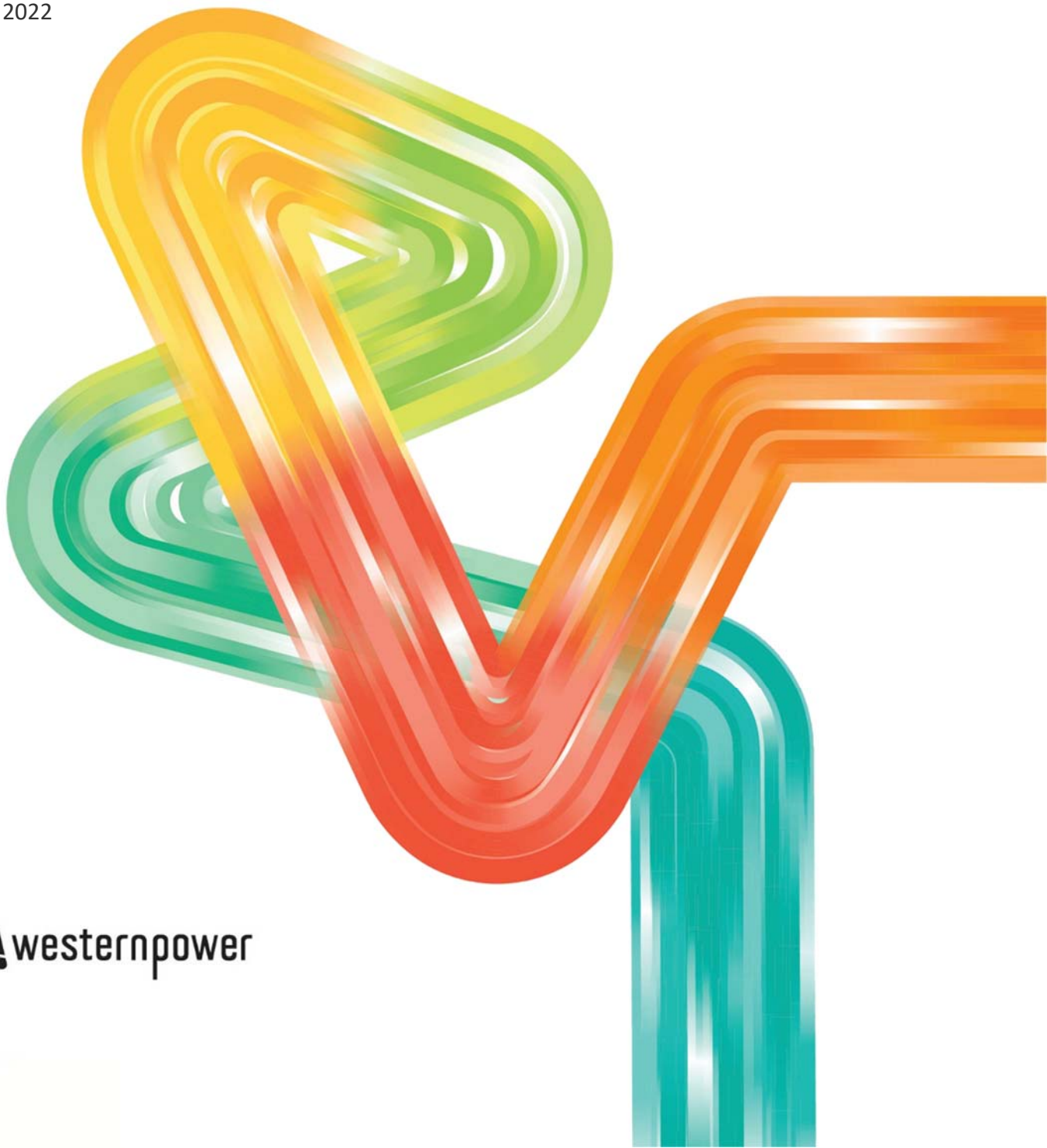
Access Arrangement Information for the AA5 period

Additional Information

Tariff structures and reference services

Public

30 June 2022



westernpower

Summary

Western Power provides this further access arrangement information to support our initial proposal for the fifth access arrangement period spanning 1 July 2022 to 30 June 2027 (**AA5**). Our initial proposal, including our revised access arrangement and access arrangement information, is available on the Economic Regulation Authority's (**ERA**) website[1].

This supplementary information document sets out the information Western Power considers would assist stakeholders in understanding the proposed new reference services and tariff structures to be incorporated into its access arrangement. A summary of the key information included in this document is provided in Figure 1.1 below.

Figure 1.1 Summary of key reference services and tariff structure changes

Responding to stakeholder requirements	In response to more recent feedback from stakeholders, Western Power is proposing new additional reference tariffs for AA5 that enable a customer-led, demand-side solution to address changing customer behaviours and ensure more efficient utilisation of the network.
New distribution tariff for grid-connected storage	Western Power has developed a new distribution grid-connected storage tariff structure with price signals to encourage battery operators to store excess renewable energy when abundant and release it to the network and end-use customers when needed.
New tariff for dedicated electric vehicle charging stations	Western Power has developed an innovative tariff structure for electric vehicle charging infrastructure businesses to facilitate the emerging dedicated electric vehicle charging industry via a sliding-scale based tariff consisting of both time-of-use and demand charges that vary with utilisation.
New super off-peak time of use tariff with demand component	In addition to the super off-peak time of use tariff included in the initial proposal, Western Power has developed a new super off-peak time of use tariff with a demand component to further contribute to the range of network tariffs that signal efficient utilisation of the network during peak demand periods.
Facilitating grandfathering of existing time of use tariffs	With the addition of the new tariff structures proposed in this supplementary information, Western Power considers the extensive tariff options available for users facilitates the closure of tariffs designed during previous access arrangements which no longer support or reflect the efficient utilisation of the network. Western Power considers that closure of these tariffs to new customer nominations in AA5 is in the best interest of customers as utilising more cost reflective network tariffs should enable network augmentation costs to reduce over time.
Rebalancing of fixed and variable charges in 2023-24	Western Power's initial proposal noted our intent to transition towards cost-reflective tariffs and signalled an increase in the proportion of fixed charges compared to variable charges. Customers support a move towards more cost-reflective tariffs provided any transition pathway is gradual. The rebalancing between fixed and variable does not change the network component of an average residential bill in 2023-24.

[1] Access Arrangement 2022-2027 - Economic Regulation Authority Western Australia (erawa.com.au)

Stakeholders have requested Western Power publish an indicative price list for 2023-24. Accordingly, Western Power has developed indicative network tariffs for 2023-24 and include these in Appendix B to this supplementary information.

The 2023-24 indicative network tariffs have been developed using the financial inputs included in our initial proposal, in particular the following key submission artefacts:

- Revenue for the AA5 period as per *Attachment 11.1 – AA5 Regulatory Revenue Model – Public, 1 February 2022*;
- Energy and customer number forecasts for the AA5 period as per *Attachment 7.5 – Energy and Customer Number Forecast Report (2020)*;
- Reference services as listed in *Appendix E – Reference Services (Track Changes) 1 February 2022* and any new references services included in this supplementary information.

The ERA's draft decision is expected to be published in September 2022 with Western Power's response to be due in November 2022. Western Power notes that the above inputs may be updated as part of our response to the draft decision. If that occurs, Western Power will also submit an updated 2023-24 indicative price list at that time.

Contents

1. Introduction

Western Power provides this further access arrangement information to support our initial proposal for the fifth access arrangement period spanning 1 July 2022 to 30 June 2027 (**AA5**). This document sets out the supplementary information to assist stakeholders' understanding of the new reference services and tariff structures to be incorporated into its access arrangement.

The submission of further access arrangement information is a new step in the access arrangement process following the amendments to the *Electricity Networks Access Code (2004)* (**Access Code**) gazetted on 18 September 2020.

Our initial proposal, including our revised access arrangement and access arrangement information, is available on the Economic Regulation Authority's (**ERA**) website[2].

The ERA published an issues paper seeking stakeholder submissions on Western Power's AA5 proposal on 4 March 2022[3]. Western Power reviewed each of the public submissions provided to the ERA's issues paper and it is evident there is much that is agreed as an industry, particularly the need to respond to the rapidly changing energy landscape.

We note there are also some areas where stakeholders are seeking more clarity on Western Power's AA5 proposal.

Ensuring stakeholders have a common understanding of our AA5 proposal is paramount to Western Power. Accordingly, this document provides further information to assist stakeholder understanding in the following key common areas of interest:

- tariff structures;
- reference services; and
- indicative 2023-24 price list.

Section 5.1(e) of the Access Code requires an access arrangement to include a tariff structure statement (**TSS**) and reference tariff change forecast in accordance with Chapter 7 of the Access Code.

The TSS is a new process for this access arrangement and the new Tariff Structure Statement - Overview (Appendix F.1) and Tariff Structure Statement - Technical Summary (Appendix F.2), included with our initial proposal, present information in a different manner to Western Power's prior access arrangements as follows:

- the Overview sets out context for tariff setting; the tariff structures for the new reference services; and the forecast weighted average price change for each reference tariff over AA5;
- the Technical Summary sets out Western Power's compliance with the pricing objective and pricing principles under the Access Code in the setting of the revenue to be recovered from each class of reference tariffs. The Technical Summary also provides an overview of each reference tariff and its charging parameters (fixed and variable charges, any time of use bands, capacity charges, demand-based charges, and any applicable discounts).

[2] Access Arrangement 2022-2027 - Economic Regulation Authority Western Australia (erawa.com.au)

[3] Economic Regulation Authority, "Proposed revisions to the access arrangement for the Western Power Network 2022-23 – 2026-27", Issues Paper, March 2022.

Stakeholders have reviewed the material submitted with our initial proposal and requested Western Power to provide further information on the charging parameters and structures for the new reference services to be introduced in AA5 and an indicative price list for 2023-24.

This document summarises:

- The Access Code requirements pertaining to the TSS;
- Overview of the supplementary information Western Power intends to include in its TSS, in the revised AA5 proposal;[4]
- Further detail on the proposed tariff structure and charging parameters of the new reference tariffs for electric vehicle infrastructure charging and distribution grid-connected storage; and
- Further information demonstrating compliance of the TSS with the Access Code pricing principles.

Western Power notes that should any of the new tariffs proposed in this supplementary information be included in the access arrangement, a new reference service will need to be developed for each of those. Western Power will update *Appendix E – Reference Services* to reflect these new services following the ERA's draft decision expected in September 2022.

[4] Western Power will submit a revised AA5 proposal following the ERA's draft decision

2. Requirements of the Access Code

In developing the TSS for the AA5 period, Western Power has considered the requirements in the Access Code, outlined below.[5]

Tariff structure statements

7.1A A *tariff structure statement* of a *service provider* of a *covered network* must set out the *service provider's pricing methods*, and must include the following elements:

(a) the structures for each proposed *distribution reference tariff*;

(b) the *charging parameters* for each proposed *distribution reference tariff*; and

(c) a description of the approach that the *service provider* will take in setting each *distribution reference tariff* in each price list of the *service provider* during the relevant *access arrangements period* in accordance with sections 7.2 to 7.12.

7.1B A *tariff structure statement* must comply with:

(a) the *pricing principles*; and

(b) any applicable *framework and approach*.

7.1C A *network service provider* must comply with the *tariff structure statement* approved by the *Authority* and any other applicable requirements in this Code when the *service provider* is setting the *reference tariffs* for *reference services*.

7.1D A *tariff structure statement* must be accompanied by a *reference tariff* change forecast which sets out, for each *reference tariff*, the *service provider's* forecast of the weighted average annual price change for that *reference tariff* for each *pricing year* of the *access arrangement period*.

Form of pricing methods

7.2 A *tariff structure statement* may contain any *pricing methods* provided they collectively meet the objectives set out in sections 7.3 and 7.4 and otherwise comply with this Chapter 7.

(Examples:

- The *pricing methods* may result in *tariffs* which distinguish between:
  - voltage levels; and
  - *classes* of *users* or *users* by reference to their *end-use customers*.
- The *pricing methods* may result in *tariffs* which relate to specific *connection* points, and may result in *tariffs* which involve a combination of fixed and variable amounts related to one or more of the following elements:
  - demand levels (maximum kW or kVA per period);
  - energy quantities involved (kWh or kVAh per period); and
  - time of use.
- If the *pricing methods* use quantities in determining *tariffs*, they may use minimum, maximum or actual quantities.)

[5] Electricity Networks Access Code 2004 (unofficial consolidated version), 30 July 2021, ss. 7.1A-7.3.

Pricing objective

7.3 Subject to sections 7.3K, 7.7 and 7.12, the *pricing methods* in a *tariff structure statement* must have the objective (the "**pricing objective**") that the *reference tariffs* that a *service provider* charges in respect of its provision of *reference services* should reflect the *service provider's* efficient costs of providing these *reference services*.

3. Supplementary information for the TSS

Western Power provides the following supplementary information in response to stakeholder submissions to provide greater clarity on the proposed TSS for AA5:

Table 3.1 Matters addressed in this supplementary information

Topic	Explanation	Section /Appendix
Drivers of network tariffs	Demonstrates how Western Power has structured its reference tariffs to reflect the efficient utilisation of network.	Section 3.1
New reference tariffs	Outlines the new reference tariffs and charging parameters required by the ERA's framework and approach final decision for the new reference services related to: • distribution grid-connected storage; and • electric vehicle charging infrastructure. In addition, Western Power is proposing to introduce a new time-of-use tariff with a demand component to replace similar time-of-use tariffs being closed to new customer nominations during AA5.	Section 3.2
FY24 Indicative Price List	Outlines the assumptions underpinning the indicative price list and the transition path for the fixed component of tariffs. Includes the indicative reference tariffs for the 2023-24 financial year.	Section 4 Appendix A
Access Code compliance	Demonstrates how Western Power's reference tariffs comply with the pricing objective and pricing principles set out in the Access Code.	Section 5 Appendix B

In addition to the above key areas, some stakeholders are seeking further information on specific aspects of the TSS such as, the cost allocation methodology for metering reference tariffs and a weighted average tariff change forecast for metering reference tariffs over AA5. Further updates to the TSS are expected to be included in Western Power's revised AA5 proposal, or as part of the pricing proposal submitted to the ERA following its final decision in accordance with Section 8.1 of the Access Code.

3.1 Drivers of network tariffs

This section provides additional information on the two key drivers that influence the underlying structure of Western Power's proposed new reference tariffs for AA5. These drivers are:

1. increasing adoption of solar PV and distributed energy resources (**DER**) contributing to low load on the network, particularly during the middle of the day; and
2. changing total system demand profile that has the potential to increase overall system-maximum demand and increase the costs of efficiently using the network.

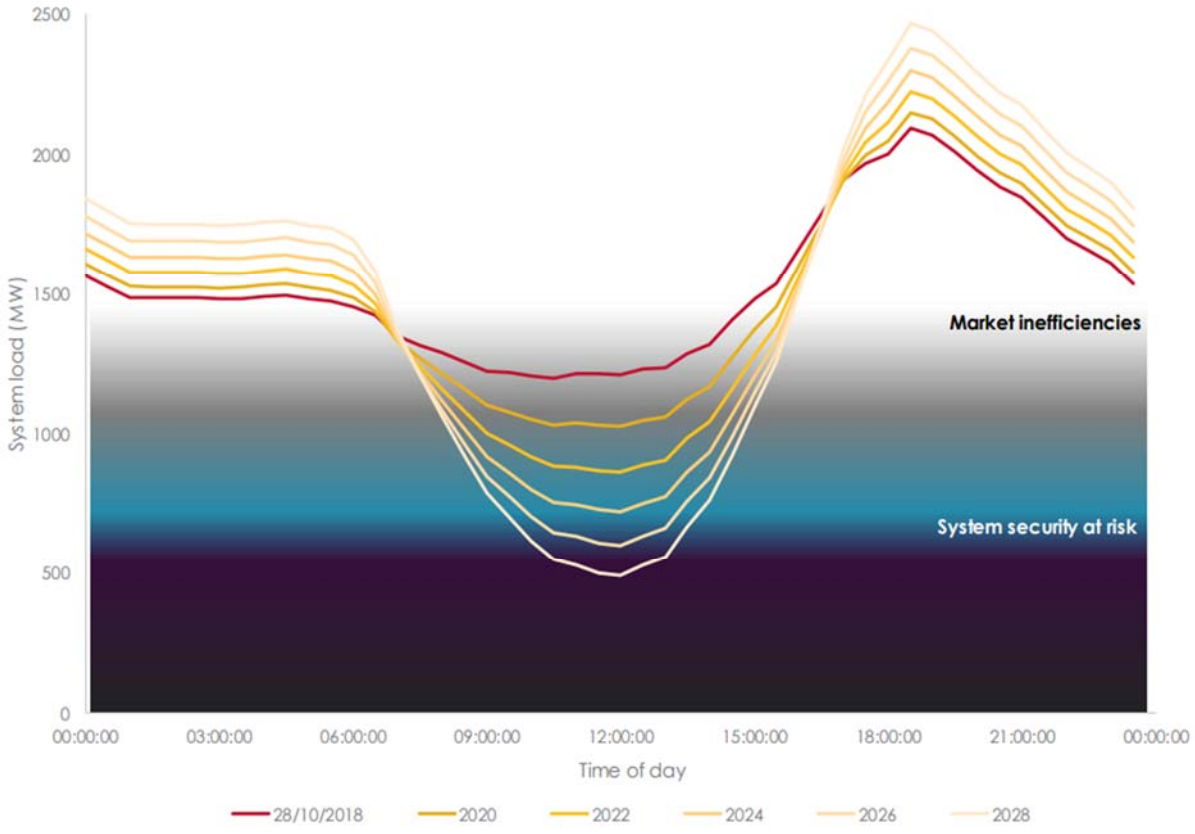
3.1.1 Solar PV and DER contribution to low load on the network

Taking advantage of our sunny climate, Western Australia has embraced renewable energy through the rapid deployment of solar power. To date, approximately 1.7 GW of grid connected solar PV has been installed in the South West Interconnected System (**SWIS**).

However, this high uptake of solar is not without challenges for Western Power's network. This trend has driven a reduction in demand for electricity from the grid during the day, as homes and businesses use energy produced by their rooftop solar systems and export any surplus into the network. This means there is increased strain on the network as it works to keep up with fluctuating supply and demand, which has the potential to create instability.

The 'duck-curve' refers to a graphical representation of electricity demand from the grid on days when solar energy production is high and demand in the network is low. When plotted on a graph the lines and curves form a distinctly duck-like shape for the SWIS as shown in Figure 3.1 below.

Figure 3.1 AEMO's analysis on the shape of the load curve on the minimum demand day, 2018 actuals forecast to 2028, based on ESOO PV forecasts [6]



Essentially, the 'duck-curve' represents the potential for power system instability, as the network attempts to cope with extreme changes in demand across different parts of the day.

As more solar energy is exported to the network, usually across the middle part of the day when the sun is shining, the curves deepen. Then, as the sun sets and solar energy is no longer being generated, the 'duck-curve' typically shows extreme changes (a steep upswing) in demand. Managing a network to support the minimum demand while also facilitating peak load a few hours later poses a range of planning and

[6] Source: AEMO 2019, "Integrating Utility-scale Renewables and Distributed Energy Resources in the SWIS", p.27.

operational challenges. While these challenges occur for a short time (e.g. ramping up of load during the afternoon as solar PV generation reduces) it is occurring more frequently which may result in the energy system becoming unstable.

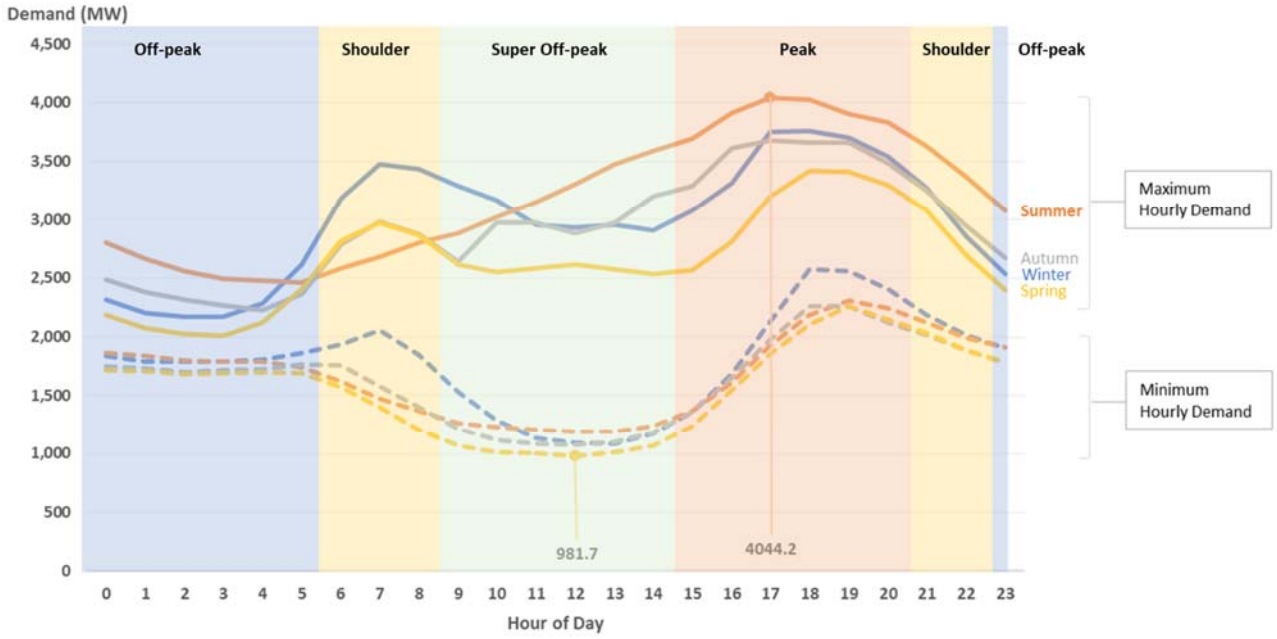
3.1.2 Developing the charging windows to align with total-system demand profile

From a network tariff perspective, Western Power has considered how the structure of new reference tariffs for AA5 can better enable a customer-led, demand-side solution to address changing customer behaviours and ensure more efficient utilisation of the network.

Therefore, in determining the charging windows for the new reference tariffs proposed in AA5, Western Power considers aligning the charging windows with the system-total peak demand allows us to set reference tariffs that are more cost reflective. That is, end-use customers are not paying peak charges when there is a low probability of a peak demand event and makes it easier for end-use customers to reduce their network charges through changes in their usage.

As such, to address the increasing low-load period during the middle of the day, Western Power is proposing the introduction of a new super off-peak charging period with a very low variable energy price of close to zero. The super off-peak charging window from 9:00am to 3:00pm coincides with the expected system-wide minimum demand on the network where solar PV exports to the network are greatest as shown in Figure 3.2 below.

Figure 3.2 System total maximum and minimum hourly demand profile by season



The intent of the super off-peak charging window for time-of-use residential tariffs is to encourage end-use customers to shift load to that time of the day when supply significantly exceeds demand on our network. Western Power has not proposed to include a shoulder charging window between the super off-peak and on-peak charging windows as the 'duck-curve' presented earlier in Figure 3.1 demonstrates that, as the sun sets and solar energy is no longer being generated, the network typically sees extreme changes in demand with high ramp rates that rapidly increases utilisation of the network in a short period of time.

Western Power considers its proposed peak and shoulder energy charging windows contribute to compliance with the pricing principles under the Access Code and to the achievement of the network pricing objective, because:

- The on-peak charging window covers both the maximum and minimum system-total demand irrespective of the season;
- The shoulder charging window covers both the maximum and minimum system-total demand for those seasons (Winter, Spring and Autumn) where customer demand contributes to increased utilisation of the network; and
- The super off-peak charging window coincides with minimum hourly system-total demand for all seasons.

Many of the existing time-of-use tariffs developed in prior access arrangements contain off-peak and shoulder periods that no longer support or reflect the efficient utilisation of the network, in particular the impact of continued uptake of distributed energy resources, particularly rooftop solar photovoltaic systems. Western Power therefore considers it imperative that tariffs designed during previous access arrangements should be closed to new customer nominations and replaced with more cost reflective network tariffs.

3.2 New reference tariffs

This section includes further information on the tariff structures and charging components for the following new reference services (in accordance with the reference services approved in the framework and approach): [7]

- distribution grid connected storage tariffs; and
- electric vehicle charging infrastructure tariff.

In addition, in response to stakeholder feedback on time of use tariffs, Western Power is proposing to include a new super off-peak time-of-use tariff with a demand component.

3.2.1 Grid connected storage tariff

Tariff Structure Snapshot

Objective: Develop a tariff structure to provide price signals to encourage battery operators to store excess renewable energy when abundant and release to the network and users when needed.

New Tariff: RT34 Distribution Storage Low Voltage Bi-directional Service and RT35 Distribution Storage High Voltage Bi-directional Service

Premises: Business

Highlights: Super off-peak consumption charge of close to zero.

Export charge outside of the super off-peak charging window close to zero.

[7] ERA, *Framework and approach for Western Power's fifth access arrangement review – Final decision*, 9 August 2021, p.20.

In accordance with the framework and approach, Western Power included new reference services for transmission and distribution connected storage as part of its AA5 proposal. The TSS contemplated the following tariffs for these services for AA5:

- Distribution storage service tariffs for low voltage and high voltage connections in the form of metered demand and contract maximum demand; and
- A transmission storage service in the form of contract maximum demand.

Western Power recognises that efficiency is promoted by a battery operator (or any customer) providing the service that is most highly valued by the electricity supply chain, which may not necessarily be network services.

The role of Western Power's tariffs is therefore to provide a battery operator, with a price signal that enables it to decide whether the provision of network services or other services will produce the highest benefit to the electricity market.

The potential for grid-connected batteries to provide non-network services also means that the battery should contribute to the cost of maintaining and operating the network, just as other business connection points do. Western Power considers the costs imposed on business connection points should align with those times where use of a battery has the greatest potential to impose costs on the network.

The high levels of distributed energy resources on the network are expected to continue over AA5 signals two times during the day when the use of batteries has the potential to impose additional costs on the network:

- The first is where a battery consumes electricity from the grid during on-peak periods, which has the potential to increase coincident peak demand on the network;
- The second is where a battery exports electricity to the network during the super off-peak period which has the potential to further exacerbate the 'duck-curve' and contribute to low-load events on the network. Stakeholder submissions noted exempting storage from being charged for exports had the potential to increase network costs where this additional load on the network was not needed. To address this risk Western Power's proposed new grid connected storage tariffs now contemplate a charge for exports.

Furthermore, as shown earlier in Figure 3.2, depending on the season, the morning and evening shoulder periods have the potential to impose additional costs on the network. This is particularly evident in Winter where end-use customers turn on heating in the morning and/or run their heating later into the evening. In developing this tariff, Western Power has included charging windows that allow it to charge storage devices for consumption from the network during these periods to reflect this new load's contribution to peak demand. Where the number of distribution connected storage devices is low, Western Power's expectation is that the charges during the shoulder charging periods will also be low.

Western Power considers that a tariff structured to encourage battery operators to avoid charging and discharging a battery during those times with the potential to impose additional costs on the network, while allowing a battery to provide the service most highly valued by the electricity supply chain, is likely to lead to more efficient utilisation of the network in the long-term interests of consumers.

Tariff charging components

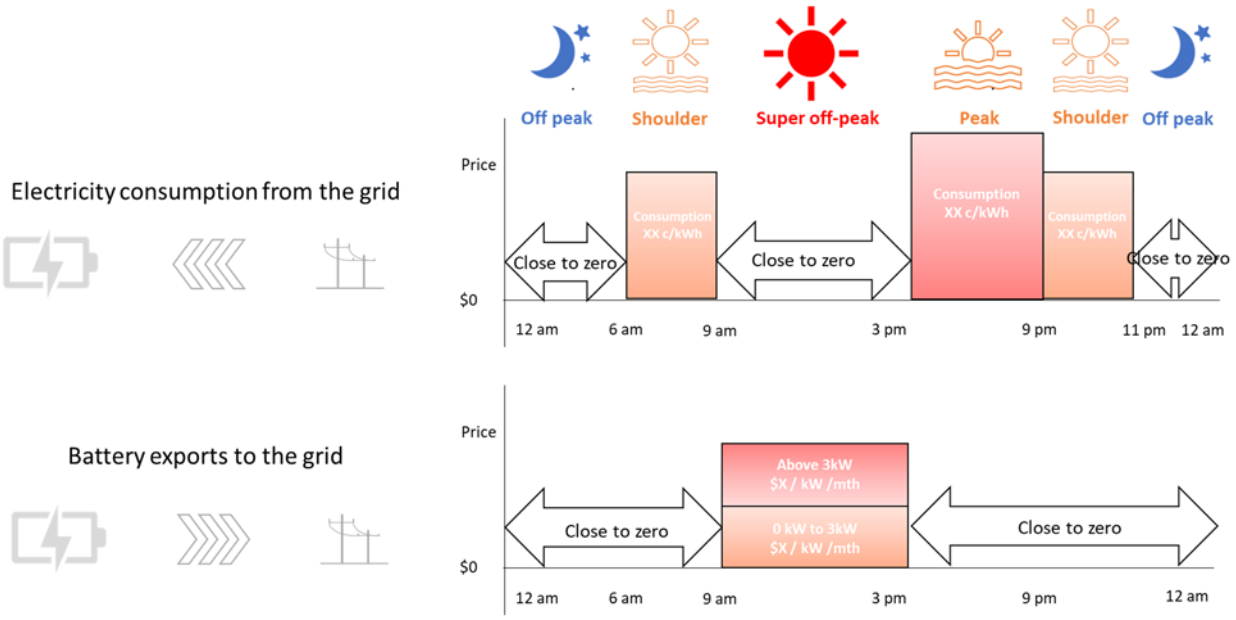
Western Power's proposed tariff (RT34 and RT35) would consist of the following charging components (refer Figure 3.3):

- Energy consumed from the network:
  - A fixed daily network access charge ($/day);
  - A time-of-use based variable component (c/kWh) measured in the:
    - Off-peak period – 12:00 am until 6:00 am;
    - Shoulder period – 6:00 am until 9:00 am;
    - Super off-peak period – 9:00 am until 3:00 pm;
    - On-peak period – 3:00 pm until 9:00 pm;
    - Shoulder period – 9:00 pm until 11:00 pm; and
    - Off-peak period – 11:00 pm until 12:00 am.
- Energy exports into the network:
  - A stepped demand charge for exports ($/kW) based on the relevant band with the highest level of energy exported into the network during the super off-peak period between 9:00 am and 3:00 pm in the month, with the:
    - Band 1 rate applying to the first 3 kW exported;
    - Band 2 rate applying to all kW exported above 3 kW; and
  - Note network charges will be close to zero for exports during off-peak, shoulder and peak periods.

Indicative representation of tariff

Schematically, the proposed tariff would have the form outlined in Figure 3.3.

Figure 3.3 Indicative tariff structure for grid connected storage



Western Power has proposed minimal network charges outside of the on-peak and super off-peak periods as the intent is for the price signal to encourage the battery to store excess renewable energy production when abundant and release it when needed. That is, to treat the battery like a renewable generator, not a load with the charging windows intended to account for when load is not beneficial to the electricity system.

Western Power notes the approach to the development of cost-reflective network tariffs for grid-connected storage is an emerging area and acknowledges its approach may need to change in future access arrangements in response to developments over AA5.

Western Power will also be seeking stakeholder feedback on the potential for a similarly structured tariff for transmission connected storage. Western Power understands there are added complexities with transmission connected storage, as the stored energy can be used both in the balancing market and the essential services market (particularly, in relation to frequency co-optimised essential system services). Western Power will continue to work with stakeholders on the best way to resolve the issues associated with the dual function of transmission connected storage and is expected to be incorporated into Western Power's revised AA5 proposal.

3.2.2 Electric vehicle infrastructure charging tariff

Tariff Structure Snapshot

Objective: Develop a tariff structure that facilitates the emerging dedicated electric vehicle charging industry via a sliding-scale based tariff consisting of both time-of-use and demand charges that vary with utilisation.

New Tariff: RT36 Electric Vehicle Charging Low Voltage Exit Service
RT37 Electric Vehicle Charging High Voltage Exit Service

Premises: Business

Highlights: Gradually transition dedicated EV charging from volumetric (time-of-use) to demand based charges over time. Information collected from end-use customers and users of this tariff will be used to inform any changes in structure for AA6.

As part of our initial proposal, we included a new, technology specific tariff for dedicated EV charging stations, in line with the ERA's final decision on the framework and approach. The proposed structure of the new reference tariffs for dedicated EV charging stations was consistent with our existing metered demand tariffs (RT5 and RT6)

Stakeholder submissions to the ERA's Issues Paper submitted that Western Power's proposed adoption of the existing RT5 and RT6 tariff structures would result in very high electricity costs for electric vehicle (**EV**) charging stations and discourage the roll out of publicly available EV charging infrastructure.

Stakeholders proposed developing a specifically designed cost-reflective tariff (or tariffs) that reflect the characteristics of electricity demand at EV charging sites or place these connection points on a business time-of-use tariff and use the AA5 period to collect data on EV charging stations to enable tariffs to be developed for AA6.

Western Power recognises the economics of operating dedicated EV charging infrastructure is challenging and may not permit a viable business opportunity while EV adoption is in its early stages and charger utilisation rates are low. This is primarily because the demand-based charges on existing tariffs have the potential to impose greater costs on the business compared with the revenue likely to be recovered from end-use customers using the charging station. For example, an unexpected event, such as a car rally, could result in a much higher utilisation of the facility over a single day, which would set the demand charge for

the next rolling 12-month period irrespective of whether the facility sees similar utilisation for the rest of the year.

To address these concerns, Western Power is proposing to develop a sliding-scale based tariff consisting of both time-of-use and demand charges that vary with utilisation. Western Power considers that this approach would provide EV charging infrastructure businesses with more stable and predictable cost outcomes under multiple use cases, load factors and load sizes that will scale with utilisation while also signalling efficient use of the network.

Tariff charging components

Western Power's proposed tariff would consist of the following charging components:

- A fixed daily or monthly network access charge ($/time period)
- A two-tiered time-of-use-based component (c/kWh) that steps down with utilisation. The on-peak period would align with that of Western Power's current tariffs from 3:00 pm to 9:00 pm, with the time between 9:00 pm and 3:00 pm being an off-peak rate.
- A demand-based component ($/kW) for the highest 30-minute demand in a month within the on-peak period that steps up with utilisation.

Utilisation

Western Power intends to define "utilisation" for this reference tariff as the proportion of intervals over a billing period that exceed a defined threshold.

The intent of this approach to calculating utilisation is to only count those intervals across the day where active charging of electric vehicles is taking place.

Intent of the charging parameters

Given that EV charging infrastructure is an emerging industry, Western Power considers a new better structured tariff has more potential to assist the uptake of EVs in Western Australia. The intent of the proposed new EV charging infrastructure tariff is to provide a tariff structure that transitions from a predominantly volumetric charging regime to a demand-based charging regime as the utilisation of the facility increases. That is, during the emergence of the EV charging industry where the utilisation of assets and coincident demand on the network are low, a facilities network charges will be predominantly made up of fixed and volumetric charges with a relatively low demand component.

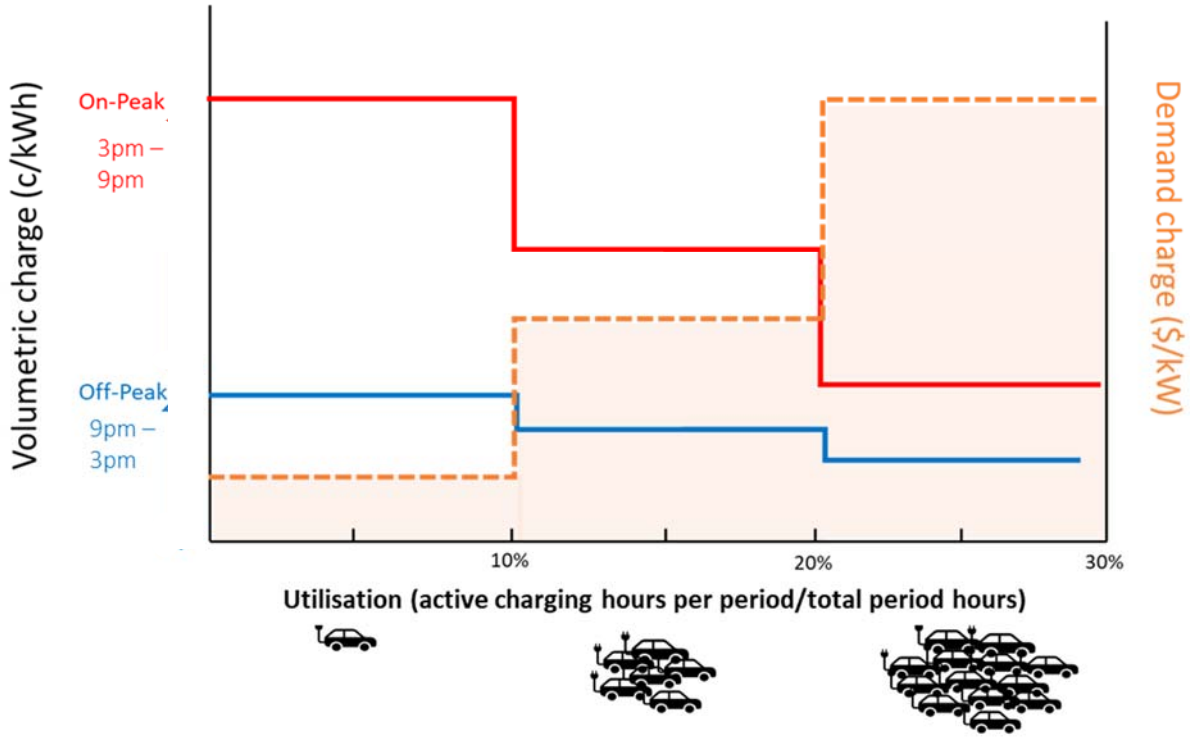
Conversely, as the utilisation of the facility increases and its network load and potentially coincident network peak demand increases, a facilities network charges will change to better reflect the efficient utilisation of the network with a much higher demand component compared with the volumetric charges.

Western Power will consider the need for a further pricing band beyond 30% as part of its evaluation of this tariff over AA5, but contemplates that when an EV charging facility surpasses 30% utilisation that more traditional reference tariffs such as metered demand and/or contract maximum demand may prove to be efficient alternatives. Western Power intends to collect and monitor data for customers on this reference tariff with a view to the need for additional tariff options.

Indicative representation of the tariff

Schematically, the proposed tariff would have the form outlined in Figure 3.4.

Figure 3.4 Indicative tariff structure for EV charging infrastructure that varies by utilisation



A similarly structured tariff will be developed for both EV chargers on the low voltage distribution network and those EV chargers on the high voltage distribution network.

3.2.3 Super off-peak time of use tariff with demand component

Tariff Structure Snapshot

Objective: Provide a new super off-peak time of use tariff with a demand component to further contribute to the range of network tariffs that signal efficient utilisation of the network during peak demand periods.

New Tariff: RT33 Multi Part Time of Use Demand (Business) Exit and Bi-directional Service

Premises: Business

Highlights: Providing greater time-of-use options to users and end-use customers and assisting with the transition to more cost reflective and efficient tariffs.

Stakeholder submissions to the ERA's Issues Paper contended there were users that utilised the existing time-of-use reference tariffs with a demand component and therefore did not support the closing of the existing time-of-use tariffs with a demand component to new customer nominations.[8]

Western Power has consulted with users about the potential reduction in available time-of-use tariff options and is proposing to include a super off-peak time-of-use tariff with a demand component. Western Power considers this additional tariff would further contribute to the range of network tariffs that signal efficient utilisation of the network during peak demand periods.

Tariff charging components

Western Power's proposed tariff would consist of the following charging components:

- A fixed daily network access charge ($/day)
- A four-tiered, five part time-of-use-based variable component (c/kWh)
  - Off-peak – 12:00 am until 06:00 am;
  - Shoulder – 06:00 am until 09:00 am;
  - Super off-peak – 09:00 am until 3:00 pm;
  - On peak – 3:00 pm until 9:00 pm;
  - Shoulder – 9:00 pm until 11:00 pm; and
  - Off-peak from 11:00 pm until 12:00 am
- A demand-based charge calculated by multiplying the demand charge by the maximum demand in a 30-minute period within the on-peak period defined above at the connection point (expressed in kW) measured over a billing period which is payable each day.

With the addition of the new tariff structures proposed in this supplementary information, Western Power considers the extensive tariff options available for users facilitates the closure of tariffs designed during previous access arrangements which no longer support or reflect the efficient utilisation of the network. Western Power considers that closure of these tariffs to new customer nominations in AA5 is in the best interest of customers as utilising more cost reflective network tariffs should enable network augmentation costs to reduce over time.

[8] Alinta Energy, and Synergy submissions to the Economic Regulation Authority, "Proposed revisions to the access arrangement for the Western Power Network 2022-23 – 2026-27", Issues Paper, March 2022.

4. 2023-24 indicative price list

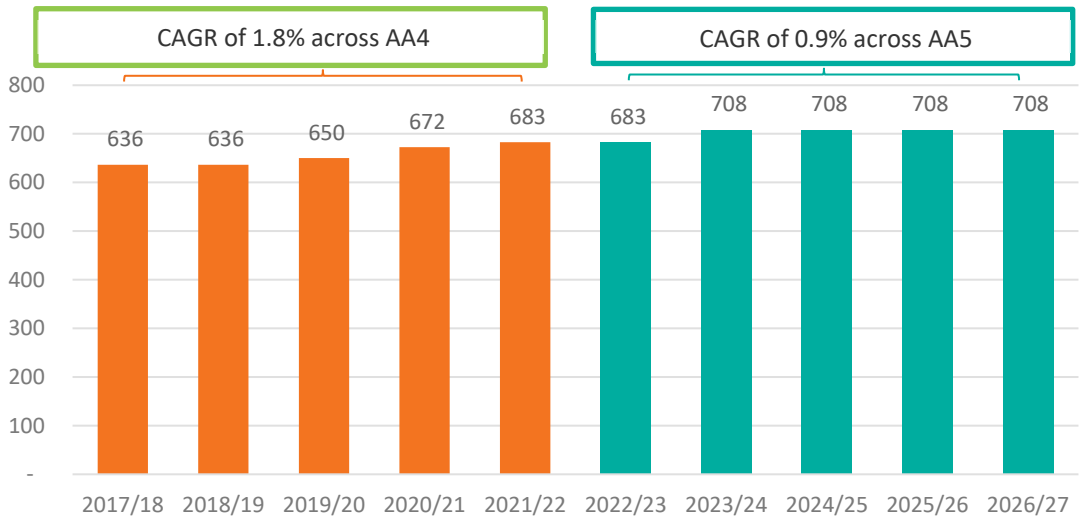
Our initial AA5 proposal provided price decreases for customers (in real terms). For the AA5 period, the average network bill outcome represents a compound annual growth rate (CAGR) of 0.9 per cent per annum which is 50 per cent lower than the AA4 period CAGR of 1.8 per cent per annum.

The proposal results in a one-off increase of approximately $25 in 2023-24 for retailers providing services to an average consumption customer, then flat for the remainder of AA5 (up to the end of 2026-27).

The setting of retail prices for residential customers is subject to a separate Western Australian State Government led process as part of the annual State Budget. The recent 2022-23 State Budget announced in May 2022 that increases in electricity charges in 2022-23 would be capped at 2.5 per cent[9].

This further access arrangement information does not deviate from the network price outcome included in the initial proposal. Rather, it provides further information to present the indicative individual reference tariff outcomes for 2023-24.

Figure 4.1: Estimated network price movements for the average residential customer (2018 - 2027)[10]



4.1 2023-24 indicative price list development

Amendments to the Access Code to better streamline the decision-making process included the requirement for the pricing for each reference tariff to be determined by Western Power and provided to the ERA for approval *after* the Final Decision has been published. As such, in line with these amendments, Western Power's access arrangement information did not include an indicative price list for reference tariffs for 2023-24. Note, the price list for 2022-23 was included with our initial proposal and has been developed based on maintaining 2021-22 prices in accordance with the framework and approach.

In submissions to the ERA Issues Paper, stakeholders have requested Western Power publish an indicative price list for 2023-24. Accordingly, Western Power has developed indicative prices for 2023-24 and include these in Appendix B to this supplementary information.

[9] 2022-23 WA State Budget, Economic & Fiscal Outlook Budget Paper 3, p. 329 https://www.ourstatebudget.wa.gov.au/2022-23/budget-papers/bp3/2022-23-wa-state-budget-bp3.pdf

[10] $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.

The 2023-24 indicative prices have been developed using the financial inputs included in our initial proposal, in particular the following key submission artefacts:

- Revenue for the AA5 period as per *Attachment 11.1 – AA5 Regulatory Revenue Model – Public, 1 February 2022*;
- Energy and customer number forecasts for the AA5 period as per *Attachment 7.5 – Energy and Customer Number Forecast Report (2020)*;
- Reference services as listed in *Appendix E – Reference Services (Track Changes) 1 February 2022* and any new references services included in this supplementary information.

The ERA's framework and approach final decision required Western Power's AA5 form of price control to consist of a single price control incorporating both the distribution and transmission target revenues.[11] Consequently, setting separate target revenues for the transmission and distribution services is no longer required. Given the single form of price control, Western Power has provided bundled tariff components as part of its indicative 2023-24 price list.

For the new grid-connected storage and dedicated electric vehicle services for which usage and revenue is currently unknown, for the purposes of calculating an indicative price for inclusion in Appendix B, Western Power has applied the approach the Australian Energy Regulator (**AER**) has approved for reference tariff trials under the National Electricity Rules[12]. This approach allows a distribution business to introduce tariff trials provided they do not recover more than 1% of the annual revenue requirement or 5% of the annual revenue requirement in total for multiple trials. The AER considers this approach offers businesses the opportunity to explore innovative tariff strategies while protecting consumers from the wide scale introduction of tariffs they may struggle to understand or respond to.

In order to develop an indicative price for the new grid connected storage and EV charging infrastructure services, the assumptions included in Table 4.1 have been applied.

Table 4.1: Usage and revenue allocation assumptions for new reference tariffs

Reference Tariff	Assumption
Reference Service C19 and C21 – New Grid Connected Low/High Voltage Distribution Storage Service	Western Power has applied the reference tariff trial approach as per the AER. Assumptions: • total reference service revenue for this service over AA5 is $1 million; • expect a total of 24 connection points over AA5; and • annual consumption at 10% utilisation is 1.5 MWh to 4.4 MWh at 30% utilisation per connection point.
Reference Service A21 and A23 – Low/High Voltage Two Part Electric Vehicle Charging Service	Western Power has applied the reference tariff trial approach as per the AER. Assumptions: • total reference service revenue for this service over AA5 is $1 million; • expect a total of 20 connection points over AA5.

[11] ERA, *Framework and approach for Western Power's fifth access arrangement review – Final decision*, 9 August 2021, p.38.

[12] https://www.aer.gov.au/networks-pipelines/network-tariff-reform/tariff-trials#:~:text=As%20of%20August%202021%20the,current%20and%20next%20regulatory%20periods.

4.2 End user impacts

The initial AA5 proposal results in a one-off increase of approximately $25 in 2023-24 for retailers providing services to an average consumption customer, then flat for the remainder of AA5 (up to the end of 2026-27).

Within the total tariff, Western Power's network tariffs include fixed and variable components. Western Power's initial proposal noted our intent to transition towards more cost-reflective network tariffs and signalled an increase in the proportion of fixed charges compared to variable charges. Through our engagement on the tariff structure statement in the lead up to our initial proposal, it was clear that customers supported a move towards more cost-reflective tariffs but that any transition pathway should be gradual.[13]

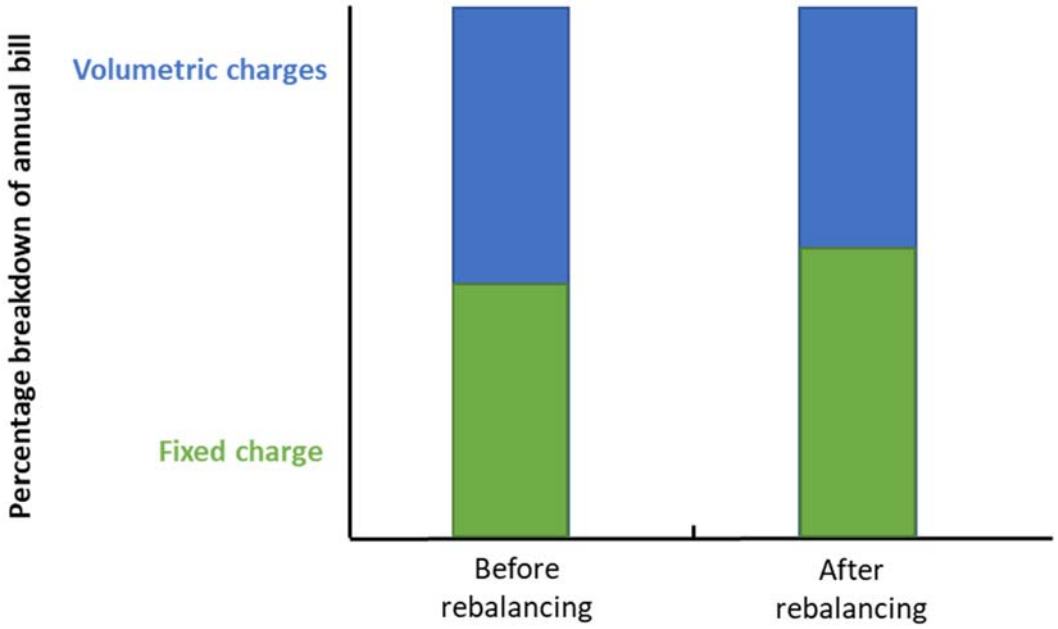
Western Power is proposing a reduction in the weighted average price in 2023-24 for residential connection points on the RT1: Anytime A1 network tariff. Included in this price is a rebalancing between fixed and variable charges which sees an increase to the fixed charge by 8 cents per day, offset by reductions in the variable component.

Western Power is also proposing a reduction in the weighted average price in 2023-24 for business connection points on the RT2: Anytime A2 network tariff.

Consistent with our initial proposal, to achieve greater cost reflectivity across all reference tariffs, some reference tariffs are proposed to increase in 2023-24. An indicative price list for all reference tariffs for 2023-24 is included in Appendix B.

On average, the rebalancing between fixed and variable charges for the network component of an average residential bill in 2023-24 remains unchanged in total as demonstrated below.

Figure 4.2: Conceptual effect of rebalancing network component of average residential bill



[13] Section 12.3.1

Western Power anticipates the fixed component will increase at the rate of inflation for the remaining years of the AA5 period.

Western Power notes that the proposed rebalancing in 2023-24 is significantly lower than the rebalancing required to achieve cost reflective network tariffs.

Western Power considers it important to note that its network tariffs are only one component of a customer's total electricity bill. As such, the impact on customers of our proposed new network tariffs, and reform of our existing network tariffs will vary depending on each customer's energy consumption level and profile, metering type and voltage level.

An individual customer's impact will also be influenced by how retailers pass through our network price signals to their customers and the extent to which those customers are willing and able to respond to the proposed changes in the level and structure of our network tariffs.

As noted above, the setting of retail prices for residential customers is subject to a separate Western Australian State Government led process as part of the annual State Budget.

The following Tables 4.3, 4.4 and 4.5 provide a high-level overview of the percentage impact to an average residential and business customers' network charges by applying the indicative 2023-24 price list. The Tables also outline the expected change in network charges compared with the current 2021-22 price list. In consultation with stakeholders on the TSS, customers supported a transition to more cost reflective network tariffs provided any rebalancing was undertaken gradually. Stakeholder submissions to the ERA's Issues Paper reiterated a desire for any rebalancing to be undertaken gradually. In response, Western Power has amended its approach to rebalancing its network tariffs for AA5 compared with the TSS published on 1 February 2022, which has resulted in lower weighted average price movements for 2023-24.

Table 4.3: Impacts on typical residential customer network bill component in 2023-24

Reference tariff	Percentage and $ change from 2022-23
Existing: Anytime RT1 (A1)	-2.1% (-$16)
Existing: Time-of-use RT3	1.0% ($8)
Existing: Time-of-use RT13	-1.3% (-$10)
Existing: Time-of-use RT15	4.5% ($34)
Existing: Time-of-use RT17	4.6% ($32)
Existing: Time-of-use Demand RT19	2.8% ($119)
Existing: Time-of-use RT21	3.2% ($14)
New: Super off-peak time-of-use RT31	NA

Note: Excludes GST. Percentage change not available for new tariffs as did not exist in 2021-22.

Table 4.4: Impacts on typical small business customer network bill components in 2023-24

Reference tariff	Percentage and $ change from 2022-23
Existing: Anytime RT2	-2.9% (-$46)
Existing: Time -of-use RT4	2.6% ($208)
Existing: Time-of-use RT14	0.8% ($16)

Reference tariff	Percentage and $ change from 2022-23
Existing: Time-of-use RT16	2.4% ($318)
Existing: Time-of-use RT18	-0.5% (-$34)
Existing: Time-of-use Demand RT 20	-2% (-$270)
Existing: Time-of-use RT22	1.5% ($41)
New: Super off-peak time-of-use RT32	NA
New: Super off-peak time-of-use Demand RT33	NA

Note: Excludes GST. Percentage change not available for new tariffs as did not exist in 2021-22.

Table 4.5: Impacts on typical large business customer network bill components in 2023-24

Reference tariff	Percentage and $ change from 2022-23
Existing: HV metered demand – RT5	-2.4% (-$2,880)
Existing: LV metered demand – RT6	-1.2% (-$389)
Existing: HV contract maximum demand – RT7	-2.3% (-$10,813)
Existing: LV contract maximum demand – RT8	-1.5% (-$4,302)

Note: Excludes GST.

5. Access Code Compliance

Section 7.1B(a) of the Access Code specifies that Western Power's TSS must comply with the pricing principles. These pricing principles are set out in sections 7.3D to 7.3L.

The pricing objective specified in section 7.3 of the Access Code requires Western Power's reference tariffs that it charges in respect of its provision of reference services should reflect Western Power's efficient costs of providing those services.

Western Power has included Appendix B to this supplementary information to provide further information to demonstrate how the proposed reference tariffs comply with the pricing objective and pricing principles set out in the Access Code as per Table 4.1 below.

Western Power's 2022-27 access arrangement period reference tariffs as outlined in the TSS have therefore been structured to comply with the pricing principles under sections 7.3D-7.3I and 7.6 of the Access Code.

Table 5.1: Additional information to demonstrate compliance with pricing principles

Section	Access Code Requirement	Relevant TSS sections	Additional information
7.3D	For each reference tariff, the revenue expected to be recovered must lie on or between: a. an upper bound representing the stand-alone cost of service provision for customers to whom or in respect of whom that reference tariff applies; and b. a lower bound representing the avoidable cost of not serving the customers to whom or in respect of whom that reference tariff applies.	Technical summary, section 4	Appendix B, Section 2.1
7.3G	Each reference tariff must be based on the forward-looking efficient costs of providing the reference service to which it relates to the customers currently on that reference tariff with the method of calculating such cost and the manner in which that method is applied to be determined having regard to: c. the additional costs likely to be associated with meeting demand from end-use customers that are currently on that reference tariff at times of greatest utilisation of the relevant part of the service provider's network; and d. the location of end-use customers that are currently on that reference tariff and the extent to which costs vary between different locations in the service provider's network.	TSS Overview, section 4 Technical Summary, section 2	Appendix B, Section 2.1

Section	Access Code Requirement	Relevant TSS sections	Additional information
7.3H	The revenue expected to be recovered from each reference tariff must: a. reflect the service provider's total efficient costs of serving the customers that are currently on that reference tariff; b. when summed with the revenue expected to be received from all other reference tariffs, permit the service provider to recover the expected revenue for the reference services in accordance with the service provider's access arrangement; and c. comply with sections 7.3H(a) and 7.3H(b) in a way that minimises distortions to the price signals for efficient usage that would result from reference tariffs that comply with the pricing principle set out in section 7.3G.	TSS Overview, section 4 Technical summary, section 3	Appendix B, Section 2.1
7.3I	The structure of each reference tariff must be reasonably capable of being understood by customers that are currently on that reference tariff, including enabling a customer to predict the likely annual changes in reference tariffs during the access arrangement period, having regard to: a. the type and nature of those customers; b. the information provided to, and the consultation undertaken with, those customers.	TSS Overview, section 5 Technical Summary, section 5	Section 4.2
7.6	Unless a tariff structure statement containing alternative pricing methods would better achieve the Code objective, and subject to section 7.3K, for a reference service: a. the incremental cost of service provision should be recovered by tariff components that vary with usage or demand; and b. any amount in excess of the incremental cost of service provision should be recovered by tariff components that do not vary with usage or demand		Appendix B, Section 2.1

Appendix A

Indicative 2023-24 price list

A.1 Indicative 2023-24 Price Tables

The indicative prices included in this appendix have been developed based on the assumptions and inputs noted in Section 4 of this document.

All prices quoted in this indicative price list are **GST exclusive**.

A.1.1 Prices for energy-based tariffs on the distribution network

A.1.1.1 Use of system prices

Table A.1: Reference tariffs prices for RT1, RT2, RT3, RT4, RT9, RT10, RT13, RT14, RT15, RT16, RT17 and RT18

Bundled tariff	Fixed Price	Energy Rates			
	c/day	Anytime c/kWh	On-Peak c/kWh	Shoulder c/kWh	Off-peak c/kWh
Reference tariff 1 - RT1	97.896	8.161			
Reference tariff 2 - RT2	183.770	10.981			
Reference tariff 3 - RT3	97.896		15.342		3.372
Reference tariff 4 - RT4	336.426		17.810		4.126
Reference tariff 9 – RT9	9.223	4.503			
Reference tariff 10 – RT10	69.269	3.532			
Reference tariff 13 - RT13	97.896	8.322			
Reference tariff 14 - RT14	183.770	11.972			
Reference tariff 15 - RT15	97.896		16.224		3.562
Reference tariff 16 - RT16	336.426		17.862		4.125
Reference tariff 17 - RT17	97.896		11.592	7.079	5.589
Reference tariff 18 - RT18	183.770		17.458	12.107	8.264

Table A.2: Reference tariffs for RT19 and RT20

Bundled tariff	Fixed Price	Energy Rates			
	c/day	Demand RT19 – c/kW/day RT20 – c/kVA/day	On-Peak c/kWh	Shoulder c/kWh	Off-Peak c/kWh
Reference tariff 19 – RT19	97.896	6.052	9.620	6.672	4.493
Reference tariff 20 - RT20	230.696	6.741	15.927	10.289	7.201

Table A.3: Reference tariffs for RT21, RT22, RT31, RT32 and RT33

Bundled tariff	Fixed Price	Energy Rates					
	c/day	Demand RT33 – c/KVA/day	On-Peak c/kWh	Shoulder c/kWh	Off-Peak c/kWh	Overnight c/kWh	Super Off-Peak c/kWh
Reference tariff 21 – RT21	97.896		8.999	5.440	3.842	3.842	
Reference tariff 22 – RT22	183.770		17.504	11.779	7.933	7.933	7.933
Reference tariff 31 – RT31	97.896		14.093	7.046	5.420		0.100
Reference tariff 32 – RT32	336.426		20.656	10.328	7.945		5.000
Reference tariff 33 – RT33	336.426	6.741	20.595	10.297	7.921		5.000

Table A.4: Reference tariffs for RT34 and RT35

Bundled tariff	Fixed Price	Energy Rates (network to storage - charging)				
	c/day	Off-Peak c/kWh	Shoulder c/kWh	Super Off-Peak c/kWh		On-Peak c/kWh
Reference tariff 34 – RT34	Varies with capacity see Table A.5 below	0.100	10.328	0.100		20.656
		Energy Rates (storage to network – discharging)				
		Off-Peak c/kWh	Shoulder c/kWh	Super Off-peak 0-3 kW c/kW	Super Off-Peak < 3 kW c/kW	On-Peak c/kWh
		0.100	0.100	10.328	20.656	0.100
Bundled tariff	**Fixed Price**	**Energy Rates (network to storage - charging)**				
	c/day	**Off-Peak c/kWh**	**Shoulder c/kWh**	**Super Off-Peak c/kWh**		**On-Peak c/kWh**
Reference tariff 35 – RT35	Varies with capacity see Table A.5 below	0.100	10.328	0.100		20.656
		Energy Rates (storage to network - discharging)				
		Off-Peak c/kWh	Shoulder c/kWh	Super Off-peak 0-3 kW c/kW	Super Off-Peak < 3 kW c/kW	On-Peak c/kWh
		0.100	0.100	10.328	20.656	0.100

Table A.5: Fixed Price for Reference tariffs for RT34 and RT35

Capacity of storage works kVA	Fixed Price c/day
0 - 100	350.000
100 - 1000	700.000
1000 and above	1,500.000

Table A.6: Reference tariffs for RT36 and RT37

Bundled tariff	Utilisation	Fixed Price	Energy Rates		
	%	c/day	Off-Peak c/kWh	On-Peak c/kWh	Demand On-peak c/kVA/day
Reference tariff 36 – RT36	0 – 10	350.000	6.000	12.000	5.000
	10 – 20	350.000	3.000	6.000	30.000
	20 – 30	350.000	1.500	3.000	70.000
Reference tariff 37 – RT37	0 – 10	350.000	6.000	12.000	5.000
	10 – 20	350.000	3.000	6.000	30.000
	20 – 30	350.000	1.500	3.000	70.000

A.1.1.2 Streetlight asset prices

The prices in the following tables are applicable for reference tariff **RT9**.

Table A.7: Current light types

Light specification	Daily charge (No contribution) c/day	Daily charge (Full upfront contribution) c/day
42W CFL SE	24.351	n/a
42W CFL BH	25.879	n/a
42W CFL KN	29.163	n/a
70W MH	42.567	n/a
70W HPS	20.935	n/a
125W MV	25.340	n/a
150W MH	49.178	n/a
150W HPS	27.539	n/a
250W MH	49.178	n/a
250W HPS	27.539	n/a
Standard LED 20W	12.942	8.411
Standard LED 16W - 3000K	12.942	8.411
Standard LED 16W - 4000K	12.942	8.411
Standard LED 36W	12.942	8.411
Standard LED 28W - 3000K	12.942	8.411

Light specification	Daily charge (No contribution) c/day	Daily charge (Full upfront contribution) c/day
Standard LED 27W - 4000K	12.942	8.411
Standard LED 53W	13.047	8.411
Standard LED 43W - 3000K	13.047	8.411
Standard LED 42W - 4000K	13.047	8.411
Standard LED 80W	12.921	8.411
Standard LED 70W - 3000K	12.921	8.411
Standard LED 68W - 4000K	12.921	8.411
Standard LED 160W	14.176	8.411
Standard LED 140W - 3000K	14.176	8.411
Standard LED 135W - 4000K	14.176	8.411
Standard LED 170W	14.176	8.411
Standard LED 165W - 3000K	14.176	8.411
Standard LED 155W - 4000K	14.176	8.411
Decorative BH LED 17W	24.092	8.411
Decorative KN LED 17W	26.414	8.411
Decorative LED 34W	26.352	8.411
Decorative LED 42W	24.092	8.411
Decorative LED 80W	27.669	8.411
Decorative LED 100W	31.079	8.411
Decorative LED 155W	31.079	8.411

Table A.8: Obsolete light types

Light specification	Daily charge c/day
50W MV	15.585
70W MV	20.976
80W MV	20.976
150W MV	26.079
250W MV	34.019
400W MV	35.719

Light specification	Daily charge c/day
40W FLU	15.585
80W HPS	21.546
125W HPS	28.343
100W INC	15.585
80W MH	20.976
125W MH	50.614
22W LED	12.942

A.1.2 Prices for demand-based tariffs on the distribution network (RT5 to RT8 and RT11[14])

A.1.2.1 Demand charges

The prices in the following table are applicable for reference tariff **RT5**.

Table A.91: Prices for reference tariff RT5

	Bundled tariff	
Demand (kVA) (Lower to upper threshold)	Fixed c/day	Demand (in excess of lower threshold) c/kVA/day
0 to 300	213.663	75.214
300 to 1000	30,550.995	54.699
1000 to 1500	82,348.391	25.231

The prices in the following table are applicable for reference tariff **RT6**.

Table A.10: Prices for reference tariff RT6

	Bundled tariff	
Demand (kVA) (Lower to upper threshold)	Fixed c/day	Demand (in excess of lower threshold) c/kVA/day
0 to 300	1,516.234	84.524
300 to 1000	36,559.816	65.222
1000 to 1500	102,398.000	33.833

[14] Note that some components of RT11 are in section A.1.3

The prices in the following table are applicable for reference tariffs **RT7** and **RT8**.

Table A.11: Prices for reference tariffs RT7 and RT8

Zone substation	TNI	Pricing zone	Bundled		
			Fixed charge for first 1000 kVA (c per day)	Demand charge for 1000<kVA<7000 (c/kVA/day)	Demand Charge for kVA > 7000 (c/kVA/day)
Cook Street	WCKT	CBD	52,943.081	29.128	32.530
Forrest Avenue	WFRT	CBD	52,943.081	29.128	32.530
Hay Street	WHAY	CBD	52,943.081	29.128	32.530
Milligan Street	WMIL	CBD	52,943.081	29.128	32.530
Wellington Street	WWNT	CBD	52,943.081	29.128	32.530
Black Flag	WBKF	Mining	52,943.081	42.071	43.624
Boulder	WBLD	Mining	52,943.081	39.261	41.215
Bounty	WBNY	Mining	52,943.081	69.738	67.338
West Kalgoorlie	WWKT	Mining	52,943.081	35.653	38.123
Albany	WALB	Mixed	52,943.081	47.669	48.423
Boddington	WBOD	Mixed	52,943.081	29.646	32.974
Bunbury Harbour	WBUH	Mixed	52,943.081	29.269	32.651
Busselton	WBSN	Mixed	52,943.081	36.839	39.139
Byford	WBYF	Mixed	52,943.081	30.524	33.727
Capel	WCAP	Mixed	52,943.081	34.127	36.815
Chapman	WCPN	Mixed	52,943.081	41.362	43.016
Darlington	WDTN	Mixed	52,943.081	32.639	35.540
Durlacher Street	WDUR	Mixed	52,943.081	38.558	40.613
Eneabba	WENB	Mixed	52,943.081	36.985	39.265
Geraldton	WGTN	Mixed	52,943.081	38.558	40.613
Marriott Road	WMRR	Mixed	52,943.081	28.693	32.158
Muchea	WMUC	Mixed	52,943.081	32.475	35.399
Northam	WNOR	Mixed	52,943.081	39.477	41.401
Picton	WPIC	Mixed	52,943.081	30.613	33.803

Zone substation	TNI	Pricing zone	Bundled		
			Fixed charge for first 1000 kVA (c per day)	Demand charge for 1000<kVA<7000 (c/kVA/day)	Demand Charge for kVA > 7000 (c/kVA/day)
Rangeway	WRAN	Mixed	52,943.081	40.277	42.086
Sawyers Valley	WSVY	Mixed	52,943.081	37.199	39.448
Yanchep	WYCP	Mixed	52,943.081	32.405	35.339
Yilgarn	WYLN	Mixed	52,943.081	45.348	46.433
Baandee	WBDE	Rural	52,943.081	41.829	43.417
Beenup	WBNP	Rural	52,943.081	44.618	45.807
Bridgetown	WBTN	Rural	52,943.081	29.070	32.481
Carrabin	WCAR	Rural	52,943.081	45.478	46.544
Cataby	WCTB	Rural	52,943.081	29.902	33.193
Collie	WCOE	Rural	52,943.081	33.500	36.278
Coolup	WCLP	Rural	52,943.081	37.139	39.397
Cunderdin	WCUN	Rural	52,943.081	38.887	40.895
Katanning	WKAT	Rural	52,943.081	35.903	38.337
Kellerberrin	WKEL	Rural	52,943.081	40.856	42.583
Kojonup	WKOJ	Rural	52,943.081	26.371	30.167
Kondinin	WKDN	Rural	52,943.081	28.034	31.592
Manjimup	WMJP	Rural	52,943.081	28.876	32.314
Margaret River	WMRV	Rural	52,943.081	36.014	38.433
Merredin	WMER	Rural	52,943.081	37.502	39.708
Moora	WMOR	Rural	52,943.081	29.130	32.532
Mount Barker	WMBR	Rural	52,943.081	37.406	39.626
Narrogin	WNGN	Rural	52,943.081	41.590	43.212
Pinjarra	WPNJ	Rural	52,943.081	22.107	26.512
Regans	WRGN	Rural	52,943.081	29.902	33.193
Three Springs	WTSG	Rural	52,943.081	29.056	32.469
Wagerup	WWGP	Rural	52,943.081	21.290	25.812

Zone substation	TNI	Pricing zone	Bundled		
			Fixed charge for first 1000 kVA (c per day)	Demand charge for 1000<kVA<7000 (c/kVA/day)	Demand Charge for kVA > 7000 (c/kVA/day)
Wagin	WWAG	Rural	52,943.081	36.340	38.712
Wundowie	WWUN	Rural	52,943.081	32.346	35.289
Yerbillon	WYER	Rural	52,943.081	44.430	45.646
Amherst	WAMT	Urban	52,943.081	20.938	25.510
Arkana	WARK	Urban	52,943.081	20.938	25.510
Australian Paper Mills	WAPM	Urban	52,943.081	20.938	25.510
Balcatta	WBCT	Urban	52,943.081	20.938	25.510
Beechboro	WBCH	Urban	52,943.081	20.938	25.510
Belmont	WBEL	Urban	52,943.081	20.938	25.510
Bentley	WBTY	Urban	52,943.081	20.938	25.510
Bibra Lake	WBIB	Urban	52,943.081	20.938	25.510
British Petroleum	WBPM	Urban	52,943.081	20.938	25.510
Canning Vale	WCVE	Urban	52,943.081	20.938	25.510
Clarence Street	WCLN	Urban	52,943.081	20.938	25.510
Clarkson	WCKN	Urban	52,943.081	20.938	25.510
Cockburn Cement	WCCT	Urban	52,943.081	20.938	25.510
Collier	WCOL	Urban	52,943.081	20.938	25.510
Cottesloe	WCTE	Urban	52,943.081	20.938	25.510
Edmund Street	WEDD	Urban	52,943.081	20.938	25.510
Forrestfield	WFFD	Urban	52,943.081	20.938	25.510
Gosnells	WGNL	Urban	52,943.081	20.938	25.510
Hadfields	WHFS	Urban	52,943.081	20.938	25.510
Hazelmere	WHZM	Urban	52,943.081	20.938	25.510
Henley Brook	WHBK	Urban	52,943.081	20.938	25.510
Herdsman Parade	WHEP	Urban	52,943.081	20.938	25.510
Joel Terrace	WJTE	Urban	52,943.081	20.938	25.510

Zone substation	TNI	Pricing zone	Bundled		
			Fixed charge for first 1000 kVA (c per day)	Demand charge for 1000<kVA<7000 (c/kVA/day)	Demand Charge for kVA > 7000 (c/kVA/day)
Joondalup	WJDP	Urban	52,943.081	20.938	25.510
Kalamunda	WKDA	Urban	52,943.081	20.938	25.510
Kambalda	WKBA	Urban	52,943.081	35.554	38.039
Kewdale	WKDL	Urban	52,943.081	20.938	25.510
Landsdale	WLDE	Urban	52,943.081	20.938	25.510
Maddington	WMDN	Urban	52,943.081	20.938	25.510
Malaga	WMLG	Urban	52,943.081	20.938	25.510
Mandurah	WMHA	Urban	52,943.081	20.938	25.510
Manning Street	WMAG	Urban	52,943.081	20.938	25.510
Mason Road	WMSR	Urban	52,943.081	20.938	25.510
Meadow Springs	WMSS	Urban	52,943.081	20.938	25.510
Medical Centre	WMCR	Urban	52,943.081	20.938	25.510
Medina	WMED	Urban	52,943.081	20.938	25.510
Midland Junction	WMJX	Urban	52,943.081	20.938	25.510
Morley	WMOY	Urban	52,943.081	20.938	25.510
Mullaloo	WMUL	Urban	52,943.081	20.938	25.510
Mundaring Weir	WMWR	Urban	52,943.081	20.938	25.510
Munday	WMDY	Urban	52,943.081	20.938	25.510
Murdoch	WMUR	Urban	52,943.081	20.938	25.510
Myaree	WMYR	Urban	52,943.081	20.938	25.510
Nedlands	WNED	Urban	52,943.081	20.938	25.510
North Beach	WNBH	Urban	52,943.081	20.938	25.510
North Fremantle	WNFL	Urban	52,943.081	20.938	25.510
North Perth	WNPH	Urban	52,943.081	20.938	25.510
O'Connor	WOCN	Urban	52,943.081	20.938	25.510
Osborne Park	WOPK	Urban	52,943.081	20.938	25.510

Zone substation	TNI	Pricing zone	Bundled		
			Fixed charge for first 1000 kVA (c per day)	Demand charge for 1000<kVA<7000 (c/kVA/day)	Demand Charge for kVA > 7000 (c/kVA/day)
Padbury	WPBY	Urban	52,943.081	20.938	25.510
Piccadilly	WPCY	Urban	52,943.081	33.584	36.349
Riverton	WRTN	Urban	52,943.081	20.938	25.510
Rivervale	WRVE	Urban	52,943.081	20.938	25.510
Rockingham	WROH	Urban	52,943.081	20.938	25.510
Shenton Park (Old)	WSPA	Urban	52,943.081	20.938	25.510
Shenton Park (New)	WSPK	Urban	52,943.081	20.938	25.510
Sth Ftle Power Station	WSFT	Urban	52,943.081	20.938	25.510
Southern River	WSNR	Urban	52,943.081	20.938	25.510
Tate Street	WTTS	Urban	52,943.081	20.938	25.510
University	WUNI	Urban	52,943.081	20.938	25.510
Victoria Park	WVPA	Urban	52,943.081	20.938	25.510
Waikiki	WWAI	Urban	52,943.081	20.938	25.510
Wangara	WWGA	Urban	52,943.081	20.938	25.510
Wanneroo	WWNO	Urban	52,943.081	20.938	25.510
Welshpool	WWEL	Urban	52,943.081	20.938	25.510
Wembley Downs	WWDN	Urban	52,943.081	20.938	25.510
Willetton	WWLN	Urban	52,943.081	20.938	25.510
Yokine	WYKE	Urban	52,943.081	20.938	25.510

A.1.2.2 Demand length charges

The prices in the following table are applicable for reference tariffs **RT5, RT6, RT7, RT8** and **RT11** and the CMD/DSOC is between 1,000 and 7,000 kVA.

Table A.12: Reference for tariffs RT5, RT6, RT7, RT8 and RT11

	Demand-Length Charge	
Pricing zone	For kVA >1000 and first 10 km length (c/kVA.km/day)	For kVA >1000 and length in excess of 10 km (c/kVA.km/day)
CBD	0.000	0.000
Urban	1.876	1.326
Mining	0.402	0.281
Mixed	0.875	0.605
Rural	0.545	0.380

The prices in the following table are applicable for reference tariffs **RT7, RT8** and **RT11** and the CMD/DSOC is at least 7,000 kVA.

Table A.13: Reference tariffs RT7, RT8 and RT11

	Demand-Length Charge	
Pricing zone	For first 10 km length (c/kVA.km/day)	For length in excess of 10 km (c/kVA.km/day)
CBD	0.000	0.000
Urban	1.606	1.128
Mining	0.347	0.242
Mixed	0.754	0.523
Rural	0.473	0.325

A.1.2.3 Metering prices

The prices in the following table are applicable for all reference tariffs (excluding RT9, RT10, RT25, RT26, RT27, RT28 and RT29).

The total metering price payable is the sum of the applicable charge in Table A.14, which is based on the reference tariff of the connection point and the charge in Table A.15, which is based on the metering reference service applicable to the connection point, or as selected by the retailer. The applicable metering reference service for each reference service is defined in Appendix E, table E.1.2[15].

[15] https://www.erawa.com.au/cproot/20419/2/ERA-Approved---Appendix-E---Reference-Services.pdf

Note that for billing purposes, Western Power will calculate the total metering charge per connection point (a sum of the relevant charge in Table A.14 and Table A.15) as a single daily charge.

For the purposes of the Metering Model Service Level Agreement, the charges in Table A.15 (M1 – M15) are considered to be the incremental fees involved in providing the additional metering services.

Table A.14: Metering prices[16]

Reference Tariff	c/revenue meter/day
RT1	6.534
RT2	6.896
RT3	6.793
RT4	10.717
RT5 – RT8	11.814
RT11	11.814
RT13	6.517
RT14	7.523
RT15	6.537
RT16	11.661
RT17	11.814
RT18	11.814
RT19	11.814
RT20	11.814
RT21	11.814
RT22	11.814
RT31	11.814
RT32	11.814
RT33	11.814
RT34	11.814
RT35	11.814
RT36	11.814
RT37	11.814
TRT1 and TRT2	929.071

[16] Additional charges will apply if the user has selected a non-standard metering service for the relevant exit, entry or bi-directional service. The charge will reflect Western Power's incremental costs of providing the additional metering services and may consist of capital and non-capital costs.

Table A.15: Metering reference service prices

Metering Reference Service	c/revenue meter/day
M1	1.987
M2	1.987
M3	22.672
M4	45.345
M5	12.115
M6	12.115
M7 - SIM	105.023
M7 - AMI	1.987
M8	1.987
M9	1.987
M10	22.672
M11	45.345
M12	12.115
M13	12.115
M14 - SIM	105.023
M14 - AMI	1.987
M15	0.000

A.1.2.4 Administration charges

The prices in the following table are applicable for reference tariffs **RT7** and **RT8**.

Table A.16: Administration charges for RT7 and RT8

CMD	Price (c/day)
>=7,000 kVA	8,877.00
<7,000 kVA	5,097.00

A.1.2.5 LV prices

The prices in the following table are applicable for reference tariff **RT8**.

Table A.17: LV prices RT8

Category	Price (c/day)
Fixed	1,101.980
Demand	10.744 / kVA

A.1.2.6 Connection price

The prices in the following table are applicable for reference tariff **RT11**.

Table A.18: Connection Price RT11

	Connection Price (c/kW/day)
Connection price	1.490

A.1.3 Transmission prices

A.1.3.1 Use of system prices

The prices in the following table are applicable for reference tariff **TRT1**.

Table A.19: Transmission prices TRT1

Substation	TNI	Use of System Price (c/kW/day)
Albany	WALB	18.213
Alcoa Pinjarra	WAPJ	5.166
Amherst	WAMT	4.335
Arkana	WARK	5.533
Australian Fused Materials	WAFM	3.593
Australian Paper Mills	WAPM	5.602
Baandee (WC)	WBDE	19.522
Balcatta	WBCT	5.670
Beckenham	WBEC	14.302
Beechboro	WBCH	5.036
Beenup	WBNP	21.841

Substation	TNI	Use of System Price (c/kW/day)
Belmont	WBEL	4.462
Bentley	WBTY	5.808
Bibra Lake	WBIB	3.989
Binningup Desalination Plant	WBDP	3.081
Black Flag	WBKF	19.907
Boddington Gold Mine	WBGM	3.342
Boddington	WBOD	3.257
Boulder	WBLD	17.550
Bounty	WBNY	43.112
Bridgetown	WBTN	8.920
British Petroleum	WBPM	7.702
Broken Hill Kwinana	WBHK	6.011
Bunbury Harbour	WBUH	2.946
Busselton	WBSN	9.226
Byford	WBYF	3.986
Canning Vale	WCVE	4.559
Capel	WCAP	6.976
Carrabin	WCAR	22.553
Cataby Kerr McGee	WKMC	8.320
Chapman	WCPN	12.978
Clarence Street	WCLN	7.491
Clarkson	WCKN	5.650
Cockburn Cement	WCCT	3.131
Cockburn Cement Ltd	WCCL	3.122
Collie	WCOE	12.603
Collier	WCOL	7.456
Cook Street	WCKT	5.365
Coolup	WCLP	15.625
Cottesloe	WCTE	5.810
Cunderdin	WCUN	17.079

Substation	TNI	Use of System Price (c/kW/day)
Darlington	WDTN	5.743
Edgewater	WEDG	4.974
Edmund Street	WEDD	5.118
Eneabba	WENB	9.346
Forrest Ave	WFRT	7.500
Forrestfield	WFFD	5.880
Geraldton	WGTN	10.652
Glen Iris	WGNI	3.475
Golden Grove	WGGV	27.919
Gosnells	WGNL	4.733
Hadfields	WHFS	5.688
Hay Street	WHAY	5.688
Hazelmere	WHZM	4.409
Henley Brook	WHBK	4.861
Herdsman Parade	WHEP	8.627
Joel Terrace	WJTE	7.829
Joondalup	WJDP	5.331
Kalamunda	WKDA	6.008
Katanning	WKAT	14.599
Kellerberrin	WKEL	18.717
Kewdale	WKDL	4.374
Kojonup	WKOJ	6.679
Kondinin	WKDN	8.060
Kwinana Alcoa	WAKW	1.381
Kwinana Desalination Plant	WKDP	3.795
Kwinana PWS	WKPS	2.771
Landsdale	WLDE	5.127
Maddington	WMDN	4.607
Malaga	WMLG	4.379
Mandurah	WMHA	3.761

Substation	TNI	Use of System Price (c/kW/day)
Manjimup	WMJP	8.759
Manning Street	WMAG	6.368
Margaret River	WMRV	14.693
Marriott Road Barrack Silicon Smelter	WBSI	2.818
Marriott Road	WMRR	2.468
Mason Road	WMSR	2.199
Mason Road CSBP	WCBP	3.327
Mason Road Kerr McGee	WKMK	2.016
Meadow Springs	WMSS	4.265
Medical Centre	WMCR	6.748
Medina	WMED	3.176
Merredin 66kV	WMER	15.927
Midland Junction	WMJX	5.359
Milligan Street	WMIL	6.353
Moora	WMOR	8.971
Morley	WMOY	5.843
Mt Barker	WMBR	15.849
Muchea Kerr McGee	WKMM	8.464
Muchea	WMUC	5.605
Muja PWS	WMPS	1.685
Mullaloo	WMUL	5.507
Munday	WMDY	5.936
Murdoch	WMUR	3.551
Mundaring Weir	WMWR	8.599
Myaree	WMYR	6.783
Narrogin	WNGN	19.322
Nedlands	WNED	6.352
North Beach	WNBH	5.670
North Fremantle	WNFL	5.703
North Perth	WNPH	4.839

Substation	TNI	Use of System Price (c/kW/day)
Northam	WNOR	11.415
Nowgerup	WNOW	6.540
O'Connor	WOCN	5.916
Osborne Park	WOPK	6.148
Padbury	WPBY	5.744
Parkeston	WPRK	19.977
Parklands	WPLD	4.384
Piccadilly	WPCY	15.887
Picton 66kv	WPIC	4.060
Pinjarra	WPNJ	3.135
Rangeway	WRAN	12.080
Regans	WRGN	9.611
Riverton	WRTN	3.925
Rivervale	WRVE	6.103
Rockingham	WROH	3.363
Sawyers Valley	WSVY	9.526
Shenton Park	WSPA	6.608
Southern River	WSNR	4.121
South Fremantle 22kV	WSFT	4.273
Summer St	WSUM	8.081
Sutherland	WSRD	4.839
Tate Street	WTTS	6.824
Three Springs	WTSG	8.910
Three Springs Terminal (Karara)	WTST	21.517
Tomlinson Street	WTLN	6.913
University	WUNI	7.327
Victoria Park	WVPA	6.671
Wagerup	WWGP	2.456
Wagin	WWAG	14.962
Waikiki	WWAI	3.676

Substation	TNI	Use of System Price (c/kW/day)
Wangara	WWGA	5.265
Wanneroo	WWNO	5.540
Wellington Street	WWNT	8.041
Welshpool	WWEL	4.348
Wembley Downs	WWDN	6.488
West Kalgoorlie	WWKT	14.523
Western Collieries	WWCL	2.473
Western Mining	WWMG	2.906
Westralian Sands	WWSD	6.325
Willetton	WWLN	4.178
Worsley	WWOR	2.052
Wundowie	WWUN	11.643
Yanchep	WYCP	5.549
Yerbillon	WYER	21.685
Yilgarn	WYLN	16.287
Yokine	WYKE	6.010

The prices in the following table are applicable for reference tariffs **RT11** and **TRT2**.

Table A.20: Reference tariffs RT11 and TRT2

Substation	TNI	Use of System Price (c/kW/day)
Albany	WALB	2.335
Badgingarra	BGA	2.381
Boulder	WBLD	1.690
Bluewaters	WBWP	2.349
Cockburn PWS	WCKB	1.424
Collgar	WCGW	2.697
Collie PWS	WCPS	2.732
Emu Downs	WEMD	2.381
Geraldton	WGTN	0.400
Greenough Solar Farm	TMGS	0.509

Substation	TNI	Use of System Price (c/kW/day)
Kemerton PWS	WKEM	1.899
Kwinana Alcoa	WAKW	1.469
Kwinana Donaldson Road	WKND	1.116
Kwinana PWS	WKPS	1.424
Landwehr (Alinta)	WLWT	1.773
Mason Road	WMSR	1.116
Merredin Power Station	TMDP	1.963
Muja PWS	WMPS	2.868
Mumbida Wind Farm	TMBW	2.416
Mungarra GTs	WMGA	2.373
Newgen Kwinana	WNGK	1.657
Newgen Neerabup	WGNN	1.460
Oakley (Alinta)	WOLY	1.977
Parkeston	WPKS	2.038
Pinjar GTs	WPJR	1.184
Alcoa Pinjarra	WAPJ	2.075
Tiwest GT	WKMK	1.151
Wagerup	WWGP	1.634
Walkaway Windfarm	WWWF	2.621
West Kalgoorlie GTs	WWKT	1.657
Worsley	WWOR	1.856
Yandin Wind Farm	WYDW	1.460
Merredin Solar Farm	WMSF	1.963
Warradarge Wind Farm	WWDW	2.381

A.1.3.2 Common service prices

The prices in the following table are applicable for reference tariff **TRT1**.

Table A.212: Common Service Prices TRT1

	Common Service Price (c/kW/day)
Common service price	5.507

A.1.3.3 Control system service prices

The prices in the following table are applicable for reference tariffs **RT11** and **TRT2**.

Table A.22: Control system service prices for reference tariffs RT11 and TRT2

	Price (c/kW/day)
Control system service price (Generators)	0.261

The prices in the following table are applicable for reference tariff **TRT1**.

Table A.23: Control system service prices for reference tariff TRT1

	Price (c/kW/day)
Control system service price (Loads)	2.122

A.1.4 Excess network usage charges – substation classification

The following table applies to reference tariffs **RT7, RT8, RT11, TRT1** and **TRT2**. The quantum of these fees is subject to review as part of Western Power's revised AA5 proposal.

Table A.24: Values for ENUM for reference tariffs RT7, RT8, RT11, TRT1 and TRT2

TNI	ENUM
ALB, BKF, BLD, BNY, PCY, PKS, WKT	2.5
All other substations	1

A.1.5 Other prices

The following table applies to reference tariff **RT25**.

Table A.25: Supply abolishment charges for RT25

Location	Charge ($)
Whole current meters metropolitan area[17]	448.28
Whole current meters non-Metropolitan area	570.97
Non- whole current meters	User specific charge which reflects the costs to Western Power of undertaking the requested supply abolishment requested by the user and may consist of capital and non-capital costs.

The following table applies to reference tariff **RT26, RT27, RT28 and RT29**.

Table A.26: Charges for RT26, RT27, RT28 and RT29

Service	Charge per request ($)
RT26	5.50
RT27	5.50
RT28	5.50
RT29	5.50

A.2 Applications and Queuing Policy fees

The Applications and Queuing Policy refers to several fees being published in the Price List. These prices are detailed below and are subject to review as part of Western Power's revised AA5 proposal:

Table A.27: Fees payable under the Applications and Queuing Policy

Fee type	Price
New Standard Access Contract Fee	$1,150.00
Access Contract Modification Fee	$140 per modification
Enquiry Fee	$3,500.00
Application Lodgement Fee	$5,000.00
Preliminary Offer Processing Fee	A variable fee
Preliminary Acceptance Fee	A variable fee

[17] As defined in the Electricity Industry (Metering) Code

Fee type	Price
Distributed energy or other non-network solution assessment fee (B3 or C15)	A variable fee[18]
Capacity allocation service fee – for a capacity swap reference service (D2 or D3)	$1,750.00
Capacity allocation service fee – for a capacity allocation reference service (D4 or D5)	$140 per modification
Remote load control/limitation/de-energise/re-energise service fee	A variable fee

Table A.28: Fees payable under the Applications and Queuing Policy

Application for Reference Service	New Connection Point Fee
A1 – Anytime Energy (Residential) Exit Service	$0.00 per connection point
A2 – Anytime Energy (Business) Exit Service	$0.00 per connection point
A3 – Time of Use Energy (Residential) Exit Service	$0.00 per connection point
A4 – Time of Use Energy (Business) Exit Service	$0.00 per connection point
A5 – High Voltage Metered Demand Exit Service C5 – High Voltage Metered Demand Bi-directional Service	$44.00 per connection point
A6 – Low Voltage Metered Demand Exit Service C6 – Low Voltage Metered Demand Bi-directional Service	$44.00 per connection point
A7 – High Voltage Contract Maximum Demand Exit Service C7 – High Voltage Contract Maximum Demand Bi-directional Service	$88.00 per connection point
A8 – Low Voltage Contract Maximum Demand Exit Service C8 – Low Voltage Contract Maximum Demand Bi-directional Service	$88.00 per connection point
A9 – Streetlighting Exit Service	$0.00 per connection point
A10 – Unmetered Supplies Exit Service	$0.00 per connection point
A11 – Transmission Exit Service	$175.00 per connection point
B1 – Distribution Entry Service	$175.00 per connection point
B2 – Transmission Entry Service	$175.00 per connection point
B3 – Entry Service Facilitating a Distributed Generation or Other Non-Network Solution	$175.00 per connection point
C1 – Anytime Energy (Residential) Bi-directional Service	$0.00 per connection point
C2 – Anytime Energy (Business) Bi-directional Service	$0.00 per connection point
C3 – Time of Use (Residential) Bi-directional Service	$0.00 per connection point

[18] Western Power intends to review this with a view to defining a fixed fee in its AA5 revised proposal.

Application for Reference Service	New Connection Point Fee
C4 – Time of Use (Business) Bi-directional Service	$0.00 per connection point
A12 – 3 Part Time of Use Energy (Residential) Exit Service C9 – 3 Part Time of Use Energy (Residential) Bi-directional Service	$0.00 per connection point
A13 – 3 Part Time of Use Energy (Business) Exit Service C10 – 3 Part Time of Use Energy (Business) Bi-directional Service	$0.00 per connection point
A14 – 3 Part Time of Use Demand (Residential) Exit Service C11 – 3 Part Time of Use Demand (Residential) Bi-directional Service	$0.00 per connection point
A15 – 3 Part Time of Use Demand (Business) Exit Service C12 – 3 Part Time of Use Demand (Business) Bi-directional Service	$0.00 per connection point
A16 – Multi Part Time of Use Energy (Residential) Exit Service C13 – Multi Part Time of Use Energy (Residential) Bi-directional Service	$0.00 per connection point
A17 – Multi Part Time of Use Energy (Business) Exit Service C14 – Multi Part Time of Use Energy (Business) Bi-directional Service	$0.00 per connection point
C15 – Bi-directional Service Facilitating a Distributed Generation or Other Non-Network Solution	$175.00 per connection point

The AQP includes two variable fees, the preliminary offer processing fee and preliminary acceptance fee. The methodology for these fees can be found on the following webpage:

https://westernpower.com.au/about/regulation/network-access-prices/

Appendix B

Access Code Compliance

B.1 Access Code Compliance

This section outlines how Western Power's network tariffs for AA5 comply with the requirements of the Access Code in respect of the pricing principles.

B.1.1 Access Code requirements

Section 7.1B(a) of the Access Code specifies that Western Power's TSS must comply with the pricing principles. These pricing principles are set out in sections 7.3D to 7.3L.

The pricing objective specified in section 7.3 of the Access Code requires Western Power's reference tariffs that it charges in respect of its provision of reference services should reflect Western Power's efficient costs of providing those services.

The Access Code pricing principles are:

Pricing principles

7.3D For each reference tariff, the revenue expected to be recovered must lie on or between:

(a) an upper bound representing the stand-alone cost of service provision for customers to whom or in respect of whom that reference tariff applies; and

(b) a lower bound representing the avoidable cost of not serving the customers to whom or in respect of whom that reference tariff applies.

7.3E The charges paid by, or in respect of, different customers of a reference service may differ only to the extent necessary to reflect differences in the average cost of service provision to the customers.

7.3F The structure of reference tariffs must, so far as is consistent with the Code objective, accommodate the reasonable requirements of users collectively and end-use customers collectively.

7.3G Each reference tariff must be based on the forward-looking efficient costs of providing the reference service to which it relates to the customers currently on that reference tariff with the method of calculating such cost and the manner in which that method is applied to be determined having regard to:

(a) the additional costs likely to be associated with meeting demand from end-use customers that are currently on that reference tariff at times of greatest utilisation of the relevant part of the service provider's network; and

(b) The location of end-use customers that are currently on that reference tariff and the extent to which costs vary between different locations in the service provider's network.

7.3H The revenue expected to be recovered from each reference tariff must:

(a) reflect the service provider's total efficient costs of serving the customers that are currently on that reference tariff.

(b) when summed with the revenue expected to be received from all other reference tariffs, permit the service provider to recover the expected revenue for the reference services in accordance with the service provider's access arrangement; and

(c) comply with sections 7.3H(a) and 7.3H(b) in a way that minimises distortions to price signals for efficient usage that would result from reference tariffs that comply with the pricing principle set out in section 7.3G.

7.3I The structure of each reference tariff must be reasonably capable of being understood by customers that are currently on that reference tariff, including enabling a customer to predict the likely annual changes in reference tariffs during the access arrangement period, having regard to:

(a) the type and nature of those customers;

(b) The information provided to, and the consultation undertaken with, those customers.

7.3J A reference tariff must comply with this Code and all relevant written laws and statutory instruments.

7.3K Despite sections 7.3D to 7.3H, a reference tariff may include a component, applicable where a user exceeds its contractual entitlements to transfer electricity into or out of the network at a connection point, which component is not set by reference to the service provider's costs, but instead is set at a level to act as a disincentive to the user exceeding its contractual entitlements. Such component should be determined having regard to the following principles:

(a) the component must be set at a level which provides a material disincentive to the user transferring into or out of the network quantities of electricity above its contractual entitlements; and

(b) in determining that level, regard is to be had to the potential adverse impact on the network, other customers and generators, and the service provider of the user transferring into or out of the network quantities of electricity above its contractual entitlements.

7.3L Unless otherwise determined by the Authority, section 7.3K does not apply to connection points servicing end use customers with a contract maximum demand not exceeding 1 MVA or end-use customers with solar photovoltaic generating plant not exceeding 1 MVA in capacity.

Tariff components

7.6 Unless a tariff structure statement containing alternative pricing methods would better achieve the Code objective, and subject to section 7.3K, for a reference service:

(a) the incremental cost of service provision should be recovered by tariff components that vary with usage or demand; and

(b) any amount in excess of the incremental cost of service provision should be recovered by tariff components that do not vary with usage or demand.

B.1.2 Compliance with the Access Code pricing principles

This section demonstrates Western Power's compliance with the pricing principles set out in sections 7.3D to 7.3L of the Access Code. In particular, the pricing principles set out in sections 7.3D, 7.3G, 7.3H, 7.3I and 7.6.

Section 7.3D stand-alone and avoidable costs

Section 7.3D of the Access Code requires Western Power to ensure that the revenue recovered for each reference tariff lies between:

(a) an upper bound representing the stand-alone cost of service provision for customers to whom or in respect of whom that reference tariff applies; and

(b) a lower bound representing the avoidable cost of not serving the customers to whom or in respect of whom that reference tariff applies.

The stand-alone and avoidable cost methodologies are consistent with those used for the 2022-27 TSS. These approaches are used to calculate the revenues for each reference tariff associated with each cost methodology. These costs are compared with the expected revenue to be recovered from Western Power's proposed reference tariffs.

The revenue expected to be recovered from each of Western Power's reference tariffs in 2023-24 is compared with the stand-alone and avoidable costs in Table B.1.

Table B.1 Demonstration Reference Tariffs are between avoidable and stand-alone cost of service provision for 2023-24 ($M Nominal)

Reference Service	Reference Tariff	Avoidable Cost	Stand-alone Cost	Forecast Revenue Recovered from Reference Tariff
A1	RT1	12.55	521.33	62.42
A2	RT2	21.92	546.09	105.98
A3	RT3	0.98	485.07	4.72
A4	RT4	8.12	506.15	33.05
A5, C5	RT5	5.83	358.00	35.90
A6, C6	RT6	25.29	557.06	130.39
A7, C7	RT7	22.07	404.42	138.58
A8, C8	RT8	2.09	488.15	16.80
A9	RT9	10.73	516.13	44.26
A10	RT10	1.49	486.82	6.65
C1	RT13	55.47	654.81	257.09
C2	RT14	1.08	485.08	4.42
C3	RT15	2.28	488.92	8.86
C4	RT16	3.59	492.12	10.17
A12, C9	RT17	130.94	889.80	515.28
A13, C10	RT18	9.58	510.62	41.58
A14, C11	RT19	0.18	482.57	0.66
A15, C12	RT20	19.88	540.98	83.32

Reference Service	Reference Tariff	Avoidable Cost	Stand-alone Cost	Forecast Revenue Recovered from Reference Tariff
A16, C13	RT21	0.00	481.95	0.00
A17, C14	RT22	0.03	482.03	0.11
A11	TRT1	2.30	401.58	44.32
B2	TRT2	2.30	401.58	52.41

Tariffs reflect forward-looking efficient costs

Section 7.3G of the Access Code requires each reference tariff to be based on the forward-looking efficient costs of providing the reference service to which it relates to the customers currently on that reference tariff with the method of calculating such cost and the manner in which that method is applied to be determined having regard to:

a. the additional costs likely to be associated with meeting demand from end-use customers that are currently on that reference tariff at times of greatest utilisation of the relevant part of the service provider's network; and

b. the location of end-use customers that are currently on that reference tariff and the extent to which costs vary between different locations in the service provider's network.

Table B.2 below outlines how Western Power allocates the revenue across its customer groups in accordance with sections 3.1 and 3.2 of the TSS Technical Summary. Western Power's process ensures that tariffs reflect the efficient costs incurred in supplying customers using those tariffs.

Table B.2 Cost allocation of distribution and transmission target revenue to relevant customer groups and cost pools for 2023-24 ($M nominal)

Customer groups	Distribution Revenue							Transmission Revenue	Bundled Revenue	Proportion of total costs
	High voltage	Low voltage	Transformers	Metering	Streetlights	Admin	Total			
Residential	233.95	251.42	31.62	51.24	0.00	137.70	705.93	198.38	**904.30**	56.48%
LV business – small	114.64	90.06	13.46	4.80	0.00	12.90	235.86	59.09	**294.94**	18.42%
LV business – large	86.35	7.53	10.76	0.20	0.00	0.53	105.37	22.49	**127.86**	7.99%
HV business	109.21	0.00	0.00	0.03	0.00	0.09	109.34	23.48	**132.81**	8.29%
Streetlights	0.00	0.37	0.00	1.43	27.79	3.85	33.44	1.48	**34.93**	2.18%
Unmetered	0.88	1.37	0.14	0.66	0.00	1.77	4.82	1.59	**6.41**	0.40%
Generators	1.18	0.76	0.12	0.13	0.00	0.34	2.52	0.65	**3.17**	0.20%
Grid connected storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00%
Transmission	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.73	**96.73**	6.04%
Total	**546.21**	**351.51**	**56.10**	**58.49**	**27.79**	**157.18**	**1,197.28**	**403.88**	**1,601.16**	**100.00%**

Distribution revenue of $1,197 million is allocated across the distribution customer groups (and subsequently the reference tariffs) according to the usage by customers of the various voltage steps (represented by asset categories) involved. Under Western Power's cost allocation methodology, the proportion of low voltage cost allocation determined by demand is equal to 50 per cent.

The efficient costs are apportioned across these asset categories, with customers' use of these assets determined by the customers' diversified demand and usage. Some assets are apportioned according to customer numbers, for example connection services.

Revenue expected to be recovered from reference tariffs

Section 7.3H of the Access Code requires the revenue expected to be recovered from reference tariffs to:

a. reflect the service provider's total efficient costs of serving the customers that are currently on that reference tariff;
b. when summed with the revenue expected to be received from all other reference tariffs, permit the service provider to recover the expected revenue for the reference services in accordance with the service provider's access arrangement; and
c. comply with sections 7.3H(a) and 7.3H(b) in a way that minimises distortions to the price signals for efficient usage that would result from reference tariffs that comply with the pricing principle set out in section 7.3G.

Table B.3 below demonstrates how the cost allocation of distribution and transmission target revenues to the relevant customer groups and cost pools has been allocated to the individual reference tariffs in a manner that when summed permits Western Power to recover the expected revenue for the reference services in accordance with the energy and customer numbers codified under the access arrangement.

Table B.3 Bundled reference service revenue recovered from distribution and transmission connection points for 2023-24 ($M nominal)

Reference tariff	MWh	Customer numbers	Forecast bundled revenue recovered
RT1 – Anytime Energy (Residential)	363,944	84,024	62.42
RT2 – Anytime Energy (Business)	518,881	69,362	105.98
RT3 – Time of Use Energy (Residential)	30,481	5,483	4.72
RT4 – Time of Use Energy (Business)	280,389	4,041	33.05
RT5 – High Voltage Metered Demand	685,504	306	35.90
RT6 – Low Voltage Metered Demand	1,858,049	3,988	130.39
RT7 – High Voltage Contract Maximum Demand	3,176,292	296	138.58
RT8 – Low Voltage Contract Maximum Demand	170,268	59	16.80
RT9 – Streetlighting	143,259	297,781	44.26
RT10 – Unmetered Supplies	50,170	19,278	6.65
RT11 – Distribution Entry	0	26	4.21
RT13 – Anytime Energy (Residential) Bi-directional	1,513,508	336,734	257.09
RT14 – Anytime Energy (Business) Bi-directional	24,048	2,156	4.42

Reference tariff	MWh	Customer numbers	Forecast bundled revenue recovered
RT15 – Time of Use (Residential) Bi-directional	54,103	10,983	8.86
RT16 – Time of Use (Business) Bi-directional	91,887	751	10.17
RT17 – Time of Use Energy (Residential)	3,101,254	710,267	515.28
RT18 – Time of Use Energy (Business)	350,455	5,884	41.58
RT19 – Time of Use Demand (Residential)	9,076	152	0.66
RT20 – Time of Use Demand (Business)	725,178	6,428	83.32
RT21 – Multi Part Time of Use Energy (Residential)	1	1	0.00
RT22 – Multi Part Time of Use Energy (Business)	725	38	0.11
Total Bundled Target Revenue from distribution customers	**13,147,472**	**1,558,039**	**1,504.43**
TRT1 – Transmission Exit	781	30	44.32
TRT2 – Transmission Entry	5,405	31	52.41
Total Bundled Target Revenue from transmission customers	**6,186**	**61**	**96.73**
Total Bundled Target Revenue			**1,601.16**

Incremental cost of service provision recovered by variable component of tariffs

Section 7.6 of the Access Code states that unless a tariff structure statement containing alternative pricing methods would better achieve the Code objective, and subject to section 7.3K, for a reference service:

a. the incremental cost (avoidable cost) of service provision should be recovered by tariff components that vary with usage or demand; and

b. any amount in excess of the incremental cost (avoidable cost) of service provision should be recovered by tariff components that do not vary with usage or demand.

Western Power has had regard to this requirement in setting tariffs. The following Table B.4 shows that the variable components for 2023-24 tariffs exceeds the avoidable cost calculated for the comparison of stand-alone and avoidable costs above, with the exception of reference tariff RT9 for streetlights which is priced lower than the avoidable cost.

Table B.4 Demonstration that variable costs exceed avoidable costs of reference tariff provision for 2023-24 ($M nominal)

Reference Service	Reference Tariff	Avoidable Cost	Variable tariff components
A1	RT1	12.55	29.70
A2	RT2	21.92	56.98
A3	RT3	0.98	2.57
A4	RT4	8.12	27.67
A5, C5	RT5	5.83	11.95

Reference Service	Reference Tariff	Avoidable Cost	Variable tariff components
A6, C6	RT6	25.29	82.82
A7, C7	RT7	22.07	66.48
A8, C8	RT8	2.09	3.93
A9	RT9	10.73	6.45
A10	RT10	1.49	1.77
C1	RT13	55.47	125.95
C2	RT14	1.08	2.88
C3	RT15	2.28	4.57
C4	RT16	3.59	9.14
A12, C9	RT17	130.94	222.25
A13, C10	RT18	9.58	37.15
A14, C11	RT19	0.18	0.58
A15, C12	RT20	19.88	77.05
A16, C13	RT21	0.00	0.00
A17, C14	RT22	0.03	0.07