



Economic Regulation Authority

Proposed revisions to the access arrangement for the Western Power Network 2022/23 – 2026/27

Issues paper

4 March 2022

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Invitation to make submissions

Submissions are due by 4:00 pm WST, Wednesday, 20 April 2022.

The ERA invites comment on this issues 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

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.

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Overview

This issues paper commences the Economic Regulation Authority's review of Western Power's proposed changes to its access arrangement for the electricity network it operates across the South West of Western Australia.

The ERA will review this proposal against the requirements of the *Electricity Networks Access Code 2004*.

An access arrangement sets out the terms and conditions, including prices, for Western Power's direct customers, which include electricity generators, major (mining and industrial) electricity users and electricity retailers. Network prices charged to electricity retailers are passed on to their electricity customers. Network charges comprise around 45 per cent of the average residential electricity bill.

Western Power's network is regulated. The ERA's review is intended to ensure that Western Power invests in and operates the network as efficiently as possible for the long-term benefit of electricity consumers. Western Power must also maintain security, reliability and safety and take account of the environmental consequences of energy supply and consumption.

The ERA has prepared this issues paper to assist interested parties to understand Western Power's proposal, the ERA's review process and significant issues the ERA will be considering during the review.

The ERA will consider submissions from interested parties when making a draft determination, scheduled for publication in September 2022.

The ERA is seeking submissions on all aspects of Western Power's proposal, but those listed below are most likely to be relevant to consumers or have the greatest effect on Western Power's proposed expenditure and prices.

Energy transformation

The growth of renewable generation, in particular roof-top solar generation, and increasing use of batteries are changing the way energy is created and used. The network will need to adapt to accommodate the changes in energy generation and consumption while maintaining acceptable standards of service quality and reliability.

Western Power proposes to respond to these changes by substantial investments in network assets and to transition the network to a form that Western Power refers to as a "modular grid".

Western Power is also proposing to change network tariffs to foster incentives for changes in consumer behaviour to shift energy demand to periods where supply of energy from renewable generation is greatest, particularly during the middle of the day.

Climate change challenges

Western Power states that extreme weather events such as storms, heat waves and bushfires are making it increasingly difficult to maintain the safety and reliability of electricity services.

Western Power is proposing investments that it considers will make the network more resilient to these events, including replacing parts of the overhead network with underground power or standalone power systems.

Safety

The network must be safe as well as reliable. The safety of workers, customers, the public and the environment is paramount. Unsafe infrastructure and practices can also impact system reliability. Western Power's proposal includes expenditure to reduce pole top fires and electric shocks.

Standards and incentives for service reliability

Recent power outages over the summer across the electricity system have highlighted the importance of energy security and reliability for the community. The ERA will assess Western Power's performance against its set service standards over the last five years and look to how performance can improve over the next five years.

The ERA intends to undertake targeted consultation in regional areas that have experienced frequent or extensive outages prior to making its draft determination.

Future uncertainty in network investment

Western Power states in its proposal that some investment in the network is unable to be planned with certainty for the five-year period of the access arrangement. New investment requirements may arise from factors such as publication of a new Whole of System Plan in 2023, clarifying obligations in relation to private poles, responding to the *Work Health and Safety Act 2020* and potential future amendments to the *Security of Critical Infrastructure Act (Cth)*.

With so much change occurring in the energy market, Western Power has indicated that some of its plans and proposed expenditure may need adjustment over the next five years.

Connecting to the network

Western Power has updated standard documents and policies for large customers connected to the network to reflect the introduction of a new electricity market design in October 2023 and to speed up the new connection application process.

Communication with customers

Data submitted by Western Power show that many more customers now interact with them through their website and social media channels, rather than through telephone calls. Western Power is proposing changes to its call centre service standards to reflect this change.

Network tariffs

Western Power is proposing several changes to its network tariffs. The ERA will assess Western Power's proposal to introduce time of use tariffs and change its variable charge component. These initiatives, aim to lower the network component of energy bills during the day when solar power is at its peak.

Affordability

The amount of operating expenditure and capital expenditure that Western Power proposes to spend has the largest effect on customer bills. The ERA will be seeking to ensure that this expenditure is reasonable and efficient, and that Western Power is minimising costs.

Questions for stakeholders

1. Is the network strategy Western Power has proposed to reconfigure and modernise the network, and the associated investment for AA5, reasonable, properly timed and based on sound cost estimates?
2. Are uncertainties about the future of the electricity system giving rise to a risk that Western Power's network strategy and transformation initiatives could result in expenditure/assets that are not required or not fit for purpose?
3. The ERA is seeking stakeholder views on Western Power's proposed approaches to addressing climate change during AA5.
4. The ERA is interested in stakeholder views on Western Power's approach to safety, including any work practices it has adopted to ensure the safety of its workforce and the community.
5. The ERA is interested in stakeholder feedback on whether the revised access arrangement should incorporate measures focussed on reliability performance in specific areas of the network where reliability is below or tracking below the benchmark.
6. The ERA is interested in stakeholder views on:
 - Western Power's proposed approach to the cost uncertainties indicated in its proposal.
 - How Western Power has responded to and is managing uncertainty about the market transformation.
7. The ERA is particularly interested in stakeholder views on:
 - Whether Western Power's proposed changes to the connection provisions of the access arrangement adequately address requirements for the new market design.
 - Any issues stakeholders have encountered when seeking connections that could be addressed by further amendments to the standard access contract, applications and queuing policy or contributions policy.
8. The ERA is interested in stakeholder views and experience of how well Western Power communicates with customers and whether current service standards are adequate or any improvements are needed.
9. Was stakeholder consultation on the proposed tariff structures adequate and were stakeholder views taken account of to ensure the proposed tariff structures accommodate the reasonable requirements of users and end-use customers?
10. The ERA is seeking:
 - Stakeholder views on the proposed new tariffs and new tariff structures, including whether they will facilitate the connection of storage and electric vehicle charging stations and encourage demand patterns that will minimise the need for network augmentation.
 - Stakeholder views on, and any information to assist in the review of, the tariff structure, future cost estimates, cost allocation and rebalancing of tariffs.

11. The ERA is interested in stakeholder views on Western Power's proposed operating and indirect expenditure and any information stakeholders may have to inform the ERA's assessment of the efficiency of the proposed expenditure.
12. The ERA is interested in stakeholder views on the proposed capital expenditure and any information stakeholders may have to inform the ERA's assessment of the efficiency of the proposed expenditure.
13. The ERA invites submissions on Western Power's proposed alternative cost of debt approach.
14. The ERA invites submissions on Western Power's proposed change from a 5-year to a 10-year term for the risk free rate for equity.
15. The ERA is seeking stakeholder views on the asset lives proposed by Western Power.
16. The ERA is interested in stakeholder views on the revenue path proposed by Western Power and the treatment of deferred revenue in the access arrangement review process.

1. Introduction

Western Power is responsible for building, maintaining and operating an electricity network that connects 2.3 million customers' homes, businesses and essential community infrastructure to an increasingly renewable energy mix.

Figure 1: Western Power's network



Source: [Western Power website](#): Our network coverage

On 1 February 2022, Western Power submitted its proposed revised access arrangement for the fifth access arrangement period spanning 1 July 2022 to 30 June 2027 (AA5).¹ The proposed revised access arrangement and access arrangement information are available on the ERA's website.

1.1 Context of the review

Western Power's proposal and the ERA's review are taking place in the broader environment of rapid and ongoing transformation of the energy sector.

Advances in the technologies of renewable generation and energy storage and changing consumer choices and preferences are significantly reshaping the dynamics of the power system and the demands on the electricity network.

Forecasting future demand is becoming increasingly difficult, with uncertainty over the rate and effects of decarbonisation of the economy and, in particular, the uptake of electric vehicles. This translates to increased uncertainty for network operators – and for the ERA as the regulator – in investment requirements, asset use and asset lives.

This is discussed further in Section 3.

¹ Western Power's access arrangement was first approved by the ERA in April 2007 and covered the period 2006/07 to 2008/09 (AA1). Subsequent revisions were approved for 2009/10 to 2011/12 (AA2), 2012/13 to 2016/17 (AA3) and 2017/18 to 2021/22 (AA4). The AA4 arrangements apply until the ERA approves a new proposed access arrangement.

1.2 Network regulation

Western Power's network business is a natural monopoly, with economies of scale and scope favouring one entity to provide distribution and transmission services across the South West of the State. The State Government established regulation of the Western Power network to impose regulatory requirements and constraints on Western Power to ensure that the monopoly power is not abused and to create both incentives and pressures for Western Power to achieve acceptable standards of service for electricity consumers and efficiency in investment and operating costs.

The Access Code sets out the overarching objective, rules and policies that the ERA applies to regulate the network.

The main instrument of regulation is the access arrangement, which governs the terms and conditions, including prices, for third parties to access the network.

Figure 2: Network regulation governance

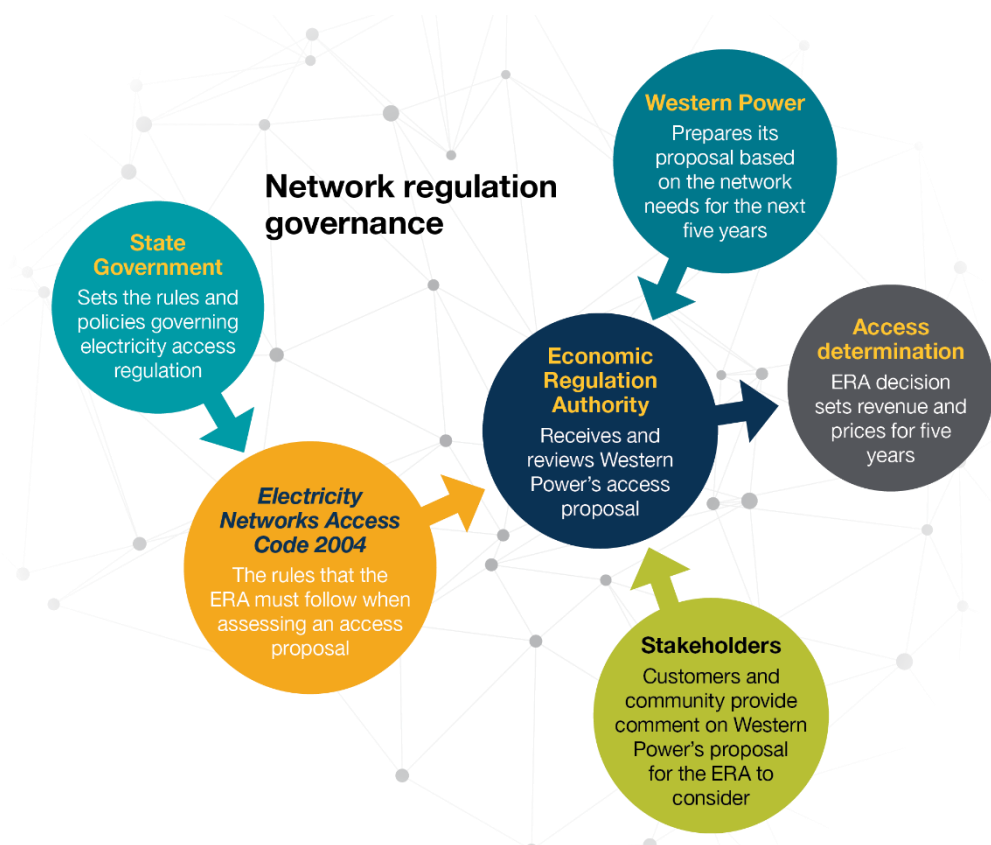
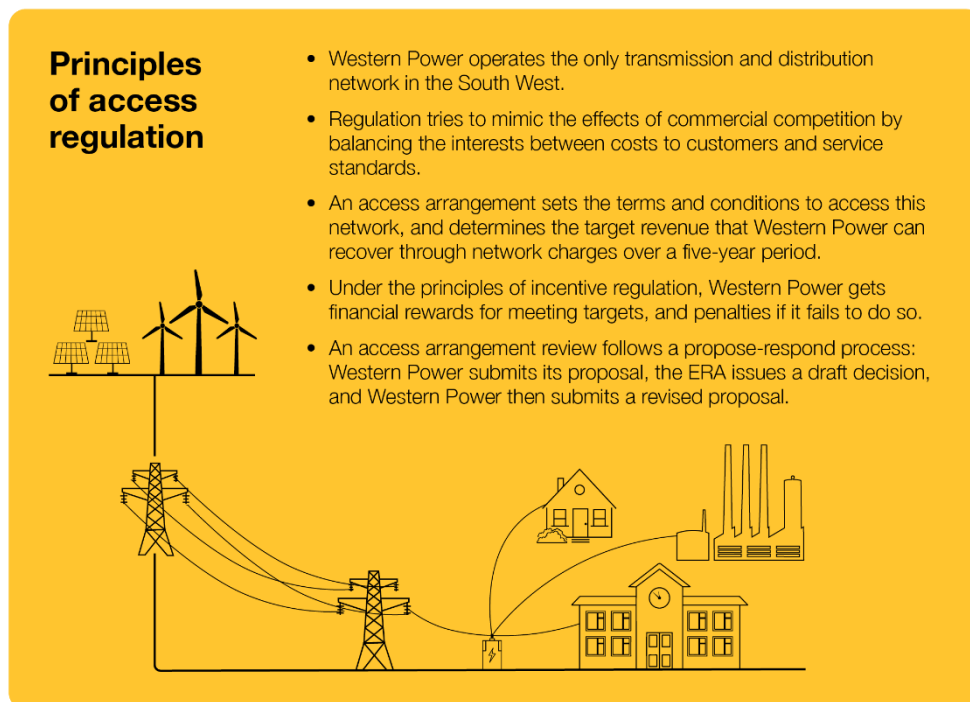


Figure 3: Principles of access regulation



The access arrangement includes a “price control” that determines the revenue Western Power can earn during the access arrangement period. The price control must give Western Power the opportunity to earn sufficient revenue (“target revenue”) to meet the efficient costs of providing regulated services, including a return on investment commensurate with the commercial risks involved.

Historically, target revenue has been determined using a building block approach incorporating the following elements:

- operating costs
- depreciation
- return on the regulated capital base²
- taxation.

The Access Code specifies additional items that must also be included in target revenue:

- Tariff equalisation contribution (funds collected from users of the Western Power network to subsidise the operations of Horizon Power).
- “Deferred revenue” (A prescribed amount set out in the Access Code in relation to AA2 target revenue that was deferred in the AA2 access arrangement for recovery at some future time).³

² The regulated capital base represents the capital investment in regulated assets and is calculated by adding capital expenditure to and deducting depreciation from the opening regulated capital base.

³ As set out in section 6.5A of the Access Code, the total value of revenue deferred was \$548.7 million (real dollar values as at 30 June 2009).

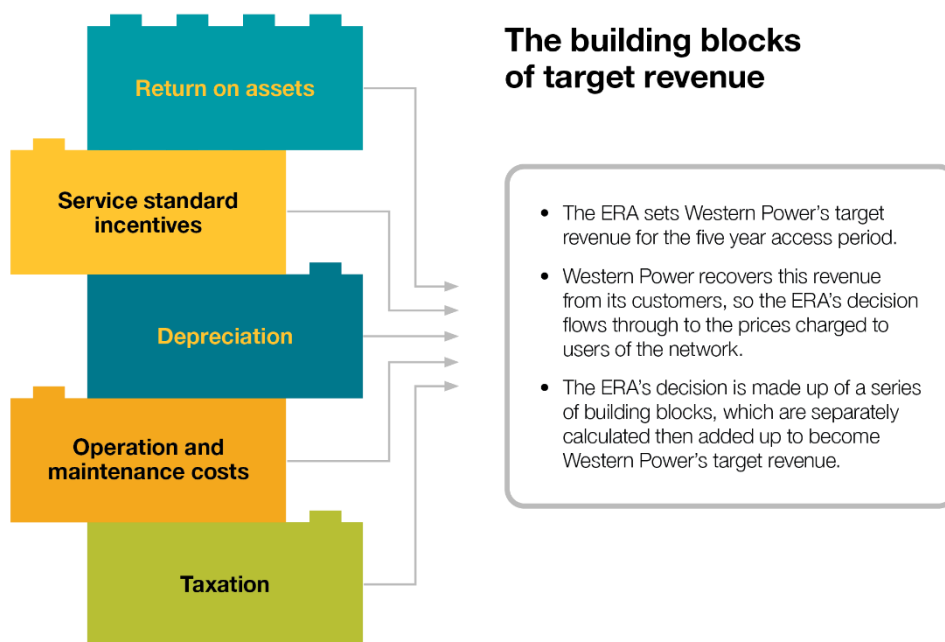
- Incentive payments (or penalties) and other adjustments from the previous access arrangement including:
 - Sharing operating cost efficiencies between Western Power and customers (gain sharing mechanism).
 - Rewards or penalties for service standard performance (service standard adjustment mechanism).
 - Adjusting for differences between forecast and actual capital expenditure for specified investment categories (investment adjustment mechanism).
 - Expenditure arising from reasonably unforeseen events or changes to the Technical Rules.
 - Operating expenditure incurred from deferring/substituting a capital expenditure project, such as network control services, or for demand-management initiatives (D-factor).⁴

Amendments to the Access Code have added new components to target revenue for the AA5 review:

- Expenditure incurred during AA4 on advanced metering communications infrastructure - \$115.36 million (real dollar values as at 30 June 2017) to be recovered over AA5 and AA6.
- Regulatory reform expenditure incurred during AA4 to support preparation of the initial whole of system plan and the development of network constraints information.
- A demand management innovation allowance.

⁴ The D-factor is not a specific requirement of the Access Code but has formed part of Western Power's access arrangement since AA2.

Figure 4: The building blocks for target revenue



1.3 Regulatory requirements

The regulatory requirements for the access arrangement and the matters the ERA must consider when reviewing Western Power's proposal are set out in the Access Code.

The Access Code prescribes what must be included in the access arrangement. This includes the services that are offered, the service standards and terms and conditions that apply and the revenue Western Power can collect from its customers through network charges.

Prescribed contents of an access arrangement

- The method used to determine the total revenue Western Power can collect from customers.
- One or more reference services (standard services).
- A tariff structure statement and forecast annual changes for each reference tariff during the access arrangement period.
- Service standard benchmarks for each reference service.
- Any adjustments that will be made to target revenue at the next access arrangement review including:
 - An investment adjustment mechanism that accounts for differences between forecast and actual costs for specified classes of capital expenditure.
 - A gain sharing mechanism that shares operating cost efficiencies between Western Power and its customers.
 - A service standard adjustment mechanism that accounts for any difference between actual service standard performance and the service standard benchmarks.
 - Deferred revenue.
 - Force majeure.
 - Technical rule changes.
 - D-factor.⁵
- Any trigger events that would require a review to commence earlier than planned.⁶
- A standard access contract for each reference service.
- An applications and queuing policy (including a transfer and relocation policy), which provides a process for parties seeking access to the network and how the service provider will prioritise applications.⁷
- A contributions policy (which sets out the principles for any payments customers may be required to make towards the cost of an asset).
- A demand management innovation allowance.⁸
- A multi-function asset policy.⁹
- Provisions for dealing with supplementary matters.
- The date for submitting the next revisions.

The ERA must determine whether Western Power's proposed revisions:

- meet the Access Code objective

⁵ This is not a specific requirement under the Access Code. The D-factor has been included in Western Power's access arrangement since AA2. The Access Code does not include a mechanism for the retrospective recovery of operating expenditure. The D-factor provides for the recovery, in the next access arrangement period of operating expenditure incurred as a result of deferring a network augmentation or for demand-management initiatives.

- comply with the relevant specific requirements in chapter five of the Access Code.

The Access Code objective is:

To promote the efficient investment in, and efficient operation and use of, *services of networks* in Western Australia for the long-term interests of *consumers* in relation to”

- (a) price, quality, safety, reliability and security of supply of electricity;
- (b) the safety, reliability and security of *covered networks*; and
- (c) the environmental consequences of energy supply and consumption, including reducing greenhouse gas emissions, considering land use and biodiversity impacts and encouraging energy efficiency and demand management.

{Note: *Consumers* in the context of the Code *objective* has the meaning in this Code being “a person who consumes electricity”}.

If the ERA considers that Western Power has satisfied the Access Code objective and specific requirements in chapter five, the ERA must approve the access arrangement. If there is a conflict between the Access Code objective and the specific requirements, the specific requirements prevail.

The ERA may not reject a proposed access arrangement on the grounds that another form of access arrangement might be better or more effectively satisfy the Access Code objective and chapter five requirements.

This is an important consideration for the ERA in the context of Western Power’s proposal for AA5. The future requirements and operation of the electricity network are uncertain in the face of rapidly changing technology and customer requirements. Western Power has necessarily had to “make a call” on the future configuration and operation of the network and the associated forecasts of capital and operating costs.

The ERA’s role is not to decide what it considers would be a better access arrangement, or future configuration of the network, but rather to carefully evaluate the evidence that Western Power has provided against the requirements of the Access Code.

The ERA must make a decision to either approve or not approve the proposed revisions. If the ERA does not approve the particular proposed revisions, it must set out the change/s that are required in its decision.

1.4 Process

The Access Code was substantially amended in 2020 to implement the State Government’s Energy Transformation Strategy and to make improvements to the process for review of the access arrangement. The Energy Transformation Strategy sets out how renewable and distributed energy resources will be integrated into the grid as they continue to grow.

⁶ A trigger event is any significant unforeseen event that has a material adverse effect and is outside the control of the service provider, not something that could have been prevented or overcome and so substantial that the advantages of re-opening the access arrangement before the end of the period outweigh the disadvantages, having regard to the impact of the variation on regulatory certainty.

⁷ Previously transfers and relocations were dealt with in a separate policy.

⁸ This is a new requirement. The level of the allowance was determined in the [framework and approach](#) published on 9 August 2021.

⁹ This is a new requirement. The ERA published [guidelines for the multi-function asset policy](#) on 15 October 2021.

Due to these changes, the process for the AA5 review is different from previous reviews. In the past, the access arrangement review commenced with Western Power submitting an access arrangement proposal.

For AA5, the ERA was required to publish a “framework and approach” document that set out how it intended to address some elements of the access arrangement, prior to Western Power submitting its proposal. Western Power’s proposal must then be consistent with the matters determined in the framework and approach.¹⁰

The ERA published its decision on the framework and approach for AA5 on 9 August 2021.¹¹

The framework and approach set out the ERA’s position on:

- Which services will be included in target revenue.
- A list of the standard services that will be offered.
- The method to set service standard benchmarks.
- The formula to set revenue each year.
- The method to adjust for difference between forecast and actual capital expenditure for specified investment categories.
- The sharing mechanism for operating cost efficiencies.
- The method for determining rewards and penalties for service standard performance.
- An allowance for demand management innovation.

The process the ERA must follow for the review is set out in chapter four of the Access Code.

An indicative timetable for the review is shown in Table 1.

¹⁰ Unless there has been a material change in circumstances in which case Western Power must provide reasons for the departure.

¹¹ [Framework and approach for Western Power’s fifth access arrangement review Final decision](#)

Table 1: Indicative timetable for the access arrangement review

Assessment stage	Indicative date
Western Power lodged application	1 February 2022
Application published by ERA	1 February 2022
Issues paper published by ERA	4 March 2022
Public forum	25 March 2022
Public consultation closes	20 April 2022
Western Power may submit further access arrangement information	May 2022
Draft decision published for consultation	September 2022
Public forum	September 2022
Western Power submits revised proposal	November 2022
Public consultation closes	December 2022
Western Power may submit further access arrangement information	January 2023
Final decision published	31 March 2023
Western Power submits price list for 2023/24	April 2023
ERA approves price list	May 2023
Revised access arrangement commences	1 July 2023

2. Western Power's proposal

2.1 Proposed target revenue

Western Power is seeking target revenue of \$7.5 billion for the AA5 period. A breakdown of the proposed target revenue and a comparison with previous access arrangements is shown in Table 2 below:

Table 2: Comparison of target revenue building blocks (\$ million real at 30 June 2022)¹²

	AA3 approved target revenue	AA4 approved target revenue	AA5 proposed target revenue
Operating expenditure	2,733.3	1,958.5	2,182.7
Depreciation	1,996.5	2,152.7	2,496.4
Return	1,684.8	2,068.8	1,523.4
Tax	292.2	267.6	122.4
Tariff Equalisation Contribution	1,076.4	876.9	897.4
Deferred revenue	207.7	218.6	182.9
Advanced meter infrastructure recovery ¹³	-	-	66.5
Demand management innovation allowance ¹⁴	-	-	5.9
Incentive rewards/penalties and other adjustments from the previous access arrangement ¹⁵	73.0	513.2	9.3
Total	8,063.9	8,056.2	7,486.9

Source: Western Power AA5 Regulatory Revenue Model and ERA AA4 Access Arrangement Decision Revenue Model Target Revenue Calculation.

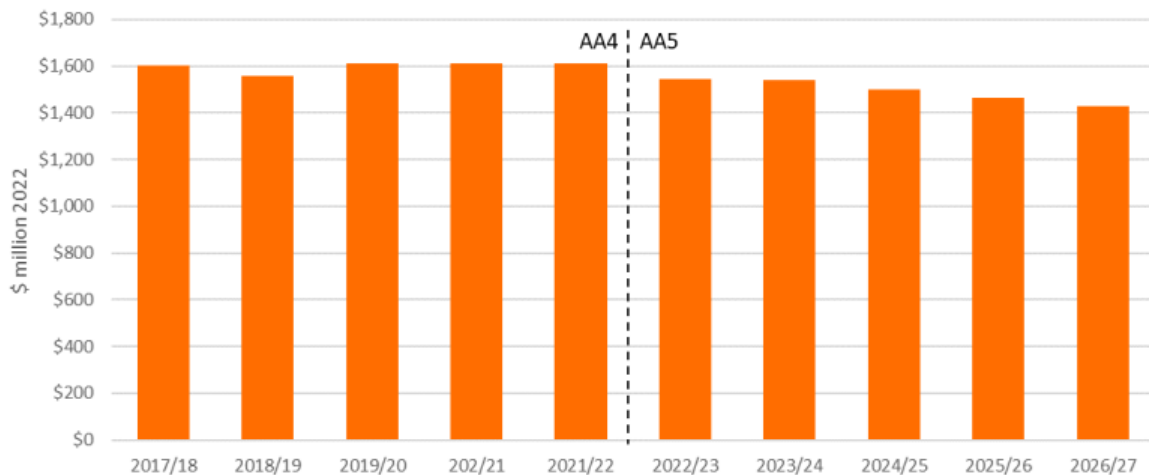
Western Power's proposed target revenue for the AA5 period (\$ million real at 30 June 2022) is lower than the target revenue for the AA4 period, as shown in Figure 5.

¹² Based on unsmoothed target revenue.

¹³ Expenditure not approved in AA4 on communication infrastructure for advanced meters has been included in the Access Code as a specified amount (\$115.36 million real dollar values as at 30 June 2017) that can be recovered over AA5 and AA6 period.

¹⁴ The new allowance created as part of the energy transformation reforms.

¹⁵ Includes investment adjustment mechanism, service standard adjustment mechanism, gain share mechanism, D-factor and regulatory reform costs.

Figure 5: Target revenue (smoothed) (\$ million real at 30 June 2022)

Source: Figure ES.6, *Western Power Access Arrangement Information*, 1 February 2022, p. xviii.

The reduction in revenue for the AA5 period is driven primarily by reductions in the return on assets and adjustments for incentive schemes, as shown in Figure 6.

Figure 6: Changes in revenue (unsmoothed) from AA4 to AA5, by building block (\$ million real at 30 June 2022)

Source: *Western Power Access Arrangement Information*, 1 February 2022, p. xviii.

2.2 Proposed network tariffs

Before developing individual tariffs, Western Power has proposed to smooth its target revenue over the access arrangement period as shown in the Table 3 below.¹⁶

¹⁶ An assessment of building blocks may result in a revenue stream that is lumpy (unsmoothed). Lumpiness or variability in revenues would ultimately translate to price variation. To avoid significant price variation requires the path of revenue to be smoothed over time relative to the path of expenditure.

Table 3: Unsmoothed and smoothed target revenue (\$ million nominal)

	2022/23	2023/24	2024/25	2025/26	2026/27
Unsmoothed revenue	1,494.6	1,512.8	1,582.9	1,644.0	1,726.8
Smoothed revenue	1,576.4	1,601.9	1,593.5	1,585.0	1,576.6
Change in average prices based on energy delivered (%)	0	3.65	0	0	0

Source: Western Power AA5 Regulatory Revenue Model

As the access arrangement will not be approved until 31 March 2023, any changes to customer prices will come into effect in the second year of AA5, 2023/24.

Western Power is proposing an increase in overall prices in 2023/24 then flat prices for the remainder of AA5. It states that this will result in a one-off increase to the average annual residential bill of \$25 in 2023/24.

The effect on individual tariffs will vary. Western Power has included its proposed change to individual tariffs over the access arrangement period in [Table 5.1](#) of its Tariff Structure Statement Overview. Changes vary between a 5.7 per cent increase to 2.5 per cent decrease. The change in the residential A1 tariff (RT1) is reported as a reduction of 0.9 per cent.

Western Power has proposed changes to its network tariff structures. Details can be found in Western Power's [Tariff Structure Statement Overview](#) and [Tariff Structure Statement Technical Summary](#).

2.3 Demand forecast

Western Power has forecast annual reductions in transmission and distribution energy volumes delivered of 0.6 per cent and 0.5 per cent respectively.

Western Power is forecasting that peak demand will fall slightly over the AA5 period under both its low and medium demand scenarios and to remain flat under its high demand scenario.

On the distribution network, Western Power is forecasting the number of over-used feeders will increase compared to previous years of flat or negative growth, mainly due to increased economic conditions. Western Power is also expecting to see a continuing uptake of rooftop solar and a continuing decline in daytime minimum load on the network.

Details of the forecasts of customer numbers and volumes are included in Western Power's [Energy and Customer Number Forecast Report](#). Additional details on the peak demand forecast are included in Western Power's [Forecast Capital Expenditure Report](#).

2.4 Rate of return

The weighted average cost of capital (WACC) is the rate of return that Western Power earns on its investment in the electricity network.

Western Power's proposed WACC for the AA5 period is estimated at 5.05 per cent in 2022/23, falling to 4.49 per cent in 2026/27, resulting in an average WACC of 4.73 per cent across the AA5 period. This is lower than the WACC of 5.87 per cent that applied during the

AA4 period, driven by recent low interest rates. The WACC parameters will be updated to reflect the latest market conditions closer to the time of the AA5 decision.

2.5 Deferred revenue

As part of the ERA's access arrangement decision for the AA2 period, a component of revenue was deferred to future access arrangement periods to avoid price shock for customers.

Amendments to the Access Code were made in July 2021 to allow Western Power to expedite the recovery of this revenue from network users during the AA5 period, up to a level that results in flat nominal prices for customers.

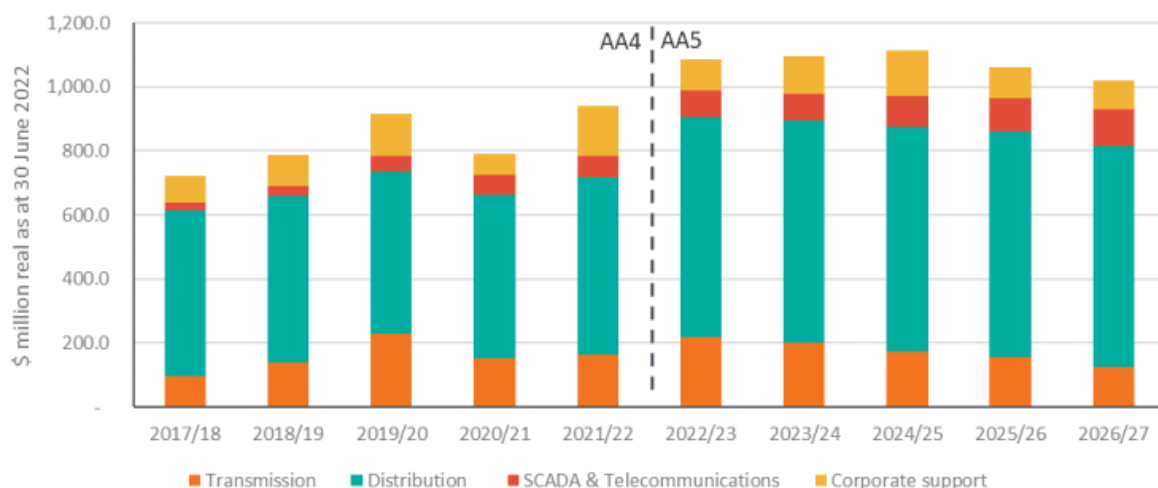
Western Power proposes to recover \$182.9 million of this deferred revenue during the AA5 period. This amount has been determined on the recovery method previously approved in prior access arrangement periods.

2.6 Capital expenditure

During the AA5 period, Western Power proposes to invest \$5,376 million of capital (35 per cent more than actual expenditure during AA4) to deliver covered services. From this, approximately \$1,035 million will be recovered directly from customers in the form of either capital contributions or gifted assets.

Western Power has forecast that \$4,341 million will be added to the regulated asset base and recovered through reference and non-reference tariffs.

Figure 7: AA4 actual and AA5 forecast capital expenditure, including indirect costs and escalations (\$ million real at 30 June 2022)



Source: Figure ES.7, Western Power Access Arrangement Information, 1 February 2022, p. xix.

2.7 Operating expenditure

Western Power's operating expenditure reflects activities and costs that are ongoing and recurring. It has forecast operating expenditure of \$2,183 million to operate and maintain its network over the AA5 period. This is similar to actual expenditure during AA4.

2.8 Changes to the access arrangement

Western Power has proposed the following changes:

- Amendments to the call centre service standards (see section 6.5.2 of Western Power's access arrangement information). This is discussed further in section 3 of the issues paper.
- Amendments to the standard access contract, applications and queuing policy and contributions policy (see sections 13.1 to 13.4 of Western Power's access arrangement information). This is discussed further in section 3 of the issues paper.
- A demand management innovation allowance (\$6 million in total for the AA5 period) as required by the Energy Transformation amendments to the Access Code (see section 9.4 of Western Power's access arrangement information).
- A new multi-function asset policy as required by the Energy Transformation amendments to the Access Code (see section 13.5 of Western Power's access arrangement information).

3. Key issues

The ERA is seeking stakeholder comments on all aspects of Western Power's proposal, but the following issues are most likely to be relevant to consumers or have the greatest effect on Western Power's proposed expenditure and prices.

3.1 Network transformation

The electricity industry and market are rapidly changing due to the uptake of rooftop solar panels and increasing levels of large-scale renewable generation from wind and solar farms.

In particular, rooftop solar and battery storage is enabling electricity users to become increasingly engaged with the power system by exercising choice between receiving electricity supply from the grid, investing in their own supply, and selling excess energy back to the grid.

This is significantly changing the dynamics of the power system and the demands on the electricity network.

The ERA acknowledges that Western Power's network will need to be reconfigured, modernised; and operated differently to support and enable the transformation of the State's electricity sector, including the delivery of the Government's Energy Transformation Strategy:

- The distribution network will need to sustainably accommodate ongoing connection of distributed energy resources while maintaining the safety, stability and reliability of the electricity system.
- Expansion and strengthening of the network may be required in future if electricity demand increases because of electrification of the economy due to decarbonisation.

Opportunities for network transformation also arise from opportunities to use new technologies of distributed generation, batteries, microgrids and stand-alone generation systems to reduce network costs – particularly as aging assets are replaced – and to increase service reliability.

Western Power proposes to reconfigure the network over the next 30 years as a modular grid.

The modular grid differentiates the distribution network into three zones:

- **Tightly meshed urban network:** For metropolitan customers, Western Power proposes to underground assets where possible and make investments to strengthen the network and introduce more sophisticated operating systems to enable increasing levels of renewable and distributed energy resources and accommodate new loads and electricity demands, such as electric vehicles.
- **Hybrid network:** For customers between the metropolitan and regional areas in the South West Interconnected System, Western Power proposes to maintain a network of mostly overhead assets with new technologies like standalone power systems and microgrids adopted where those technologies are the most efficient means of providing energy supply and meeting service standards.
- **Autonomous standalone network:** Some remote areas may be permanently excised from the larger network for operation as autonomous microgrids and many individual customers will be supplied with services from standalone power systems.

For the tightly meshed urban network, Western Power has developed a new program to target conversion of overhead areas to underground power. Western Power has proposed this conversion for areas where:

- The overhead assets are deteriorated and require replacement.
- The underground replacement presents a comparable or lower cost to a like-for-like overhead replacement.

The AA5 proposal includes \$681.8 million capital expenditure to underground 875 kilometres of overhead distribution lines. Western Power will seek to finance \$241.9 million of this through financial partnerships with the relevant local government authorities.

For the hybrid and autonomous standalone zones, Western Power proposes to transition 4,000 existing connection points to either standalone power systems or remove the supply with the agreement of the customer by 2031. The AA5 proposal includes \$330.8 million capital expenditure and \$67.4 million operating expenditure to install 1,861 stand-alone power system units and remove the associated 19,000 poles and conductors.

Western Power is also proposing substantial investments in metering, monitoring and control systems:

- Western Power proposes to modernise its Supervisory Control and Data Acquisition (SCADA) and telecommunications systems during the AA5 and AA6 periods to support a digital network and enable the integration of distributed energy resources. Western Power considers this investment will enable a secure transformation to the modular grid by improving cyber security controls and enabling the introduction of new and emerging technologies. The AA5 proposal includes \$483.4 million of capital expenditure and \$19.5 million of operating expenditure for the SCADA and telecommunications network of which Western Power states that \$188.4 million is needed to replace equipment that is obsolete and unsupported.
- Western Power considers that advanced metering infrastructure is necessary for increased visibility (and potentially control) of the distribution network. Western Power submits that advanced metering infrastructure will enable the effective integration of distributed energy resources, solutions for mitigating the risk of low load, flexible tariffs and allowing end-use electricity customers to actively participate in the energy market. The AA5 proposal includes \$317.1 million of capital expenditure to roll out advanced meters across most of the network (795,130 meters), partially offset by operating expenditure savings of \$13.8 million.

Other transformation initiatives include:

- Replacing or upgrading contestable meters to support the implementation of five-minute settlements for the new wholesale energy market design (capital expenditure of \$29.2 million).
- The State Government's Distributed Energy Resources (DER) Roadmap identifies a potential new role for Western Power as a distribution system operator. A distribution system operator would require visibility of the distribution network and could be responsible for:
 - Enabling connection and operation of active distributed energy resources on the network while ensuring the network operates within its technical limits.
 - Identifying and managing network technical issues as they arise and engaging distributed energy resource providers to mitigate these issues where it is the most efficient solution.

The AA5 proposal includes \$22 million of operating expenditure to enable Western Power to develop distribution system operator capabilities.

- Project Symphony is a collaborative project between Energy Policy WA, Western Power, the Australian Energy Market Operator and Synergy with funding from ARENA. The project aims to build industry capability by developing and testing the “end-to-end customer, market and technical capabilities and functions required to safely and securely integrate distributed energy resources within the SWIS.” The AA5 proposal includes \$6 million of capital expenditure for this project.
- A regulatory reform program has been established to implement stage 1 of the Energy Transformation Strategy. The AA5 proposal includes \$4.1 million operating expenditure for this.

Western Power states that it will require additional expenditure during AA5 for Stage 2 of the Energy Transformation Strategy. However, Western Power does not have an estimate of these costs at this stage. It proposes to provide information on likely expenditure in its response to the draft decision.

Questions

1. Is the network strategy Western Power has proposed to reconfigure and modernise the network, and the associated investment for AA5, reasonable, properly timed and based on sound cost estimates?
2. Are uncertainties about the future of the electricity system giving rise to a risk that Western Power’s network strategy and transformation initiatives could result in expenditure/assets that are not required or not fit for purpose?

3.2 Climate change challenges

The Western Power network has been affected by significant weather and related events during the AA4 period, including:

- Severe storms in May 2020 over a large area from Quinns Rock in the north through to Albany in the south.
- The Woorloo, Wundowie and Red Gully bushfires in January, February and March 2021.
- Storm-related flooding in Northam and surrounding areas in March 2021.
- Tropical Cyclone Seroja in April 2021.
- Heatwave conditions in December 2021 with four consecutive days above 40 degrees Celsius.

These events have affected the performance and reliability of the network resulting in often lengthy interruptions for customers.

In its proposal, Western Power states that climate change will require greater emphasis on disaster preparedness and resilience and increase the challenge of protecting grid infrastructure and supply to communities.¹⁷

Western Power considers that transitioning to a modular grid and the integration of new technologies such as stand-alone power systems and micro-grids will improve the reliability

¹⁷ Western Power, *AAI for the AA5 period*, 1 February 2022, p. 17.

and resilience of the network in regional areas and facilitate faster restoration of supply in the event of extreme weather events.

Western Power has also proposed expenditure to make the network more resilient to bushfires and adverse weather events, including replacing and renewing ageing assets. This includes:

- Bushfire management to mitigate the risk of overhead conductors causing sparks that could lead to ground fires (\$14 million capital expenditure).¹⁸
- Pole management to prevent failure of assets that could, among other things, lead to ground fires (\$104 million capital expenditure).

As part of the recent changes to the Access Code, the Code objective has been amended to include consideration of:

The environmental consequences of energy supply and consumption, including reducing greenhouse gas emissions, considering land use and biodiversity impacts and encouraging energy efficiency and demand management.

Based on data reported to the Clean Energy Regulator, Western Power's direct emissions are less than 1 per cent of total emissions for the South West Interconnected System.

As set out on page 23 of its access arrangement information, Western Power states that it is addressing climate change by supporting the decarbonisation of the economy. Western Power will continue to evolve its network to safely accommodate increased renewable generation and develop products and services that support the electrification of the transport, industrial and processing sectors.

Western Power is taking the following additional actions to support decarbonisation:

- Implementing its 2050 net-zero transition plan by 2023.
- Ensuring that it can support greater than 50 per cent of all electricity needs being met by renewable sources by 2031.
- Transitioning more than 25 per cent of its light passenger fleet to electric vehicles by 2025.
- Developing standards for the optimised charging of electric vehicles by 2025.
- Replacing all streetlights with light-emitting diodes (LEDs) by 2029.

Western Power has not included demand from electric vehicles in its demand forecast. Western Power considers that its undergrounding program will play a key role in supporting the future uptake of electric vehicles by enhancing capacity on the distribution network to accommodate charging services.

Western Power has not included any significant transmission network augmentations in its proposal. The next Whole of System Plan is expected to be developed within the AA5 period and will include a review of potential projects in the Mid West, climate policy targets and new projects such as hydrogen. This may identify additional network investment requirements.

It is not clear from Western Power's submission whether any expenditure proposed for AA5 has been justified solely on the basis of decarbonisation. The ERA will be seeking further information from Western Power to assist its assessment of whether proposed expenditure is consistent with the investment test in the Access Code.

¹⁸ This includes proactively installing "spreaders" on sections of lines that are likely to clash and maintaining existing spreaders.

Question

3. The ERA is seeking stakeholder views on Western Power's proposed approaches to addressing climate change during AA5.

3.3 Safety

The network must be safe as well as reliable. This includes the safety of workers, customers, the public and the environment. Safety incidents can also affect reliability.

Significant safety risks include:

- Pole top fires and other fire risks
- Faulty connections or other assets that could lead to electrocution
- Restoring supplies during or after weather or natural disaster events.

Protecting the network from damage due to physical or cyber intrusions could also be considered an aspect of safety.

Western Power reports that its safety performance has been maintained throughout the AA4 period. Western Power notes the following performance on electric shocks and ground fires:

- Electric shocks decreased from an average of 206 per year in the AA3 period to 158 per year in the AA4 period. This is mainly due to the rollout of the Service Connection Condition Monitoring program and ongoing maintenance programs. Public awareness campaigns contributed to an increase in the number of electric shocks reported in the second half of the AA4 period, however, no increase in injuries was observed.
- Ground fires increased from an average of 117 per year in the AA3 period to 162 per year in the AA4 period. This is mainly due to increases in pole top fire events. Ground fires can lead to injury from burning and smoke inhalation as well as environmental impacts on native flora and fauna. Western Power states that fires caused by its assets represent less than 2.5 per cent of the total number of fires recorded in Western Australia each year.¹⁹

Western Power is planning to continue to use a risk-based renewal approach for its assets to manage the safety performance of its network and provide a safe working environment for its workforce. The following proposed investments address, among other things, safety issues:

- Replacing and reinforcing poles, towers and conductors to minimise public safety risk from asset failure, for example, bushfires and electric shocks. Western Power is planning 34,974 wood pole replacements and 27,500 reinforcements during the AA5 period (\$423.1 million capital expenditure). The pole management expenditure referred to in the previous section replaces cross arms, insulators and stays that support the overhead infrastructure.
- Investing in stand-alone power systems and converting overhead network to underground as discussed above.

¹⁹ On average there are approximately 4,000 vegetation fires within the area covered by the Western Power network. DFES, Vegetation Fires 2000-2016 report.

- Upgrading substation buildings to minimise risk to public and workforce safety. Western Power has proposed \$37.2 million capital expenditure for substation security and \$16.4 million capital expenditure for substation building upgrades.
- Updating its ageing depots to meet current workplace safety practices and ensuring both cyber and physical security protection of critical infrastructure assets. Western Power has proposed \$145.8 million for corporate real estate with the majority relating to its depot program.
- Continuing investment in advanced meters to identify potentially faulty connections.

Managing safety requirements can also have operational effects that affect reliability:

- To reduce the likelihood of pole top fires, Western Power applies silicone grease on insulators periodically on its distribution overhead network. Historically, the silicone application process was applied while the line was energised. A review of work practices undertaken in 2020/21 determined that the application of silicone treatments would only be undertaken on deenergised lines. Consequently, the AA5 proposal includes lower volumes of silicone treatments compared to AA4 due to the requirement to get planned outages for silicone treatment on de-energised lines. The unit cost for silicone treatments is higher as a result of the change in work practice.
- Western Power's customer research indicated that customers want staff on the ground to return the network to normal as soon as possible after natural disasters. However, there are safety issues (both in terms of bushfire risk and workforce safety) that may delay access to the network. This may extend the length of the interruption. The service standards discussed below allow Western Power to exclude time when it is unable to access a site due to a total fire ban or directions from emergency services.

Western Power states that, in response to the "increasing threat landscape" for digital systems and assets, it has adopted the Australian Energy Sector Cyber Security Framework to implement controls to manage cyber risks.²⁰

Cyber security comprises part of the justification for elements of Western Power's proposed investment for the AA5 period including:

- Providing an increase in cyber security as part of the depot program as noted above.
- A component of the proposed investment in transmission substation security noted above.
- The replacement and augmentation of SCADA and telecommunications assets previously discussed to mitigate risks from existing assets and meeting emerging cyber security needs.

The AA5 proposal also includes \$17.5 million operating expenditure to establish a new cyber security function.

Western Power has identified some matters currently under review affecting safety requirements that may change during the access arrangement review or during AA5:

- The requirement to inspect private poles directly connected to the network following the Supreme Court's judgement relating to the Parkerville fire.
- Responding to the *Work Health and Safety Act 2020* and related regulations.

²⁰ Western Power, *Access Arrangement Information*, 1 February 2022, p. 14.

- Future amendments to the *Security of Critical Infrastructure Act (Cth)*.²¹

Question

4. The ERA is interested in stakeholder views on Western Power's approach to safety, including any work practices it has adopted to ensure the safety of its workforce and the community.

3.4 Standards and incentives for service reliability

The reliability framework under the *Electricity Industry Act 2004* is as follows:

- The *Electricity Industry (Network Quality and Reliability of Supply) Code 2005* (NQ&R Code) sets out supply reliability and quality standards for electricity network operators for voltage fluctuations, harmonics, unplanned or planned interruptions and complaints.
- The Access Code requires Western Power's access arrangement to include service standard benchmarks for each of the standard network services that it provides.
- The Access Code also requires Western Power's access arrangement to include a mechanism detailing how Western Power's performance against the service standard benchmarks will be treated by the ERA at the next access arrangement review.

The standards in the NQ&R Code are separate from, and different to, the service standard benchmarks in the access arrangement. The NQ&R Code is a legislative requirement. As is the case for any of its legislative requirement, Western Power should base its expenditure forecasts on the efficient cost of meeting the NQ&R Code standards.

The service standard benchmarks in the access arrangement are based on actual performance over the previous five years. As they are minimum standards that must be met, they are based on the 97.5th percentile of performance achieved over the previous five years.

As required by the Access Code, the access arrangement includes a mechanism that determines how Western Power's performance against the service standard benchmarks will be treated by the ERA at the next access arrangement review. This mechanism includes targets that are set higher than the benchmarks. The targets are based on Western Power's average performance over the previous five years.

The mechanism includes financial rewards and penalties based on the value of customer reliability. If Western Power exceeds the target, it receives a financial reward. If it is below the target, it receives a financial penalty. Basing the rewards and penalties on the value of customer reliability should incentivise Western Power to improve service standards above current performance where it is valued by customers.

Based on its reported performance to date during AA4, Western Power will incur a penalty of \$32 million that will be included in the AA5 target revenue.

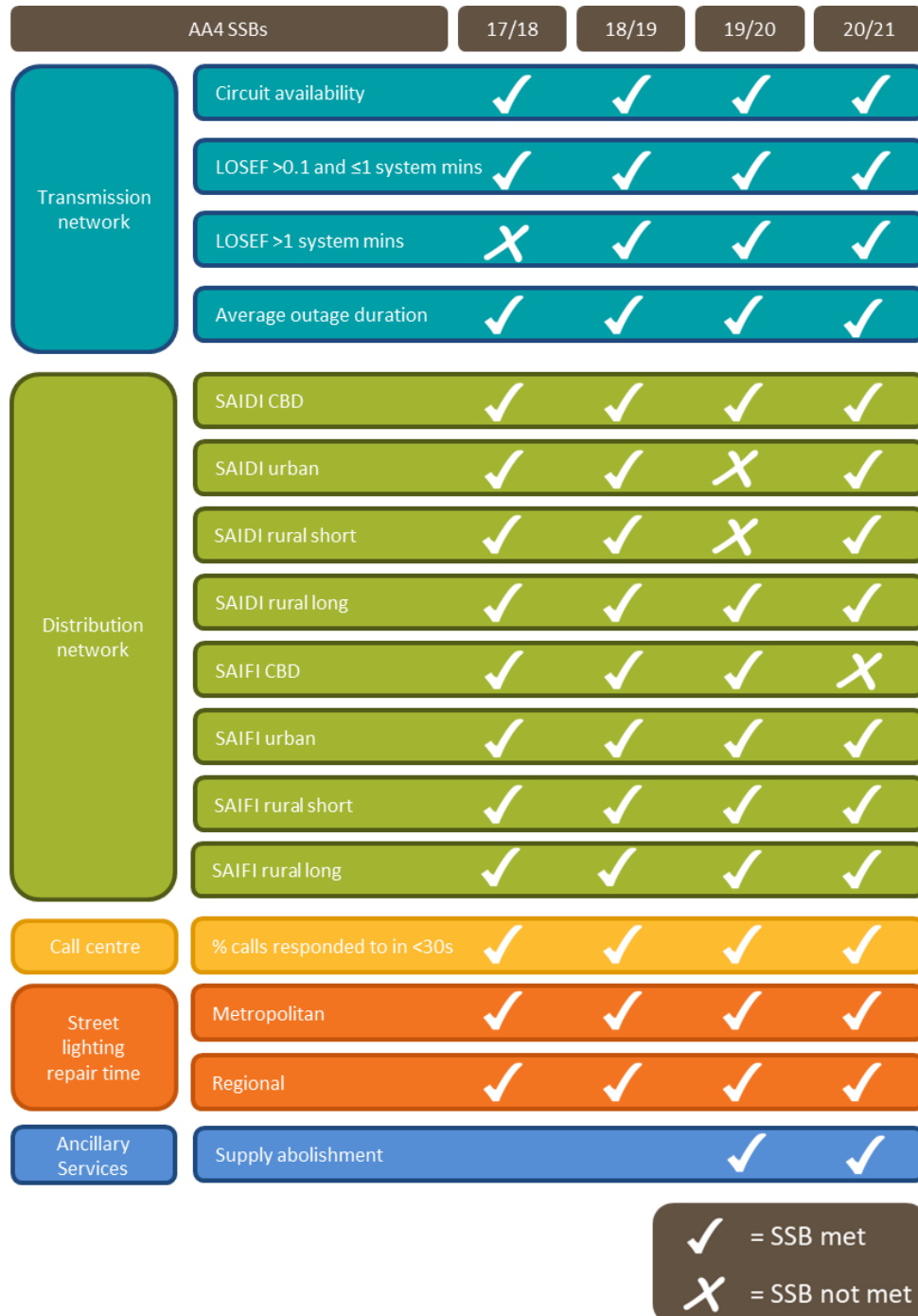
Sections 5 and 6 of Western Power's Access Arrangement Information document provide detailed information on its performance-related expenditure during AA4, network reliability

²¹ Future changes are expected to include a requirement for responsible entities for critical infrastructure assets to adopt and maintain an all-hazards critical infrastructure risk management program. This requirement was included in the original draft of the *Security Legislation Amendment (Critical Infrastructure) Bill 2021* but has been deferred pending further industry consultation.

performance for both the AA3 and AA4 access periods, and its strategy for performance in AA5.²²

Western Power’s performance is reported by feeder category - central business district (CBD), urban, rural short and rural long.

Figure 8: Western Power’s service standard benchmark performance, AA4



Source: Western Power Access Arrangement Information, 1 February, p. 72.

²² Western Power Access Arrangement Information, 1 February 2022, pp. 59-134.

Figure 9: Western Power's service standard target performance, AA4

AA4 Performance against SSTs		19/20	20/21	Net reward/penalty
Transmission network	Circuit availability	+	=	+
	LOSEF >0.1 and ≤1 system mins	+	+	+
	LOSEF >1 system mins	=	+	+
	Average outage duration	+	-	-
Distribution network	SAIDI CBD	-	+	-
	SAIDI urban	-	-	-
	SAIDI rural short	-	-	-
	SAIDI rural long	-	-	-
	SAIFI CBD	-	-	-
	SAIFI urban	-	-	-
	SAIFI rural short	-	+	-
	SAIFI rural long	+	+	+
Call centre	% calls responded to in <30s	+	-	+
Net reward/penalty		-	-	-

+ = Performance better than SST (reward)
 - = Performance worse than SST (penalty)
 = = Performance equal to SST (neutral)

Source: Western Power Access Arrangement Information, 1 February, p. 73.

The benchmarks and targets for distribution-connected customers set for AA4 were all tighter than the previous access period, except for rural long. During AA4, Western Power generally performed better than the benchmark but worse than the target. It did not meet the benchmarks for urban and rural short feeders in 2019/20 and rural long feeders in 2020/21.

Outage frequency and duration data for the transmission system provided by Western Power shows that performance has exceeded the benchmark for the AA4 period except for loss of supply event frequency (LOSEF) greater than 1 minute in 2017/18. Western Power states that “overall, transmission reliability during the AA4 period has been good.”

Western Power notes that “performance is plateauing, which is consistent with industry practice” and that “we are getting to a stage where customers are happy with their level of reliability and do not value additional investment to improve reliability.” Western Power adds, however, that “performance is under pressure due to increasing environmental and energy industry change.”²³ Western Power’s customer research was conducted before the recent outages discussed in the next section.

Western Power proposes to maintain current reliability performance levels for AA5 where the current levels of performance are satisfactory.

Recent outages

This summer, Perth and surrounding areas had record-breaking heatwaves that have increased pressure on the system. These, coupled with bushfires and pole-top fires, have led to a large number of widespread, repeated or extended outages across the Perth, South West, Mid West, Wheatbelt and Goldfields regions. A list of the areas particularly affected, including the type of feeder category, is included in Appendix 3.

The State Government has commissioned an inquiry into the outages experienced in the Perth metropolitan area over the Christmas 2021 period. The findings of this inquiry may be relevant to the AA5 review, and the ERA will monitor this process closely.

While, as the AA4 data shows, Western Power has generally exceeded reliability performance over the past five years, the average nature of the data may mask parts of the system that are under-performing.

Western Power has proposed capital expenditure totalling \$45 million over the AA5 period to “address locations with reliability performance well below the network category average and below the specified minimum service standards under the Access Code.” It is not clear from the AA5 proposal what these locations are.

The ERA will ask Western Power to provide information on the AA4 reliability performance for areas that have experienced numerous recent outages and any other areas experiencing underperformance.

The ERA is interested in stakeholder feedback on whether the revised access arrangement should incorporate measures focussed on reliability performance in specific areas of the network where reliability is below or tracking below the average service standard performance. For example, this might include greater disaggregation of the categories currently reported on (CBD, Urban, Rural Short and Rural Long) and/or incorporation of other parameters such as multiple outages or extended outages.

The ERA is also seeking to understand the specific locational investments in the network that may be required to improve reliability in underperforming areas. The ERA will seek further information from Western Power on this matter.

Changes for AA5

Until now, outages caused by planned outages (for example, maintenance works) or transmission outages have been excluded from distribution performance measures. The performance data is also normalised for major event days and “force majeure” events. This

²³ Western Power Access Arrangement Information, 1 February 2022, p. 74, paragraph 372, 374.

could mean that what is being measured could be different from what customers are experiencing.

As determined in the ERA's framework and approach, for AA5, Western Power will no longer exclude transmission outages from its service standard performance. This should result in future outage performance data (and the incentive/penalty mechanism) reflecting outages occurring in the Goldfields and Mid West when those transmission lines fail.

Western Power is also required to no longer exclude force majeure events from distribution outage performance.²⁴ However, Western Power can exclude time when it is unable to access a site due to a total fire ban or directions from emergency services. A similar exclusion exists in the National Electricity Market.

Question

5. The ERA is interested in stakeholder feedback on whether the revised access arrangement should incorporate measures focussed on reliability performance in specific areas of the network where reliability is below or tracking below the benchmark.

3.5 Future risks

As discussed above, Western Power has indicated outstanding issues and uncertainties in its proposal that may affect costs during AA5.

Western Power proposes to address outstanding issues/uncertainties as follows:

- Include any updated costs in its response to the ERA's draft decision.
- If changes occur after the response to the draft decision is submitted that will affect Western Power during the AA5 period, it will work with the ERA to assess whether the change requires the re-opening of the access arrangement before the end of the AA5 period.
- Changes in costs that do not warrant the re-opening of AA5 can be dealt with in the AA6 period.

The biggest risk is uncertainty about the market due to continued technological change and decarbonisation in the energy sector during AA5 and beyond. Although not currently apparent for the AA5 period, there may also be risks associated with the timing of an expected step up in the electrification of the State economy and higher levels of renewable generation needing to be connected to the network in response. This uncertainty could lead to Western Power getting its forecasts and investment strategies wrong.

This could result in:

- Investment in long-term assets that may not be required or not required for their full technical life
- Existing assets being replaced earlier than necessary based on an incorrect view of the future.

²⁴ In the framework and approach the ERA determined that the method used to exclude "major event days" dealt adequately with such events.

- Investment not occurring early enough to deal with the transformation.

Western Power considers that its grid strategy provides a roadmap to the grid vision which minimises whole of life cycle costs and regrettable investment. The fact that much of Western Power's asset base is ageing provides an opportunity to incorporate future requirements as part of the replacement or renewal of those assets.

Major uncertainties in relation to network requirements for transitioning to zero emissions or increases in demand due to the electrification of the economy are being considered in the Whole of System Plan. Outputs from that process can then be used to adapt or update Western Power's investment plans as necessary.

Questions

6. The ERA is interested in stakeholder views on:
- Western Power's proposed approach to the cost uncertainties indicated in its proposal.
 - How Western Power has responded to and is managing uncertainty about the market transformation.

3.6 Connecting to the network

Effective connection processes are essential to ensure that renewable energy and new technologies can connect where needed to facilitate the transition away from fossil fuel generators, meet new demands for electrification and manage power system security.

A new market design based on security constrained economic dispatch will be introduced in October 2023. It replaces the current market design that assumes all generators have "firm" access rights to the network. Under the new market design, the algorithm used to decide which generators will be dispatched will take into account both the price offered by the generator and any constraints in the network. The new market design enables more generators to be connected to the network without the need for network augmentation.

Amendments were made to the Access Code on 31 July 2021 to incorporate changes to support the introduction of constrained access. The amendments included a revised standard access contract, applications and queuing policy and contributions policy that apply until amended documents are approved as part of the AA5 access arrangement.

Western Power has based its proposed standard access contract, applications and queuing policy and contributions policy on the revised documents included in the Access Code. It has proposed minor amendments that it considers improve clarity and applicability.

In addition, Western Power has made changes to the applications and queuing policy that it considers will speed up the process for applicants.

Details of the proposed changes can be found in chapter 13 of Western Power's access arrangement information. Change summaries for each document are included in Attachment 13.1 to 13.4 of the access arrangement information.

Questions

7. The ERA is particularly interested in stakeholder views on:
- Whether Western Power's proposed changes to the connection provisions of the access arrangement adequately address requirements for the new market design.
 - Any issues stakeholders have encountered when seeking connections that could be addressed by further amendments to the standard access contract, applications and queuing policy or contributions policy.

3.7 Communication with customers

Effective and timely communication enables customers to receive the services they require. If there is a problem, such as an outage, customers need as much accurate information as possible to enable them to plan accordingly.

In its proposal, Western Power provides data showing a significant increase in digital engagement with customers. In the past two years, website traffic has increased 76 per cent, from 4.6 million page views in 2018 to 8.2 million in 2020. Social media channel engagement (including likes, shares, comments, inbound enquiries and link clicks) has increased 349 per cent. Phone call volumes have remained relatively flat over the same period.

Based on the method that the ERA has already approved in the framework and approach for setting service standards, the call centre service standard benchmark and service standard target will rise for AA5. Western Power considers that its customer research shows that customers would not value this improvement in service and would prefer to experience slightly longer call centre response times in exchange for an improvement in other service channels.

Western Power proposes to retain the service standard benchmark for the call centre at the current level and to remove the call centre response time from the service standard adjustment mechanism.

Western Power proposes to collect data from both its phone and digital service channels over the AA5 period to enable it to propose more relevant customer service performance measures in the AA6 period.

Question

8. The ERA is interested in stakeholder views and experience of how well Western Power communicates with customers and whether current service standards are adequate or any improvements are needed.

3.8 Network tariffs

The Access Code amendments include new requirements for Western Power to develop efficient tariffs. Efficient tariffs are important to encourage better use of the existing network and reduce the need for network augmentation.

Efficient tariffs provide better signals for network use based on costs that reflect use of the network at different times.

The Access Code requires that the structure of reference tariffs must, so far as is consistent with the Access Code objective, accommodate the reasonable requirements of users collectively and end-use customers collectively.

Western Power has proposed changes to tariffs, including:

- Reducing variable charges and increasing fixed charges.
- Introducing a very low super off-peak rate for energy between 9am and 3pm.
- Introducing new tariffs for grid-connected batteries and electric vehicle charging stations.

Western Power proposes a gradual transition to its proposed new tariffs to avoid price shocks and provide customers and stakeholders with time to prepare for the changes. Western Power is aiming to limit the increase in the average price of a tariff to no more than two per cent above the change that is required to recover total target revenue.

A summary of the proposed changes is set out below. Further details can be found in Western Power's [Tariff Structure Statement Overview](#) and [Tariff Structure Statement Technical Summary](#).

Future network costs

To develop its proposed prices, Western Power has estimated the forward-looking efficient cost (or future cost) of providing each reference service. It has grouped together reference services that it considers are likely to have similar future costs.

Western Power states that the proposed on-peak prices – derived from the estimate of future costs – are well below its existing on-peak prices. Western Power considers it can increase efficiency by reducing on-peak prices.

Consequently, Western Power proposes to reduce variable energy charges in line with its estimate of future costs and increase fixed charges to recover the total revenue required.

The ERA is seeking further information from Western Power to understand its proposed new pricing structures and the effect it will have on network charges.

Time of use prices

Western Power proposes to offer a very low, “super off-peak” energy price to encourage greater use of energy during periods when solar panels are exporting renewable energy to the grid.

Western Power proposes a strong pricing difference between peak and low demand time band, for example:

- A very low variable rate of close to zero cents per kW hour for electricity consumption during the super off-peak period (9am to 3pm).
- A low variable rate during off-peak periods (11pm to 6am).
- A moderate variable rate for shoulder periods, of approximately 1.3 times the off-peak rate (6am to 9am and 9pm to 11pm).
- A relatively higher variable rate for consumption during the on-peak period from 3pm to 9pm, approximately two times the shoulder rate (3pm to 9pm).
- A fixed charge component that is the same across different time periods.

Western Power has proposed time of use energy tariffs (rather than demand structures) because it thinks that customers understand energy-based tariffs more easily and will be encouraged to shift load outside of the on-peak period.²⁵

Batteries and electric vehicles

As required by the framework and approach, Western Power proposes to introduce new tariffs for large batteries that connect directly to the network, and for dedicated electric vehicle fast-charging stations.

Western Power states that the proposed new tariffs will have similar structures to existing tariffs. For example, the tariffs for electric vehicle fast-charging stations will be consistent with existing metered demand tariffs (RT5 and RT6). As is the case for existing bi-directional distribution-connected customers, Western Power will not charge distribution-connected storage systems for exporting energy into the grid.

The ERA is seeking further information from Western Power to better understand these proposed new tariffs.

Forecast price changes

Western Power has summarised the forecast weighted average price change for each reference tariff in AA5 in [Table 5.1](#) of the Tariff Structure statement overview.²⁶

The proposal is based on a small sample of the 2.5 per cent of total residential customers that have advanced metering infrastructure. Western Power expects to be able to refine its forecast of weighted average annual price changes over the course of 2022, as it gains access to a larger sample of interval data for residential customers.

Western Power has not calculated a forecast weighted average price change for the new tariffs as there is currently no published starting point from which to calculate the price change. Western Power anticipates that once the initial price is established for 2023/24 there will be no further price change for the remaining years.

²⁵ A demand based tariff structure is based on both power demand on the network in a specific time period (expressed in kW) and the amount of electricity used (expressed as kWh).

²⁶ Western Power Appendix F.1, Tariff Structure Statement Overview, p. 28.

Questions

9. Was stakeholder consultation on the proposed tariff structures adequate and were stakeholder views taken account of to ensure the proposed tariff structures accommodate the reasonable requirements of users and end-use customers?
10. The ERA is seeking:
 - Stakeholder views on the proposed new tariffs and new tariff structures, including whether they will facilitate the connection of storage and electric vehicle charging stations and encourage demand patterns that will minimise the need for network augmentation.
 - Stakeholder views on, and any information to assist in the review of, the tariff structure, future cost estimates, cost allocation and rebalancing of tariffs.

3.9 Affordability for customers

Efficiency of expenditure

The amount of operating expenditure and capital expenditure has the largest effect on customer bills. The Access Code includes provisions to ensure that network charges only include costs that would be incurred by a service provider efficiently minimising costs.

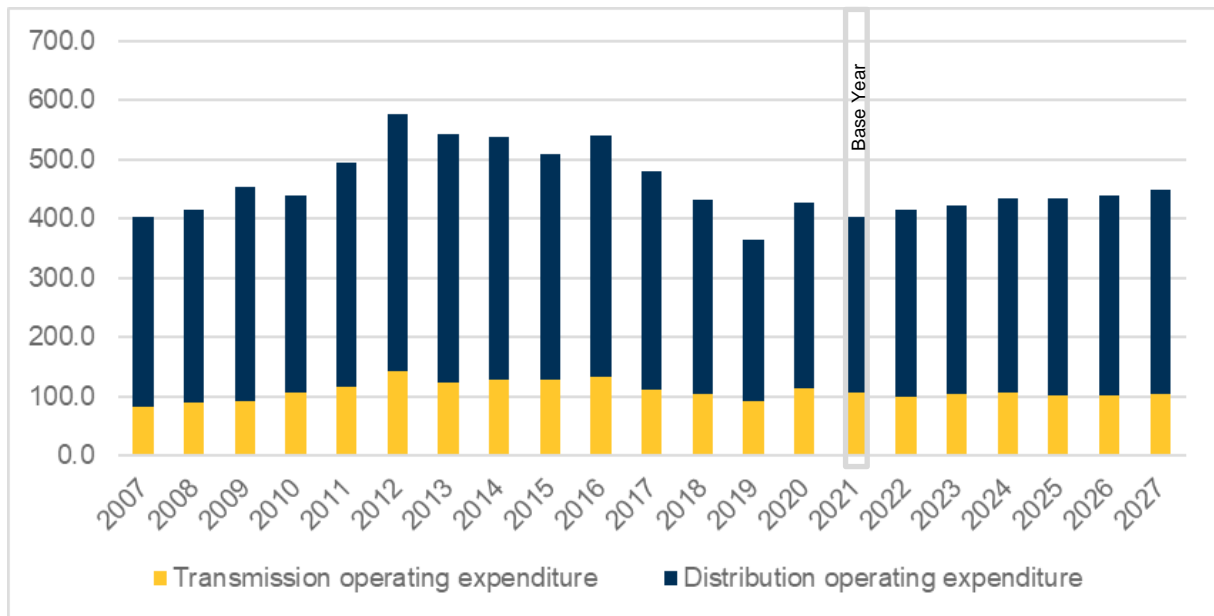
A key part of the ERA's review is to determine whether Western Power's proposed expenditure is efficient. Operating expenditure, indirect expenditure and capital expenditure are considered below.

Operating expenditure

Western Power is proposing to spend \$2,182.7 million of operating expenditure in the AA5 period. Figure 10 shows actual and forecast operating expenditure from previous access arrangements and the AA5 proposed expenditure. Forecast operating expenditure for AA5 is \$224 million higher than the AA4 forecast and \$137.6 million higher than the AA4 actual expenditure.²⁷

²⁷ For comparison purposes, actual expenditure during AA4 that can be recovered in the AA5 target revenue (through the D-factor and regulatory reform adjustment) has been excluded from the AA4 actuals. This amounts to \$41.5 million across the AA4 period.

Figure 10: Actual and forecast operating expenditure from previous access arrangements and the AA5 (\$ million real at 30 June 2022)

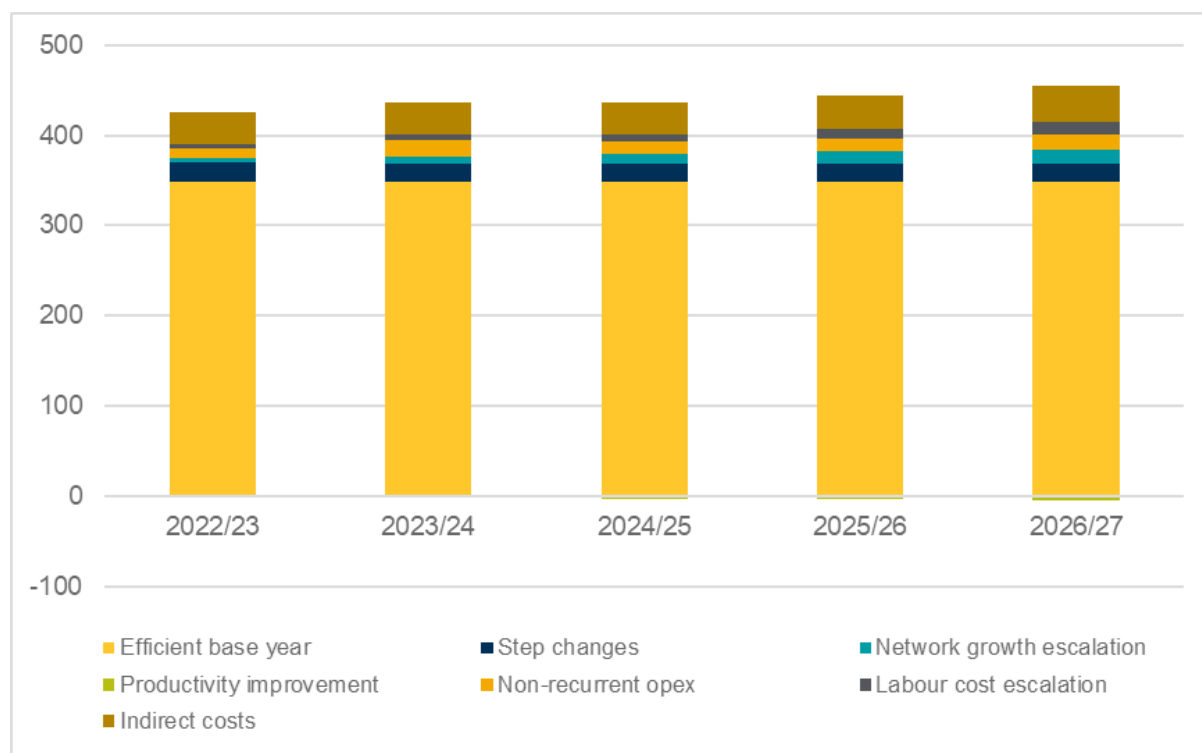


Source: Derived from Western Power's AA5 Regulatory Revenue Model.

Western Power has used the “base-step-trend” method to forecast recurrent operating expenditure. The method takes the reported operating expenditure for the most recent year available (2020/21) and adjusts it for:

- any expenditure not reflective of the recurrent cost base
- categories of operating expenditure impacted by discrete step changes
- changes in output and cost input trends over the forecast period.

Figure 11 shows the proposed operating expenditure broken down by year and over AA5.

Figure 11: Forecast operating expenditure (\$ million real at 30 June 2022)

Source: Derived from Western Power's Access Arrangement Information

Western Power has used the actual costs reported for 2020/21, adjusted for non-recurrent expenditure, to establish the efficient base year. Western Power has then made the following adjustments:

- Step changes (\$104.9 million): These are new ongoing costs that Western Power considers will be needed for AA5. Details of the step changes can be found on page 146 to 163 of Western Power's access arrangement information. They include:
 - Repairing streetlight faults - \$22.7 million
 - Distribution system operator capability - \$21.8 million
 - Meter reading – a reduction of \$13.9 million
 - Silicone treatment program - \$26.4 million
 - Digital substation - \$5 million
 - SCADA and telecommunications - \$19.5 million
 - Standalone power systems maintenance - \$6.4 million
 - Governance and safety assurance - \$3.8 million
 - Light Detection and Ranging program - \$6.1 million
 - Distribution power quality monitoring - \$2.2 million
 - High voltage injection unit and emergency response generators - \$5 million
- Network growth escalation (\$52.9 million): Western Power commissioned KPMG to develop a forecast based on the network growth escalation method currently used by the Australian Energy Regulator. The method uses changes in customer numbers, line length and maximum demand to estimate additional costs needed due to growth in the

network. Western Power has included the forecast reduction in distribution line length following the installation of stand-alone power systems. Details can be found on page 163 to page 167 of Western Power's access arrangement information.

- Productivity improvement (\$14.2 million): Western Power has included an annual reduction in operating expenditure of 0.25 per cent for expected productivity improvements, based on methods and data used by the Australian Energy Regulator. Details can be found on page 167 to page 168 of Western Power's access arrangement information.
- Non-recurrent operating expenditure (\$72.5 million): These are one-off costs that Western Power considers will be needed for AA5. Details can be found on page 168 to page 170 of Western Power's access arrangement information. They include:
 - 66 kV line removal - \$7.4 million
 - Regulatory reform program - \$4.1 million
 - Decommissioning of distribution overhead lines following installation of standalone power systems - \$61 million.
- Labour cost escalation (\$42.8 million): Western Power has included an annual increase above inflation for labour costs of 0.77 per cent. It is based on the forecast annual rate of growth in the wage price index for Western Australian electricity, gas, water and waste-water services.

Indirect costs are costs that cannot be directly attributed to activities driving expenditure but are required to enable, manage and support those activities. Indirect costs include management and support costs associated with field staff, network and non-network asset management and planning, contract management and procurements teams. Indirect costs also include IT services and facilities management.

Western Power has forecast \$842.6 million of expenditure on indirect costs over the AA5 period. This includes \$183.4 million of operating expenditure forecasts, as detailed above, and the remaining \$659.2 million is capital expenditure (discussed below).

Western Power has forecast indirect costs using a similar method to direct operating expenditure.

Details of the indirect cost forecast can be found on page 171 to page 176 of Western Power's access arrangement information. The forecast indirect costs include:

- Step changes (\$68.2 million): Details can be found on page 173 to page 175. They include:
 - Increased support services to deliver the capital program - \$31.5 million
 - A new cyber security function - \$17.5 million
 - IT increases in managed contracts and software support - \$19 million
- Network growth escalation (\$5.2 million).
- Productivity improvement (\$6.2 million).
- Labour cost escalation (\$16.5 million).

Question

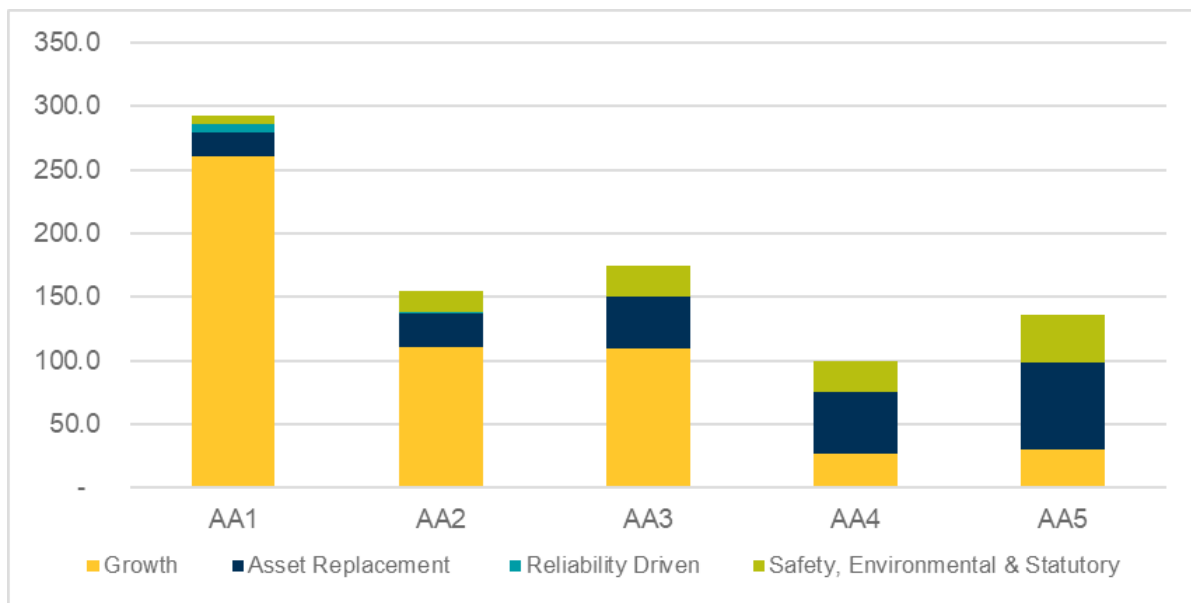
11. The ERA is interested in stakeholder views on Western Power’s proposed operating and indirect expenditure and any information stakeholders may have to inform the ERA’s assessment of the efficiency of the proposed expenditure.

Capital expenditure

Western Power is proposing to spend \$4,341.3 million of capital expenditure (excluding gifted assets and contribution) in the AA5 period. Forecast net capital expenditure for AA5 is \$1,084.1 million higher than the AA4 forecast and \$1,406.1 million higher than the AA4 actual.

A comparison of the proposed capital expenditure for AA5 with actual expenditure for previous access arrangements is shown in the charts below. For comparison purposes, the investment has been annualised.²⁸ Separate charts have been prepared for transmission, distribution and corporate (including SCADA and communications, IT and business support).

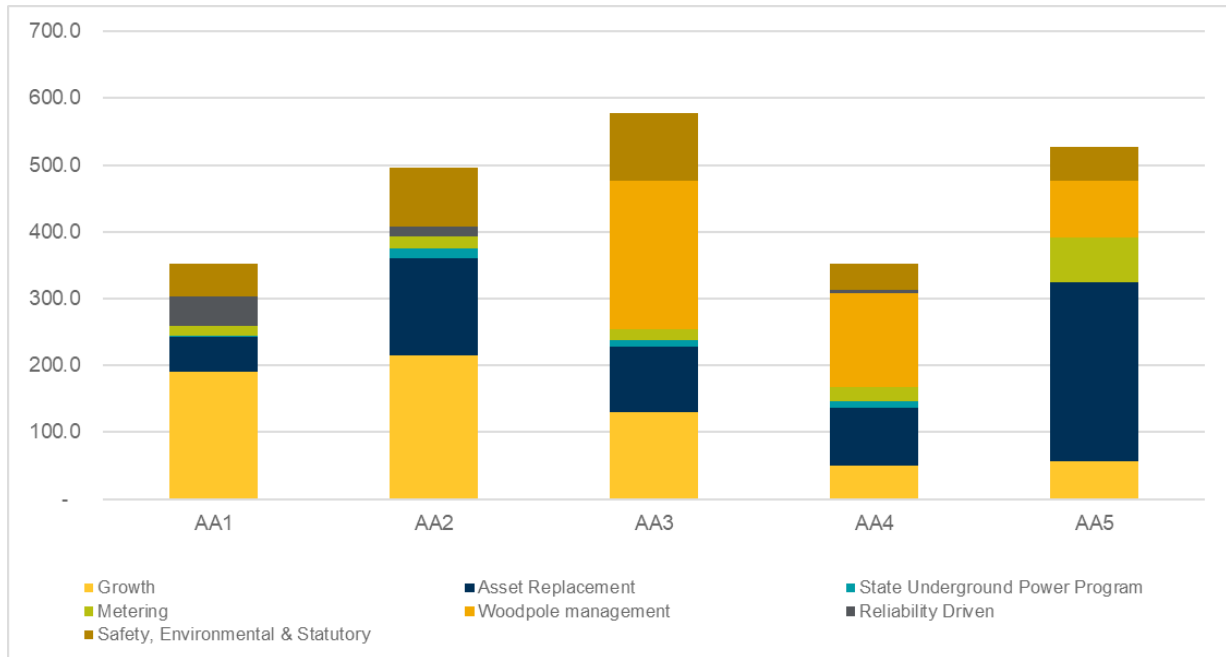
Figure 12: Annualised transmission net capital expenditure by investment category (\$ million real at 30 June 2022)



Source: Derived from Western Power’s AA5 Regulatory Revenue Model.

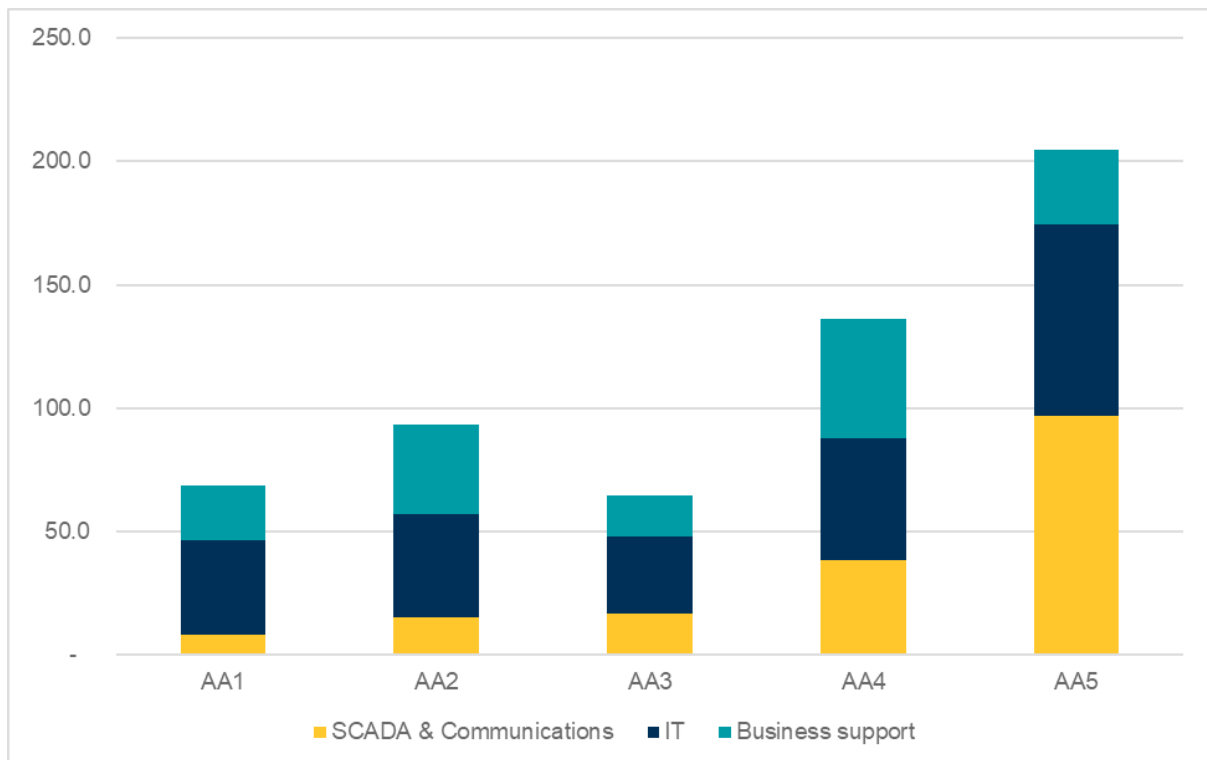
²⁸ AA1 and AA2 were three-year periods. AA3, AA4 and AA5 are five-year periods.

Figure 13: Annualised distribution net capital expenditure by investment category (\$ million real at 30 June 2022)



Source: Derived from Western Power’s AA5 Regulatory Revenue Model.

Figure 14: Annualised SCADA & Communications, IT and business support net capital expenditure (\$ million real at 30 June 2022)



Source: Derived from Western Power’s AA5 Regulatory Revenue Model.

As can be seen in the charts, expenditure on asset replacement, metering, SCADA and IT is significantly higher than previous access arrangements. The increase in expenditure

compared with AA4 is essentially due to four new or one-off significant projects (totalling \$1,570 million):

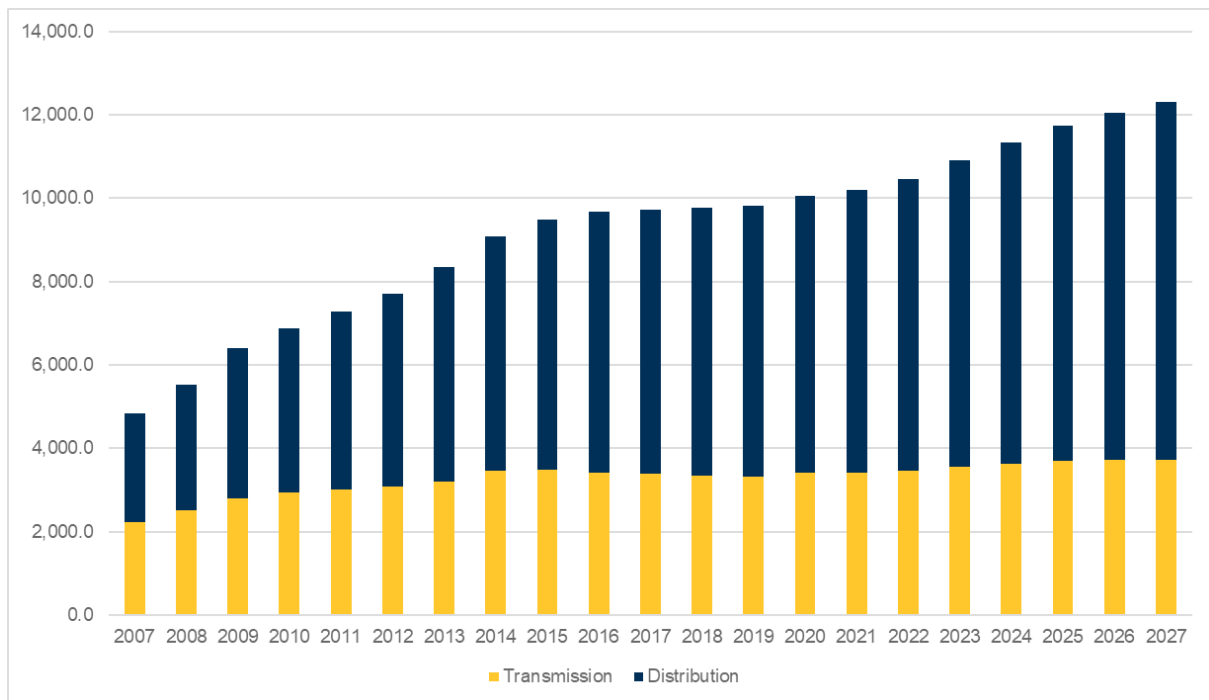
- SCADA and communications (\$483 million).
- Network renewal underground program included under asset replacement (\$440 million, net of capital contribution of \$241.9 million, to underground 875 kilometres of distribution overhead lines).
- Stand-alone power systems included under asset replacement (\$330 million to install 1,861 units).
- Replacing all meters with advanced meters during AA5 (\$317 million to replace 795,130 meters).

These projects will replace existing assets. Consideration will need to be given to whether these assets still have a material value in the regulated asset base and, if so, how that should be treated.

The proposal does not include any expenditure for the State Underground Power Program during AA5. Western Power's network renewal underground program is seeking to underground sections of the network where it is cost comparative with the overhead network or a third party is willing to fund the incremental costs of undergrounding. As the proposed expenditure appears to be contingent on these circumstances, consideration may need to be given to providing a "true-up" at the next access arrangement to take account of the volume of undergrounding actually undertaken. Potentially this could be achieved through the investment adjustment mechanism.²⁹ The ERA is seeking further information from Western Power to better understand its proposal.

The regulated asset base is forecast to increase over the AA5 period as shown in the chart below.

²⁹ The investment adjustment mechanism seeks to ensure that Western Power is not better or worse off than if it had accurately forecast the actual capital expenditure at the time of the review.

Figure 15: Regulated asset base – actuals to 2021 (\$ million real at 30 June 2022)

Source: Derived from Western Power's AA5 Regulatory Revenue Model.

Question

12. The ERA is interested in stakeholder views on the proposed capital expenditure and any information stakeholders may have to inform the ERA's assessment of the efficiency of the proposed expenditure.

Rate of return

The rate of return rate provides service providers with the funding to pay interest on any loans and give a return on equity to investors. The rate of return is expressed as a weighted average cost of capital (WACC).

Western Power proposes an average nominal post-tax WACC of 4.73 per cent for the AA5 period, compared with 5.87 per cent approved in AA4.

Western Power's proposed WACC is lower than AA4 due to changes in market conditions that have reduced the cost of finance. This reduction is partially offset by increases resulting from Western Power's proposed changes to the WACC approach.

Western Power has used placeholder values as at 30 June 2021 for its proposal calculation. These will be replaced with the most current values at the time of the ERA's final decision.

Western Power's proposed changes to the WACC for AA5 are set out in Table 4. This table compares Western Power's proposal with the AA4 decision and the ERA's current

WACC approach.³⁰ Western Power's proposed approach increases revenues from return of assets by approximately \$600 million compared to the ERA's current approach.³¹

Table 4: WACC parameters comparison for period to 30 June 2021

Parameters	Western Power AA5 proposal	ERA's current approach	Approved WACC for AA4
Cost on equity (%)	5.73*	4.93*	6.57
Cost of debt (%)	3.90*	2.72*	5.29
Nominal after-tax WACC (%)	4.73*	3.71*	5.87
Average regulated asset base over regulatory period (\$m)	11,792	11,792	9,380
Total WACC revenue (\$m)#	1,617.6	1,016.9	1,878.3

* Five-year average over the AA5 period.

Excluding working capital.

Source: ERA analysis

The ERA adopts a standard rate of return approach for its heavily regulated energy networks, which means general WACC approaches and parameters are the same across energy networks. These WACC parameters include:

- the market risk premium
- debt issuing costs
- inflation
- dividend imputation credit (known as gamma).

Western Power has broadly maintained the ERA's approach to estimating most WACC parameters for AA5, including the methods to estimate the market risk premium and equity beta.

However, Western Power proposes the following changes that move away from the approach applied in AA4 and the ERA's current approach:³²

- an alternative approach to calculating the cost of debt.
- an increase in the term of the risk free rate to 10 years, up from a term of five years.

The ERA has summarised the proposed changes in the sections below.

³⁰ Western Power's AA5 proposal and the ERA's current approach both use the same period (the 20 trading days to 30 June 2021) to calculate market values. WACC parameters will be updated to reflect the latest market conditions closer to the time of the AA5 decision. The approved WACC for AA4 was calculated four years ago based on the 20 trading days to 29 March 2018.

³¹ The ERA is yet to fully review and consider Western Power's revenue model. As such, any figures presented in this section using the revenue model are indicative and based on Western Power's unreviewed modelling methods.

³² Western Power, Access Arrangement Information: Access Arrangement revisions for the fifth access arrangement period, 1 February 2022, pp. 230 - 236.

Additionally, the ERA is currently reviewing its energy network rate of return approach, and associated WACC parameters, as part of its review of the gas rate of return instrument.³³

During that review, the ERA will also consider a range of information, including stakeholder submissions, academic literature, market data and developments and stakeholder feedback. Any relevant information may also be considered as part of the AA5 determination.

Form of debt

Western Power proposes a departure from the ERA's current approach to calculating the cost of debt for energy entities and the AA4 final decision.

The current approach estimates the return on debt using a hybrid trailing average approach. Under the hybrid trailing average approach:

- The benchmark entity enters into the assumed benchmark efficient debt strategy. This strategy is assumed to be a staggered portfolio of 10-year fixed-rate BBB+ debt with 10 per cent being refinanced each year.
- The benchmark entity uses derivative arrangements to adjust the efficient debt portfolio and lock in a risk free rate over the regulatory period.
- A 10-year trailing average debt risk premium is updated annually through the tariff variation mechanism.

In previous access arrangements the ERA considered that a hybrid trailing average approach best approximates the efficient regulatory revenues a service provider would require, while also recognising interest rate risk, refinancing risk and the staggered nature of debt portfolios.³⁴

Western Power has proposed a 10-year trailing average debt approach that has removed the need to fix the risk free rate over the AA5 period. Under Western Power's proposed approach:³⁵

- Consistent with the current approach, the benchmark entity enters into the assumed benchmark efficient debt strategy. This strategy is assumed to be a staggered portfolio of 10-year fixed-rate BBB+ debt with 10 per cent refinanced each year.
- A 10-year trailing average total debt cost is updated annually through the tariff variation mechanism.

Western Power submits that this approach to estimating the cost of debt is efficient and is now used by all other Australian regulators. Western Power states that "the current approach to the allowed return on debt reflects a financing strategy that a business would be unlikely to consider adopting, other than to replicate the allowance provided to it under the current approach."³⁶

³³ ERA, 2022 gas rate of return instrument review – Discussion paper, December 2021.

³⁴ ERA, Final Gas Rate of Return Guidelines Explanatory Statement, December 2018, p. 35.

³⁵ Western Power, Access Arrangement Information: Access Arrangement revisions for the fifth access arrangement period, 1 February 2022, p. 234.

³⁶ Western Power, Access Arrangement Information: Access Arrangement revisions for the fifth access arrangement period, 1 February 2022, p. 234.

Based on the 30 June 2021 placeholder averaging period, the proposed approach to the cost of debt increases debt costs by approximately \$383 million over the AA5 period.³⁷

- Western Power’s proposed cost of debt over the period starts at 4.50 per cent and reduces to 3.47 per cent. The 10-year trailing average debt approach initially produces a high cost of debt as it includes historic high yearly debt costs (for example, debt from 10 years and nine years ago). As these high yearly debt costs are rolled out the 10-year trailing average reduces as interest rates declined.
- The ERA’s current approach produces an average cost of debt of 2.72 per cent.

Question

13. The ERA invites submissions on Western Power’s proposed alternative cost of debt approach.

Risk free rate

In its AA5 proposal, Western Power considers that the risk free rate for equity should be set on the basis of the yield on 10-year Commonwealth government bonds, as opposed to the current ERA approach of using a five-year term for the risk free rate.

Based on the 20-trading day averaging period to 30 June 2021, the ERA estimates a five-year term nominal risk free rate of 0.73 per cent. This compares to Western Power’s proposal of 1.53 per cent for a 10-year nominal risk free rate.

Western Power’s proposal will increase the return on equity by 0.8 per cent. This increases revenue for equity costs by approximately \$215 million over the AA5 period.

Question

14. The ERA invites submissions on Western Power’s proposed change from a 5-year to a 10-year term for the risk free rate for equity.

Depreciation

Depreciation is the allowance provided so that the investment in regulated assets is recovered over the economic life of the assets. Economic life is the expected period of time that the asset will remain useful.

Western Power proposes to reduce some asset lives and introduce new categories of assets as shown in Table 5. Western Power proposes the revised asset lives will only apply to expenditure from AA5 onwards. It is not proposing to amend the lives of existing assets.

Reducing asset lives brings forward the revenue Western Power can earn, which means higher tariffs in the short term. The proposed reduction in asset lives increases target revenue during the AA5 period by approximately \$9 million.

³⁷ The ERA is yet to fully review and consider Western Power’s revenue model. As such any figures presented using the revenue model are indicative and based on Western Power’s unreviewed modelling methods.

Table 5: Proposed revised and new asset lives (years)

	Proposed asset life	Current asset life
Transmission reactors	40	50
Transmission circuit breakers	40	50
Transmission secondary systems	30	New asset category
Distribution underground cables	50	60
Distribution switchgear	30	35
Stand-alone power systems	15	New asset category
Storage	10	New asset category
Equity raising costs	46	49

Western Power has based its changes in asset life for the existing asset classes on the most recent tax ruling (TR 2021/3) on the effective life of depreciating assets. As the new asset classes are made up of a number of different components – for example, a standalone power system includes PV panels, a battery and a generator - the proposed asset life is based on Western Power’s assessment of the mean replacement life for each component of the asset.

Western Power proposes that the revised asset lives will only apply to capital expenditure undertaken during AA5.

The ERA will need to determine whether the proposed asset lives are consistent with the economic life of those assets.

Question

15. The ERA is seeking stakeholder views on the asset lives proposed by Western Power.

Revenue path

Western Power has proposed a revenue path that results in an increase in average prices of 3.65 per cent in 2023/24 and then no change in average prices for the remainder of AA5.

As discussed in section 2, amendments to the Access Code allow Western Power to accelerate the recovery of AA2 deferred revenue. These amendments require the ERA to approve any accelerated deferred revenue proposed by Western Power providing it does not result in the forecast weighted average annual price change across all reference tariffs being greater than zero for any pricing year of the access arrangement period.³⁸

As Western Power’s proposal results in an increase in charges to customers, it has not accelerated the recovery of the deferred revenue. However, Western Power proposes that that the accelerated recovery of deferred revenue be applied as a balancing item during the AA5 review.

³⁸ See section 6.5D of the Access Code.

If, in its draft decision, the ERA reduces Western Power's target revenue from the amount proposed, Western Power proposes to include additional deferred revenue in its response to the draft decision up to the level that results in flat nominal prices for customers.

Western Power proposes that the ERA make a similar adjustment in the final decision if the ERA reduces any components in Western Power's proposed target revenue.

The Access Code provisions for the acceleration of deferred revenue were only intended to be used up to a level that results in flat nominal prices for customers. As discussed above, additional costs may arise during the AA5 period. If this occurs, there is a risk that there would be both an acceleration of deferred revenue and increases in prices which would be inconsistent with the intent of the Access Code amendment.

Question

16. The ERA is interested in stakeholder views on the revenue path proposed by Western Power and the treatment of deferred revenue in the access arrangement review process.

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Appendix 3 Areas experiencing outages

The table below lists areas that have recently experienced extended or frequent outages.

Region	Area	Area Type	SCNRRR / Feeder Categories (as of January 2022)
Goldfields - Esperance region	City of Kalgoorlie-Boulder	Local Government Area	Urban (58%), Rural Short (42%)
Great Southern region	Bridgetown	Suburb/Locality	Rural Long
Great Southern region	Shire of Denmark	Local Government Area	Rural Long
Mid West region	Horrocks in the Shire of Northampton	Suburb/Locality	Rural Long
Mid West region	Northampton in the Shire of Northampton	Suburb/Locality	Rural Long
Mid West region	Shire of Perenjori	Local Government Area	Rural Long
Mid West region	City of Greater Geraldton	Local Government Area	Rural Short (62%), Urban (23%), Rural Long (15%)
Peel	Dawesville in the City of Mandurah	Suburb/Locality	Rural Short
Peel	Falcon in the City of Mandurah	Suburb/Locality	Rural Short (98%), Urban (2%)
Peel	Halls Head in the City of Mandurah	Suburb/Locality	Urban
Perth Metropolitan	Chidlow in the Shire of Mundaring	Suburb/Locality	Rural Short
Perth Metropolitan	Roleystone in the City of Armadale	Suburb/Locality	Rural Short
Perth Metropolitan	Wooroloo in the Shire of Mundaring	Suburb/Locality	Rural Short
Perth Metropolitan	Kelmscott in the City of Armadale	Suburb/Locality	Urban (61%), Rural Short (39%)
Perth Metropolitan	City of Canning, Perth Metropolitan region	Local Government Area	Urban (83%), Rural Short (17%)
Wheatbelt	Shire of Bruce Rock	Local Government Area	Rural Long
Wheatbelt	Shire of Narrogin	Local Government Area	Rural Short (59%), Rural Long (41%)

Source: Western Power data.