates escalated following the 'back to green' review.<sup>14</sup> AEMO's in period submission of April 2023 states it has increased its expectation of the cost to deliver the reform program to around \$128 million. AEMO stated it:

"has discovered it has significantly underestimated the complexity of the reforms and of developing and adapting the associated IT systems. Consequently, substantial additional effort, above that previously estimated, is required to implement the new market and power system arrangements and unlock the benefits of the new market to industry and consumers."<sup>15</sup>

AEMO's supporting information for the in-period submission comprised its revised workplan and other resource requirements, project management financial tracking sheets, steering committee papers and minutes, contingency calculators, and other documentation.

## 3.2 Factors driving AEMO's forecast capital expenditure proposal

The ERA's review of the program history, cycle of scope and budget amendments, and governance responses leads the ERA to conclude that much of the cost overruns are attributable to slower than expected progress. This has affected the cost of delivery in two ways:

1. The external resources needed to deliver the project attract a substantial premium over internal resources.
2. The program has not managed to reduce the risk associated with project delivery. New risks have materialised associated with external resources and technical risks.

The slower than anticipated work progress may be due in part to the complexity of the program. The effort to make up time has then attracted a premium to deliver against a hard deadline. Economic conditions such as higher interest rates and inflation have applied additional pressure to project costs and the costs associated with external support.

Some of the factors influencing program execution are within AEMO's control, such as its internal governance processes, program and project planning and scoping, project management and coordination.

<sup>12</sup> AEMO, 2023, Adjustment to 2022-2025 Forecast Capital Expenditure, p. 14, ([online](#))

<sup>13</sup> AEMO, 2023, Adjustment to 2022-2025 Forecast Capital Expenditure, pp. 14-15, ([online](#))

<sup>14</sup> This is based on review of AEMO's steering committee minutes late 2022 to early 2023.

<sup>15</sup> AEMO, 2023, Adjustment to 2022-2025 Forecast Capital Expenditure, p. 3, ([online](#))



There are also factors outside AEMO's control, such as the policy environment, interest rates and labour market. However, most of these factors, including the new market commencement date, were settled some time ago between the policy documents and the second and third rules tranches. Rising interest rates have increased costs, but the labour market remains in a similar state to what it was during the original AR6 proposal.

Making up progress has introduced new costs into the program delivery to achieve the government's timing objectives for market start on 1 October 2023.

### 3.2.1 Labour cost

There were two sources of data underpinning the build of project costs. AEMO project managers use a common excel workbook template "financial tracking sheet" to record and track project expenditure. Each financial tracking sheet summarises costs into a set of categories including internal and external labour, consultants, software, hardware, finance and travel.

The financial tracking sheets use AEMO's broad based budget estimate salary tiers. This may be appropriate for internal budgeting purposes, however, the tiers systemically overestimate labour costs. Their use for allowable revenue and forecast capital expenditure determinations inflates costs, resulting in values the ERA considers inconsistent with the Rules.<sup>16</sup> The use of broad-based salary tiers to estimate costs is contrary to Section 4.1 of the ERA's funding proposal guidelines.<sup>17</sup>

Substituting actual costs for tiered rates reduces the labour component of AEMO's WEM reform budget by around \$1.35 million. The ERA's method for salary substitution is summarised in Appendix 3.

AEMO submits it needs external resources to make up for difficulties to recruit internal resources.<sup>18</sup> Challenges obtaining individuals with the required skills has likely contributed to project time pressures AEMO was already under at the end of AR5.<sup>19</sup> AEMO's submission states:

"Delivery and integration are typically the most labour-intensive period of a major IT project involving major uplift in effort and resources".<sup>20</sup>

External resources come at an obvious premium needed to provide a commercial rate of return to service providers. The ratio of internal resources to external resources between the original AR6 proposal and the in-period submission has substantially changed, from roughly 3:1 internal to external resources to 1:2.<sup>21</sup> Review of AEMO's labour costs indicate external labour resources on average cost half again per person day those of AEMO's internal resources.

<sup>16</sup> Economic Regulation Authority, 2020, *AEMO in-period funding submission for the implementation of the DER Roadmap actions – Determination report*, pp. 15-19, ([online](#)), also Economic Regulation Authority, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, pp. 70-74, 131-135, ([online](#)).

<sup>17</sup> Economic Regulation Authority, 2022, *Guideline to inform the Australian Energy Market Operator's funding proposal Version 3*, p. 10, ([online](#)).

<sup>18</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 17, ([online](#)).

<sup>19</sup> AEMO, 2022, *Response to the ERA's AR6 Draft Determination*, p. 48, ([online](#)).

<sup>20</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 13, ([online](#)).

<sup>21</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 17, ([online](#)).

### 3.2.2 Finance costs

The reform program is debt financed. AEMO borrows money to pay for its staff and external contractors and the software and materials used to undertake the reform program. Increases in interest rates to curb inflation affect the cost of borrowing and the magnitude of borrowing also increases with the increase in time and resources needed to execute the reforms.

In its review of the project costs, the WATC identified that the interest rates appeared to be sub-commercial. This may reflect the lag between cut off for inputs to preparing the proposal and subsequent increases in interest rates. The WATC recalculated the debt cost with an end of month closing balance. This analysis suggested the cost of debt may be understated by \$0.37 million. WATC also recalculated the cost of debt for a commercial interest rate assuming an uplift of 0.75 per cent. This also increased the cost of debt by an additional \$0.7m.

Collectively, these recalculations would increase the expected cost of the in-period submission by around \$1.07 million. No adjustments have been made to finance costs as these costs broadly offset the costs associated with overstatement of internal labour costs.

### 3.2.3 Reform uncertainty and cost

In its AR6 proposal, AEMO argued the proportion of project costs it identified to be set aside for contingency management (on average 26 per cent) was reasonable.<sup>22</sup> Both the UK Treasury Green Book and Boehm's paper on software engineering cited by AEMO in its AR6 proposal suggest this may be reasonable early in a project lifecycle.<sup>23</sup>

AEMO's contingency calculators identified costs to mitigate risks totalling around \$2.9 million that do not meet the required standard set out in the funding proposal guidelines. They relate to uncertainty estimates that are general, non-specific and unsubstantiated to cover 'scope misalignment, incorrect assumptions, and unplanned effort'.<sup>24,25</sup>

Boehm's work argues the costs driven by the scope of works may not be fully understood until the detailed design specification stage. This follows feasibility and the concept of operation, and the broad functional requirements.<sup>26</sup>

The early stages of the reform program (that of feasibility and concept of operation), relate to the policy development work that defined what the individual projects are to deliver. These functional and operational requirements were codified into the market rules by late 2020.

Since then, the value of resources expended on the work program would suggest it is fairly advanced. Despite this, program contingency remains a substantial element of the funding request increasing from the approved value of \$4.6 million (down from a requested value of

<sup>22</sup> AEMO, 2021, Allowable Revenue and Forecast Capital Expenditure 2022-23 to 2024-25, p48-49, ([online](#))

<sup>23</sup> HM Treasury, 2013, Optimism bias, p2, ([online](#)) and Boehm B.W., 1984, 'Software Engineering Economics', *IEEE Transactions on Software Engineering*, vol. SE-10, no. 1, pp. 4-21.

<sup>24</sup> Synergies Economic Consulting, 2023, DRAFT – Review of AEMO's AR6 in-period expenditure submission, pp 15-17

<sup>25</sup> The guidelines require the risks to be clearly identified, and the impacts validly and reliably estimated with a cost impact that can be quantified through a reasonable and logical assessment. Refer to ERA, 2022, Guideline to inform the Australian Energy Market Operator's funding proposal Version 3, pp 12-13, ([online](#))

<sup>26</sup> Boehm B.W., 1984, 'Software Engineering Economics', *IEEE Transactions on Software Engineering*, vol. SE-10, no. 1, pp. 4-21

nearly \$8 million) to over twelve million.<sup>27</sup> This runs counter to the orthodoxy that cost uncertainty reduces as a project nears completion. AEMO cited the UK Treasury Green Book and Boehm to explain its contingency quantities, which are summarised in Appendix 4. Both sources highlight the role of decision making and planning in reducing uncertainty.

To understand the cause of the ongoing high contingency, the ERA examined AEMO's contingency calculators. These reveal a change in the nature of the project delivery risks, and their costs. New risks have been introduced over the last twelve months that relate to the need to use external contractors to deliver the projects in order to achieve the new market commencement date of 1 October 2023.<sup>28</sup>

The ERA sought copies of AEMO's risk registers for the WEM projects to understand the extent to which project management sought to mitigate the risks through non-monetary mechanisms. AEMO did not provide the risk registers, instead providing a matrix for how it estimated the impact of risks.

Using the WEM Dispatch Engine (WEMDE) project as an example, the contingency quantity nearly doubled from \$784 thousand to \$1.4 million between AR6 and the more recent in-period submission. The contingencies identified by AEMO for this project are summarised in Figure 6. Green risks are possible risks, amber risks are likely risks and red, almost certain risks. The block on the left indicates the view as of April 2022 when the AR6 proposal contingency calculators were provided to the ERA. The block on the right indicates the view on contingencies provided to the ERA supporting the in-period submission in April 2023.

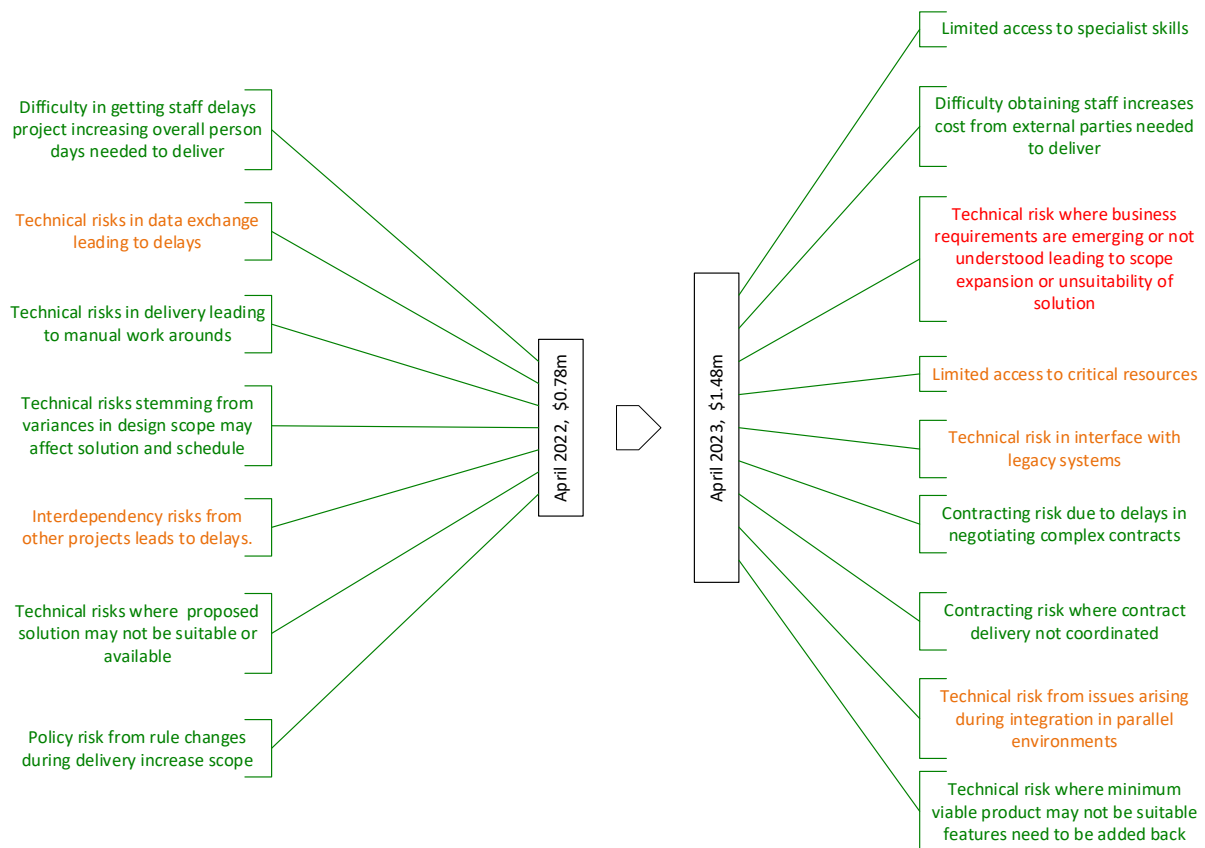
The nature of risks has also changed. The most prominent risk, rated almost certain, is that business requirements have not been fully understood implying AEMO's confidence it has fully scoped this critical program component of the reform program is low.

---

<sup>27</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, pp. 18-19, ([online](#)) also

ERA, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, p. 84, ([online](#))

<sup>28</sup> For example, AEMO's cutover schedule to commission the new software systems involves parallel testing of multiple systems. Parallel testing of systems allows little room for error and fixing systems on the fly may create issues with dependent systems.

**Figure 6 Changes to project contingencies WEMDE, P2079**

Source: ERA analysis of AEMO supporting information for AR6 and the AR6 in period submission

In 2022, the risks related to being unable to source necessary qualified staff to deliver the work program, extending the development cycle and resulting in higher staff costs, technology risk, interface and integration issues with related projects, disputes over data formats, and development pace.

By April 2023, technical risk is more prominent in the contingencies reflected in emerging requirements, build quality, and integration with other systems, resource constraints slowing development pace or increasing the cost, uncertainty in cost estimates, and new themes related to engaging external expertise.

Because of the closeness to market start and the nature of the risks and the consequences of the reform program stalling due to underfunding, the ERA does not intend to make adjustment to project contingencies.

### 3.3 AEMO's response to cost escalation

As costs have increased, the ERA has observed an increase in AEMO's governance activity. AEMO's realisation that it had underestimated the program cost following the AR6 final determination instigated a deep review of the project delivery scope. AEMO's board is now more deeply engaged in project oversight, and AEMO has increased the information technology capability on the board with the appointment of a new board member in June 2021.

AEMO's adjustment proposal cites:<sup>29</sup>

- Establishing an 'Enterprise Portfolio Office' to improve program oversight.
- Embedding an 'assurance partner' in the reform implementation program.
- Including a non-executive director as an observer on steering committee meetings.
- Improved reporting to the Board on program performance.
- Changes to the project management model.

AEMO has indicated since around the time of AEMO's AR6 proposal, the board has received quarterly 'deep dives' into the reform to supplement monthly board program updates. In early 2022, in response to a growing recognition that delivery was at risk, AEMO sought to increase the use of external resources to deliver work with internal resources shifted to provide guidance and direction.<sup>30</sup> Following the ERA's AR6 determination, a non-executive director started attending steering committee meetings.<sup>31</sup>

Following its realisation that progress was not as advanced as it should have been and that the cost was likely to exceed the approved budget, AEMO commenced the 'back to green review' to identify a least-cost means of program delivery by new market commencement date.

This review looked at applying downward pressure on cost increases necessary to 'scale' or catch up on development to achieve the 1 October 2023 new market commencement date.<sup>32</sup> This meant seeking to identify simpler technical solutions, a reduced scope to deliver market start, deferring work not critical to market start and identifying the 'minimum viable product' needed to give effect to the market reforms in time for market start.<sup>33</sup> The review's emphasis was on delivery over cost and some of the options determined will leave a residual work program following go-live to clean-up areas with a higher operational burden and risk.

The review itself, based on the information provided to the ERA, appears to have been thorough and considered a broad range of remedial action and alternative delivery options. Ultimately though, this review identified relatively modest savings against a substantially higher budget requirement reflecting the late stage of project development.

The timing of this review so late in the program meant that the opportunity to identify more cost-effective implementation has diminished. Whilst AEMO's focus on governance is improving, the ERA encourages greater emphasis on proactive rather than reactive governance engagement with future substantial work programs.

### 3.4 The ERA's determination on AEMO's WEM reform costs

The WEM reform program is an immense and complex work program. It has required greater time, resources, and budget than was originally anticipated. AEMO's focus on program governance has improved in response to cost overruns. AEMO has evolved and adapted its project management approach and sought to identify cost reductions while avoiding further time delays – but too late in the process to materially affect overall cost.

<sup>29</sup> AEMO, 2023, *Adjustment to 2022-25 Forecast Capital Expenditure*, p. 4, ([online](#)).

<sup>30</sup> AEMO, 30 March 2022, *Memo: WEM Reform Program Sourcing Strategy*, AEMO internal document

<sup>31</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 13, ([online](#)).

<sup>32</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 14.

<sup>33</sup> AEMO, 2023, *Adjustment to 2022-2025 Forecast Capital Expenditure*, p. 14.

Slower than expected progress coupled with the drive to achieve market start has necessitated more expensive external resources and a need to maintain a substantial risk buffer in the costs. External resources are on average slightly more than half again the cost of internal resources. However, the investment and efforts require the works to be completed for the benefits to be captured.

Expenditure to this point is sunk and path dependence prevents a more efficient program delivery. The ERA has considered the cost to complete the work program as it stands now, not compared with a more efficient counterfactual.

In reaching this provisional determination the ERA has weighed the risks and costs of potentially underfunding AEMO against the risks and costs of overfunding AEMO.

Underfunding AEMO at this point in the project cycle risks stalling an already lagging work program.

The ERA has historically been reticent in providing AEMO greater funds than are necessary due to AEMO's record in using surplus funds on other projects bypassing the market's prudence and efficiency tests.<sup>34</sup> This remains the potential risk of overfunding AEMO.

Labour costs and contingency amounts have been the two largest sources of adjustment to AEMO's funding proposals. Over a capital works program as substantial as the WEM reform program this amount is not inconsequential.<sup>35</sup> In the original AR6 determination, adjustments to labour costs from substituting actual salaries for capital expenditure projects was around \$3.6 million or a reduction of 12 per cent.<sup>36</sup> For this funding proposal the delta due to the tiered calculation method is around \$1.3 million. Contingencies that would normally be trimmed because of their vague and non-specific nature amount to a further \$2.9 million.

In considering the potential for AEMO being over-funded and the risk of a surplus being repurposed, the ERA has considered AEMO's current circumstances and the risks in completing the market reforms within the required time frame.

This determination will be completed close to half-way through the funding cycle with a substantial work program still to be delivered. If AEMO's final expenditure on WEM reform turned out to be less than anticipated, the likelihood AEMO could repurpose funds is limited. AEMO has identified it anticipates making an additional forecast capital expenditure request within nine months of publication of the ERA's draft determination. This will provide the ERA with a window for oversight over AEMO's expenditure. AEMO's financial reporting for capital expenditure projects should also identify any repurposing of contingency funds to new projects.

The ERA has reviewed the information provided by AEMO in support of the funding proposal and is aware AEMO still has some level of uncertainty over project scope and ultimately budget. AEMO's overspend allowance should cover any shortfall until AEMO makes its next funding proposal.

On this basis, the ERA provisionally approves the \$45.02 million in forecast capital expenditure sought for the WEM reform program.

---

<sup>34</sup> Economic Regulation Authority, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, p. 97, ([online](#))

<sup>35</sup> Economic Regulation Authority, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, p. 21, ([online](#)).

<sup>36</sup> Economic Regulation Authority, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, p 73, ([online](#)).

The ERA welcomes market participants and other interested entities and individuals raising any views, concerns, or comments on this draft determination.



## 4. Sustaining capital expenditure and GSI

Sustaining capital expenditure refers to updates on core systems to ensure they are current, manage emerging risks appropriately and reduce legacy system exposure (for example unsupported software that might pose current and future technical risks). This is maintenance on systems (either software or hardware) rather than widespread systems overhaul such as is being done with the WEM reform capital works program.

The AR6 determination made allowance of \$12.94 million for sustaining capital works projects, the majority being for the WEM. AEMO is seeking an additional \$2.09 million to support new and rolled over capital works projects. Most of this expenditure is associated with the WEM, with a smaller element associated with the GSI project.

### 4.1 Assessment of AEMO's forecast sustaining capital expenditure proposal

Four sustaining capital expenditure projects are proposed, all of which are new to the AR6 period.<sup>37</sup> Table 1 summarises costs for proposed sustaining capital expenditure project. Two of the work programs, the Oracle upgrade and the application programming interface management projects, are part of national work programs to which AEMO has allocated a share to the Western Australian markets.

**Table 1: Summary costs related to sustaining capital expenditure projects<sup>38</sup>**

Project title	National program		Additional WEM forecast capital expenditure (\$m)	Additional GSI forecast capital expenditure (\$m)
	Total cost (\$m)	WA share (%)		
Oracle upgrade	\$3.6m	42.3%	\$1.44	\$0.09
Application programming interface management	\$1.725	25%	\$0.43	
WEM Energy management system GPS clock			\$0.08	
Trucked LNG market rule change				\$0.043
<b>Total</b>	<b>\$5.32</b>		<b>\$1.95</b>	<b>\$0.133</b>

<sup>37</sup> AEMO, 2023, AR6 financial templates excel workbook.

<sup>38</sup> Numbers may not sum due to rounding.



Source: AEMO proposal

### 4.1.1 Oracle upgrade

AEMO operates many Oracle databases nationally for critical market functions. AEMO has identified that the physical servers on which the Oracle databases are hosted are reaching end-of-life and vendor support for the physical infrastructure will decline.<sup>39</sup> Western Australian functions served by this infrastructure include the gas bulletin board, the market surveillance data catalogue, and metering data used for market settlement.

AEMO considered alternatives but these were dismissed due to higher cost and lower security.<sup>40</sup> This work program is part of a national project with a total budget of \$3.6 million including contingency of \$250,000. Western Australia's share of Oracle resources is 42.3% leaving the state's share of the total at \$1.54 million. Most of the state's share accrues to the WEM at an amount of \$1.44 million with the remaining \$0.09 million accruing to the GSI platform.

The ERA has reviewed the internal labour costs for this project and recalculated them based on identified staff salaries rather than the labour cost tiers in AEMO's budget. This led to a reduction in the labour cost of around \$88,000 with Western Australia's share being around \$35,000 for WEM and \$2,200 for GSI. The ERA has also reviewed the contingency calculator for this project. Of the \$250,000 of identified contingency risks, all are rare or unlikely. The ERA proposal guidelines exclude risks deemed unlikely or rare. Removing these risks would reduce the probable project cost by a further \$106,000 for Western Australia's proportion.

The ERA provisionally approves forecast capital expenditure of \$1.32 m for the WEM and a further \$0.08 m for the GSI platform.

### 4.1.2 Application programming interface management

The application programming interface (API) management project enables systems to communicate with each other in a secure manner, simplifying data exchange processes. AEMO has identified a need to develop API's for critical control room systems like the dispatch engine in-house to provide greater security.

While it will be applied in Western Australia first, the work program is part of a national system and the costs will be shared across jurisdictions. AEMO has explored alternatives, including a WA based solution, however the least cost model was to share costs across multiple control room operations,<sup>41</sup> with Western Australia's share being one quarter of total costs.

AEMO has apportioned costs of \$430,000 as Western Australia's share of a total project cost of \$1.7 million. The ERA's evaluation of labour costs, based on identified staff salary costs rather than using labour tiers, indicates actual labour costs would be around \$34,000 lower with WA's apportionment being \$8,660. The project also includes a contingency amount of \$211,000 with Western Australia's pro-rata share being around \$53,000. Two of the risks in AEMO's contingency calculator – that of the increase in delivery partner cost and internal labour cost increase were classified by AEMO as unlikely. The ERA proposal guidelines excludes risks deemed unlikely or rare. Removing these risks would reduce the probable project cost by a further \$24,000.

<sup>39</sup> AEMO, 2023, *Adjustment to 2022-2025 forecast capital expenditure*, p. 50, ([online](#)).

<sup>40</sup> AEMO, 2023, *Adjustment to 2022-2025 forecast capital expenditure*, p. 50, ([online](#)).

<sup>41</sup> AEMO, 2023, *Adjustment to 2022-2025 forecast capital expenditure*, p. 49, ([online](#)).

The ERA provisionally approves costs of \$400,000 for this project.

### **4.1.3 WEM EMS GPS Clock**

The global positioning system (GPS) clock is a central element of AEMO's energy management system necessary for automatic generator control. Western Power currently provides redundancy for the system clock. However, it has advised AEMO it is upgrading its energy management systems and as a consequence will no longer be able to provide a backup service.

AEMO considered alternative options, however these would have potentially compromised system redundancy and hence posed an unacceptable risk to system integrity.<sup>42</sup>

AEMO anticipates the cost of the works program is \$80,000 including a contingency of \$10,000 to allow for relatively minor time overruns. The ERA provisionally approves forecast capital expenditure of \$80,000 for this project.

### **4.1.4 Trucked LNG**

This project was instigated by a rule change proposal under the gas rules and is GSI related capital expenditure. The project is now complete and total actual expenditure is reported as \$43,615. This is marginally above the ten per cent overspend allowance for the GSI the AR6 determination of \$40,000.

AEMO has articulated a preference to use the overspend allowance for unscheduled rule change proposals like the trucked LNG project. AEMO has flagged this as a new function the cost of which just exceeds the 10 per cent overspend allowance.

The ERA provisionally approves the forecast capital expenditure of \$43,615 for this project for the GSI platform.

---

<sup>42</sup> AEMO, 2023, *Adjustment to 2022-2025 forecast capital expenditure*, pp. 48-49, ([online](#)).

## 5. Draft determination

The ERA provisionally approves the forecast capital expenditure amounts summarised in Table 2.

**Table 2: Summary of provisional approvals for AR6 in-period submission**

Item	Market	AEMO proposal (\$m)	ERA provisional approval (\$m)	Variance (%)
<b>WEM REFORM</b>				
WEM reform		45.02	45.02	0
<b>Sustaining Capital Expenditure</b>				
Oracle upgrade	WEM	1.45	1.32	-9%
	GSI	0.09	0.08	-11%
Application programming interface management	WEM	0.43	0.40	-8%
WEM GPS clock	WEM	0.08	0.08	0
Trucked LNG	GSI	0.04	0.04	0
<b>Total sustaining capital expenditure</b>		<b>2.09</b>	<b>1.92</b>	<b>-8%</b>
<b>TOTAL</b>	<b>WEM</b>	<b>46.98</b>	<b>46.82</b>	<b>-0.3%</b>
	<b>GSI</b>	<b>0.13</b>	<b>0.12</b>	<b>-8%</b>
<b>Grand Total</b>		<b>47.11</b>	<b>46.94</b>	<b>-0.4%</b>

## Appendix 1 List of Tables

Table 1:	Summary costs related to sustaining capital expenditure projects .....	19
Table 2:	Summary of provisional approvals for AR6 in-period submission.....	22

## Appendix 2 List of Figures

Figure 1	Breakdown of proposed forecast capital expenditure increase by work program (\$m) .....	5
Figure 2	Breakdown of proposed WEM reform related forecast capital expenditure increase .....	6
Figure 3:	Breakdown of AEMO's proposal by expenditure category .....	7
Figure 4:	Projection of effect of in-period submission on market fees .....	8
Figure 5:	Timeline of WEM reform funding requirements .....	10
Figure 6	Changes to project contingencies WEMDE, P2079 .....	15
Figure 7:	Boehm's cone of uncertainty and WEM reform .....	28

## Appendix 3 Approach to labour costs

AEMO's proposal used broad aggregated labour tiers to estimate the costs associated with the reforms. The ERA has consistently rejected the method used by AEMO as appropriate for funding proposals because actual costs are known by AEMO and it can provide more accurate estimates.

The ERA's approach to labour costing should not be construed as a judgement on AEMO's internal budgeting processes. AEMO remains free to use whatever method it deems appropriate. However, the method has a propensity to inflate labour costs due to the broadness of the tiers and averaging methods that don't account for workload weighting. Further detail on the ERA's explanation of the method's unsuitability as applied to revenue requirement determinations is contained in Appendix 7 of the ERA's AR6 determination.<sup>43</sup>

### *Issues with AEMO's costs submitted to the ERA*

Material provided by AEMO on the labour cost estimates was not contextualised for an allowable revenue determination. There was lack of workings and explanatory material that would have saved time and aided interpretation. Many of the costs were also not appropriate for a capital works proposal. The material had fewer errors relative to the original AR6 proposal and supporting material. However, there remained errors in the calculation of payroll tax, unexplained inconsistencies in workers compensation costs. The supporting material also contained costs such as overtime, and entitlements where the likelihood they would accrue to a capital works program was unsubstantiated.

### *ERA's approach to labour costs by category*

The ERA has reviewed the salary on-costs in light of AEMO's revised enterprise bargaining agreement.

#### *Salary on-costs*

An allowance factored into AEMO's costs has been made for annual leave, long service leave (for permanent staff), and personal leave accruing beyond the costing year consistent at rates advised by AEMO. The amount accrued also includes an allowance for superannuation consistent with common accounting practice.

AEMO's staff manifest included quantities for allowances. It advised the allowance applied to higher duties. However, the enterprise bargaining agreements also provides for substantial allowances for staff undertaking shift work in settlements, control room operators and such. In some instances, these amounted to around half the base salary. AEMO was unable to differentiate between staff undertaking higher duties from other leave entitlements that would not be incurred in the execution of the capital expenditure program. Higher duties should be included in the base salary profile presented as part of the costing.

For example, a control room operator would legitimately invoke shift work entitlements when performing their normal duties. However, their support to programmers building the dispatch engine or the user interface for example, would not occur overnight when other staff are not working on such projects. For this reason, allowances are assumed to apply to operational

<sup>43</sup> ERA, 2022, *Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination*, pp. 131-135, [online](#)

expenditure and in the absence of more specific data, the costs have been excluded from the capital expenditure forecast.

Notwithstanding clause 28.3 of AEMO's enterprise bargaining agreement, overtime is assumed to apply in accord with the enterprise bargaining agreement where identifiable from the workforce plan. AEMO's staff manifest has identified that some positions did incur overtime expenses. However, AEMO has been unable to substantiate whether these were related to normal operational functions or capital expenditure projects. For the purposes of the costing exercise where forecast times do not indicate overtime, this has not been included.

AEMO had misapplied the workers compensation rates across several jurisdictions in the staff manifest. Payroll tax has been recalculated based on the jurisdiction. Vacant positions are assumed to be costed based in Western Australia. For the 2022-23 financial year a blended rate of 5.75 per cent is used to reflect the inclining block tax rate.

AEMO had inconsistent workers compensation rates for workers inside the same jurisdiction. For worker compensation, a rate of 0.5 per cent based on the recommended premium published by Workcover.

#### *Vacant positions*

Included in AEMO's workforce plan were two categories of staff 'TBA' referred to internal staff yet to be identified and 'TBD' referring to external contractors. Day rates for external contractors were not modified.

For positions flagged as 'TBA', costed positions with the same title were used to benchmark the salary estimate. These were cross checked against the wider sample from the AR6 proposal after adjustment for changes to AEMO's enterprise bargaining agreement.

Outliers to the sample were excluded where the sample was large enough and an average of remaining staff used as salary values for empty or unidentified positions with the same position title. The values where possible were cross checked against the larger data sample provided for AR6 updated for the revisions to the enterprise bargaining agreement.

Where no comparable sample exists for a position, salary data for the jurisdiction of employment (assumed to be Western Australia) gathered from employment agencies (such as Hays) was used to benchmark empty positions.

## Appendix 4 The role of decision making to mitigate uncertainty

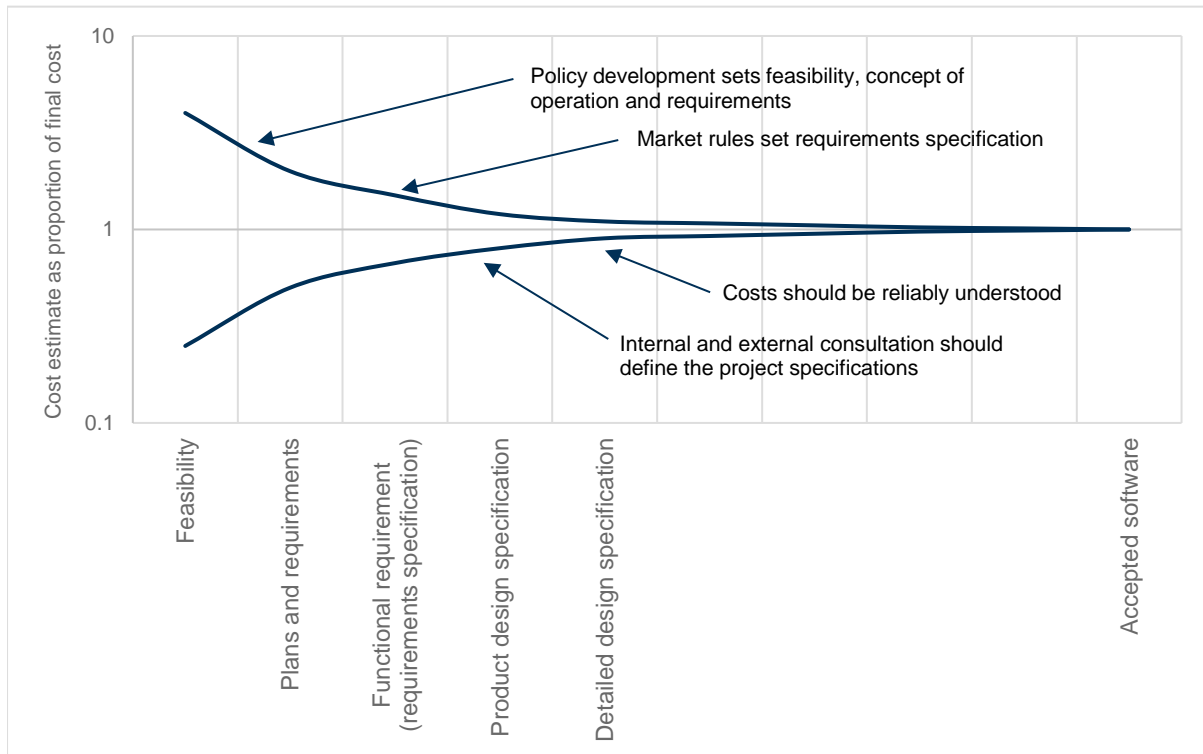
AEMO referred to two main sources to support its arguments for high project contingencies. The UK Treasury green book and Boehm's work on software engineering. Both sources Boehm and UK Treasury note the role of project management to reduce uncertainty.

The UK Treasury green book (from which supplementary guidance was cited in AEMO's AR6 proposal) sets out the basis for project evaluation and associated works extend to preparing business cases. AEMO stated the supplementary guidance suggests an adjustment of 200 per cent to account for optimism bias in cost for software development projects. AEMO further stated that an estimate adjusting for optimism bias should be informed by causes for cost overruns, research, and the application of mitigating factors. The main strategies for reducing optimism bias are:

- Full identification for stakeholder requirements
- Accurate costing (in the context of a business case)
- Project and risk management.

AEMO's AR6 proposal also referred to Boehm's cone of uncertainty, stating many of the projects were at an early stage of development. Project management literature has over a long time addressed the challenges of delivering IT infrastructure projects for more than 40 years. Barry Boehm's treatise on the economics of software engineering introduced the concept of a 'cone of uncertainty' in the lifecycle cost of a project. The cone of uncertainty reproduced in Figure 7 suggests that as a project nears completion, the understanding of the final delivery cost and specification becomes more sharply focussed and closer to the final delivery cost.



**Figure 7: Boehm's cone of uncertainty and WEM reform**

Source: Adapted from Boehm (1984)

Narrowing the cone of uncertainty requires decision making to reduce uncertainty such as through reducing project scope, change of technology, or alternative delivery approaches.<sup>44</sup>

<sup>44</sup> Boehm B.W., 1984, 'Software Engineering Economics', *IEEE Transactions on Software Engineering*, vol. SE-10, no. 1, pp. 8-9.

## Appendix 5 AEMO's functions under the WEM and GSI Rules

### *WEM Rules*<sup>45</sup>

- 2.1A.1. AEMO is conferred functions in respect of the Wholesale Electricity Market under the WEM Regulations and AEMO Regulations.
- 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;
  - (eC) to trigger and administer the SESSM in accordance with section 3.15A;
  - (eD) to procure, schedule and dispatch Non-Co-optimised Essential System Services in accordance with these WEM Rules;
  - (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:

<sup>45</sup> Wholesale Electricity Market Rules (WA), 1 July 2023, ([online](#))

- i. the Economic Regulation Authority's monitoring of other Rule Participants' compliance with the WEM Rules;
  - 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;
- (IA) 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;
- (IB) to develop and maintain a Congestion Information Resource;
- (IC) to establish, maintain and update a DER Register in accordance with clause 3.24;
- (ID) 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;
- (IE) 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;
- (IF) to advise and consult with each Network Operator in respect of AEMO's System Operation Functions as contemplated under the Technical Rules applicable to their Network;

- (IG) to provide information and assistance to the Coordinator relating to the preparation of the Whole of System Plan by the Coordinator;
- (IH) to contribute to, provide information and assist with, the development of the Transmission System Plan in accordance with section 4.5B;
- (II) 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>46</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;

<sup>46</sup> Gas Services Information Rules (WA), 1 December 2022, ([online](#)).

- (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;
- (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 6 AEMO's obligations under the WEM Rules and GSI Rules

### *WEM Rules*<sup>47</sup>

- 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.2A. A submission by AEMO under clause 2.22A.2 must be made and processed in accordance with the following timelines:
- (a) by 31 October of the year prior to the start of the Review Period, AEMO must submit a proposal for its Allowable Revenue and Forecast Capital Expenditure over the Review Period to the Economic Regulation Authority;
  - (b) by 31 March of the year in which the Review Period commences, 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;
  - (c) by 30 April of the year in which the Review Period commences, 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 together with any submission received in response to the draft determination published in accordance with clause 2.22A.2A(b); and
  - (d) where the Economic Regulation Authority does not make a determination by the date in clause 2.22A.2A(c) or clause 2.22A.2B(c), the Market Fee rate and System Operation Fee rate determined in accordance with section 2.24 for the current Financial Year will continue to apply until the Economic Regulation Authority makes a determination.
- 2.22A.3. AEMO's proposal under clauses 2.22A.2A(a) or 2.22A.2B(b) or AEMO's application for reassessment under clauses 2.22A.12 or 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

---

<sup>47</sup> Wholesale Electricity Market Rules (WA), 1 July 2023, ([online](#))

(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:

- (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>48</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 the AEMO 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:

<sup>48</sup> Gas Services Information Rules, 1 December 2022, ([online](#)).



- (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.
- (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 7 ERA's obligations under the WEM Rules and GSI Rules

### *WEM Rules*<sup>49</sup>

- 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;
  - (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;

---

<sup>49</sup> Wholesale Electricity Market Rules (WA), 1 July 2023, ([online](#))

- (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 clauses 2.22A.2A(a) or 2.22A.2B(b):
- (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.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.
- 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 clauses 2.22A.2A(c) or 2.22A.2B(d) if AEMO makes a reassessment application under clauses 2.22A.12, 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.

## ***GSI Rules***<sup>50</sup>

### **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

---

<sup>50</sup> Gas Services Information Rules, 1 December 2022, ([online](#)).

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**

- (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.
- (7) The ERA must consult on and issue guidelines in relation to this Division, 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.
- (8) 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.

### **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 a 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).