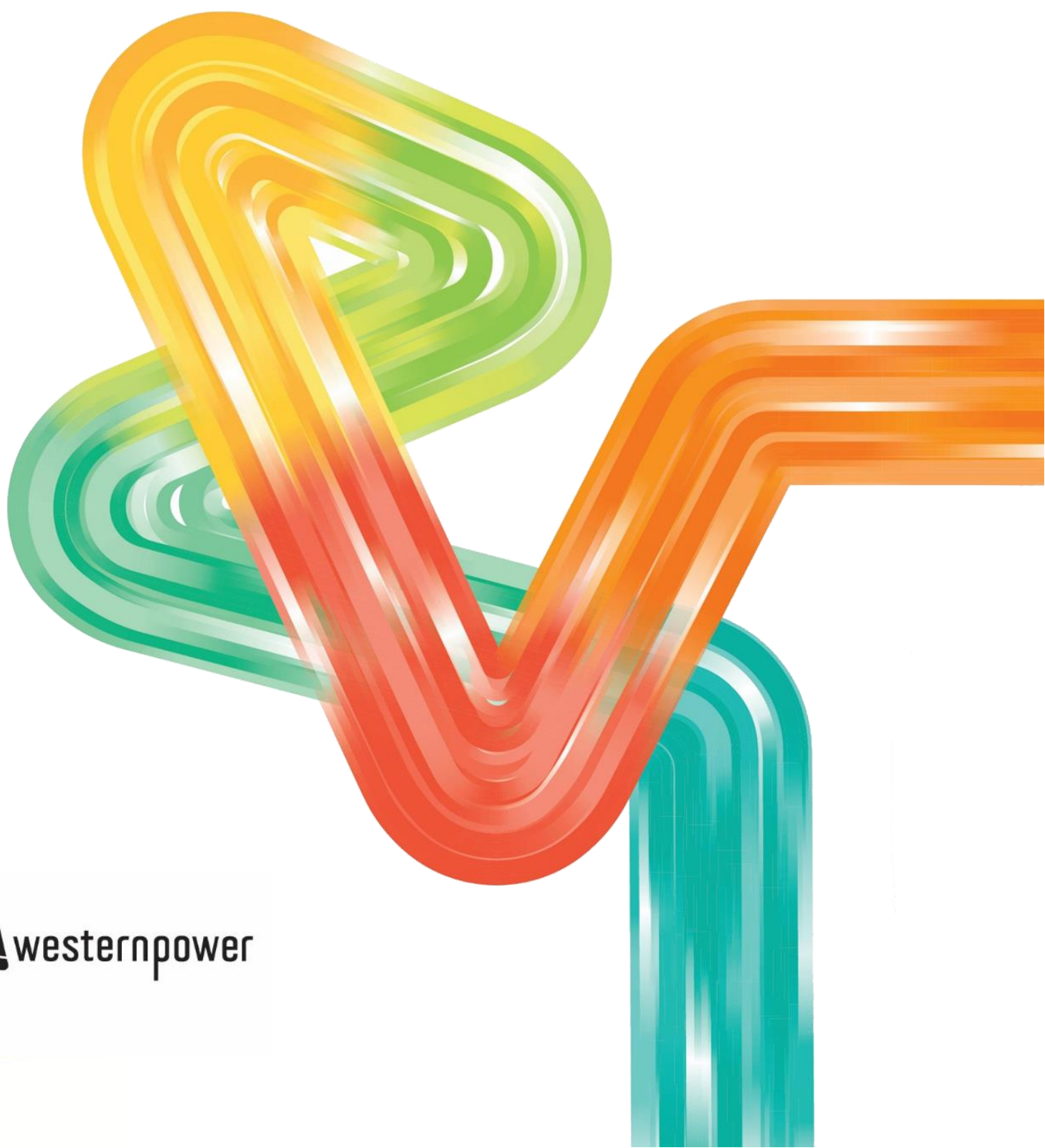


# Total Transmission Cost Estimate for the Benchmark Reserve Capacity Price for 2027/28

10 September 2024



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# 1. Introduction

This document provides the calculation of the Transmission Connection Costs in accordance with Section 3.4 of the Market Procedure: Benchmark Reserve Capacity Price (BRCP), Version 8 (the Market Procedure), developed by the Economic Regulation Authority (ERA).

Section 3.4.1 of the Market Procedure requires Electricity Networks Corporation (Western Power) to estimate the transmission costs to directly connect a benchmark capacity provider to the transmission network to accommodate the capacity of that benchmark capacity provider. Under section 3.4.9 Western Power must provide an assurance as to the accuracy of the information it has used in developing its estimate. It is on this basis that the report contains an independent audit assurance letter.

As per section 2.1.5 of the Market Procedure, the reference technology has changed from a gas or liquid fuelled generator to a lithium battery energy storage system (BESS) with:

- a) 200 megawatt (MW) injection;
- b) 800 megawatt hours (MWh) of energy storage;
- c) a 330 kilovolt connection; and
- d) located in an unconstrained connection near Kwinana or Pinjar.

Western Power has used a specially tailored spreadsheet – that was provided by the ERA and has previously been verified by the Australian Energy Market Operator’s (AEMO) auditor when AEMO conducted BRCP determinations – to implement the requirements of the Market Procedure. Western Power has collated customer capital contributions and shallow connection costs and included them in the spreadsheet and has provided these to the ERA. The results are presented in this report.

## 2. Method

In accordance with the Market Procedure, Western Power must provide an estimate of the Transmission Connection Costs using the method specified.

In summary, the estimated Transmission Connection Cost is calculated by multiplying the forecast connection cost per capacity credit by the total number of capacity credits. The calculation is performed in the tailored spreadsheet<sup>1</sup> and uses a weighted average approach to calculate the forecast connection cost per capacity credit. The total number of capacity credits is provided in 2.2.3(c) of the Market Procedure. The calculation for this year uses a BESS as the reference technology. Previously, this was estimated based on generators that were capable of being gas or liquid fuelled, however the reference technology has changed for this determination.

The calculation must exclude any facility where:

- the significant driver for the location of the facility is the access to source energy (fuel or renewable) or the need to embed the generation with a load (electrical or heat); or
- the facility is connected on a shared distribution feeder; or
- the capital contribution does not relate to a significant increase in the Declared Sent Out Capacity associated with the facility.

Where no capital contributions have been paid in a particular year, an estimate of shallow transmission connection costs only for the works required to connect a BESS to the shared transmission is used.

Western Power must estimate the shallow transmission connection costs for the works required to connect a BESS to the shared transmission network in accordance with section 3.4.6 of the Market Procedure.

The estimate of shallow connection costs is also used to determine the basis of escalation of network infrastructure costs and is the average change over 5 years in the estimates calculated. This is consistent with the previous method<sup>2</sup> and Western Power believes it continues to be appropriate.

For more details of the method, please see the Market Procedure:

<https://www.erawa.com.au/electricity/wholesale-electricity-market/market-procedures>

### 2.1 Western Power's Contributions Policy and NFIT

Actual transmission connection costs are governed by the Access Code 2004, the New Facilities Investment Test (NFIT), and Western Power's Access Arrangement including the Contributions Policy approved by the ERA.

In accordance with sections of Western Power's contributions policy, a contribution payable by a customer for any works is calculated by:

- determining the appropriate portion of any of the forecast costs of the works which do not meet the new facilities investment test or the alternative option test to allocate to the applicant,

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<sup>1</sup> provided by the ERA and has previously been verified by the Australian Energy Market Operator's (AEMO) auditor when AEMO conducted BRCP determinations.

<sup>2</sup> The requirements in section 2.4.2 from version 7 was removed, Western Power believes the method remains appropriate.

- deducting the amount likely to be recovered in the form of new revenue gained from providing covered services to the applicant, or, if the applicant is a customer, to the customer's retailer, as calculated over the reasonable time, at the contributions rate of return.

Future capital contributions which may be required from users do not relate to the transmission component of the Benchmark Reserve Capacity Price (BRCP). Capital contributions required from new users will be assessed individually and depend on the amount of network investment that may or may not pass NFIT which may ultimately be determined by the ERA.

### 3. Shallow Connection Costs

For the purposes outlined in step 3.4.2 of the Market Procedure, Western Power must estimate the shallow transmission connection costs for the works required to connect a relevant BESS to the shared transmission network.

In summary, estimates in accordance with section 3.4.6 of the Market Procedure are required for the costs for the following:

- a substation,
- 2 km of overhead line to the power station, and
- an overhead line easement.

Each of these cost components are discussed below.

### 3.1 Substation

In accordance with the Market Procedure, the Transmission Connection Cost Estimate must include the cost of a generic three breaker mesh substation configured in a breaker and a half arrangement. The connection of the substation into the transmission line should be turn-in, turn-out and will be based on the most economical (i.e., least cost) solution. The typical three-switch mesh 330 kV substation configuration which has been used recently in the SWIS has been assumed as shown in the single line diagram in Figure 3.1.

**Figure 3.1: Three-switch mesh 330 kV substation configuration**

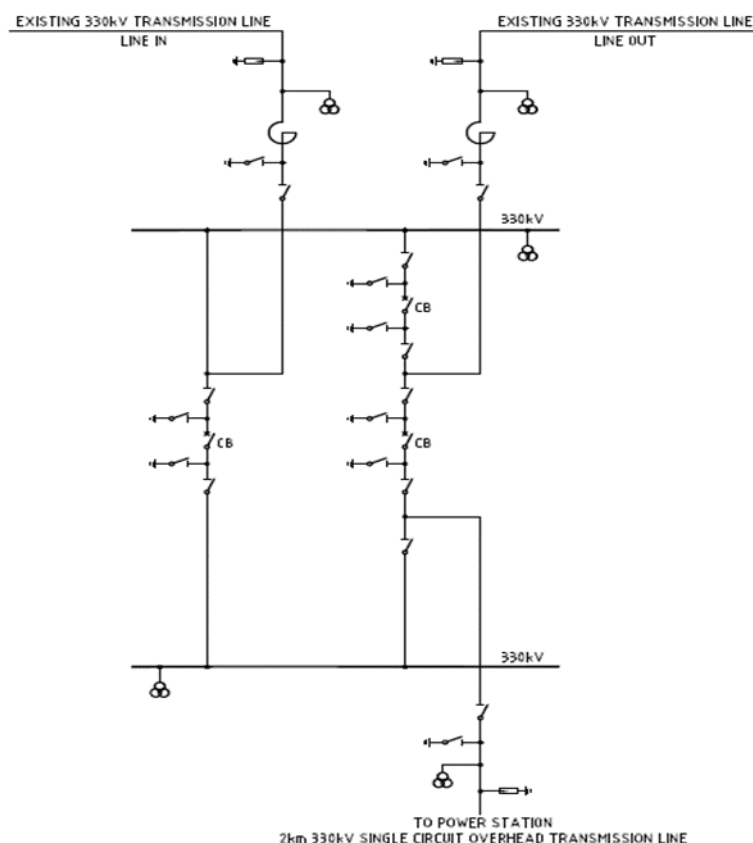


Table 3.1 lists the estimated costs of a typical new substation. It should be noted that the estimate does not include the cost of the land, nor does it consider any site-specific details.

**Table 3.1: Total Substation cost**

Description	Cost
330kV breaker and a half, 3 x circuit breakers, 3 x circuit breakers, 3 x gantry, 2 x circuits	\$5,420,000
Site works – terminal station 1 yard (3 bays)	\$3,610,000
Terminal relay room, including new SCADA and communications facilities	\$3,530,000
<b>TOTAL</b>	<b>\$12,560,000</b>

### 3.2 Overhead Line to Power Station

In accordance with the Market Procedure, the Transmission Connection Cost Estimate must include the cost for 2 km of 330 kV overhead single circuit line to the power station that will have one road crossing. It must be assumed that the transmission connection to the Power Station will be located on 50% flat - 50% undulating land, 50% rural - 50% urban location and there will be no unforeseen environmental or civil costs associated with the development.

Table 3.2 shows the estimated costs of the 2km transmission line connection.

**Table 3.2: Connection Transmission Line Costs**

Description	Cost
One kilometre of rural single circuit steel tower transmission line (\$1,170,000 per kilometre, adjustment multiplier <sup>3</sup> = 2.5)	\$2,925,000
One kilometre of urban single circuit steel tower transmission line (\$2,240,000 per kilometre, adjustment multiplier = 2.5)	\$5,600,000
One set of live line scaffold (\$195,000 each, adjustment multiplier = 2.5)	\$487,500
<b>TOTAL</b>	<b>\$9,012,500</b>

### 3.3 Easement for Overhead Line

In accordance with the Market Procedure, the cost of an easement for the 2km overhead line has been provided by the ERA in accordance with section 3.5 of the Market Procedure and is **\$9,438,325**.

### 3.4 Total Shallow Connection Cost

The Total Shallow connection costs calculated in accordance with section 3.4.6 of the Market Procedure is shown in table 3.3.

<sup>3</sup> Refer to Section 4 for explanation of adjustment multiplier

**Table 3.3: Total Transmission Connection Cost Estimate**

Description	Cost
Substation	\$12,560,000
Transmission line	\$9,012,500
Line easement	\$9,438,325
<b>TOTAL</b>	<b>\$31,010,825</b>



## 4. Results

Western Power is required to provide an estimate of the Total Transmission Costs in accordance with section 3.4 of the Market Procedure: Benchmark Reserve Capacity Price. In accordance with the Market Procedure, Western Power has sought agreement with the ERA regarding which facilities should be included in the calculation of the Transmission Connection Costs (if any) and has collated all relevant information including confidential capital contribution data and estimates of shallow connection costs for the current and previous years. However, no new facilities that meet the requirements outlined in the Market Procedure: Benchmark Reserve Capacity Price have been installed in the relevant period. Although Synergy's Kwinana BESS has come into operation recently, it is a 100 MW / 200MWh BESS which is significantly smaller than the BRCP reference technology BESS specifications.

### 4.1 Total Transmission Costs

The Total Transmission Costs calculated for the 2025 BRCP, which will apply to the 2027/28 Capacity Year in accordance with the Market Procedure, is \$39,082,200<sup>4</sup>. This is an increase of 24.6% when compared to the previous year's Total Transmission Costs price estimate.

### 4.2 Escalation Factor for Network Infrastructure

The escalation factor for network infrastructure is calculated in accordance with the criteria in section 2 of this report is 7.50%.

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<sup>4</sup> This is different to the figure presented in table 3.3 due to escalating the price to 1 April 2027 as per clause 3.10.1 of the Market Procedure

# Appendix A

## Auditor's Report



## Independent Limited Assurance Report to the Directors of Electricity Networks Corporation

### Conclusion

Based on the evidence we obtained from the procedures performed, we are not aware of any material misstatements in the calculation of the Total Transmission Cost Estimate and Escalation Factor for Network Infrastructure as presented in sections 3 and 4 of the Total Transmission Cost Estimate for the Benchmark Reserve Capacity for 2027/2028 as at 10 September 2024, which has been calculated by management of Electricity Networks Corporation in accordance with WEM Procedure: Benchmark Reserve Capacity Price [version 8] published by the Economic Regulation Authority and the methodology outlined in section 2 of the Report.

### Information Subject to Assurance

The information subject to assurance is the calculation of the Total Transmission Costs Estimate and Escalation Factor as presented in sections 3 and 4 of the Total Transmission Cost Estimate for the Benchmark Reserve Capacity Price for 2027/28 report as at 10 September 2024 (the Report), prepared by management of Electricity Networks Corporation (Western Power) and available on the Economic Regulation Authority's website (the calculation), comprised of the following:

Section	Selected Data	Page no.
3. Shallow Connection Costs	• Table 3.1: Total Substation cost	5
	• Table 3.2: Connection Transmission Line Costs	5
	• 3.3 Easement for Overhead Line	5
	• Table 3.3: Total Shallow Connection Cost	6
4. Results	• 4.1 Total Transmission Costs	7
	• 4.2 Escalation Factor for Network Infrastructure	7

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The reasonableness of assumptions are not included in this engagement and will not be subject to the limited assurance procedures.

### Criteria Used as the Basis of Reporting

The criteria used as the basis of reporting are the:

- WEM Procedure: Benchmark Reserve Capacity Price [Version 8] published by the Economic Regulation Authority (ERA) and available on the ERA [website](#); and
- Western Power's methodology for the calculation of *Escalation Factor for Network Infrastructure* as described in section 2 of Total Transmission Cost Estimate for the Benchmark Reserve Capacity for 2027/28 (the criteria).

### Basis for Conclusion

We conducted our work in accordance with Australian Standard on Assurance Engagements ASAE 3000 (Standard). In accordance with the Standard, we have:

- used our professional judgement to plan and perform the engagement to obtain limited assurance that we are not aware of any material misstatements in the calculation whether due to fraud or error;
- considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on their effectiveness; and
- ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

### Summary of Procedures Performed

Our limited assurance conclusion is based on the evidence obtained from performing the following procedures:

- enquiries with relevant Western Power personnel to understand the internal controls, governance structure and reporting process of the Total Transmission Cost Estimate and Escalation Factor for Network Infrastructure;
- reviews of relevant documentation including the ERA WEM Procedure: Benchmark Reserve Capacity Price [version 8];
- analytical procedures comparing the Total Transmission Cost Estimate for the Benchmark Reserve Capacity for 2027/28 to the prior year calculation;
- evaluating the appropriateness of the criteria with respect to the calculation; and
- reviewed the Total Transmission Cost Estimate for the Benchmark Reserve Capacity for 2027/28 in its entirety to ensure it is consistent with our overall knowledge of assurance engagement.

### How the Standard Defines Limited Assurance and Material Misstatement

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Misstatements, including omissions, are considered material if, individually or in the aggregate, they could reasonably be expected to influence relevant decisions of the Directors of Electricity Network Corporation.

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approved under Professional Standards Legislation.



## Inherent Limitations

The calculation has been prepared by management and adopted by the directors in order to meet the requirements of the Wholesale Electricity Market Rules. There is a considerable degree of subjective judgement involved in preparing the calculation since it relates to event(s) and transaction(s) that have not yet occurred and may not occur. Actual results are likely to be different from the forecast since anticipated event(s) or transaction(s) frequently do not occur as expected and the variation may be material.

## Use of this Assurance Report

This report has been prepared for the Directors of Western Power and the Economic Regulation Authority for the purpose of assisting the Directors in meeting the requirements of the Wholesale Electricity Market Rules and may not be suitable for another purpose. We disclaim any assumption of responsibility for any reliance on this report, to any person other than the Directors of Western Power and the Economic Regulation Authority or for any other purpose than that for which it was prepared.

### Management's responsibility

Management are responsible for:

- determining that the criteria is appropriate to meet their needs, the needs of the Directors of Western Power and the needs of Economic Regulation Authority;
- preparing and presenting the calculation in accordance with the criteria; and
- establishing internal controls that enable the preparation and presentation of the calculation that is free from material misstatement, whether due to fraud or error.

### Our Responsibility

Our responsibility is to perform a limited assurance engagement in relation to the calculation of the Total Transmission Cost Estimate and Escalation Factor for Network Infrastructure as presented in sections 3 and 4 of the Total Transmission Cost Estimate for the Benchmark Reserve Capacity for 2027/2028 as at 10 September 2024, and to issue an assurance report that includes our conclusion.

### Our Independence and Quality Management

We have complied with our independence and other relevant ethical requirements of the *Code of Ethics for Professional Accountants (including Independence Standards)* issued by the Australian Professional and Ethical Standards Board and complied with the applicable requirements of Australian Standard on Quality Management 1 to design, implement and operate a system of quality management.



KPMG

Perth

10 September 2024