



Access Arrangement Information

**Access Arrangement revisions for the fifth
access arrangement period**

Executive Summary

1 February 2022



The logo for Western Power, featuring a stylized white grid icon on the left and the text 'westernpower' in a white, lowercase, sans-serif font on the right. The logo is set against a thick, orange, rounded rectangular background. The entire logo area is part of a larger decorative graphic consisting of multiple overlapping, wavy lines in shades of green, yellow, and orange that flow across the bottom of the page.

westernpower

An appropriate citation for this paper is:

Access arrangement information

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What our AA5 proposal delivers for our community and customers



Continued focus on safety

- Maintain safety performance
- Replace ~37,000 wood poles, underground 875 km of urban network, improve substation security, reduce electric shocks and enhance cyber security



Reliable supply

- Maintain overall network reliability and improve underperforming hotspots
- Utilise standalone power systems, microgrids and undergrounding
- Modernise protections, control and visibility of network operation and performance



Facilitating more renewables

- Support more renewable connections including 3 GW of rooftop solar by the end of the AA5 period
- Enhance voltage management
- Full deployment of advanced metering infrastructure



Affordable price outcomes

- Price rises of less than inflation for the average network bill
- New services and tariffs that increase customer choice and control of bills



enabled via the transition to a modular grid

- Improve resilience to extreme climate events
- Adopt new technology that better supports customers
- Improve use of technology to support two-way energy flows, remote supply, storage, and communication



Our customers

Residents, Generators, Retailers, Local Government, Large, small & medium businesses, Land development & industry, Electrical service

Highlights

Increase in the average network bill is less than inflation	Our proposal provides price decreases for customers (in real terms). This means nominal price increases for the average network bill will be lower than the rate of inflation. For the AA5 period, the average network bill rise is 50 per cent lower than the price increase in the AA4 period.
Customer and community engagement shaped our AA5 proposal	Customers and the community tell us they expect electricity to be there when they need it. They expect safe, reliable, and increasingly renewable energy, delivered at an affordable price. Our proposal is a measured and cost efficient approach to meeting the increasing challenges associated with the changing use of our network, such as connecting new technologies, and supporting the decarbonisation of the Western Australian economy whilst continuing to maintain a safe, reliable, and affordable energy service.
Safety will continue to be a key focus	Our assets co-exist with the community. Safety is considered critical by customers and by Western Power. We will continue to use our risk-based approach and experience to continuously seek ways to reduce the cost of maintaining safety for our customers, our people, and the community.
Reliability performance will be maintained	Reliability is front of mind for our customers and Western Power. Our investment plan for the AA5 period is aimed at maintaining overall reliability levels and managing the technical challenges associated with the integration of distributed energy resources. Customers have reiterated their support for further investments to improve network resilience in response to extreme climate events through undergrounding and ensuring there are sufficient staff to restore supply when outages occur.
We are supporting the energy transformation	Western Australians are embracing renewable energy technologies in homes and businesses at one of the highest rates in Australia. More than one in three homes serviced by our network has rooftop solar PV. The installed capacity of grid connected rooftop solar is forecast to reach almost 3 GW by the end of the AA5 period, representing a 60% increase from the end of the AA4 period. We have responded to our customer preferences by introducing new services and network tariffs which will provide customers with greater choice.
A proposal that balances customer needs and affordability	Our proposal delivers on customer needs and responds to the challenges of a changing energy environment, while balancing the cost of delivering safe and reliable services from an ageing network. Our investments over the coming decade will be both transformational; modernising the electricity delivery system to meet the changing needs of our stakeholders, and traditional; maintaining the core of the grid which underpins supply. Our investment is greater than in the AA4 period but the price impact on customers will be offset by market conditions that reduce the cost of financing the investment.

How our AA5 proposal compares to AA4

Outcomes	AA5 Proposal	Changes from AA4
Safety	Continued strong focus	No change (maintain performance)
Reliability	Maintain with improvements in underperforming areas and crew availability	No change (maintain performance)
Services	Introduce new tariffs that provide strong incentives to use the network efficiently and to recognise emerging technologies such as batteries, energy storage and electric vehicles.	Increasing pace of changing customer behaviour requires a more proactive response to support new services and improve efficient use of the network.
Prices	Prices rise by less than inflation	Prices rose above inflation
Compliance	Maintain existing compliance levels and meet new obligations.	New technologies and energy reform has increased functions and obligations

Key Financial Elements ¹	AA5 Proposal	Changes from AA4
Revenue	\$7.5 billion	10% reduction primarily driven by a lower rate of return
Capital expenditure	\$5.4 billion	30% increase to address the challenges associated with the changing use of the network and improve technology and communication to support new services and markets.
Operating expenditure	\$2.2 billion	Small reduction achieved despite managing new obligations, functions and growth in the network and labour costs.
Rate of return	4.73%	A reduction of nearly 20% due to changes in market conditions.

¹ Financial metrics presented in \$ real as at 30 June 2022.

Executive Summary

1. Electricity is essential to our modern way of life – so much of the Western Australian lifestyle and productivity depends on safe and reliable electricity supply 24 hours of every day. Western Power is committed to ensuring the community can continue to enjoy this lifestyle and is strongly focused on adapting our business to meet the changing energy needs of Western Australians. This includes understanding community expectations, and testing and integrating new technologies to provide an optimum outcome for customers.
2. The rapidly changing energy landscape and technology, coupled with a move towards decarbonisation and increasing electrification of industry, is seeing a significant change in customer behaviour and expectations of Western Power’s networks and how we plan for the future.
3. This Access Arrangement Information and supporting documents presents our plan for delivering services to customers over the next five years that will provide an important platform for our future network. This plan reflects extensive customer engagement that has sought to understand the requirements and priorities of our customers whilst managing the current state of our network and the necessary steps to meet future expectations.
4. In developing this proposal, we engaged with a broad range of consumers and stakeholders in the community to capture and incorporate their views into our planning processes for the fifth access arrangement period (referred to as the **AA5 proposal**).
5. Customers and the community tell us they expect electricity to be there when they need it. They expect safe, reliable, and increasingly renewable energy, delivered at an affordable price. Importantly, the community is voting with its wallet and investing in ever greater amounts of renewable generation and expects Western Power to enable a renewable-powered future.
6. The AA5 proposal supports our Corporate Strategy (refer Figure ES.1) to meet these needs by efficiently and effectively transitioning to a modular grid that will support the decarbonisation of the Western Australian local economy and meet our customers’ needs, whilst maintaining an affordable energy delivery service reflected in our network tariffs.

Figure ES.1: Western Power Corporate Strategy 2021-2031



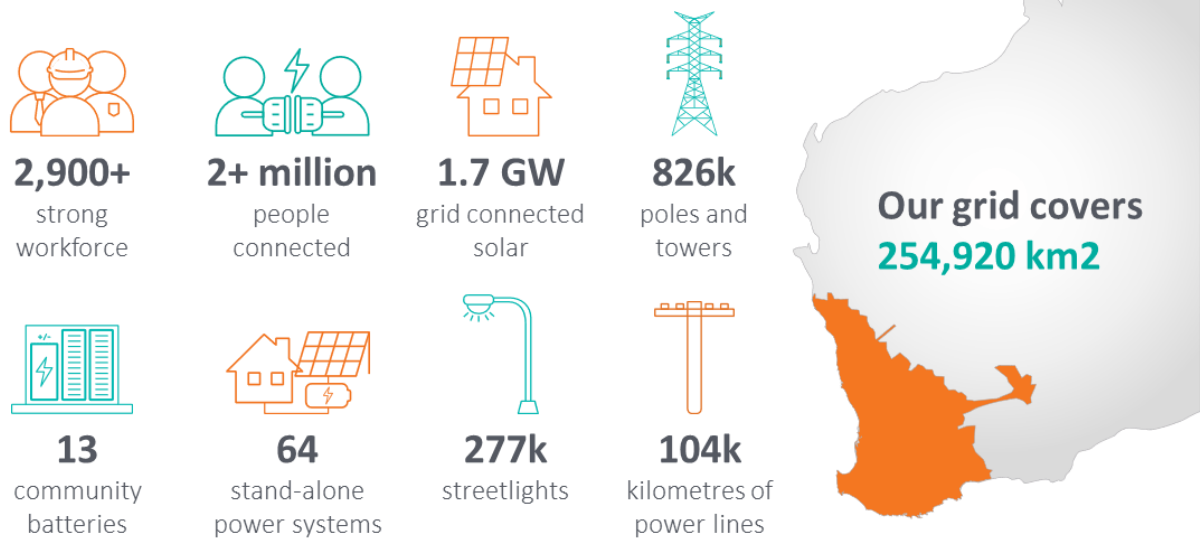
7. The modular grid refers to a move from a purely traditional network towards one which incorporates a mix of new energy solutions, such as standalone power systems (**SPS**), microgrids and battery energy storage systems (**BESS**), that can potentially plug into or out of the grid as needed.

Our customers and network

- Western Power connects more than 2 million Western Australian homes, businesses and essential community infrastructure through our geographically vast network that covers the south west corner of our state.

Figure ES.2: Western Power's network

About Western Power



- Western Australians are embracing renewable energy technologies on homes and businesses at one of the highest rates in Australia. Combined with growing levels of utility-scale renewables being connected, this is transforming the way that electricity is generated for, delivered to, and used by, customers.
- These changes are largely driven by customer behaviour, government policy, decarbonisation of the electricity system and technological advancement in the energy sectors. In particular:
 - more than one in three homes serviced by the Western Power Network have rooftop solar PV and customers are connecting over 4,000 new installations each month
 - the installed capacity of grid connected rooftop solar is increasing by more than 20 MW each month and is forecast to reach almost 3 GW by the end of the AA5 period
 - applications for large-scale renewable energy projects (wind, solar and waste-to-energy) to connect to the Western Power Network continues to increase, with almost 1 GW currently under development
 - the times demand is peaking on the network has shifted from an afternoon interval to the evening, due to the growth in PV, which is also exacerbated by significant load volatility during times of unusual weather patterns and cloud cover
 - there are now more than 3,500 approved battery applications for residential customers on the Western Power Network, with a combined storage capacity of over 34 MWh
 - new technologies such as SPS and batteries are being installed to support or replace network infrastructure in areas where it addresses a network need and is financially prudent to do so
 - an increasing uptake of electric vehicles (EVs) within WA

- a low carbon electricity system is critical to the State Government’s commitment to net zero greenhouse gas emissions by 2050
- other recent technological advancements including behind the meter solutions offer our customers more choices to optimise their generation, storage and use of electricity.

Our growing challenges and opportunities

11. The pace of change in the energy market, presents Western Power with a number of growing challenges and opportunities. Western Power has been addressing these challenges over recent years and must continue to proactively respond throughout the AA5 period.

Significant new renewable connections

12. For decades, Western Power transported electricity directly to homes and businesses through poles and wires from traditional gas, diesel, and coal-fired generators. The electricity system is now in an unprecedented transformation, driven by widespread uptake of customer owned rooftop solar photovoltaic (PV) systems and changes in the utility-scale generation mix towards more renewables, both displacing utility-scale fossil fuelled generators. More than one in three homes in the South West Interconnected System (SWIS) now have rooftop solar PV, contributing to 1.7 GW of grid connected solar. This compares to 4 GW of Western Power’s network capacity. In addition, Western Power has recently connected a further 460 MW of utility-scale renewable energy projects to our network, including the Yandin Wind Farm, Warradarge Wind Farm, and the Merredin Solar Farm.

Transformation from historical one-way power flows to two-way power flows

13. ‘Minimum operational demand’ (at times of peak rooftop solar PV generation) and the associated impact on system stability represents a growing challenge for Western Power to maintain a reliable supply. It is anticipated that customer behaviour, increasing decarbonisation of the electricity system, and ongoing technological advancement in the energy sector will continue to push the capacity of the network to keep up with the community’s expectations and requirements.

Increasing proportion of ageing assets with deteriorating performance

14. These changes are occurring while Western Power’s existing network is experiencing increased deteriorating performance from a large portion of ageing assets and security of our critical infrastructure becomes more important to protect our physical and digital assets against potential incidents. This causes further challenges in managing our assets, while planning for, and starting to transition into, the network of the future.

Increasing extreme climate events

15. In recent times, Western Power has seen extreme climate events have a significant impact on the network, including severe storms in May 2020 stretching from Quinns Rock in the north through to Albany in the south; the Wooroloo, 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; and heatwave conditions in December 2021 with four consecutive days above 40 degrees celsius. Compared to any prior climate event, many of these events caused the most significant widespread damage to Western Power’s network and impacted the largest number of our customers.

Significant energy reforms

16. Western Power has been working closely with Energy Policy WA and the Australian Energy Market Operator (AEMO) in the development and implementation of the Government’s Energy Transformation

Strategy². To meet these expectations, Western Power is planning and implementing the network of the future, which will facilitate decarbonisation, enable benefits for the community from their investments in distributed energy resources (DER) and ensure an energy supply which is more resilient to extreme climate events for future generations. This will support Western Australia's (WA) economy and is backed by reforms under the Energy Transformation Strategy.

17. These challenges are having a combined effect of lowering minimum demand levels during the middle of the day, followed by steep ramping to an evening peak compared to a decade ago. This is exacerbated by significant load volatility at times of unusual weather patterns and cloud cover and voltage and network stability issues from the changing generation mix. However, it also presents our business, and customers, with opportunities.


Providing greater choice to customers through network tariffs

18. In consultation with customers and end-users, we have developed network tariffs which will provide greater choice to customers in response to changing customer behaviour and influence future network investment needs. Designing a package of tariffs that encourages customers to use less electricity at peak times and greater electricity at times of minimum demand, whilst promoting affordability and fairness across our customer base, is an important part of our proposal. Our new time of use tariff introduces a 'super off-peak' component from 9am-3pm, with a variable price per kilowatt hour (kWh) close to zero, to encourage usage when the network is experiencing minimum demand.
19. This proposal for our AA5 period focuses on delivering on customer needs and responding to the challenges of a changing energy environment, while balancing the cost of delivering safe and reliable services. Electrification is expected to play a key role in the industry and communities' decarbonisation plan. The network must be able to facilitate decarbonisation and renewable connections and integrate new technologies into the grid to enable Western Power to continue to provide an essential service for customers 24 hours of every day now and into the future.

How we are responding to what our customers told us

20. Western Power reached out to more than 2,000 members of the community, including users, end-use customers, generators, retailers, industrial businesses, small to medium sized businesses, local governments, industry associations and residential customers (including urban, regional, vulnerable, and culturally and linguistically diverse customers).
21. The key insights from this extensive research program are summarised in the table below.

Table ES.1: Key insights from customer engagement program

	<p>Safety is considered critical by customers.</p>	<p>Should the level of service surrounding safety decline, it would be detrimental to customer experience. Customers see safety as being a core value of profound importance.</p>
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² Government of Western Australia, Energy Transformation Strategy, 2019 <https://www.wa.gov.au/sites/default/files/2019-08/Energy-Transformation-Strategy.pdf>



Reliability of supply is critical to customers.

There are different service experiences across our network. The frequency and duration of outages is considerably greater and longer amongst customers in regional areas in comparison with urban customers. However, any erosion of reliability would have a significant negative impact on customer experience, irrespective of customer segment.



Customers expect Western Power to integrate more renewables into the grid and to prepare the grid for the future.

This requires a sustainable approach to DER management, to manage critical minimum demand risks while maximising the opportunity for the community to invest in DER and large-scale renewables.



Customers expect Western Power to continue to address ageing assets.

While at the same time facilitating the transition of the network to meet changing customer behaviour and expectations.



Residential customers are sensitive to price increases and therefore minimising cost increases is a high priority for them.

However, there is willingness to pay for increased reliability, renewables and potentially a combination of elements, provided the cost impacts range between 1-5 per cent of their current bill. Similarly, small and medium enterprises supported future focused investments, provided cost increases were within the 1-9 per cent range.



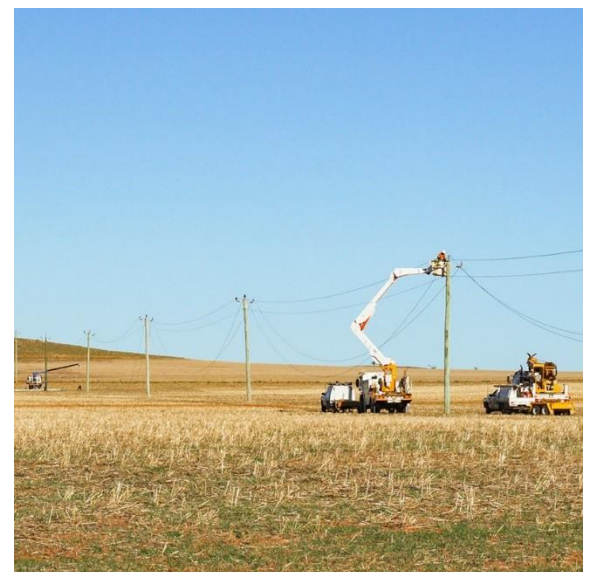
Customers are more sensitive to bill increases than bill reductions.

A finding which is supported by economic literature.

- 22. Our AA5 proposal includes investments aligned with our customers’ priorities of safety, reliability, increasing renewable energy generation, investing in new technologies and supporting future demand.

Delivering safe electricity to customers

- 23. Our assets co-exist with the community. Safety is considered critical by customers and by Western Power – they see safety as being a core value of profound importance.
- 24. Customers believe there is already significant importance given to safety and do not prioritise additional investment in this area. This is due to a perception that Western Power is performing well in this area. However, there is no willingness to trade-off safety for lower bills, greater reliability, or increased sustainability.
- 25. During the AA5 period, Western Power will continue to use a risk-based renewal approach to manage safety performance of our network including providing a safe working environment for our people. Specific investments targeted at addressing the deteriorating performance of ageing assets and maintaining the safety of the Western Power Network include:



- replacing and reinforcing poles, towers and conductors to minimise public safety risk from asset failure, for example, bushfires and electric shocks
 - investing in SPS and converting overhead network to underground where these options are determined to be lower cost than replacing the overhead network or provide additional capacity, for example from EVs. Investment Snapshot 1 presents more information on Western Power’s undergrounding program.
 - upgrading substation buildings to minimise risk to public and workforce safety
 - updating Western Power’s ageing depots to meet current workplace safety practices for our people and ensuring both cyber and physical security protection of our critical infrastructure assets.
26. Importantly, almost 40 per cent of our forecast investment is directed at maintaining safety performance of the network during the AA5 period.

Investment Snapshot 1 – Undergrounding Program

Our Undergrounding Program involves the targeted conversion of overhead powerlines to underground power. These projects are proposed for areas in the urban network where:

- the overhead assets are deteriorated and require replacement, and
- underground replacement presents the same or lower cost to a like for like replacement.

Western Power will seek to underground the network through financial partnerships with local communities (via the relevant local governments).



A significant part of the metropolitan overhead network will soon need to be replaced. Undergrounding projects are timed to address the largest proportion of overhead assets that require treatment.

The benefits of this investment program are improved safety and reliability, lower maintenance costs, and facilitation of more renewable connections. Undergrounding of existing overhead infrastructure also provides better amenity and streetscapes by allowing the green canopy in urban areas to grow.

Western Power plans to invest \$685 million in underground power programs during the AA5 period, including \$245 million in capital contributions. This investment will convert approximately 875 km of poles and wires to underground cabling during the AA5 period.

27. Supported by the investments identified above, our AA5 proposal maintains the current level of safety standards in accordance with customer expectations.
28. Importantly, as many of our investments are in long life assets with assets lives of greater than 40 years, these investments will be paid for by customers over the next 40+ years.

Providing reliable services for customers

29. As an essential service, customers expect electricity to be there when they need it, 24 hours of every day. The reliability of our services is perceived as good by most customers, although there are pockets of our regional network where customers value improvements. Customers have reiterated their support for further investments to improve network resilience in response to extreme climate events.
30. We will maintain overall reliability levels over the AA5 period and improve service in hotspots that are underperforming. We will also improve network resilience through undergrounding and ensuring sufficient staff on the ground to restore supply after an outage event
31. In recent times, Western Power has seen extreme climate events have a significant impact on the network, including severe storms in May 2020 stretching 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; and heatwave conditions in December 2021 with four consecutive days above 40 degrees celsius. Compared to any prior climate event, many of these events caused the most significant widespread damage to Western Power's network and impacted the largest number of our customers.
32. Investment in the modular grid and the integration of new technologies therein (i.e., SPS and microgrids) will improve the level of reliability and resilience of our network in regional areas and facilitate faster restoration of supply. Investment Snapshot 2 presents more information on Western Power's SPS program.

Investment Snapshot 2 – Stand-alone power systems

Providing reliable power supply in regional and remote areas of WA is challenging, with distance, complex terrain, diverse landscapes and extreme climate events and bushfires impacting network infrastructure. SPS deliver significant benefits to our customers in these areas, providing a cost-effective alternative to traditional poles and wires that can provide reliable access to power almost regardless of location or conditions.



Each SPS functions as an energy supply unit comprised of a renewable energy source (solar PVs), a battery and back-up generation (if required), operating entirely independently of the main electricity network while still forming part of our service area.

Western Power plans to invest \$330 million in SPS during the AA5 period. SPS will be deployed when sections of our overhead network require replacement and an SPS solution is determined to be the same or lower cost over the long term.

SPS will be efficiently deployed based on the optimal balance of asset deterioration and cost efficiency. As this solution is implemented, large geographical areas of overhead network will be decommissioned.

SPS benefits include improve reliability, an inherent reduction in electric shock and bushfire risk, improved network access, lower whole of life costs and supporting decarbonisation. Western Power plans to transition 4,000 existing connection points to either SPS or proactive supply abolishment by 2031. Approximately, 1,860 SPS units or equivalent are forecast to be deployed in the distribution area over the AA5 period. This includes 1,630 SPS equivalents for the SPS program and 230 SPS equivalents to enable microgrids.

Responding to changing customer behaviour

33. Customers expect Western Power to continue to address the deteriorating performance of ageing assets, whilst at the same time facilitating the transition of the network to meet changing customer behaviour and expectations.
34. DER are smaller-scale devices that can either use, generate or store electricity, and form a part of the local distribution system, serving homes and businesses. They include rooftop solar, energy storage, EVs, and other technologies that customers can use at their premises to manage their electricity demand. With the rapid uptake of DER, particularly rooftop solar PV systems, customers are increasingly meeting their own electricity demand for certain periods of the day, while still relying on the network at other times. Customers still view Western Power as an essential service.
35. In consultation with customers and end-users, we have developed services and network tariffs which will provide greater choice to customers in response to changing customer behaviour and influence future network investment needs. Designing a package of services and tariffs that encourages customers to use less electricity at peak times and greater electricity at times of minimum demand, whilst continuing to promote affordability and fairness across our customer base, is an important part of our AA5 proposal. Our new time of use service introduces a 'super off-peak' component from 9am-3pm, with a variable price per kilowatt hour close to zero, to encourage the use of our network at times of minimum demand. Changing usage patterns will avoid costly reinforcements to the network to meet the requirements of peak and minimum demand days.
36. We have introduced new reference services for:
 - transmission connected storage systems
 - distribution connected storage systems
 - dedicated EV charging points
 - time of use, with time bands to reflect forecast demand patterns.
37. Increased adoption of DER and large-scale renewable systems will contribute to reducing carbon emissions and cost of generation in the system, while providing customers with the benefit of greater control over their energy use and costs. However, the high level of uncontrolled and unpredictable solar PV is making the system harder to manage in the transition away from conventional, controllable generation sources such as coal and gas fired generation.
38. Advanced metering infrastructure (**AMI**) plays a key role in a range of emerging network requirements which require increased visibility (and potentially control) of the distribution network and technology connected to it. AMI is a critical enabler for the effective integration of DER solutions, mitigating risks associated with minimum demand, the introduction of more flexible tariffs and allowing customers to actively participate in the energy market. Investment Snapshot 3 presents more information on Western Power's AMI program.

Investment Snapshot 3 – Advanced Metering Infrastructure

AMI refers to digital meters with a communication device installed. Advanced meters can automatically and remotely read electricity flows and provide early detection of connection faults and supply issues. They enable a clearer picture of power quality information, including voltage and current levels, and how much renewable energy is being fed into the network.

AMI plays a key role in a range of emerging network requirements which require increased visibility (and potentially control) of the distribution network, including both customer and network, and technology connected to it. AMI is a critical enabler for the effective integration of DER, solutions for mitigating the risk of low load, flexible tariffs and allowing customers to actively participate in the energy market.



Western Power commenced deployment of AMI in 2019, with the deployment aimed for completion in 2027. Almost half a million advanced meters will be installed by June 2022, with a further 795,130 scheduled to be installed during the AA5 period.

Western Power will invest \$317 million in advanced meters during the AA5 period.

The implementation of advanced metering delivers immediate benefits to customers from improved fault detection – our service connection condition monitoring program is forecast to provide a 70 per cent reduction in network electric shocks; remote meter reading leading to fewer estimated bills and a reduction in workplace safety risk; usage recordings in 30-minute intervals, allowing for more detailed energy usage information; remote re-energisation, leading to faster reconnections; and improved efficiency in integration of new technologies including community batteries, microgrids, embedded networks and EVs.

Facilitating more renewables on the network for the benefit of our customers

39. Overall, there is strong support for further investment that increases the amount of renewable energy in the SWIS, with stakeholders suggesting that renewables are essential to the future of energy in our state. Furthermore, there was strong support for Western Power to proactively lead the way and plan for the future.

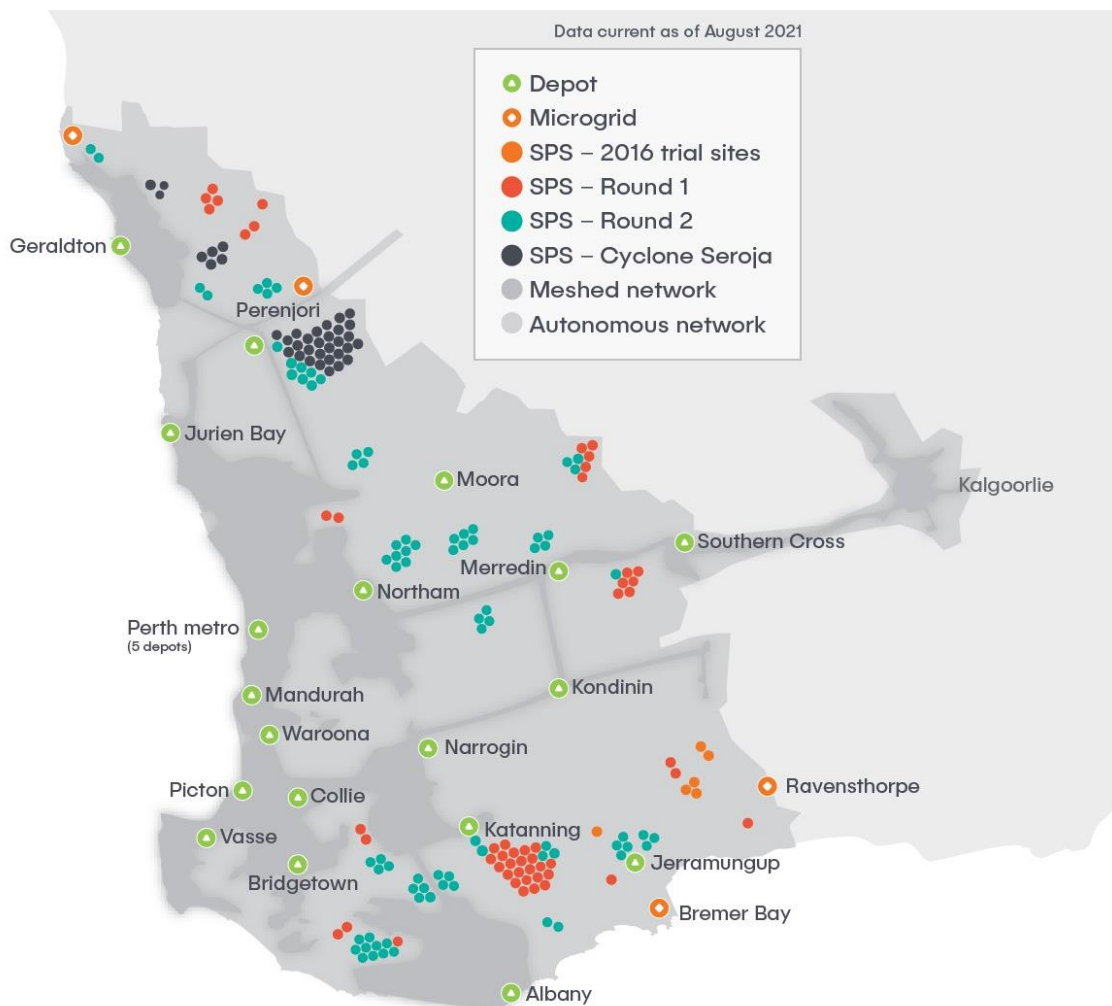
40. During the fourth access arrangement (**AA4**), our commitment to a constrained access model to facilitate renewable generation connection, via the commissioning of our Generator Interim Access (**GIA**) tool, has enabled the connection of 460 MW of utility-scale renewable energy projects, including the Yandin Wind Farm,



Warradarge Wind Farm, and the Merredin Solar Farm. We are also undertaking work in the Eastern Goldfields region to open up capacity to customers, enabling them to move from site generation to a grid connection thereby accessing renewable energy via our network.

41. During the AA4 period we have made significant progress in transforming our network by leveraging new technologies, developing data-based modelling and connecting renewable energy sources. Technology is evolving rapidly as we continually trial new solutions to test their suitability for the transforming network. SPS and community batteries are now part of our toolkit to manage the network and are being installed to replace or support traditional network infrastructure in areas where it is technically or financially feasible.
42. Our Grid Strategy is based on long-term scenario planning for evolving customer preferences and needs, which identifies the right technology to use at the right place and time. This approach provides a roadmap which minimises whole of life cycle costs and regrettable investment.
43. Our proposed capital expenditure (**capex**) plan for the AA5 period is designed to enable increased levels of renewable generation connection to our network and implement the Energy Transformation Strategy Stage 1 outcomes.
44. To best meet the needs of our community, now and into the future, we need to move as safely, and as affordably as possible to the modular version of the network. This needs transformational investment in existing assets and new technology. The modular grid will consist of three zones:
- a tightly meshed urban network of increasingly underground assets servicing most of our customers for decades to come
 - a hybrid network of mostly overhead assets, complimented by new technologies such as SPS
 - an autonomous stand-alone network of remote power systems such as SPS and microgrids (see Figure ES.3).

Figure ES.3: Illustrative network zones and assets of Western Power’s modular network

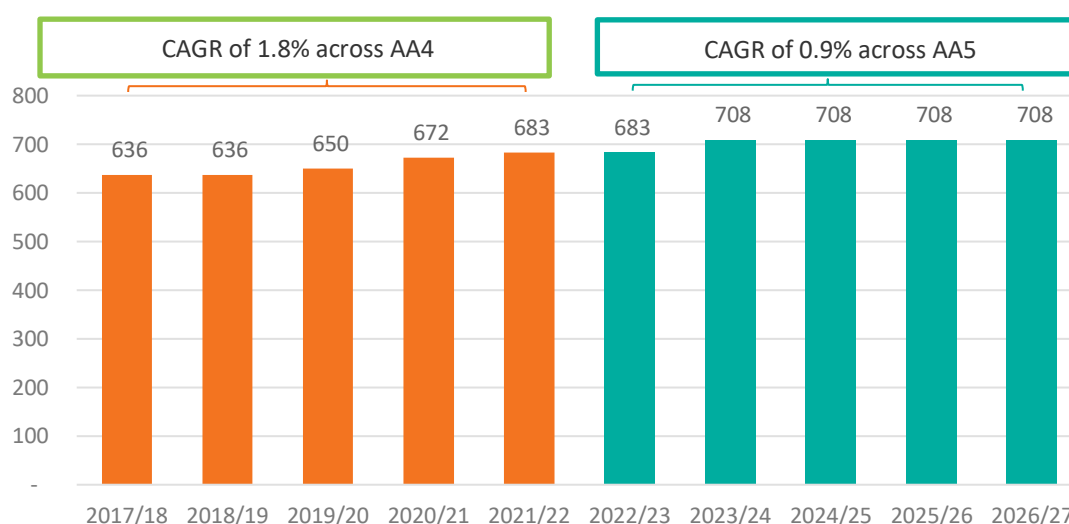


45. Our undergrounding program will play a key role in supporting the future uptake of EVs by enhancing capacity on our distribution network to accommodate EV charging services.
46. We continue to support the State Government’s Energy Transformation Strategy to identify the right policy, regulation and investments that will allow us to manage the rising challenges and embrace the right solutions, while remaining efficient and delivering on customer expectations.
47. Our proposed capex plan includes investments to:
 - enable customers to keep connecting renewable generation to the transmission network
 - allow customers to continue to connect rooftop solar by addressing emerging grid stability issues caused by the high penetration of renewable resources in the distribution network
 - implement new capability to manage and enable the connection of DER.
48. Western Power’s strategy to move as safely and as affordably as possible to a modular network will support our ability to tackle climate change impacts and connect more renewables to the network. Western Power will continue to evolve our network to safely accommodate renewable generation and innovate by developing products and services that support the electrification of the transport, industrial and processing sectors.

Ensuring affordability for our customers

49. Ensuring affordable price outcomes is a high priority for our customers. Our AA5 proposal considers the price impact on customers, particularly residential and small and medium business customers.
50. Residential customers are sensitive to price increases, so keeping costs low is a high priority for them. Our AA5 proposal results in price decreases for customer (in real terms). This means nominal price increases for the average network bill will be lower than the rate of inflation. For the AA5 period, the average network bill outcome represents a compound annual growth rate (CAGR) of 0.9 per cent per annum which is 50 per cent lower than the AA4 period CAGR of 1.8 per cent per annum.
51. If passed on to regulated retail customers, the proposal would result in a one-off increase of approximately \$25 in 2023/24 to the retail bill of an average consumption customer, then flat for the remainder of AA5 (up to the end of 2026/27).

Figure ES.4: Estimated average network price movements (2018 - 2027)³

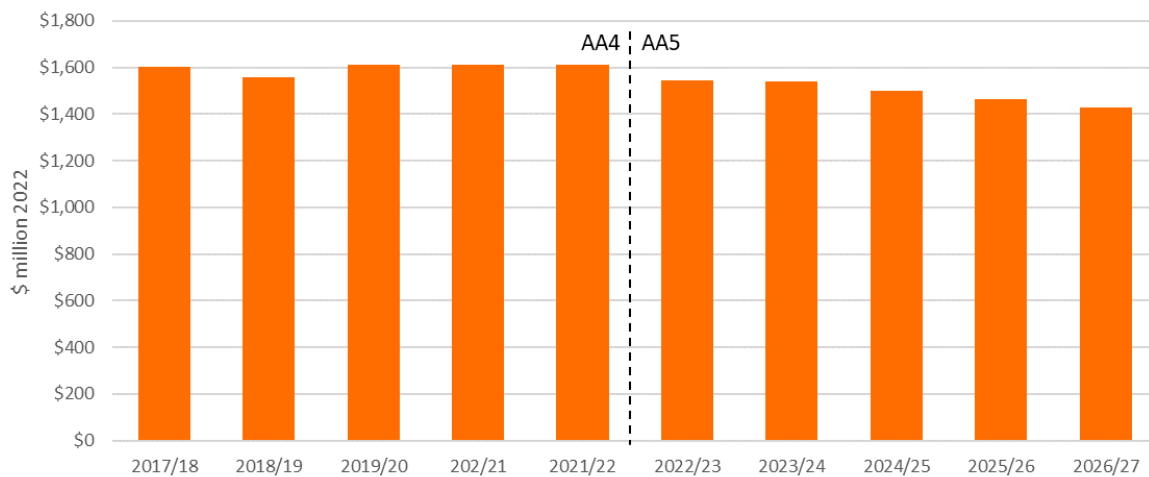


Revenue required to deliver on customer expectations

52. Western Power’s proposed revenue requirement for the AA5 period is \$7,473 million (smoothed \$ real 2022). This is the revenue required to recover the prudent and efficient costs of transforming the network to meet our customers’ expectations, treat ageing assets and address the challenges of the changing energy landscape.
53. Target revenue for the AA5 period (\$ million real) is 6.5 per cent lower than the target revenue for the AA4 period (\$7,992 million), as shown in Figure ES.5.

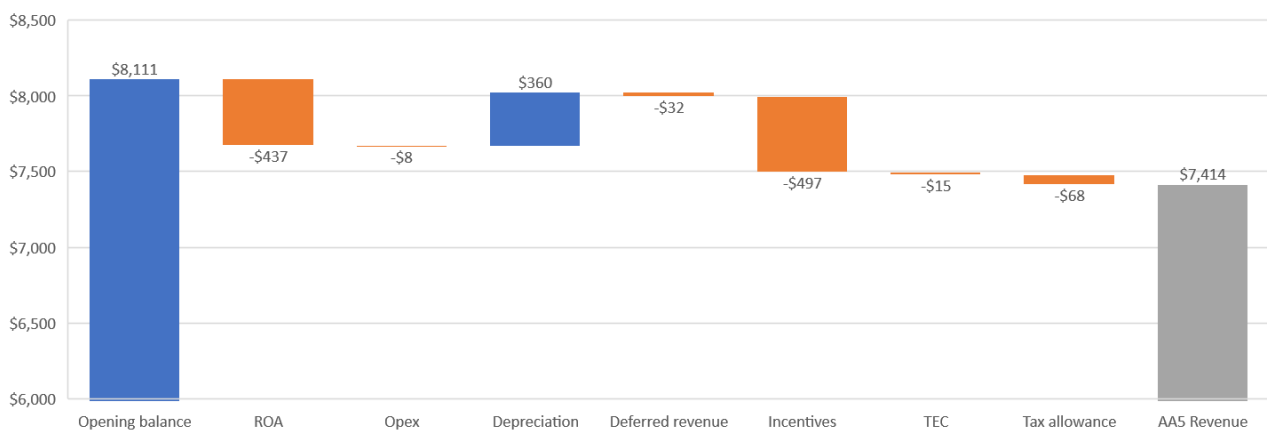
³ \$683 in 2022/23 being the network component of an average residential bill, excluding tariff equalisation contribution (TEC) (\$762 including TEC). Final pricing will be subject to updated information as it becomes available prior to final determination.

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



54. The target revenue allowance comprises the following building blocks:
- return on assets (**ROA**), which is a function of the capital investment and rate of return (or weighted average cost of capital (**WACC**)) on those assets
 - operating expenditure (**opex**)
 - depreciation
 - deferred revenue recovery
 - incentive scheme adjustments
 - tariff equalisation contribution
 - tax allowances.
55. 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 ES.6.

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



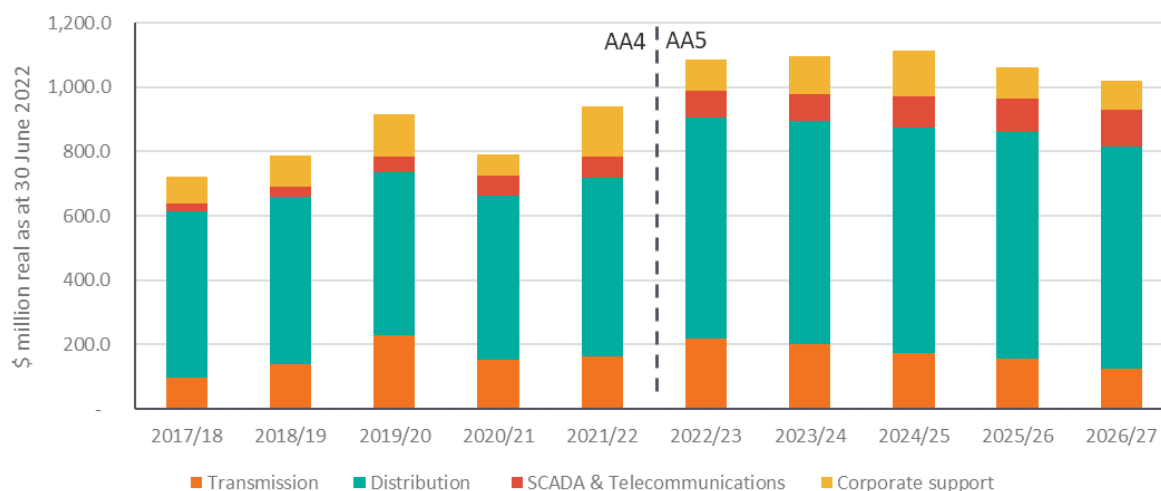
56. The WACC generally has the greatest impact on Western Power’s financial sustainability. The WACC is the rate of return that Western Power earns on its investment in the electricity network. The proposed WACC for the AA5 period is estimated at 5.05 per cent in 2022/23, falling to 4.49 per cent in 2026/27, resulting in

an average WACC of 4.73 per cent across the AA5 period. This is considerably lower than the WACC of 5.87 per cent that applied during the AA4 period.

Capital expenditure

57. During the AA5 period, Western Power proposes to invest \$5,376 million of capital 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. We forecast \$4,341 million will be added to the regulated asset base (RAB) and recovered through reference and non-reference tariffs.

Figure ES.7: AA4 actual and AA5 forecast capex, including indirect costs and escalations, \$ million real at 30 June 2022



58. Our proposed capex plan for the AA5 period is designed to move as safely and as affordably as possible to the modular version of the grid during a period of energy transformation. Western Power is developing the modular grid as it affords the least cost technology to meet the requirements of the differing customer groups served by Western Power. At the same time, the proposed investment will allow us to continue to manage the existing network, treat the deteriorating performance of ageing assets and maintain safety and reliability, while we transform into the future.
59. We are forecasting increases in capex for our transmission, distribution, and Supervisory Control and Data Acquisition (SCADA) and telecommunications networks to treat the deteriorating performance of ageing assets, meet our customers' expectations and address the challenges of the changing energy landscape. Corporate capex is forecast to remain steady relative to the actual expenditure incurred in the AA4 period. The increases in capex reflect the following factors:
- **Transmission network:** forecast capex is expected to increase by around 11 per cent (compared to the actuals for the AA4 period) driven primarily by Western Power's ageing asset base and to facilitate additional capacity for customer connection (including connection of renewable generation and load to meet their carbon reduction requirements) and rationalise voltages, whilst improving network utilisation. Asset life extension techniques such as refurbishment, digital asset management and delivery optimisation have underpinned our proposed capex investment plan to ensure current levels of network performance are maintained
 - **Distribution network:** forecast capex is expected to increase by around 34 per cent (compared to actuals for the AA4 period) driven primarily by the need to manage the deteriorating performance of ageing assets, facilitate the transformation of the network and support future customers' needs, such

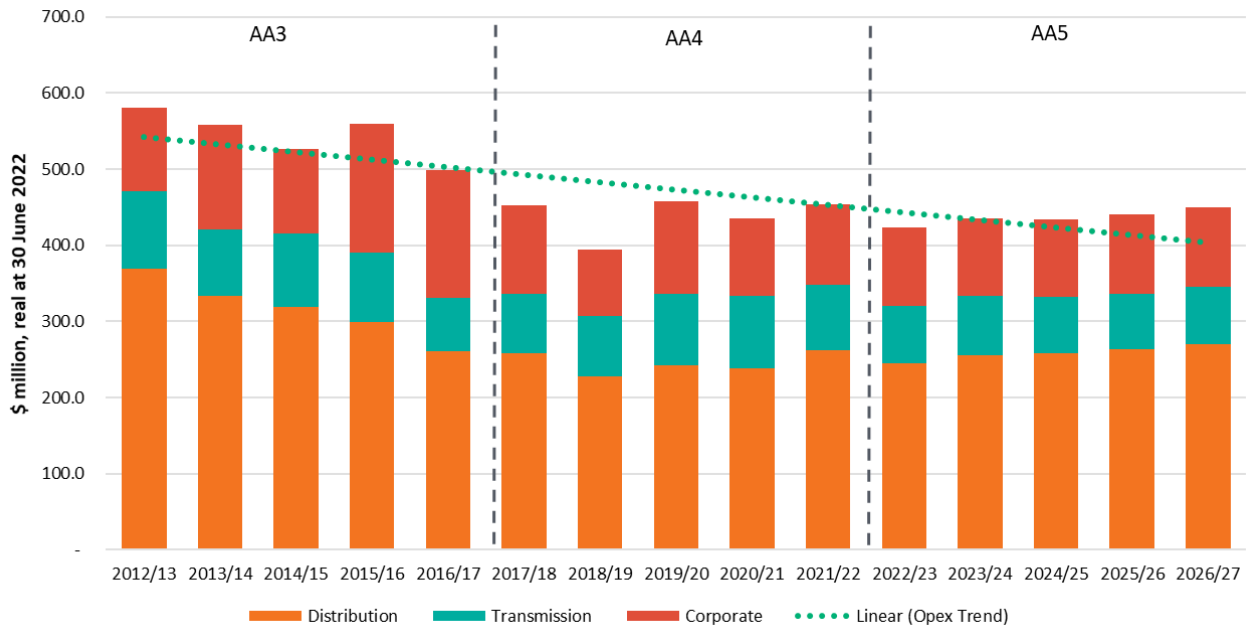
as EVs, whilst managing minimum demand risks and maximising the opportunity for the community to invest in DER. Key investment programs include maintaining safety performance of our network (including addressing ring main unit safe operating risk issues), undertaking the AMI deployment, installation of SPS and significant undergrounding programs

- **SCADA and Telecommunications:** forecast capex is expected to increase by around 110 per cent (compared to the actuals for AA4 period) driven primarily by asset obsolescence, management of cyber security risk, compliance requirements and requirements to implement the outcomes of the Energy Transformation Strategy (e.g. five-minute settlement and DER integration). Western Power will uplift its largely obsolete SCADA and Telecommunications network during the AA5 period to support the digital network and enable the integration of DER. This investment will enable a secure transformation to a modular grid by improving our foundational cyber security controls and adopting a 'secure by design' approach to the introduction to new and emerging technologies.
60. We are cognisant of the emerging delivery challenges presented by the current world climate, including competition for local resources and global supply chain disruption, and have developed workforce strategies and supply chain plans to mitigate these potential challenges accordingly.

Operating expenditure

61. Opex reflects activities and costs that are ongoing and recurring. We are forecasting opex of \$2,183 million to safely operate and maintain our networks over the AA5 period, which is \$11 million lower than the opex incurred in the AA4 period. Our opex forecast for the AA5 period only includes non-capital costs that would be incurred by a service provider efficiently minimising costs.
62. We have developed our AA5 opex forecast using the base-step-trend method, which has the following benefits:
- it is simple and transparent
 - it has been applied in recent regulatory decisions in Australia, including Western Power's AA4 decision
 - it embeds efficiency gains made by Western Power during the AA4 period.
63. We consider our proposed opex is efficient for the following reasons:
- our proposed base year is in line with the approved opex for 2020/21 and the approved base year opex for 2016/17 in the AA4 Further Final Decision
 - the forecast opex embeds opex savings resulting from improvements to Western Power's work practices and processes, asset strategies, procurement processes and organisational structure implemented during the AA3 and AA4 periods. These improvements have ensured that our proposed base year remained efficient, and we will sustain these efficiencies into the AA5 period
 - proposed step changes in the AA5 period are required to meet substantial new obligations; support and improve the integration of DER, AMI and SPS on the Western Power Network; support the transformation of the network to meet future needs; and improve fault response and condition monitoring capabilities to maintain the reliability of supply, which is critical to customers.

Figure ES.8: AA3 and AA4 historical and AA5 forecast opex, including indirect costs and escalations, \$ million real at 30 June 2022



Western Power's AA5 proposal

- 64. Western Power considers this proposal for the fifth access arrangement review period best serves the long-term interests of our customers and the community.
- 65. Customers have told us what they expect, and we have developed a plan to meet those expectations whilst balancing the need to keep prices affordable. We consider our proposed access arrangement, as described in this proposal, complies with the requirements of the *Electricity Networks Access Code 2004 (Access Code)*, reflects an optimum investment profile which keeps prices affordable and meets the current and future expectations of customers and the community now and into the future.