Economic Regulation Authority

Annual data report 2021/22

Energy distributors

30 January 2023

D256659

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Chair's foreword

The Economic Regulation Authority's annual data report to the Minister for Energy provides an overview of the trends in energy markets and indicators of energy distributors' performance, with a focus on reliability and customer service.

Performance reporting obligations apply only to distributors serving small use customers, who are residential and small business customers consuming less than 160 megawatt hours of electricity or one terajoule of gas a year. This comprises Western Power, Horizon Power, Rottnest Island Authority and Peel Renewable Energy in respect of electricity, and ATCO Gas Australia, Wesfarmers Kleenheat Gas and Esperance Power Station for gas.

Observations for 2021/22

The data shows electricity connections on Western Power and Horizon Power's distribution systems continue to increase, with a combined total of 1.2 million connections reported in 2021/22. This is the highest in the six years reported and is attributed to growing population. Gas connections also continue to increase for all distributors except Esperance Power Station. Under the State government's Esperance Energy Transition Plan, Esperance will transition to electricity-only appliances from 31 March 2023, when Esperance Power Station ceases operation.

Western Power's reliability performance deteriorated in 2021/22 compared to the previous year. Overall, there was a seven per cent increase in customers experiencing extended interruptions (longer than 12 hours). More customers also experienced multiple outages in 2021/22 compared to 2020/21. There was a three-fold increase in Perth and urban customers experiencing more than nine interruptions in the year and a nine-fold increase in rural customers experiencing more than 16 interruptions. Western Power attributes most of these interruptions to events outside its direct control such as severe weather events (bushfires, storms and heatwave conditions) and outages on the transmission network and in generation that occurred throughout the reporting year.

Other energy distributers have generally met reliability standards; Horizon Power has met the outage duration standard for the fourth consecutive year and only one per cent of Horizon Power customers experienced an extended interruption. The gas distribution networks have consistently high reliability, with less than 0.1 per cent of ATCO's customers and none of Kleenheat or Esperance Power Station's customers experiencing an outage in the reporting period.

The ERA's role

The ERA recognises the importance of energy reliability and has a particular focus on poor levels of service in some parts of Western Power's network, as highlighted by the data in this report, the Independent Report on Christmas 2021 Power Outages by Michelle Shepherd, and the ERA's own engagement with regional customers.

Western Power undergoes regular funding reviews, called access arrangements, by the ERA. Through these reviews, Western Power proposes funding to build resilience in the network including to counter the severe weather events associated with climate change. Network reliability is an area of focus in the ERA's review of Western Power's next access arrangement that extends through to 2027. The ERA has proposed introducing measures aimed at improving reliability performance and will discuss other options to improve reliability with Energy Policy WA.

This report also includes a section on streetlight repairs, which the ERA collects data on for the purpose of Western Power's access arrangement. The data shows that repair timing is

improving across metropolitan and regional areas. To address local government concerns about streetlight standards, in October 2022, the ERA facilitated a workshop between local governments, Western Power and Synergy. The outcomes of this workshop should hopefully improve streetlighting quality and customer satisfaction over coming years.

Steve Edwell
Chair, Economic Regulation Authority

1. Market overview

Main points

- The number of electricity connections on Western Power and Horizon Power's distribution systems was the highest in the six years reported.
- The number of gas connections was the highest in the six years reported, mostly due to an increase in connections on ATCO's distribution systems.
- The number of gas connections on Esperance Power Station's distribution system was the lowest in the six years reported given Esperance customers are being transitioned from gas to electricity as part of the Energy Transition Plan.[1]

This section provides an overview of the energy distributors market in Western Australia, with a focus on the:

- number of licensed distributors supplying small use electricity and gas customers[2]
- number of small use electricity and gas customer connections.

1.1 Electricity distributors

Electricity distribution licensees that supply small use customers are: [3]

- Horizon Power
- Peel Renewable Energy Pty Ltd
- Rottnest Island Authority
- Western Power.

1.2 Electricity connections

Table 1 shows the number of customer connections on each electricity distributor's system.[4]

1 Government of Western Australia media statement, 26 April 2022, 'Esperance energy transition plan secured with $10.5 million', (online) [accessed 2 December 2022].

2 A small use electricity customer is a customer who consumes less than 160 megawatt hours of electricity per year and a small use gas customer is a customer who consumes less than 1 terajoule of gas per year.

3 Throughout the report a 'small use customer' will be referred to as a 'customer' and the term 'customer' can also mean 'customer connection' depending on the context of its application.

4 Throughout this report, the term 'customer connection' means a small use customer connection.

Table 1: Electricity connections by distributor at 30 June 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Horizon Power	48,748	48,981	50,635	48,243	51,951	52,311
Peel Renewable Energy	n/a	n/a	n/a	n/a	5	8
Rottnest Island Authority	528	528	529	529	529	529
Western Power	1,128,334	1,141,308	1,152,904	1,162,601	1,175,528	1,187,153
Total	**1,177,610**	**1,190,817**	**1,204,068**	**1,211,373**	**1,228,013**	**1,240,001**

The number of connections on Western Power's distribution system was the highest in the six years reported and is consistent with the increase in the previous year. The number of connections on the network will continue to grow as the population increases.

The number for connections on Horizon Power's distribution system was also the highest in the six years reported.

1.3 Gas distributors

The number of licensed gas distributors has not changed since the ERA took over the responsibility for licensing gas distributors in 2005.

Holders of gas distribution licences are:

- ATCO Gas Australia
- Esperance Power Station
- Wesfarmers Kleenheat Gas.

1.4 Gas connections

Table 2 shows the number of customer connections on each gas distributor's system. The total number of gas connections was the highest in the six years reported, mostly due to an increase in connections on ATCO's distribution systems.

Table 2: Gas connections by distributor at 30 June 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
ATCO Gas Australia	750,339	760,355	769,597	772,861	781,436	792,130
Esperance Power Station	383	385	375	376	376	355
Wesfarmers Kleenheat Gas	1,006	1,048	1,071	1,103	1,176[5]	1,185
Total	**751,728**	**761,788**	**771,043**	**774,340**	**782,987**	**793,670**

[5] Kleenheat reported that it has underreported the number of connections in previous years. Before 2020/21, Kleenheat counted duplexes as one connection instead of one connection for each individually metered supply point in the duplex.

The number of connections on Esperance Power Station's distribution system was the lowest in the six years reported. This is because Esperance Power Station will permanently cease its activities from 31 March 2023. Horizon Power, on behalf of the State Government, is executing the Energy Transition Plan whereby all of Esperance Power Station's customers are being transitioned from gas to electricity.

2. Electricity distribution system reliability

Main points

- Seven per cent of Western Power's customers experienced extended interruptions, due to four major events in 2021/22, including storms and bushfires.
- There was an increase in the number of Western Power's Perth CDB and urban customers experiencing more than nine interruptions in 2021/22, due to environmental factors, such as severe weather that have impacted the network, planned interruptions and the four major events that caused the extended interruptions.
- The number of Western Power's rural customers having more than 16 interruptions in 2021/22 was the highest for the six years reported.
- For the fourth consecutive year, Horizon Power has met the outage duration standard for rural systems prescribed in the relevant code.[6]

Electricity distributors are required to report on the reliability of electricity supply under two regulatory frameworks:

- *Electricity Industry (Network Quality and Reliability of Supply) Code 2005* (NQ&R Code).
- The ERA framework based on the Institute for Electrical and Electronic Engineers standard 1366-2003 (IEEE 1366), which is described in the ERA's *Electricity Distribution Licence Performance Reporting Handbook*.[7]

2.1 NQ&R Code specific reliability measures

The NQ&R Code requires distributors to report on the duration and frequency of supply interruptions, including:

- The number of customer premises that have had interruptions that exceed 12 hours continuously (referred to as an extended interruption).
- The number of customer premises that have had more than:
  - Nine interruptions per year in the Perth Central Business District (CBD) and urban areas.[8]
  - 16 interruptions per year in all other areas of Western Australia.

To maintain consistency in this section of the report the term 'customer premises' has been replaced by 'customer connections' in the discussion on NQ&R Code reliability measures.[9]

The NQ&R Code's reliability measures include all supply interruptions regardless of their cause. Some interruptions are caused by factors that are within the control of the distributor,

6 All Horizon Power's customers fall under the definition of rural under the NQ&R Code.

7 *Standard IEEE 1366-2003 – Guide for Electricity Power Distribution Reliability Indices, Institute for Electrical and Electronic Engineers*

8 The CBD is the area supplied by the Milligan Street Zone Substation and the Hay Street Zone Substation, both operated by Western Power.

9 The NQ&R Code is unusual in using the term 'customer premise' to define a property connected to a distribution network.

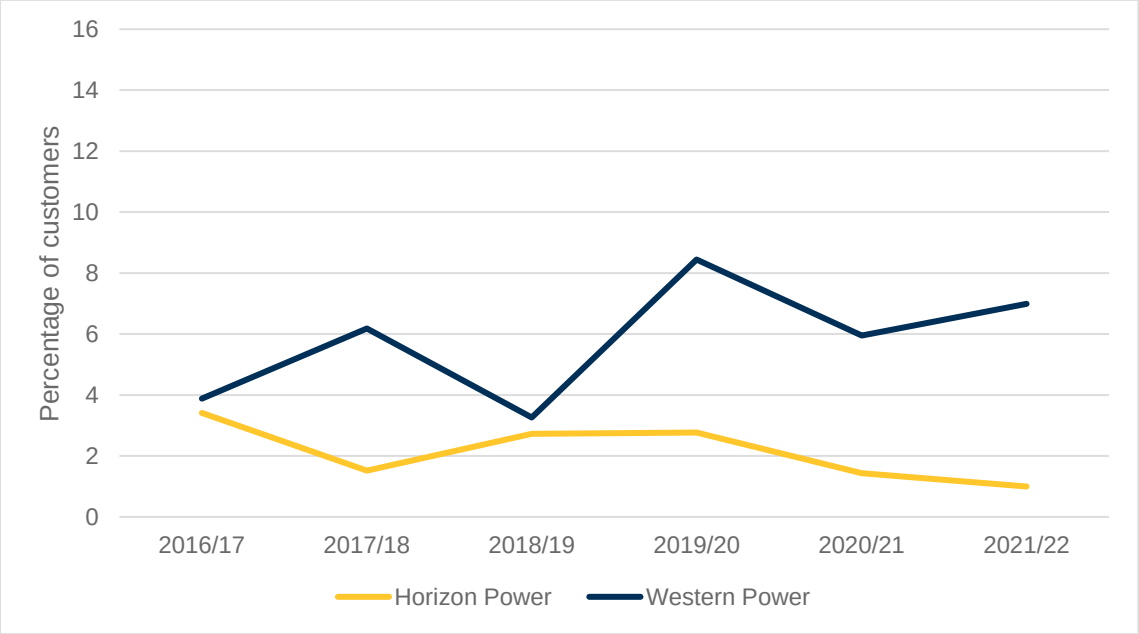
such as asset failures caused by inadequate maintenance practices and not replacing ageing or poorly performing assets in a timely manner. Other supply interruptions are caused by factors outside the reasonable control of the distributor, such as severe weather, transmission outages and generation outages. Including all supply interruptions means that the distributor is reporting on the actual customer experience.

2.1.1 Extended interruptions

The number of customer connections affected by extended interruptions varies each year because of environmental factors, such as severe storms and bush fires.

Figure 1 shows the percentage of customer connections on the Horizon Power and Western Power's distribution systems that had an extended interruption (interruptions that exceed 12 hours continuously).[10, 11]

Figure 1: Horizon Power and Western Power's extended interruptions 2017 to 2022 (%)



The proportion of customer connections supplied by Western Power that had extended interruptions in 2021/22 was seven per cent (82,939 premises). Western Power attributed the cause of the extended interruptions to four major events:

- Storm damage to Western Power's overhead network assets in the Perth Metropolitan and Peel regions in August 2021.
- Bushfires in the northern part of the Perth Metropolitan region in December 2021.
- Heatwave, which affected network performance in December 2021.
- Bushfires in the Mid-West and Goldfields regions and pole top fires in February 2022.

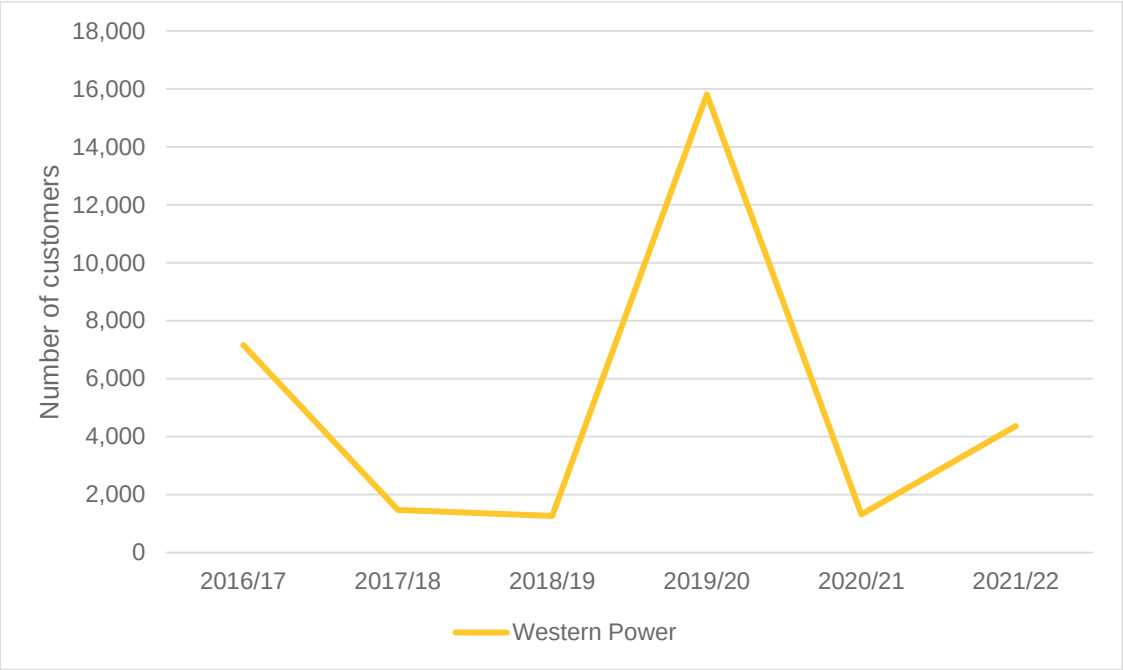
[10] The Rottnest Island Authority has been excluded from Figure 1, because it has reported zero extended interruptions on its system in the past six years. Peel Renewable Energy has also been excluded from Figure 1, because it reported zero extended interruptions in 2021/22.

[11] Data for Figures 1, 2, 3, 4 and 5 is in the energy distributor dataset published by the ERA. See Economic Regulation Authority, Energy Distributor Dataset 2017 – 2022, Network Reliability (online).

2.1.2 Multiple interruptions

Figure 2 shows the number of customer connections that had more than the permitted number of interruptions (nine) in the Perth CBD and urban areas.[12]

Figure 2: Multiple supply interruptions on electricity distribution systems – CBD and urban 2017 to 2022



In 2021/22, 4,364 Western Power customers had more than nine interruptions, which was significantly more than the 1,323 customers in 2020/21. Western Power attributed the increase to environmental factors that have impacted the network, planned interruptions, as well as the four major events that caused the extended interruptions, as discussed above.[13]

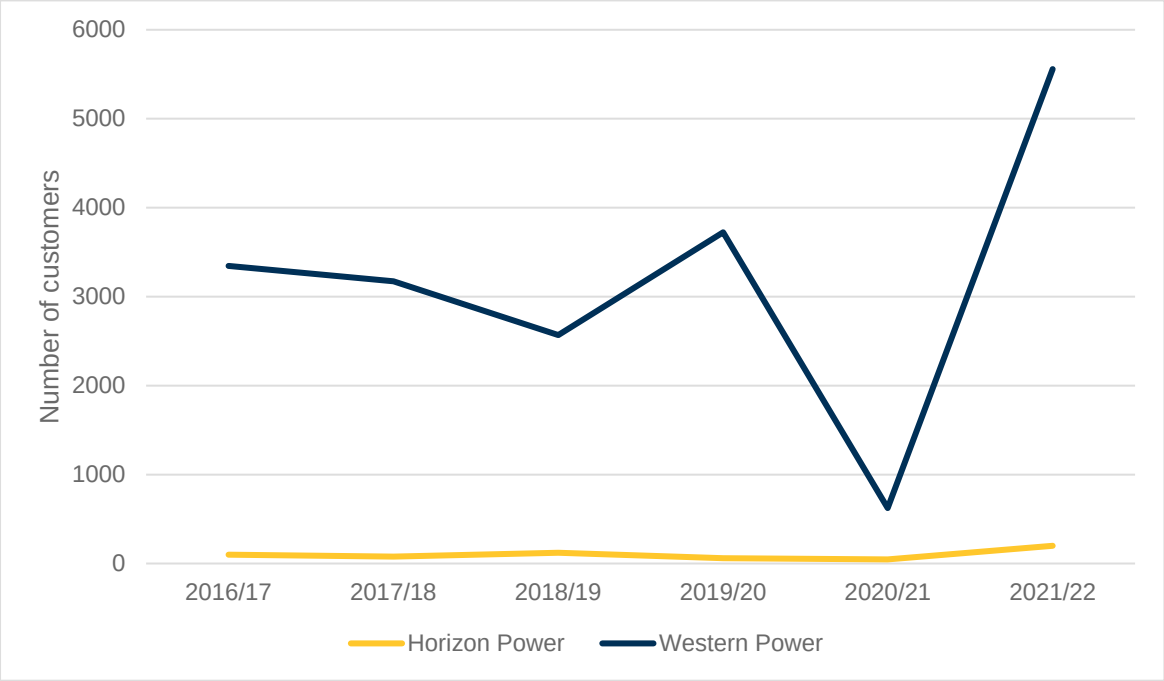
Figure 3 shows the number of customer connections that had more than the permitted number of interruptions (16) in rural areas, where all four distributors have distribution systems.[14]

[12] Western Power is the only distributor that supplies the Perth CBD and urban areas.

[13] Western Power reported that the large spike in 2019/20 was due to severe storms in February and May 2020 and pole top fires in January 2020.

[14] Rottnest Island Authority has been excluded from Figure 3, because it has reported that none of its connections had more than 16 interruptions in the past six years. Peel Renewable Energy also reported that none of its connections had more than 16 interruptions in 2021/22 and has been excluded from Figure 3.

Figure 3: Multiple supply interruptions on electricity distribution systems – rural 2017 to 2022



The 5,558 customer connections on Western Power's distribution system that had more than 16 supply interruptions in 2021/22 was the highest in six years. Western Power attributed the increase in 2021/22 for rural customers to the same environmental factors, planned interruptions, and major events that caused the extended interruptions for CBD and urban customers.

2.2 Common reliability measures

The ERA's reliability performance framework, based on the IEEE 1366 standard, and the framework under the NQ&R Code both measure distribution system reliability through two main performance indicators:[15,16]

- System Average Interruption Duration Index (SAIDI): the average total duration of supply interruptions across all customer connections on the distribution system.
- System Average Interruption Frequency Index (SAIFI): the average number of supply interruptions across all customer connection on the distribution system.

Section 13(2) of the NQ&R Code includes standards for the average total duration of interruptions in the three defined areas of the State:[17, 18]

- Perth CBD – 30 minutes

[15] The definition of the measures is in IEEE 1366-2003.

[16] The NQ&R Code does not use the terms SAIDI and SAIFI. See Appendix 3 for information about the NQ&R Code measures of reliability.

[17] This is equivalent to the SAIDI for the group of feeders supplying customer connections in each geographical area.

[18] See Appendix 3 for more information about how the standard is calculated.

- urban areas other than the Perth CBD – 160 minutes[19]
- any other area of the State (rural areas) – 290 minutes.[20]

The standard for each area takes into account the level of interconnection and available capacity factored into the design of the distribution systems.

Distributors are required to comply with the NQ&R Code as a condition of their electricity distribution licence.

Western Power is also subject to reliability performance standards other than the NQ&R Code, which are set in its access arrangement service standard benchmarks.[21]

Further information on distribution system reliability measures is in Appendix 3.

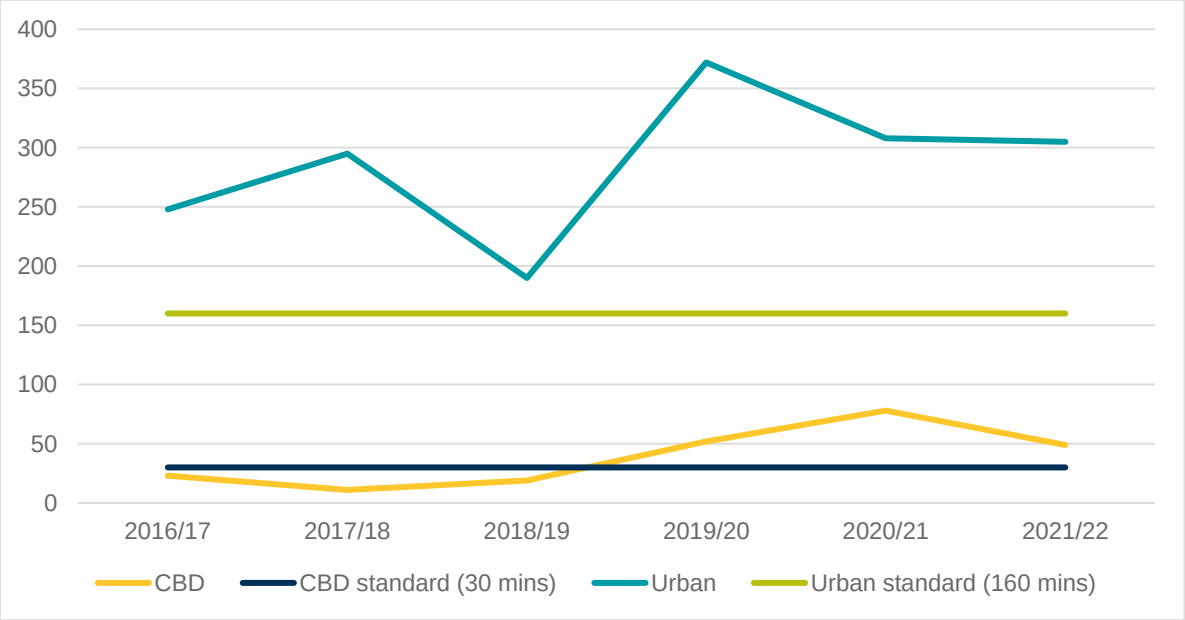
2.3 System reliability – NQ&R Code

2.3.1 SAIDI

Western Power is the only distributor that supplies customer connections in the Perth CBD and urban areas.

Figure 4 shows the average total duration of interruptions per connection (SAIDI) and compares them to the applicable standards in section 13 of the NQ&R Code.

Figure 4: Average total duration of interruptions per connection (SAIDI) in CBD and urban areas 2017 to 2022 (minutes)



[19] These areas are defined in section 3 of the NQ&R Code and include the Perth metropolitan region, Albany, Bunbury, Geraldton, Kalgoorlie and Mandurah.

[20] 'Other areas of the State' are referred to as 'rural area' in this report. Electricity distributors are required to report SAIDI, SAIFI and the Customer Average Interruption Duration Index (CAIDI) for the feeder classifications of 'short rural' and 'long rural'. This is further discussed in Appendix 3 of this report.

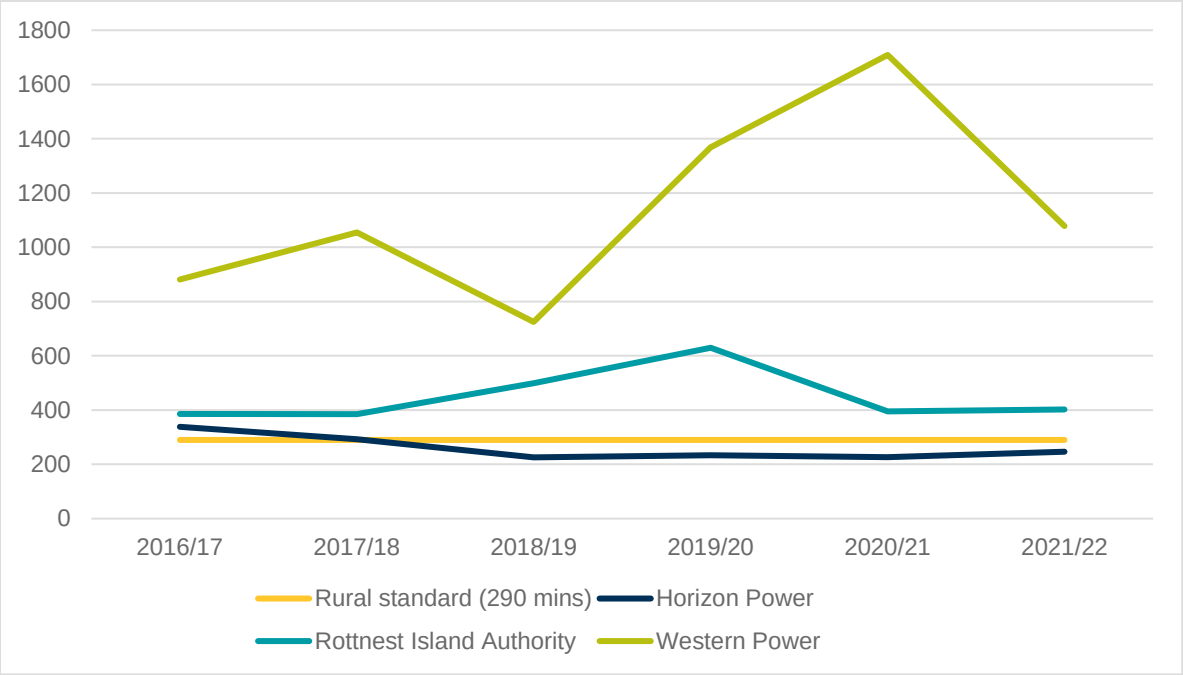
[21] The access arrangement requires Western Power to meet the service levels defined in the service standard benchmarks, which include benchmarks for distribution system reliability. More information is available on the ERA website.

This is the third consecutive year that Western Power has not met the NQ&R Code's CBD SAIDI standard of 30 minutes. Although the standard of 30 minutes was not met, the performance for this indicator improved from 78 minutes in 2020/21 to 47 minutes in 2021/22. The 2021/22 CBD SAIDI was the result of approximately 60 incidents on the CBD underground network, including transmission and distribution faults, planned outages and equipment failure.

Western Power has not met the NQ&R Code's SAIDI standard of 160 minutes for urban areas in any of the six years reported.

Figure 5 shows the average total duration of interruptions per connection (SAIDI) on distribution systems located in rural areas for each distributor.[22]

Figure 5: Average total duration of interruptions per connection (SAIDI) in rural areas 2017 to 2022 (minutes)



Western Power's SAIDI performance in rural areas has improved, reaching 1,078 minutes in 2021/22, down from 1,709 minutes in 2020/21. Western Power attributed the improvement to fewer interruptions due to equipment failure and reduced bushfire and storm activity compared to last year. However, it is still substantially higher than the 290 minutes prescribed in the NQ&R Code.

Horizon Power met the NQ&R Code's SAIDI standard for rural systems for the fourth consecutive year.

Rottnest Island Authority's SAIDI performance has been relatively stable since last year, reaching 402 minutes in 2021/22. It has not met the NQ&R Code's SAIDI standard for rural systems of 290 minutes for the six years reported.

[22] Peel Renewable Energy has been excluded from Figure 5, because it has reported that none of its connections had interruptions during the year.

2.4 System reliability – ERA licensing framework

The ERA's system reliability framework is based on IEEE standard 1366 and requires distributors to report on overall supply interruptions (which captures all interruptions regardless of cause) and normalised supply interruptions.

The benefit of reporting on overall supply interruptions is discussed in section 2.1.

The normalised supply interruptions measurement removes all unplanned supply interruptions that are caused by generation outages and transmission system outages caused by third-party events. The normalised supply interruptions measurement does not remove force majeure events and other transmission system outages not caused by third-party events.[23]

It is industry practice to use normalised reliability data to assess the reliability performance of distributors, particularly when comparing distributor performance within or across jurisdictions.

The definitions of overall and normalised interruptions under the ERA's system reliability framework are discussed further in Appendix 3.

2.4.1 SAIDI

SAIDI measures the average total duration of supply interruptions (in minutes) across all customer connections on a distribution system. The total network SAIDI is a weighted average value. The weighting is based on the proportion of total customer connections served by each of the distribution system feeder classification types.[24]

Table 3 shows the overall and normalised SAIDI values by feeder class for each distributor for 2021/22.[25]

[23] Transmission system outages caused by third party events include customer installation faults and an inter-trip signal from a connected third-party transmission system.

[24] The distribution system feeder classification types are discussed in Appendix 3.

[25] Peel Renewable Energy have been excluded from Table 3, because it reported zero interruptions.

Table 3: Overall and normalised SAIDI by electricity distributor for 2021/22

Overall SAIDI (minutes per annum)					
	Total network	**CBD**	**Urban**	**Short rural**	**Long rural**
Horizon Power	234	n/a	53	220	1,191
Rottnest Island Authority	99	n/a	n/a	99	n/a
Western Power	457	47	311	489	1,488
Normalised SAIDI (minutes per annum)					
	Total network	**CBD**	**Urban**	**Short rural**	**Long rural**
Horizon Power	155	n/a	19	147	862
Rottnest Island Authority	0	n/a	n/a	0	n/a
Western Power	236	14	144	260	870

n/a – The distributor does not operate feeders of this type

Figures 6, 7, 8 and 9 compare the past six years of overall and normalised SAIDI values for the CBD, urban, short rural and long rural feeder classes, respectively, for Horizon Power and Western Power.[26]

The value of the SAIDI for each class of feeder is influenced by the level of redundancy in the distribution system for that class, and the remoteness of the location.[27] Long and short rural feeders tend not to have any redundancy, and are often in remote locations, which increases the time to repair faults and hence the length of the outage.

The normalisation process has resulted in the values of normalised SAIDI being lower than the overall SAIDI for all classes of feeder operated by the three distributors that reported SAIDI for 2021/22. This is because the normalised SAIDI removes unplanned supply interruptions, including interruptions caused by severe weather, generation outages and transmission system outages caused by third-party events. Further information on the normalisation process is in Appendix 3.

[26] Data for Figures 6, 7, 8 and 9 is in the energy distributor dataset published by the ERA (including the Rottnest Island Authority and Peel Renewable Energy). See Economic Regulation Authority, Energy Distributor Dataset – 2017 – 2022, Network Reliability (online).

[27] Redundancy is often achieved by designing spare capacity into the feeders in a distribution system. If a feeder fails, the energy that would normally flow through it is delivered to customers via other designated feeders that have spare capacity reserved for the purpose.

Figure 6: Overall and normalised SAIDI by electricity distributor – CBD 2017 to 2022

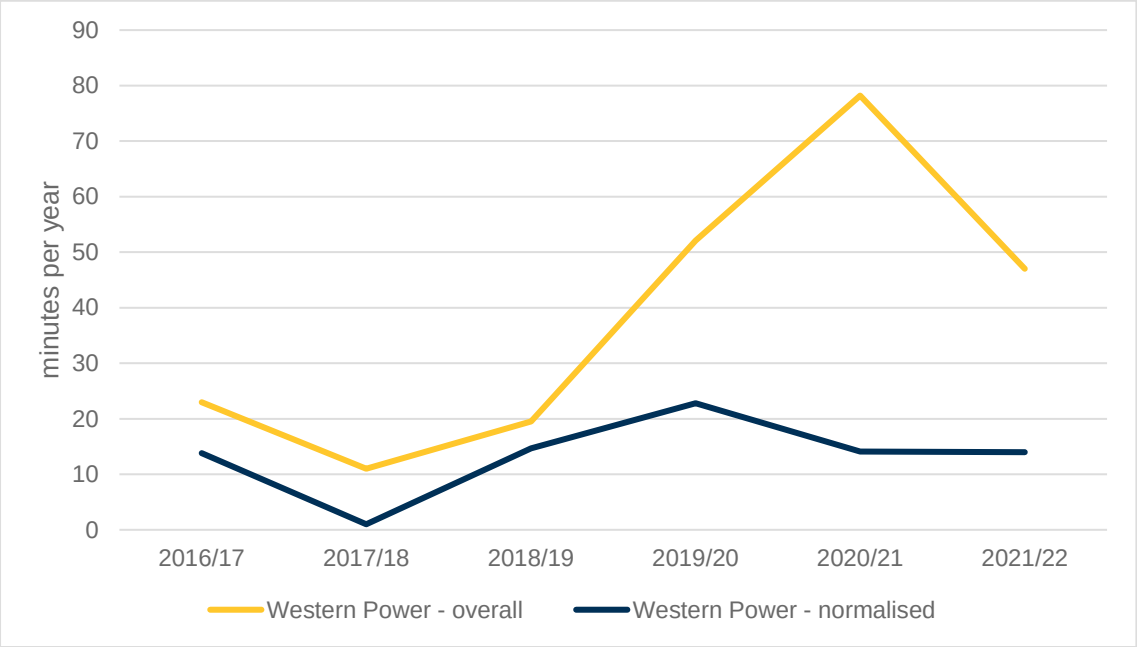
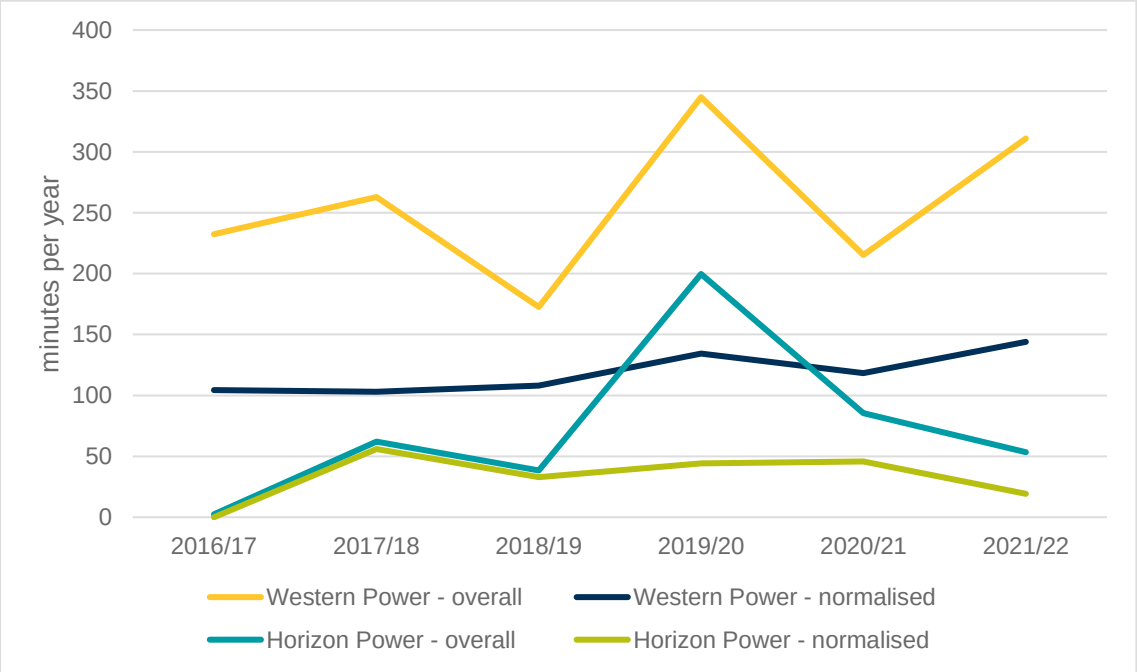


Figure 7: Overall and normalised SAIDI by electricity distributor – urban 2017 to 2022[28]



[28] Peel Renewable Energy has been excluded from Figure 7 for the reason explained in footnote 24.

Figure 8: Overall and normalised SAIDI by electricity distributor – short rural 2017 to 2022[29]

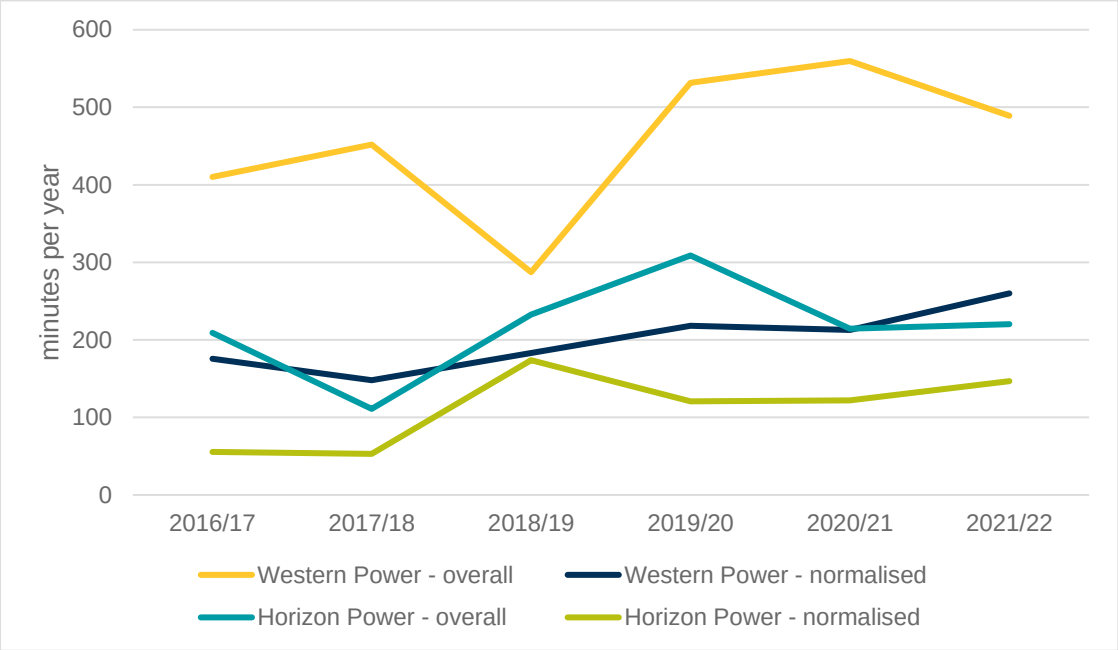
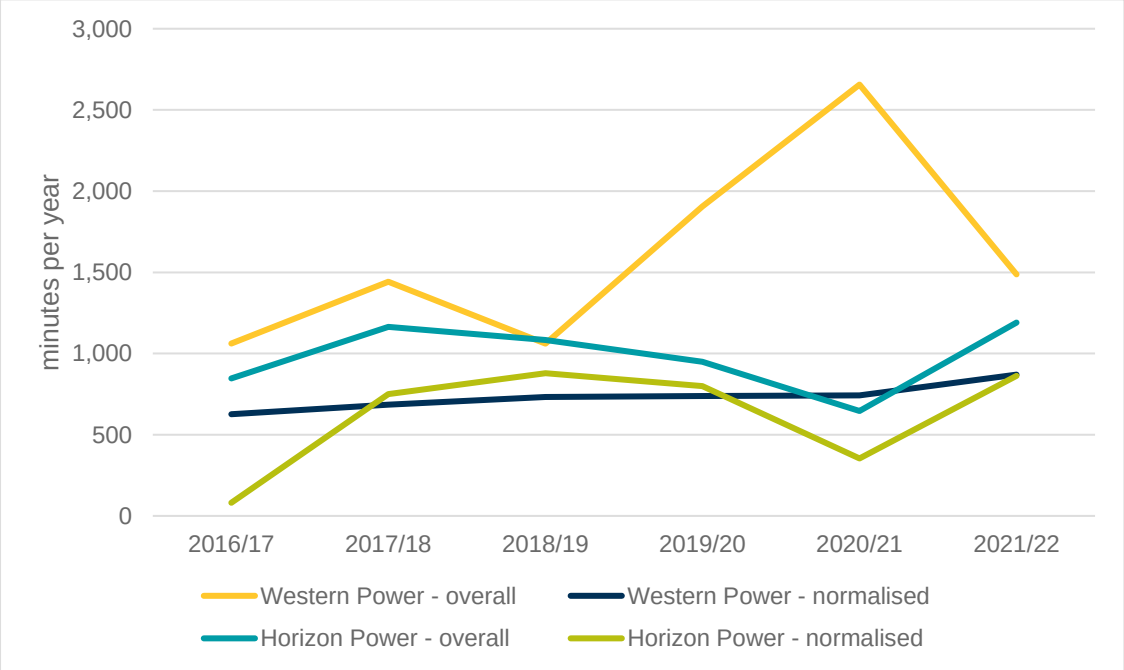


Figure 9: Overall and normalised SAIDI by electricity distributor – long rural 2017 to 2022



[29] Rottnest Island Authority has been excluded from Figure 8, because it has reported zero minutes of normalised SAIDI for each of the last six years.

2.4.2 SAIFI

SAIFI measures the average number of supply interruptions across all customer connections. The total network SAIFI is a weighted average value, with the weighting based on the total customers served by each of the distribution system feeder classification types.

Table 4 shows the overall and normalised SAIFI values by feeder class for each distributor in 2021/22.[30]

Interruptions that are excluded from the calculation of normalised SAIDI are also excluded from the calculation of normalised SAIFI.

Table 4: Overall and normalised SAIFI for each electricity distributor in 2021/22

Overall distribution network – SAIFI (per year)					
	Total network	**CBD**	**Urban**	**Short rural**	**Long rural**
Horizon Power	2.48	n/a	0.55	2.49	9.24
Rottnest Island Authority	4.77	n/a	n/a	4.77	n/a
Western Power	2.72	0.48	1.90	3.39	6.89
Normalised distribution network – SAIFI (per year)					
	Total network	**CBD**	**Urban**	**Short rural**	**Long rural**
Horizon Power	2.11	n/a	0.42	2.13	7.89
Rottnest Island Authority	0.0	n/a	n/a	0.0	n/a
Western Power	1.98	0.40	1.38	2.47	5.06

n/a – No feeders of this type are operated by the distributor

Figures 10, 11, 12 and 13 compare the past six years of overall and normalised SAIFI values for the CBD, urban, short rural and long rural feeder classes, respectively, for Horizon Power and Western Power.[31]

[30] Peel Renewable Energy have been excluded from Table 4 for the reason explained in footnote 24.

[31] Data for Figures, 10, 11, 12 and 13 is in the energy distributor dataset published by the ERA (including the Rottnest Island Authority and Peel Renewable Energy). See Economic Regulation Authority, Energy Distributor Dataset – 2017 – 2022, Network Reliability (online).

Figure 10: Overall and normalised SAIFI by electricity distributor – CBD 2017 to 2022

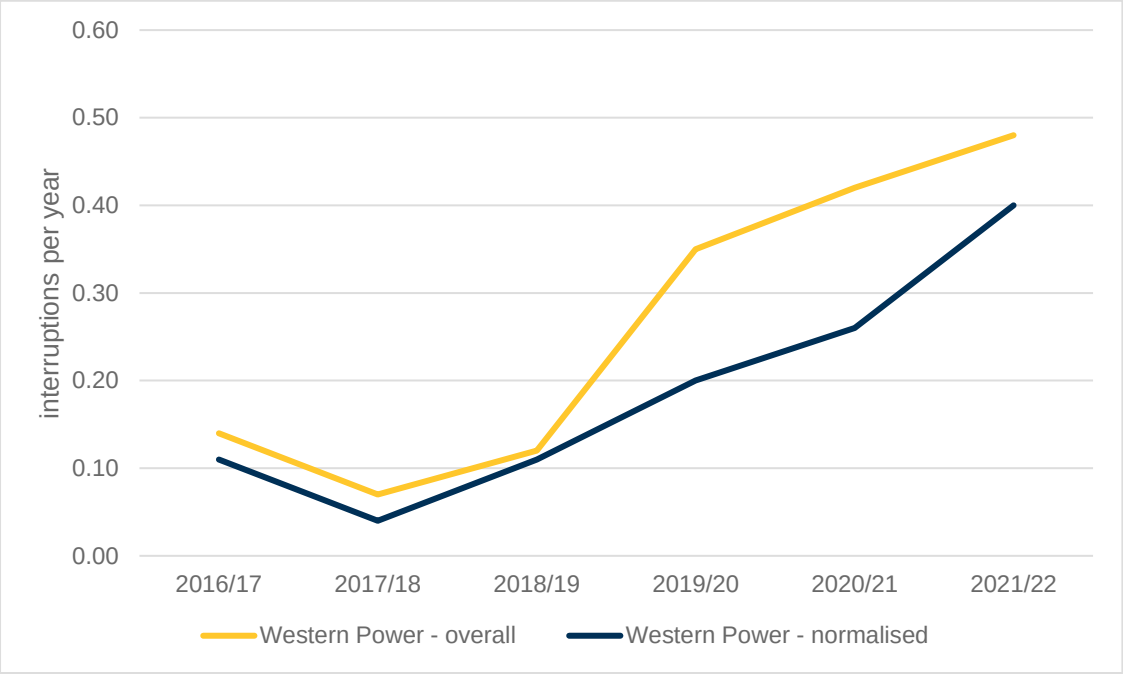


Figure 11: Overall and normalised SAIFI by electricity distributor – urban 2017 to 2022

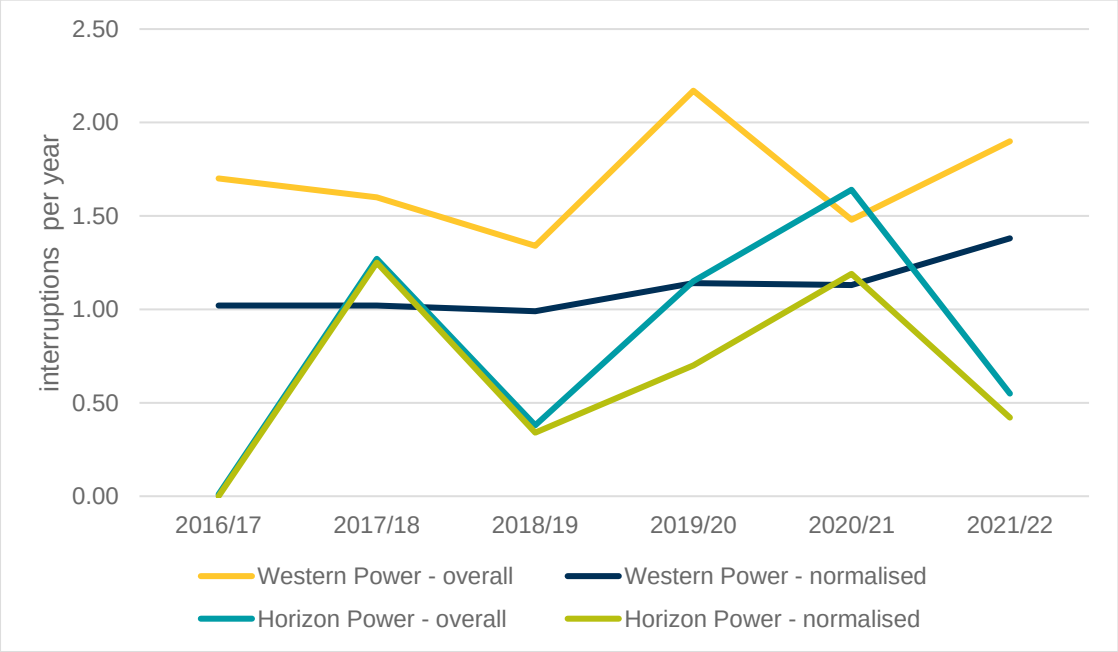


Figure 12: Overall and normalised SAIFI by electricity distributor – short rural 2017 to 2022[32]

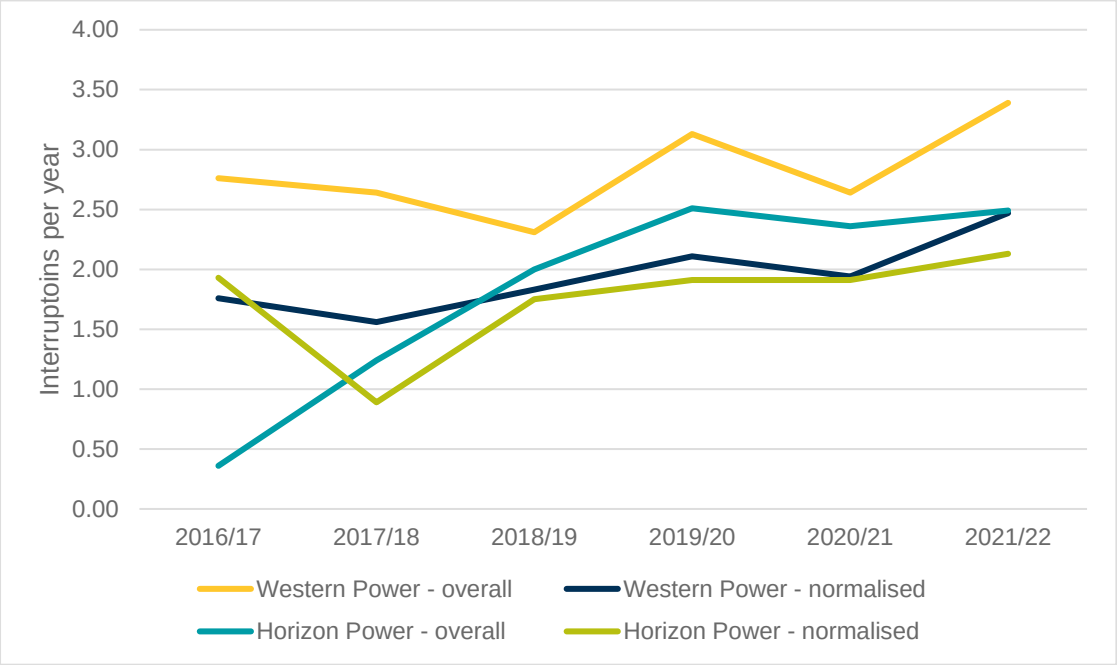
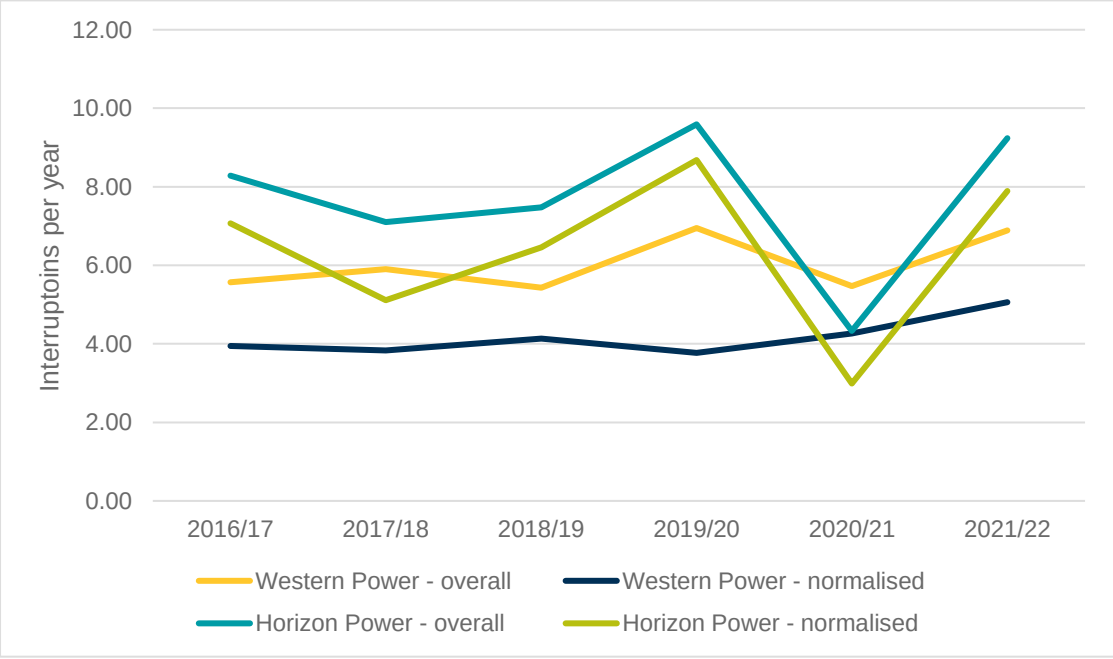


Figure 13: Overall and normalised SAIFI by electricity distributor – long rural 2017 to 2022



The change in the values of SAIFI each year mostly follows the same pattern as the corresponding SAIDI values. The result is to be expected, because the removal of an interruption from the total interruptions under the SAIDI normalisation process results in the removal of the corresponding SAIFI from the total SAIFI. Horizon Power and Western Power's

[32] The Rottnest Island Authority has been excluded from Figure 12, because it has reported a normalised SAIFI of zero for each of the last six years.

normalised performance was significantly better than both their overall performance and the performance reported under the NQ&R Code.[33]

The ERA is also required to monitor Western Power's reliability performance against the service standards benchmarks in its access arrangement. Western Power submits its Service Standard Performance Report to the ERA every year under the *Electricity Networks Access Code 2004*. Western Power met all its standard benchmarks except for SAIFI in 2021/22.[34, 35]

[33] Economic Regulation Authority, Energy Distributor Dataset – 2017 – 2022, Network Reliability, indicator NQR4 (online).

[34] ERA, Draft Decision on proposed revisions to the access arrangement for the Western Power Network 2022/23 – 2026/27 – Attachment 9: Service standard benchmarks and adjustment mechanism, September 2022 (online).

[35] ERA, Electricity Networks Access Code 2004 - Service Standard Performance Report for the year ended 30 June 2022, September 2022 (online).

3. Gas distribution system reliability

Main points

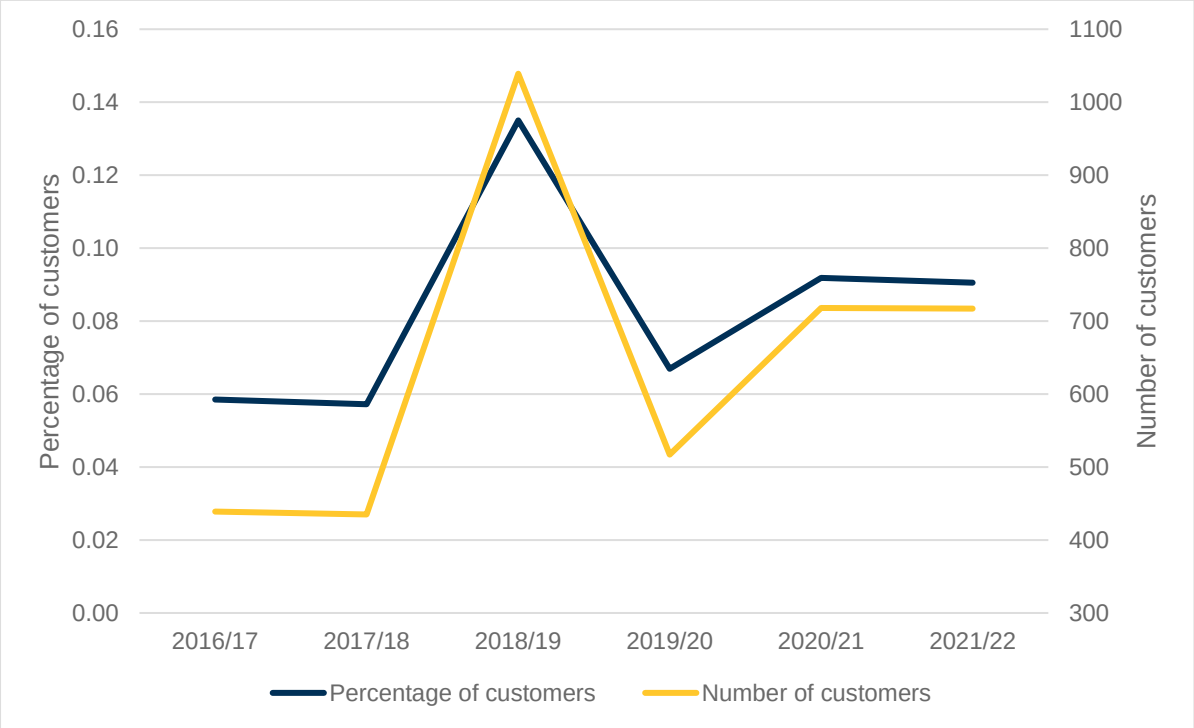
- 717 ATCO customers experienced an extended interruption in 2021/22 due to two major outages caused by water ingress.

Gas distributors are required to report on the number of customer connections with interruptions that exceed 12 hours continuously. These are referred to as extended interruptions.

3.1 Extended interruptions

Figure 14 shows the number and percentage of ATCO customer connections that had an extended interruption.

Figure 14: ATCO extended interruptions 2017 to 2022



717 ATCO customers experienced supply interruption for more than 12 hours continuously in 2021/22. ATCO reported all incidents were caused by water ingress, which resulted in two major outages. A majority of the water ingress was due to a broken water main and hot water systems leaking into gas services.

Table 5 shows the number and percentage of Kleenheat's customer connections that had an extended interruption.

Table 5: Kleenheat extended interruptions 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Number of customers	14	14	167[36]	1	0	0
Percentage of customers	1.39	1.34	15.59	0.09	0.00	0.00

Esperance Power Station has not reported any extended interruptions in the past six years.[37]

[36] Kleenheat reported that the 167 customer connections that had extended interruptions in 2018/19 was due to the Rapids Landing outage in December 2018 and January 2019 caused by third-party damage to its distribution system.

[37] Economic Regulation Authority, Energy Distributor Dataset – 2017 – 2022, Network Reliability, indicator D14 (online).

4. Energy delivered

Main points

- The energy delivered to customer connections on the Rottnest Island Authority electricity distribution system in 2021/22 was the highest for the six years reported, due to an increase in major capital works projects and off-season tourists.
- The energy delivered to customer connections on the Kleenheat gas distribution system in 2021/22 was the highest for the six years reported due to an increase in its residential connections.

Gas and electricity distributors report on the amount of energy delivered to customer connections on their distribution systems, measured as gigajoules of gas and gigawatt-hours (GWh) of electricity, respectively.

4.1 Energy delivered by electricity distributors

Data is provided separately for:

- Horizon Power
- Peel Renewable Energy
- Rottnest Island Authority
- Western Power.

Figure 15 shows the amount of energy delivered to Western Power's customers, broken down by feeder class.

Figure 15: Energy delivered by Western Power by feeder type 2017 to 2022

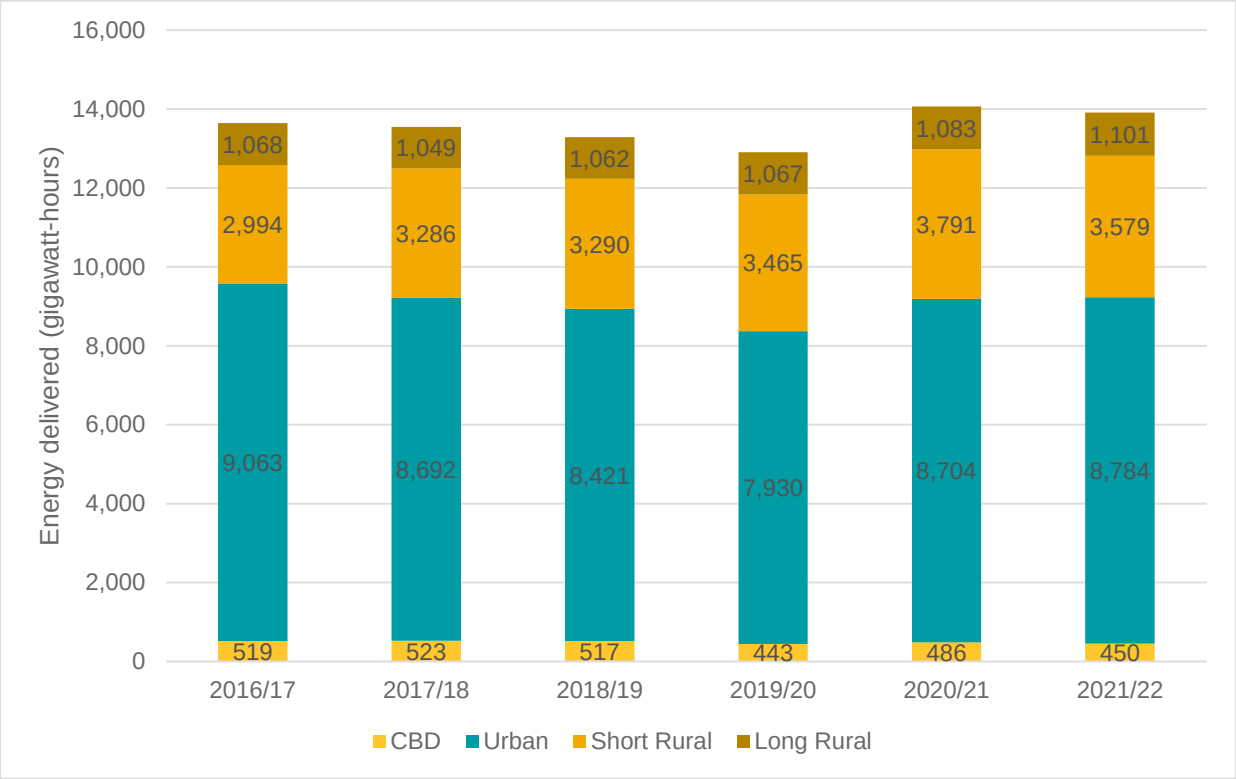
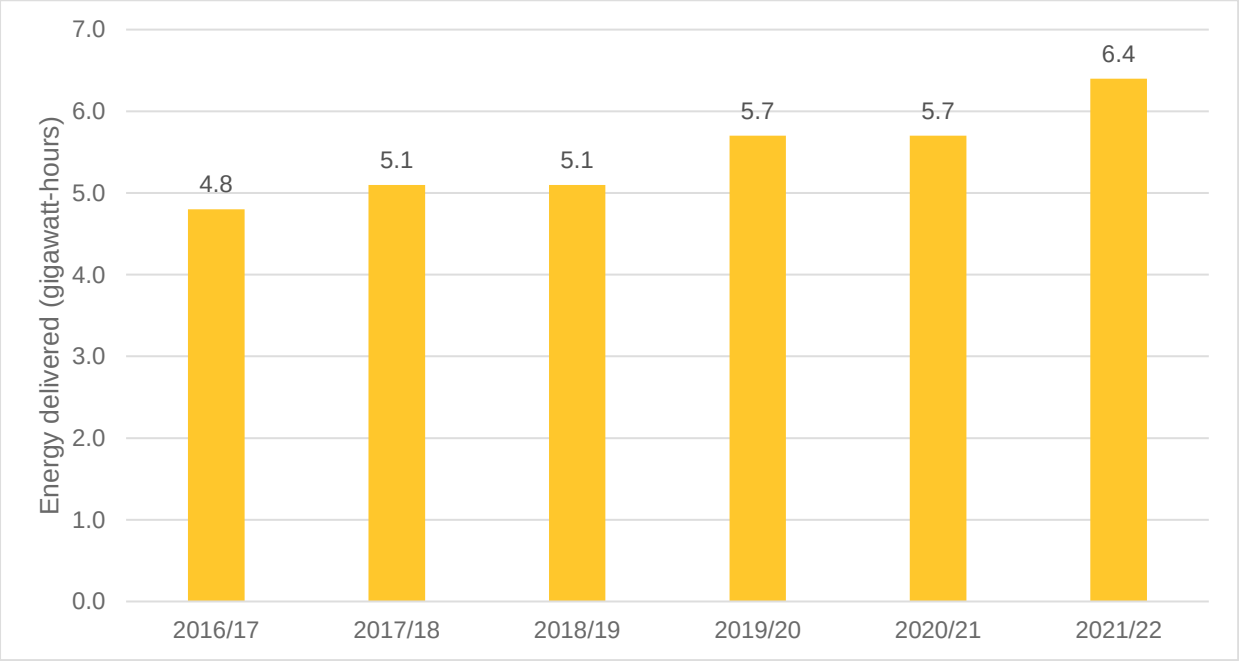


Figure 16 shows the amount of energy delivered to customer connections on the Rottnest Island Authority's short rural feeders.

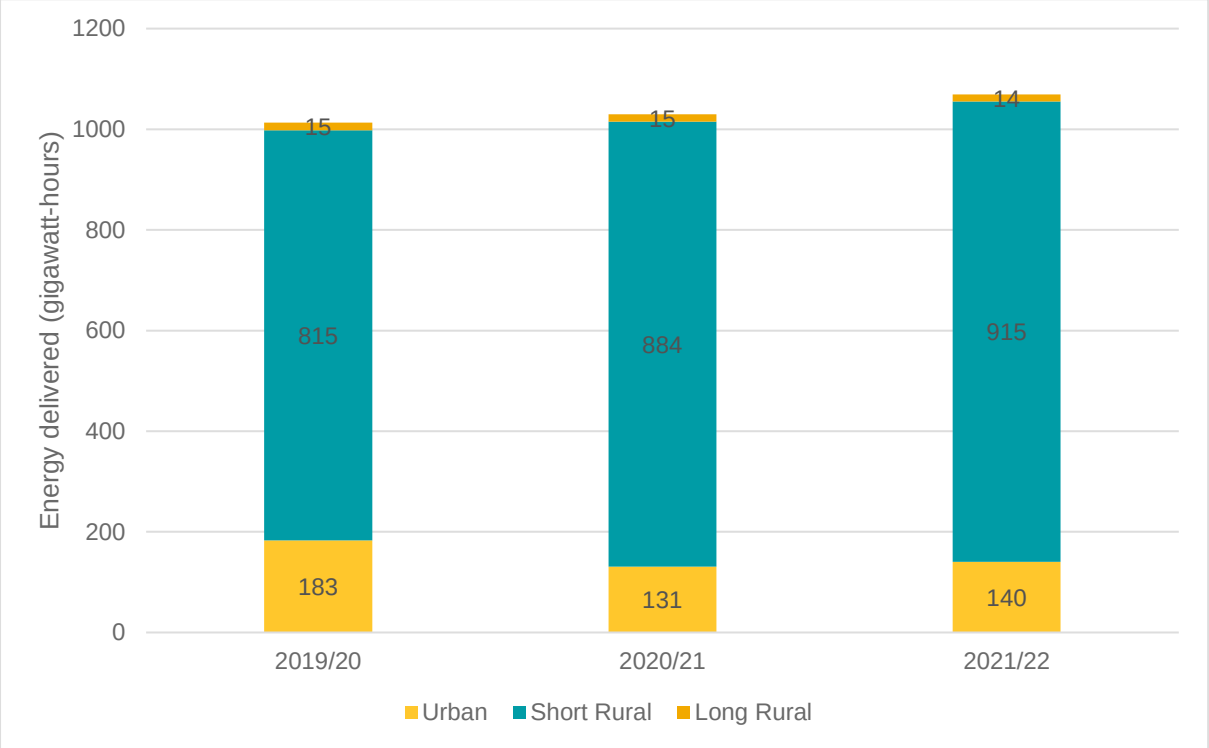
Figure 16: Energy delivered by Rottnest Island Authority 2017 to 2022



The total electricity delivered to customer connections on the Rottnest Island Authority's distribution system in 2021/22 is the highest in the six years reported at 6.4 GWh. Rottnest Island Authority attributed the 12.3 per cent increase to major capital works projects and a higher number of off-season tourists in 2021/22.

Figure 17 shows the amount of energy delivered to Horizon Power's customer connections, broken down by feeder class.

Figure 17: Energy delivered by Horizon Power 2021 and 2022



This is the third year that Horizon Power has been able to supply energy delivered data. Prior to 2019/20, Horizon was unable to separate the energy delivered to small use customers from the total energy supplied through its feeders.

The total electricity delivered to customer connections on Horizon Power's distribution system increased only slightly from 2020/21, reaching 1,069 GWh in 2021/22.

4.2 Energy delivered by gas distributors

Energy delivered data is provided separately for:

- ATCO
- Esperance Power Station
- Kleenheat.

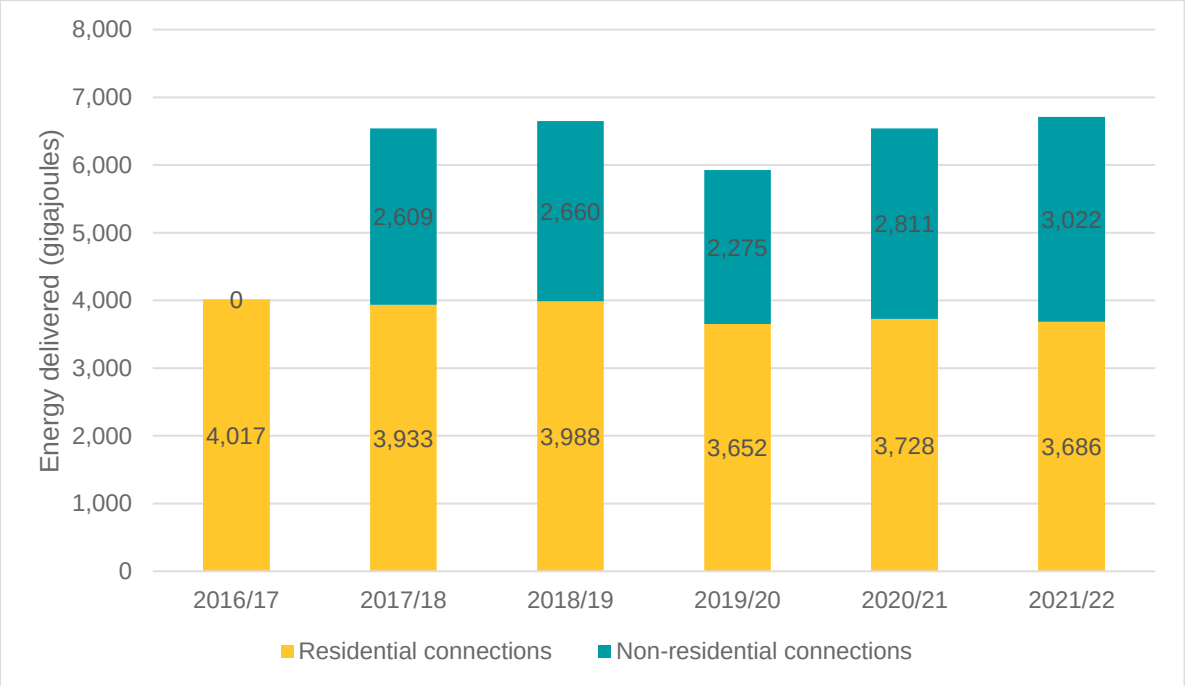
Figure 18 shows the amount of energy delivered by ATCO to residential and non-residential customer connections.[38]

[38] ATCO's gas consumption is measured over a calendar year. For example, the consumption data for 2021/22 period is in fact for the 2021 calendar year.

Figure 18: Energy delivered by ATCO 2017 to 2022

Figure 19 shows the amount of energy delivered by Esperance Power Station to residential and non-residential customer connections.

Figure 19: Energy delivered by Esperance Power Station 2017 to 2022



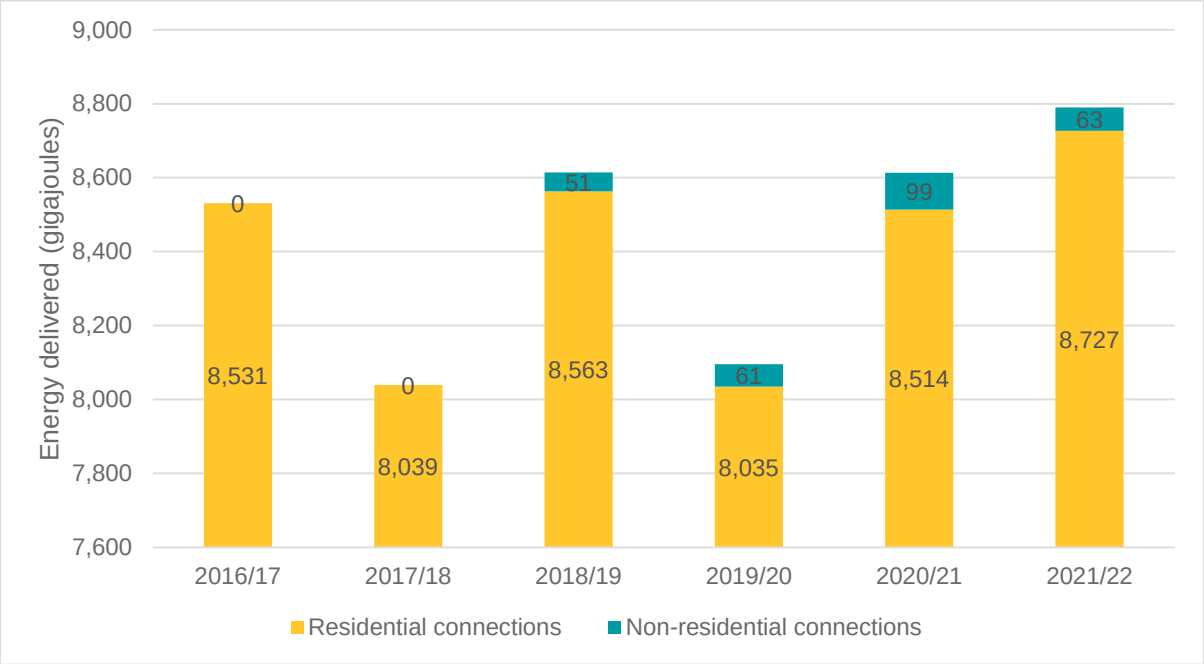
The energy delivered to non-residential customer connections in 2016/17 has been removed from Figure 19, because it included energy delivered to large use customers.[39]

[39] Customers who consumed one terajoule or more of gas per year (these customers are not covered by gas distribution licences).

Energy delivered to residential and non-residential customer connections increased by 5.3 per cent in 2021/22. The energy delivered to non-residential customers was the highest for the five years reported.

Figure 20 shows the amount of energy delivered by Kleenheat to residential and non-residential customers.

Figure 20: Energy delivered by Kleenheat 2017 to 2022



The energy delivered by Kleenheat in 2021/22 is at its highest for the six years reported. Kleenheat attributed this to an increase in residential connections on its distribution systems in Rapids Landing, Margaret River and Oyster Harbour in Albany.

5. Customer service

Main points

- The number of complaints received by Horizon Power in 2021/22 returned to pre-COVID-19 levels.
- The number of complaints received by ATCO was the highest in the six years reported.
- The percentage of calls answered within 30 seconds by Western Power and Horizon Power were both at the lowest in the six years reported.
- The total number of calls received by the ATCO call centre was the lowest for the six years reported.
- The proportion of calls answered within 30 seconds by ATCO call centre was the highest for the six years reported.

The *Code of Conduct for the Supply of Electricity to Small Use Customers* (Electricity Code) and the *Compendium of Gas Customer Licence Obligations* require distributors to have an internal process for handling complaints and resolving disputes that complies with *Australian Standard ISO 10002-2014 Guidelines for compliant management organisations*.

Customer service is reported on by energy distributors in terms of the number of complaints and call centre performance.

5.1 Electricity complaints

The Electricity Code requires distributors to report complaints information specified by the ERA.[40] The ERA has specified two categories of complaints:

- Administrative process or customer service complaints, which include: meter reading issues, the timeliness of correspondence and other customer communications, issues with the complaints handling process, late responses to a complaint and general administrative matters.
- Other complaints, which include: poor service, privacy issues, and health and safety issues.

The NQ&R Code focuses on the number of complaints received by a distributor that it has failed to comply with the NQ&R Code's power quality and reliability standards.[41]

5.1.1 Electricity code complaints

Table 6 shows the number of complaints about electricity code matters received by Horizon Power and Western Power.[42]

[40] The specification of complaints reporting obligations is in the ERA's *Electricity Distribution Licence Performance Reporting Handbook*.

[41] These standards are in Part 2 or an instrument under section 14(2) of the NQ&R Code.

[42] Rottnest Island Authority has been excluded from Table 6 because it did not receive any complaints in the past six years. Peel Renewable Energy has also been excluded from Table 6, because it did not receive any complaints in 2020/21 and 2021/22.

The total number of complaints received by Horizon Power was higher in 2021/22; 980 against 786 in the previous year. However, Horizon Power reported that total complaints in 2020/21 were significantly lower than the average due to a pause in disconnections and the introduction of government assistance payments due to COVID-19.

Table 6: Complaints received by electricity distributors (Electricity Code) 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Horizon Power[43]						
Administrative and customer service complaints	263	114	992	1,480	767	962
Other complaints	8	7	49	43	19	18
Total complaints	**271**	**121**	**1,041**	**1,523**	**786**	**980**
Western Power						
Administrative and customer service complaints	258	295	343	253	354	316
Other complaints	643	578	599	2,762	1,636	1,615
Total complaints	**901**	**873**	**942**	**3,015**[44]	**1,990**	**1,931**

5.1.2 NQ&R Code complaints

Table 7 shows the number of complaints about NQ&R Code matters received by Horizon Power and Western Power.[45]

Table 7: Complaints received by electricity distributors (NQ&R Code) 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Horizon Power	111	27	76	56	452	44
Western Power	728	920	955	4,315	3,522	2,747
Total complaints	**839**	**947**	**1,031**	**4,371**[46]	**3,974**	**2,791**

The number of NQ&R complaints received by Horizon Power in 2021/22 was 90 per cent less compared to 2020/21. Horizon Power reported that the high number of complaints received in 2020/21 was due to an increase in supply interruptions caused by the February 2021 floods

[43] Horizon Power's complaints data is the combined total of complaints about their retail and distribution services, following a change of call centre service provider.

[44] Western Power reported the increase in complaints in 2019/20 was because, for the first time, it included complaints that were resolved at first point of contact. Licensees are required to include all complaints received from customers, including those that are resolved at the first point of contact. For more information refer to section 4.3.4 of the ERA's 2019 *Electricity Distribution Licence Performance Reporting Handbook*.

[45] Because it has only received one complaint in the past six years, Rottnest Island Authority has been excluded from the table. Peel Renewable Energy has also been excluded from Table 7, because it did not receive any complaints in 2020/21 and 2021/22.

[46] See footnote 45.

in Carnarvon. The number of complaints in 2021/22 has returned to typical numbers, as seen prior to 2020/21.

5.2 Gas complaints

Table 8 shows the total number of complaints received by ATCO, Kleenheat and Esperence Power Station since 2016/17.

Table 8: Complaints received by gas distributors 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
ATCO	516	431	371	299	629	848
Kleenheat	4	4	12	1	0	1
Esperance Power Station	0	0	1	1	2	2
Total	**520**	**435**	**384**	**301**	**631**	**851**

The number of complaints received by ATCO in 2021/22 was the highest in the six years reported. ATCO reported the increase was due to several factors:

- The introduction of a new online tool in December 2019 to better enable customers to make complaints, which has led to more complaints being made.
- ATCO's centralised complaints process better capturing complaints data.
- An increase in network activity and gas pipes replacement activities leading to an increase in complaints related to reinstatement activities.
- An increase in meter reading complaints. These complaints were attributed to an increase in:
  - meter access issues.
  - estimated meter readings, due to a shortage of meter readers caused by capacity constraints in the labour market.
- An increase in complaints about invoices for damages, due to a backlog of invoices that ATCO had to process.

Table 9 categorises the complaints received by ATCO, Kleenheat and Esperance Power Station in 2021/22.

Table 9: Categorisation of complaints received by gas distributors in 2021/22

Complaint category	ATCO	Kleenheat	Esperance Power Station
Connection and augmentation	33	0	0
Reliability of supply	0	0	0
Quality of supply	0	0	0
Network charges and costs	147	0	1
Administrative processes or customer service	336	1	0
Other	332	0	1
Total	**848**	**1**	**2**

5.3 Call centre performance

Many customer interactions with distributors are by telephone. How responsive a distributor is to telephone calls is an important indicator of customer service. Distributors operate different types of call centres, depending on the number of calls they receive from customers.

5.3.1 Electricity distributor's call centre performance

Western Power operates an in-house call centre. The Rottnest Island Authority, Horizon Power and Peel Renewable Energy outsource their call centre services.

Table 10 shows the number of calls received by each electricity distributor's call centre.[47, 48]

Table 10: Number of calls to electricity distributor call centres 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Horizon Power	13,645	10,940	9,234	11,382	9,624	12,400
Western Power	343,300	376,719	357,889	394,175	350,535	339,858
Total	**356,945**	**387,659**	**367,123**	**405,557**	**360,159**	**352,258**

In 2021/22, Horizon Power reported an increase in calls to its call centre. It attributed the increase to the unusually high level of storm activity particularly in the Kimberley region.

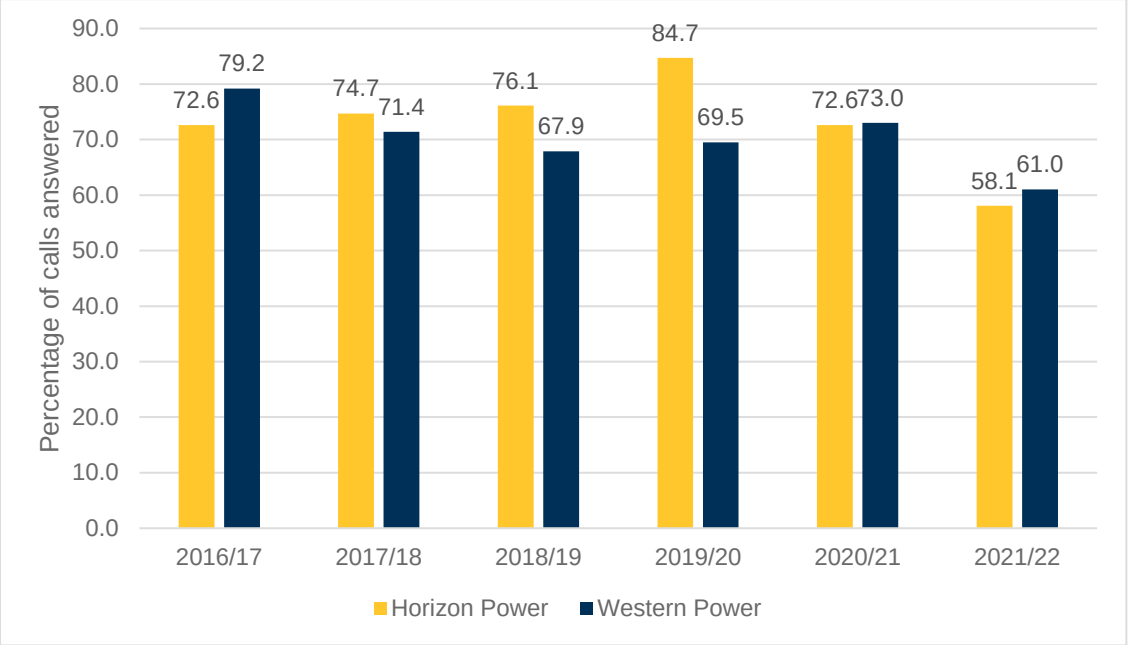
[47] The Rottnest Island Authority has been excluded from Table 10 and Figure 21 because it has not been able to separately report on calls related to their distribution service since 2019/20. Previous versions of this report provide historical call centre data.

[48] Peel Renewable Energy has been excluded from Table 10 and Figure 21, because it did not receive any calls in 2021/22.

Western Power reported the decrease in calls to its call centre was due to a growing number of customers choosing to use alternative methods, in particular digital mediums such as email, SMS and the internet to communicate with Western Power.

Figure 21 shows the percentage of calls that were answered within 30 seconds by each electricity distributor call centre.

Figure 21: Percentage of electricity distributor calls answered within 30 seconds 2017 to 2022



The percentage of calls answered within 30 seconds by Western Power and Horizon Power are both at the lowest in the six years reported.

The percentage of calls answered within 30 seconds by Western Power reduced from 73 per cent in 2020/21 to 61 per cent in 2021/22. Western Power attributed the reduction to the call centre having to manage high call volumes during and following major weather events and also the changing utilisation of customer service resources towards digital engagement, which had left fewer call takers available to answer calls.

The percentage of calls answered within 30 seconds by Horizon Power has also reduced, from 72.6 per cent in 2020/21 to 58.1 per cent in 2021/22. Horizon Power reported the decrease was largely due to the high level of recruitment to replace call centre agents and the resulting time to train the new agents. The higher call volumes, especially during high call periods, also contributed to the decrease in speed of answering.

5.3.2 Gas distributor's call centre performance

Esperance Power Station does not operate a call centre.

Kleenheat's call centre handles calls about its gas retail operations and other areas of its business, as well as distribution calls.

Table 11 shows the number of calls received by ATCO and Kleenheat's call centres.

Table 11: Number of calls to gas distributor call centres 2017 to 2022

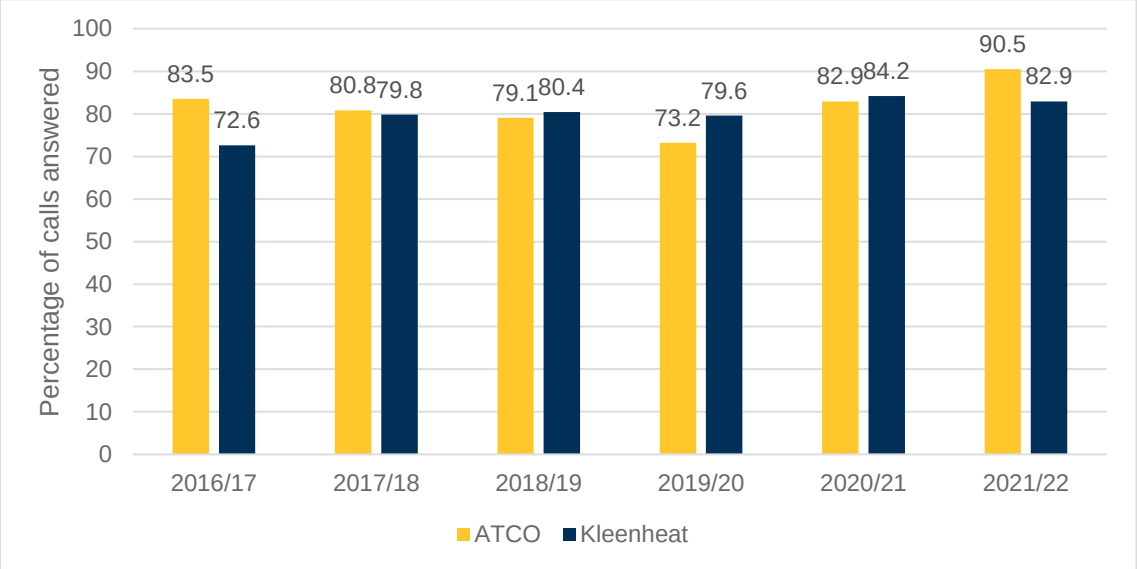
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
ATCO	79,316	71,258	68,029	60,753	43,985	38,160
Kleenheat	285,887	310,803	289,778	246,101	195,480	204,465
Total	**365,203**	**382,061**	**357,807**	**306,854**	**239,465**	**242,625**

The total number of calls received by the ATCO call centre was the lowest for the six years reported. ATCO reported that the reduction in customer calls was due to a number of factors, including:

- A pause on retailer disconnections due to COVID-19.
- A reduction in its metering replacement program, which resulted in fewer customer appointment bookings.
- The removal of some functions from the call centre's responsibility, which has positively affected the number of answered calls.
- Growth in customer self-service options, such as smell of gas reporting and open trench requests.
- Continued expansion of online methods by which customers can contact ATCO.

Figure 22 shows the percentage of calls that were answered by gas distributor call centres within 30 seconds.

Figure 22: Percentage of gas distributor calls answered within 30 seconds 2017 to 2022



The proportion of calls answered within 30 seconds by the ATCO call centre was the highest for the six years reported. An attributing factor may be ATCO's low staff turnover, which resulted in stability within the call centre and improvement in the proportion of calls answered within 30 seconds. The ERA considers it likely that the improved performance was partly due to the reduced call volume.

6. Streetlight repair [49]

Main points

- Both Western Power and the Rottnest Island Authority reported a decrease in the percentage of regional streetlights repaired outside the nine-business days' benchmark.
- The percentage of metropolitan streetlights repaired by Horizon Power outside the five-business days' benchmark was the lowest in the six years reported.
- The number of streetlight faults reported by the Rottnest Island Authority has increased significantly. The increase was due to greater reporting of faults to the Authority by visitors and contractors, as well as more streetlights coming to the end of their life.

6.1 Number of streetlights

Table 12 shows the number of streetlights in metropolitan and regional areas that were maintained by each distributor at 30 June 2022.

Table 12: Number of streetlights in metropolitan and regional areas at 30 June 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Metropolitan areas						
Horizon Power	8,066	7,866	7,672	7,501	7,684	7,684
Western Power	223,721	226,973	230,188	233,144	235,589	236,895
Peel Renewable Energy Pty Ltd	n/a	n/a	n/a	n/a	11	11
Total	**231,787**	**234,839**	**237,860**	**240,645**	**243,284**	**244,590**
Regional areas						
Horizon Power	11,255	11,202	11,225	11,336	11,461	11,618
Rottnest Island Authority	189	189	189	189	189	189
Western Power	39,931	40,363	40,637	41,072	41,160	42,088
Total	**51,375**	**51,754**	**52,051**	**52,597**	**52,810**	**53,895**

[49] There is no regulatory oversight of streetlights in the licensing framework under the *Electricity Industry Act 2004*. However, the Access Arrangement for Western Power's network sets out service standard benchmarks for streetlights that Western Power manages, and the ERA collects performance data from electricity distributors on streetlights based on the benchmarks that are specified in Western Power's Access Arrangement.

6.2 Streetlight faults

Table 13 shows the number of streetlight faults in metropolitan and regional areas reported to each distributor.

Table 13: Number of streetlight faults reported in metropolitan and regional areas 2017 to 2022

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Metropolitan areas						
Horizon Power	163	189	267	122	115	144
Western Power	33,308	36,510	41,889	49,801	38,757	37,173
Peel Renewable Energy Pty Ltd	n/a	n/a	n/a	n/a	7	0
Total	**33,471**	**36,699**	**42,156**	**49,923**	**38,879**	**37,317**
Regional areas						
Horizon Power	248	261	354	257	218	240
Rottnest Island Authority	22	33	43	30	25	87
Western Power	1,549	2,825	3,745	5,914	5,015	5,026
Total	**1,819**	**3,119**	**4,142**	**6,201**	**5,258**	**5,353**

The number of streetlight faults (87) reported by the Rottnest Island Authority was the highest in the six years reported. Rottnest Island Authority attributed the increase in streetlight faults due to increased visitor and contractor numbers to the island, as well as more streetlights coming to the end of their life and as such being more likely to fail.

Figure 23 shows the number of metropolitan and regional streetlight faults received by distributors, expressed as a percentage of the total streetlights maintained by each distributor in these areas.[50]

[50] The proportion of faulty streetlights reported by Peel Renewable Energy should be treated with caution due to the small number of streetlights it maintains.

Figure 23: Faulty streetlights by distributor and location 2017 and 2022

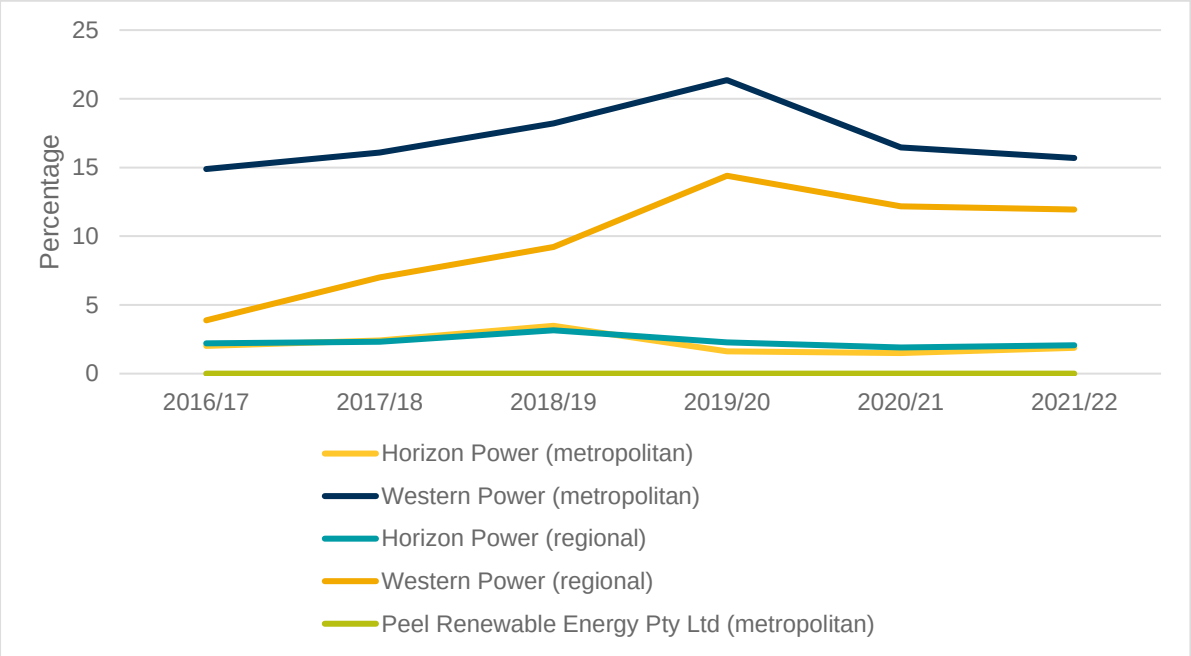


Figure 24 shows the proportion of faulty metropolitan streetlights that were not repaired within the benchmark of five business days from the date they were reported faulty.

Figure 24: Faulty metropolitan streetlights not repaired within five business days 2017 to 2022

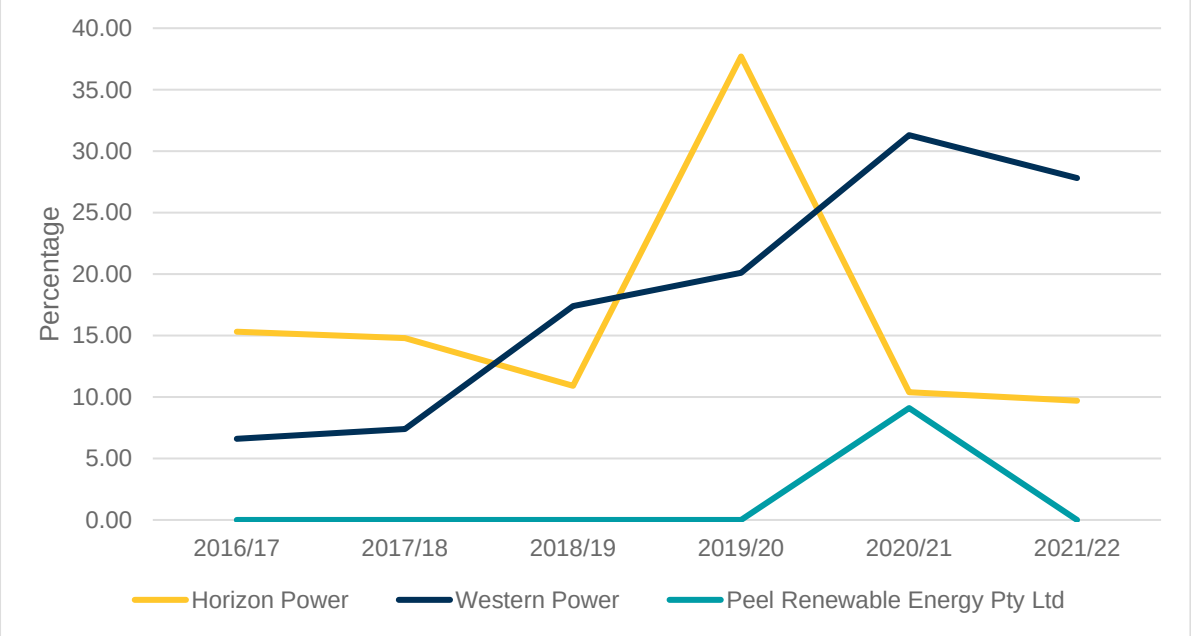
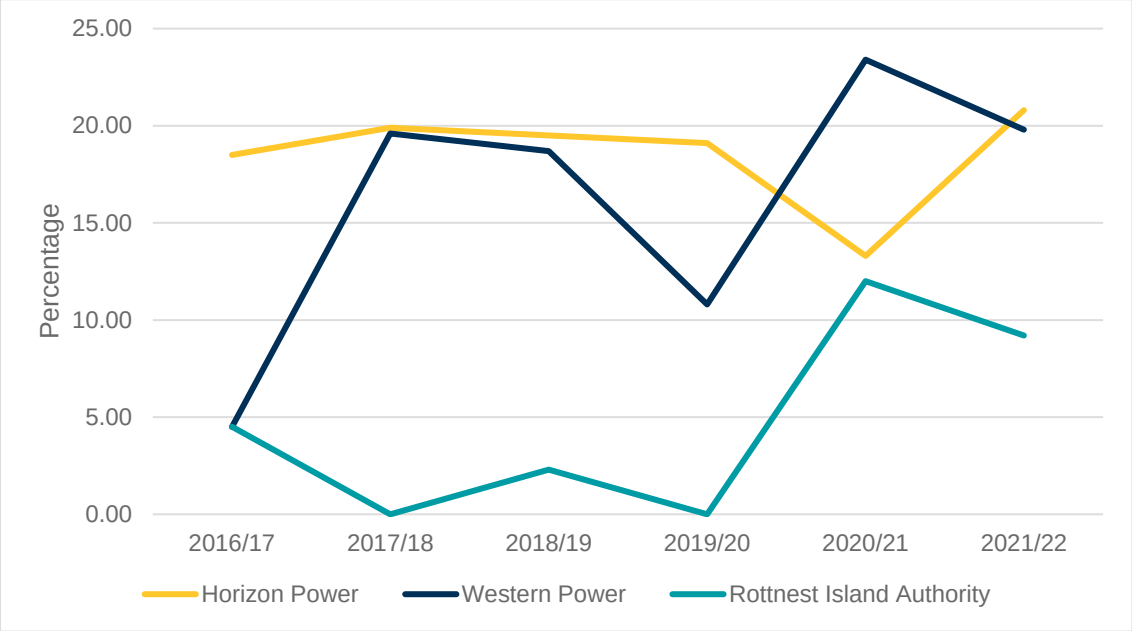


Figure 25 shows the proportion of faulty regional streetlights that were not repaired within the benchmark of nine business days from the date they were reported faulty.

Figure 25: Faulty regional streetlights not repaired within nine business days 2017 to 2022



We

The percentage of faulty streetlights not repaired within nine business days by Horizon Power increased from 13.3 per cent in 2020/21 to 20.8 per cent in 2021/22. Horizon Power reported that the percentage was unusually low in 2020/21 due to Government lockdowns because of COVID-19. The 2021/22 percentage has returned to the normal range prior to COVID-19.

The decrease in 2021/22 reported by Western Power was due to it grouping faulty streetlights together for repair at the same time to increase efficiencies, which resulted in an improvement in its performance.

Rottnest Island Authority also reported a decrease in the percentage of faulty streetlights repaired outside nine business days in 2021/22. It attributed the improved performance to a greater proportion of streetlights having minor faults, which required less time to repair.

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Appendix 3 Additional information on distribution system reliability measure

NQ&R Code reliability measures

Schedule 1, clauses 11 and 13 of the NQ&R Code specify the system reliability measures that distributors must report, and how to calculate them.

Clause 11 specifies four reliability measures:

- Average length of interruption of supply to customer premises expressed in minutes (this is equivalent to the System Average Interruption Frequency Index (SAIFI)).
- Average number of interruptions of supply to customer premises.
- Average percentage of time that electricity has been supplied to customer premises (this is equivalent to the System Average Interruption Duration Index (SAIDI)).
- Average total length of all interruptions of supply to customer premises expressed in minutes (this is equivalent to the Customer Average Interruption Duration Index (CAIDI)).

Clause 13(3) defines the average value of interruptions as:

- The average of the interruptions for each year for the four years ending in the current reporting period.
- The average of the four (annual) values.

The calculation in clause 13 gives a four-year average value for each of the measures in clause 11.

Distributors are required to report the four reliability measures in clause 11 for each discreet area of the State defined in Schedule 1, clause 2 of the NQ&R Code:

- Perth CBD
- urban areas other than the Perth CBD
- all other areas of the State.

Definitions of overall and normalised interruptions under the ERA's system reliability framework

The overall SAIDI, SAIFI and CAIDI measure all sustained interruptions (including those caused by generation outages, transmission outages, planned interruptions, unplanned interruptions and directed load shedding).[51, 52, 53, 54]

Normalised SAIDI, SAIFI and CAIDI are all unplanned sustained interruptions with the exclusion of interruptions:

- that are caused by generation outages
- that are caused by transmission outages[55]
- that are caused by direct load shedding
- where the daily unplanned SAIDI exceeds the Major Event Day (MED) boundary.

This approach is described in the ERA's *Electricity Distribution Licence Performance Reporting Handbook*.[56]

MED is defined in the Standard *IEEE 1366-2003 - Guide for Electric Power Distribution Reliability Indices, Institute for Electrical and Electronic Engineers* (IEEE 1366). Section 4.5 of the Standard describes a statistical approach to calculate the SAIDI threshold for a MED. The calculation of the MED threshold is based on the SAIDI associated with all the interruptions that occurred during the reporting period, which is typically one year.[57, 58]

The purpose of calculating the MED threshold is to remove days where the daily system SAIDI is much larger than the distribution system average for the reporting period. This approach

51 Sustained interruption means a loss of electricity associated with an outage on any part of the network of more than one minute in duration. The interruption starts when it is recorded by equipment (such as SCADA system) or, where such equipment does not exist, at the time that the first customer call relating to the network outage is received. The interruption ends when supply has been restored to that part of the distribution network affected by the outage, or when the supply is reasonably assumed to have been restored if there is no equipment available to record the time of restoration.

52 Unplanned interruption means a sustained interruption that is not a planned interruption, or a planned interruption where the required advance notice of the interruption has not been given to the customer.

53 Planned interruption means a sustained interruption of supply to a supply address that has been caused by scheduled works, for example, preventative maintenance, repairs and network augmentation. Customers are notified in advance of planned interruptions. Planned meter replacements are excluded.

54 Directed load shedding means load shedding that has been directed by the Australian Energy Market Operator (AEMO).

55 The calculation of unplanned interruptions must include interruptions caused by the failure of the transmission system connected to a distribution system where the responsibility for the transmission system lies with the distributor.

56 ERA, Electricity Distribution Licence Performance Reporting Handbook, April 2022 (online).

57 IEEE 1366-2003 has been superseded by IEEE 1366-2012. The data provided by distributors in this report is based on IEEE 1366-2003.

58 The reporting period used for this report is the year ending 30 June.

allows major events to be separately studied from normal daily operation, which exposes trends in daily operation of the system that might otherwise be masked by the MEDs. [59, 60, 61]

It is important to note that, although the SAIDI is used to identify MEDs, the system SAIFI and CAIDI should be calculated based on the removal of the values of SAIFI and CAIDI for each of the MEDs.

The Australian Energy Regulator also uses IEEE 1366 to calculate normalised values for SAIDI, SAIFI and CAIDI for the distribution systems in the National Electricity Market (NEM).[62] Adopting IEEE 1366 to calculate the normalised system reliability of Western Australian distributors provides opportunities to benchmark their performance with that of comparable distributors in the NEM.

Distribution feeder classifications

The table below provides the definitions for the four types of distribution feeder classifications.

Distributors are required to report overall and normalised SAIDI, SAIFI and CAIDI for each of the four distribution feeder classifications.

Table 14: Distribution feeder classifications

Description			
CBD[63]	**Urban**	**Short Rural**	**Long Rural**
A feeder supplying predominantly commercial, high-rise buildings, supplied by a predominantly underground distribution system containing significant interconnection and redundancy compared to urban areas.	A feeder, which is not a CBD feeder, with actual maximum demand over the reporting period per total feeder route length greater than 0.3MVA/km.	A feeder, which is not a CBD or urban feeder, with a total feeder route length less than 200km.	A feeder, which is not a CBD or urban feeder, with a total feeder route length greater than 200km.

59 The calculation of the MED threshold uses the natural logarithms of the daily SAIDI values. The MED threshold is set at 2.5 log-standard deviations above the log-average of the SAIDI data set for the reporting period. The MED for each reporting year is calculated from the four years of data immediately preceding the reporting year. For example, the MED for reporting year 2021/22 is calculated using the SAIDI in the four-year period 2017/18 to 2021/22.

60 Some regulators require distributors to separately report on the cause(s) of interruptions that occurred during MEDs. Often MEDs result from severe weather events, bushfires and the failure of critical distribution system infrastructure beyond the control of the distributor.

61 For 2021/22, Western Power calculated its MED threshold from the five years of data immediately preceding 2021/22. This longer period is used so that it is consistent with the period used to report on service standard performance in Western Power's access arrangement.

62 The National Electricity Market covers the ACT, New South Wales, South Australia, Queensland, Tasmania and Victoria.

63 The Perth CBD area is defined as the areas supplied from the Milligan Street Zone Substation or the Hay Street Zone Substation.