Service Standard Performance Report

Year ending 30 June 2012

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Executive Summary

The Service Standard Performance Report (**this report**) outlines Western Power's performance in terms of the nineteen (19) service standard benchmarks in its Access Arrangement for the 12 months from 1 July 2011 to 30 June 2012.

Western Power performed better than target for sixteen (16) of the defined service standard benchmarks for the 12 months ending 30 June 2012.

With the exception of SAIDI for the Rural Long network, Western Power's distribution network performance improved over the past 12 months. During that same period improvement was also experienced in Western Power's transmission performance with the exception of Average Outage Duration and System Minutes Interrupted (Radial).

Western Power achieved these service levels through a number of work programs and as a result of reduced environmental and other external factors.

The application of the Service Standard Adjustment Mechanism (SSAM) across the Access Arrangement 2 period from 1 July 2009 to 30 June 2012 would produce a net financial benefit of $26 million.

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1 Background and purpose of this report

In accordance with Section 11.2 of the Electricity Networks Access Code 2004 (Access Code), "the Authority must monitor and, at least once each year, publish a service provider's actual service standard performance against the service standard benchmarks" that are set out in its approved Access Arrangement

The purpose of this report is to present information on the service standards performance of the Western Power Network for the 12 month period 1 July 2011 to 30 June 2012.

The Economic Regulation Authority (the Authority) has requested this report to be provided by 15 August 2012 in accordance with the Service Standard Performance letter template 2012.

For the purposes of this report, the Western Power Network is termed South West Interconnected Network (SWIN) as per the Access Arrangement 2 period from 1 July 2009 to 30 June 2012 (AA2 period).

2 How to read this report

Section 3 provides a brief overview of Western Power's network.

Section 4 outlines and describes the reference services provided by Western Power relevant to this report, for entry, exit and bi-directional points on the Western Power network.

Section 5 outlines and describes the service standard benchmarks in the AA2 period.

Section 6 outlines and describes the actual performance against these current service standard benchmarks for the 12 months 1 July 2011 to 30 June 2012.

Section 7 outlines and describes the Service Standards Adjustment Mechanism (SSAM) as well as any data exclusions over the AA2 period.

3 Network Topology

Western Power operates and maintains the transmission and distribution electricity grid within the South West Interconnected System (SWIS) known as the Western Power Network.

The Western Power Network comprises of approximately 1,100 feeders and circuits incorporating over 97,500 kilometres of conductor, 800,000 power poles and towers and 15,000 distribution substations, providing electricity supply to over one million customers and 236,000 streetlights.

The Western Power Network covers a geographic area from Kalbarri down to Albany, and from Perth through to Kalgoorlie (Figure 1).

Figure 1 - Map of the Western Power Network

4 Reference Services

Under its Access Arrangement, Western Power provides 11 *reference services* at *network exit points* for *users*, 2 reference services at *network entry points* for *users*, and 1 bi-directional reference service. The following definitions apply in this report:

Entry Point

A point on a covered network identified as such in an access contract at which, subject to the access contract, electricity is more likely to be transferred into the network than transferred out of the network.

Entry Service

A covered service provided by a service provider at an entry point under which the user may transfer electricity into the network at the entry point

Exit Point

A point on a covered network identified as such in an access contract at which, subject to the access contract, electricity is more likely to be transferred out of the network than transferred into the network.

Exit Service

A covered service provided by a service provider at an exit point under which the user may transfer electricity out of the network at the exit point

Bi-directional Point

A point on a covered network identified as such in an access contract at which, subject to the access contract, electricity is both transferred into the network and transferred out of the network.

Bi-directional Service

A covered service provided by a service provider at a bidirectional point under which the user may transfer electricity into and out of the network.

4.1 Reference Services for network exit points

Table 1: Network exit point reference services

Reference Service		Reference Service Description
A1	Anytime Energy (Residential) Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A2	Anytime Energy (Business) Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A3	Time of Use Energy (Residential) Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A4	Time of Use Energy (Business) Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A5	High Voltage Metered Demand Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the high voltage (6.6 kV or higher) distribution system.
A6	Low Voltage Metered Demand Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A7	High Voltage Contract Maximum Demand Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the high voltage (6.6 kV or higher) distribution system
A8	Low Voltage Contract Maximum Demand Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the low voltage (415 volts or less) distribution system.
A9	Streetlighting Exit Service	An exit service combined with a connection service at an exit point on the low voltage (415 volts or less) distribution system for the purpose of public street lighting, plus the service of the provision and maintenance of the streetlight.
A10	Un-Metered Supplies Exit Service	An exit service combined with a connection service at an exit point on the low voltage (415 volts or less) distribution system.
A11	Transmission Exit Service	An exit service combined with a connection service and a standard metering service at an exit point on the transmission system.

4.2 Reference Services for network entry points

Table 2: Network entry point reference services

Reference Service		Reference Service Description
B1	Distribution Entry Service	An entry service combined with a connection service and a standard metering service at an entry point on the distribution system.
B2	Transmission Entry Service	An entry service combined with a connection service and a standard metering service at an entry point on the transmission system.

4.3 Reference Services for bidirectional services

Table 3: Network bidirectional reference services

Reference Service		Reference Service Description
C1	Time of Use (Residential) – Bidirectional Service	A bidirectional service combined with a connection service and a standard metering service at a bidirectional point on the low voltage (415 volts or less) distribution system.

5 Current service standard benchmarks

The AA2 period contains 19 Service Standard Benchmarks.

5.1 Distribution Service Standards

For the reference services A1 to A10, B1 and C1 the service standard benchmarks are expressed in terms of System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI).

5.1.1 SAIDI

SAIDI is measured over a 12 month period and is the sum of the duration of each customer interruption lasting more than one minute (Customer Minutes Interrupted) attributable solely to the distribution network (after exclusions), divided by the average of the total number of connected consumers at the beginning and end of the period.

The unit of measure is minutes per annum per customer.

The lower the minutes per annum, the higher the level of service performance.

The following exclusions apply to SAIDI:

- Major Event Days in accordance with IEEE1366-2003 definitions.
- Outages shown to be caused by a fault or other event on the transmission system or a third party system (for instance, without limitation outages caused by an intertrip signal, generator unavailability or a customer installation).
- Planned interruptions.
- Force majeure events.

The service standard benchmarks expressed in terms of SAIDI for each year of the AA2 period are shown in Table 4.

Table 4: SAIDI service standard benchmarks

SAIDI	SWIN total	CBD	Urban	Rural Short	Rural Long
Year ending June 2010	230	38	165	259	612
Year ending June 2010/11	224	38	162	253	588
Year ending June 2012	213	38	153	244	556

5.1.2 SAIFI

SAIFI is measured over a 12 month period and is the total number of customer interruptions lasting more than one minute attributable solely to the distribution network (after exclusions), divided by the average of the total number of connected consumers at the beginning and end of the period.

The unit of measure is interruptions per annum per customer.

The lower the number of interruptions, the higher the level of service performance.

The exclusions for SAIDI discussed above, also apply to SAIFI.

The service standard benchmarks expressed in terms of SAIFI for each year of the Access Arrangement 2 period are shown in Table 5.

Table 5: SAIFI service standard benchmarks

SAIFI	SWIN total	CBD	Urban	Rural Short	Rural Long
Year ending June 2010	2.50	0.24	1.92	3.12	5.00
Year ending June 2010/11	2.46	0.24	1.89	3.06	4.85
Year ending June 2012	2.41	0.24	1.83	2.98	4.80

5.1.3 Network classifications

For Access Arrangement 2, the definitions of CBD, Urban, Rural Short and Rural Long distribution network classification are used. The definitions are consistent with those applied by the Steering Committee on National Regulatory Reporting Requirements (SCNRRR).

CBD

The distribution network supplying commercial, high rise buildings and contains significant interconnection.

Urban

The distribution network where actual maximum demand over the reporting period per total high voltage feeder route length is greater than 0.3 Mega-Volt-Amperes per kilometre (excluding CBD distribution networks).

Rural Short

Those areas supplied by distribution network which are not CBD or Urban networks and where the total high voltage route length per feeder is less than 200 km.

Rural Long

The distribution network which is not classified as CBD, Urban or Rural Short.

5.2 Transmission service standards

In respect of the reference services A11 and B2 available to users directly connected to the transmission network, the service standard benchmarks are expressed in terms of:

- Circuit Availability;
- System Minutes Interrupted;
- Loss of Supply Events; and
- Average Outage Duration

These are defined below.

5.2.1 Circuit Availability

Circuit Availability is the availability of the transmission network. It is the actual circuit hours available for transmission circuits divided by the total possible defined circuit hours available.

The unit of measure is percentage of total possible hours available.

The higher the percentage of total possible hours available, the higher the level of service performance.

The following exclusions apply to Circuit Availability:

- Outages on non-transmission primary equipment (primary equipment operating at voltages less than 66 kV, including zone substation power transformers).
- Unregulated transmission assets.
- Supply interruptions shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation.
- Force majeure events.
- Duration of planned outages for major construction work, including periods where availability is temporarily restored, is to be capped at 14 days in calculating transmission line availability.

The service standard benchmarks expressed in terms of Circuit Availability for each year of the AA2 period are shown in Table 6.

Table 6: Circuit Availability service standard benchmarks

	Year ending June 2010	Year ending June 2011	Year ending June 2012
Circuit Availability	98	98	98

5.2.2 System Minutes Interrupted

System Minutes Interrupted is the summation of Mega Watt (MW) minutes of unserved energy at substations which are connected to the transmission network (meshed or radial) divided by the system peak MW.

The unit of measure is System Minutes.

The lower the System Minutes, the higher the level of service performance.

The following exclusions apply to System Minutes Interrupted:

- Unregulated transmission assets.
- Supply interruptions shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation.
- Force majeure events.

The service standard benchmarks expressed in terms of System Minutes Interrupted for each year of the Access Arrangement 2 period are shown in Table 7.

Table 7: System Minutes Interrupted service standard benchmarks

	Year ending June 2010	Year ending June 2011	Year ending June 2012
Meshed Networks	9.3	9.3	9.3
Radial Networks	1.4	1.4	1.4

5.2.3 Loss of Supply Events

Loss of Supply Events is the frequency of events where the loss of supply:

- exceeds 0.1 system minutes up to 1.0 system minute; and
- exceeds 1.0 system minute

The unit of measure is number of events per annum.

The lower the number of events per annum, the higher the level of service performance.

The exclusions applied to System Minutes Interrupted also apply to Loss of Supply Events. In addition, planned outages and interruptions with a duration lasting less than one minute are excluded.

The service standard benchmarks expressed in terms of Loss of Supply Events for each year of the AA2 period are shown in Table 8.

Table 8: Loss of Supply Events service standard benchmarks

	Year ending June 2010	Year ending June 2011	Year ending June 2012
Number of events > 0.1 System Minutes to 1.00 System Minute	25	25	25
Number of events > 1 System Minute	2	2	2

5.2.4 Average Outage Duration

Average Outage Duration is total number of minutes duration of all unplanned outages on the transmission network divided by the number of unplanned outage events.

The unit of measure is minutes.

The lower the minutes per annum, the higher the level of service performance.

The exclusions that apply to Loss of Supply Events also apply to Average Outage Duration. In addition, any event contribution to Average Outage Duration is capped at 14 days.

The service standard benchmarks expressed in terms of Average Outage Duration for each year of the AA2 period are shown in Table 9.

Table 9: Average Outage Duration service standard benchmarks

	Year ending June 2010	Year ending June 2011	Year ending June 2012
Average Outage Duration	764	764	764

5.3 Streetlight Repairs

Streetlight Repairs is the total number of days on average to repair a faulty streetlight.

The unit of measure is days.

The lower the number of days, the higher the level of service performance.

The service standard benchmarks expressed in terms of Streetlight Repairs for each year of the AA2 period are shown in Table 10.

Table 10: Streetlight Repairs service standard benchmarks

	Year ending June 2010	Year ending June 2011	Year ending June 2012
Perth metropolitan area	5 days	5 days	5 days
Major regional towns	5 days	5 days	5 days
Remote and rural towns	9 days	9 days	9 days

6 Actual service standard performance

Western Power's actual service standard performance against its 19 SSBs is summarised in Table 11 below.

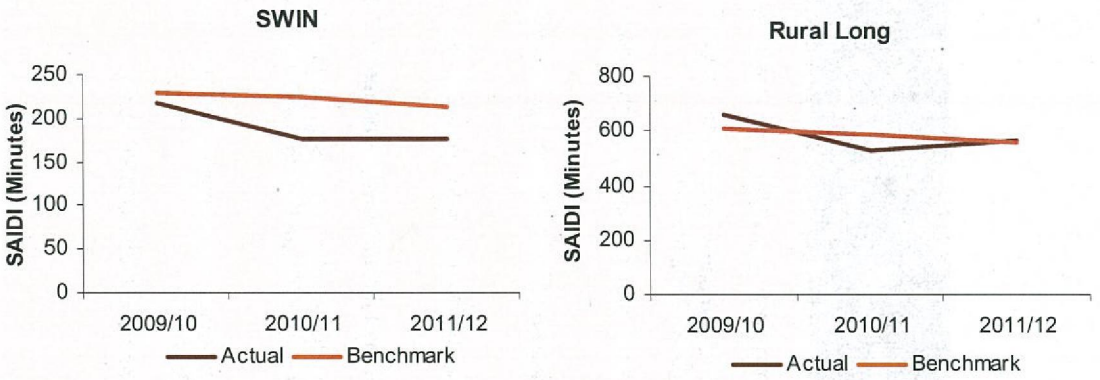
Sections 6.1 to 6.3 provide explanatory details of Western Power's service standard performance against the service standard benchmark.

Table 11: Distribution and transmission performance summary

			2009/10	2010/11	2011/12		
					Benchmark	Actual	Target Met?
Distribution	SAIDI	SWIN	217	176	≤213	177	√
		CBD	1	30	≤38	16	√
		Urban	156	120	≤153	119	√
		Rural Short	212	192	≤244	191	√
		Rural Long	661	529	≤556	563	×
	SAIFI	SWIN	2.00	1.76	≤2.41	1.71	√
		CBD	0.02	0.23	≤0.24	0.16	√
		Urban	1.55	1.31	≤1.83	1.2	√
		Rural Short	2.33	2.11	≤2.98	2.1	√
		Rural Long	4.17	3.86	≤4.8	4.33	√
Transmission	Circuit Availability		98.4%	97.9%	≥98.0%	98.5%	√
	System Minutes Interrupted	Meshed Network	8.9	6.7	≤9.3	3.98	√
		Radial Network	0.8	4.8	≤1.4	2.5	×
	Loss of Supply Events	>0.1 to 1.00 System Minute	27	18	≤25	18	√
		>1 System Minute	2	1	≤2	1	√
	Average Outage Duration		679	675	≤764	844	×
Streetlight Repairs	Perth Metropolitan Area		1.98	1.38	≤ 5 days	1.60	√
	Major Regional towns		1.98	1.51	≤ 5 days	1.54	√
	Remote and Rural Towns		1.70	1.74	≤ 9 days	2.08	√

For illustrative purposes, the following graphs show the SAIDI actual performance for the SWIN and Rural Long distribution networks against the benchmarks over the AA2 period.

Figure 2 - SAIDI for SWIN and Rural Long over the AA2 period



6.1 Distribution

Table 12: Distribution performance commentary for the period 1 July 2011 to 30 June 2012

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
SWIN SAIDI	≤213	177	Performance was better than the 2011/12 benchmark and comparable to the 2010/11 performance of 176 minutes. There was a minor increase in the contribution to SAIDI in 2011/12 compared with 2010/11 from faults due to external factors such as car vs pole and lightning activity, as well as an increase in pole top fire activity. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include: • targeted maintenance work programmes • targeted network reinforcements • the installation of automated switchgear to reduce outage durations for temporary and intermittent faults, by way of isolating the affected part of the network. See section 7.1.1 regarding Major Event Days and Force Majeure events that were excluded from the total SWIN SAIDI.
CBD SAIDI	≤38	16	Performance was better than the 2011/12 benchmark and better than the 2010/11 performance of 30 minutes. There was a decrease in supply interruptions due to overload incidents in 2011/12 compared to 2010/11 on the low voltage distribution network. This reduction is a result of proactive network reconfigurations to alleviate high load areas to reduce these occurrences. The CBD SAIDI performance is volatile over short periods of time due to the combined effects of small customer numbers and the relatively long repair times for faults in an underground CBD network. See section 7.1.1 regarding Major Event Days that were excluded from the total CBD SAIDI.

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
Urban SAIDI	≤153	119	Performance was better than the 2011/12 benchmark and comparable to the 2010/11 performance of 120 minutes. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include: • targeted maintenance work programmes • targeted network reinforcements • the installation of automated switchgear to reduced outage durations for temporary and intermittent faults, by way of isolating the affected part of the network.. See section 7.1.1 regarding Major Event Days that were excluded from the Urban SAIDI.
Rural Short SAIDI	≤244	191	Performance was better than the 2011/12 benchmark and comparable to the 2010/11 performance of 192 minutes. Those activities over the AA2 period contributing to the overall performance being better than the benchmark was the installation of automated switchgear to reduce outage durations for temporary and intermittent faults. See section 7.1.1 regarding Major Event Days that were excluded from the Rural Short SAIDI.
Rural Long SAIDI	≤556	563	Performance was marginally above the 2011/12 benchmark and worse than the 2010/11 performance of 529 minutes. During 2011/12 there was an increase in the contribution to SAIDI from faults due to pole top fires, pole failures and unknown causes. Over the AA2 period there has been an increase in outages in rural long due to factors such as lightning and inclement weather. The rural long distribution network is particularly susceptible to environmental events, and the long radial type topology contributes to longer fault identification and subsequent extended supply restoration times. Line patrols and subsequent maintenance activities over the AA3 period will target those areas of the network experiencing poor levels of reliability and should ensure that performance targets in future years will be achieved. See section 7.1.1 regarding Major Event Days and Force Majeure events that were excluded from the Rural Long SAIDI.

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
SWIN SAIFI	≤2.41	1.71	Performance was better than the 2011/12 benchmark and an improvement on the 2010/11 performance of 1.76. There was a reduction in the contribution to SAIFI from faults due to external factors such as bushfires and cable damage from third party machinery. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include: • targeted maintenance work programmes • targeted network reinforcements • the installation of automated switchgear to reduce the customer impact for temporary and intermittent faults, by way of isolating the affected part of the network.. See section 7.1.1 regarding Major Event Days that were excluded from the SWIN SAIFI.
CBD SAIFI	≤0.24	0.16	Performance was better than the 2011/12 benchmark and better than the 2010/11 performance of 0.23. There was a decrease in supply interruptions due to overload incidents in 2011/12 compared to 2010/11 on the low voltage distribution network. This reduction is a result of proactive network reconfigurations to alleviate high load areas to reduce these occurrences. The CBD SAIFI performance is volatile over short periods of time due to the combined effects of small customer numbers for faults in an underground CBD network. See section 7.1.1 regarding Major Event Days that were excluded from the total CBD SAIFI.

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
Urban SAIFI	≤1.83	1.20	Performance was better than the 2011/12 benchmark and an improvement on the 2010/11 performance of 1.31. There was a reduction in the contribution to SAIFI from faults due to supply interruptions from birds and unknown causes. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include: • targeted maintenance work programmes • power line reinforcements • the installation of automated switchgear to reduce the customer impact for temporary and intermittent faults, by way of isolating the affected part of the network.. See section 7.1.1 regarding Major Event Days that were excluded from the Urban SAIFI.
Rural Short SAIFI	≤2.98	2.10	Performance was better than the 2011/12 benchmark and comparable to the 2010/11 performance of 2.11. There was a reduction in the contribution to SAIFI from faults due to cable damage from third party machinery. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include power line reinforcements and the installation of automated switchgear, by way of isolating the affected part of the network.. See section 7.1.1 regarding Major Event Days that were excluded from the Rural Short SAIFI.
Rural Long SAIFI	≤4.80	4.33	Performance was better than the 2011/12 benchmark but worse from the 2010/11 performance of 3.86. There was a reduction in the contribution to SAIFI from faults due to bushfires and vegetation but an increase due to faults caused by unseasonal lightning activity. Those activities over the AA2 period contributing to the overall performance being better than the benchmark include: • targeted maintenance work programmes • power line reinforcements • the installation of automated switchgear to reduce the customer impact for temporary and intermittent faults, by way of isolating the affected part of the network.. See section 7.1.1 regarding Major Event Days and Force Majeure events that were excluded from the Rural Long SAIFI.

6.2 Transmission

Table 13: Transmission performance commentary for the year ending June 2012

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
Circuit availability	≥98.0%	98.5%	Performance was better than the 2011/12 benchmark and better than the 2010/11 performance of 97.9% The majority of circuit unavailability is due to planned work on the transmission network. Improved maintenance coordination contributed to Circuit Availability performance better than benchmark The performance excludes Circuit Availability related to the *force majeure* event on the 10 to 13 June 2012 (see section 7.2.1 for details).
System Minutes Interrupted Meshed Network	≤9.3	3.98	Performance was better than 2011/12 benchmark and better than the 2010/11 performance of 6.7 minutes. In comparison to 2010/11, there was a decrease in supply interruptions attributed to environmental factors and equipment failures. Due to improvements in maintenance activities, work practices, and targeted replacement programmes, there has been a reduction in the contribution from substation switchboard fault protection operations (known as "frame leakage" protection"), faults due to flashovers, and asset failures on primary equipment. This has contributed to System Minutes Interrupted on the Meshed Network performance better than the 2011/12 benchmark. The performance excludes System Minutes Interrupted related to the *force majeure* event on the 10 June 2012 (see section 7.2.1 for details).

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
System Minutes Interrupted Radial Network	≤1.4	2.5	Performance was worse than the 2011/12 benchmark and better than the 2010/11 performance of 4.8 minutes. The poor performance is primarily due to a number of pole failures on a particular circuit. The circumstances that lead to the pole failures, as well as reducing the impact of future unplanned supply interruptions are being addressed by way of targeted maintenance and plant upgrades. Some circuits of the radial network are susceptible to environmental events, which may affect performance until maintenance activities and planned upgrades are completed.
Loss of Supply Events >0.1 to 1.00 System Minute	≤25	18	Performance was better than the 2011/12 benchmark and the same as the 2010/11 performance of 18. Due to improvements in maintenance activities, work practices, and targeted replacement programmes, there has been a reduction in the contribution from substation switchboard fault protection operations (known as "frame leakage" protection"), faults due to flashovers, and asset failures on primary equipment. This has contributed to Loss of Supply Events between 0.1 and 1 minute performing better than the 2011/12 benchmark. The performance excludes Loss of Supply Events between 0.1 and 1 system minute related to the *force majeure* event on the 10 June 2012 (see section 7.2.1 for details).
Loss of Supply Events >1 System Minute	≤2	1	Performance was better than the 2011/12 benchmark and the same as the 2010/11 performance of 1. The loss of supply event that exceeded 1 system minute in 2011/12 was due to a number of pole failures on a circuit on the Radial network (as per commentary on Radial System Minutes Interrupted performance). The circumstances that led to the pole failures, as well as reducing the impact of future unplanned supply interruptions, are being addressed by way of targeted maintenance and plant upgrades. The performance excludes Loss of Supply Events greater than 1 system minute related to the *force majeure* event on the 10 June 2012 (see section 7.2.1 for details).

Service Standard Benchmark	2011/12 Performance		Comments
	Benchmark	Actual	
Average Outage Duration	≤764	844	Performance was worse than the 2011/12 benchmark and worse than the 2010/11 performance of 675 minutes. The reason for the performance exceeding the benchmark was predominantly unassisted pole failures during storm activity in June 2012. Maintenance works and the ramping up of the pole replacement programme over the AA3 period will improve the quality of the poles on the transmission network. These activities should ensure that performance targets in future years will be achieved.

6.3 Streetlights

Table 14: Streetlight performance commentary for the year ending June 2012

	Service Standard Benchmark	2011/12 Performance		Comments
		Benchmark	Actual	
Streetlight Repairs	Perth Metropolitan Area	≤5 days	1.60	The average repair time for streetlights in the metropolitan area averaged 1.60 days against a target of 5 days or less. This performance has been assisted by closer geographic grouping of faults for repair crews.
	Major Regional towns	≤5 days	1.54	The average repair time for streetlights in regional areas averaged 1.54 days against a target of 5 days or less. Contract street lighting maintenance resources located in the major regional towns of Geraldton and Kalgoorlie have contributed to this performance outcome.
	Remote and Rural Towns	≤9 days	2.08	The average repair time for streetlights in the remote and regional areas averaged 2.08 days against a target of 9 days or less.

7 Exclusions from service standards

As outlined in section 5, the service standards and the SSAM provide for certain events to be excluded from the Distribution and Transmission performance.

7.1 Distribution performance

As indicted in section 5.1, for the 12 months to June 2012, the distribution performance service standards exclude the outages as indicated below due to the following:

- Major Event Days.
- Transmission system outages.
- Third party system outages.
- Planned interruptions.
- Force majeure events.

7.1.1 Major Event Days

The following SAIDI (minutes) and SAIFI (events) were excluded for each feeder classification as Major Event Days as per IEEE 1366-2003 definitions, which resulted in exclusions by the following feeder classification levels

Table 15: SAIDI and SAIFI exclusions due to Major Event Days

		2009/10	2010/11	2011/12
SAIDI	CBD	0	3	3
	Urban	236	19	230
	Rural Short	170	186	516
	Rural Long	218	553	571
	SWIN	214	114	337
SAIFI	CBD	0.00	0.01	0.04
	Urban	0.48	0.07	0.39
	Rural Short	0.42	0.39	0.76
	Rural Long	0.59	0.60	1.06
	SWIN	0.47	0.21	0.55

There were seven days during the 12 months to 30 June 2011/12 which exceeded the daily Major Event Day threshold of 5.67 minutes.

These are discussed below.

7.1.1.1 4 January 2012

(SAIDI = 6.07 minutes, SAIFI = 0.030)

There was major lightning activity resulting in multiple faults and damage to the distribution network. Approximately 27,000 customers were affected predominantly in the Perth Metropolitan area and Wheatbelt region.

7.1.1.2 20 January 2012

(SAIDI = 9.88 minutes, SAIFI = 0.069)

There was major lightning activity resulting in multiple faults and damage to the distribution network. Approximately 47,000 customers were affected predominantly in the Perth Metropolitan, Peel and Mid West region.

7.1.1.3 2 April 2012

(SAIDI = 6.03 minutes, SAIFI = 0.035)

Pole top fire activity across the Perth Metropolitan area following sustained pollution from smoke from a significant bushfire, resulting in approximately 33,000 customers affected.

7.1.1.4 10 to 13 June 2012

(SAIDI = 252, 26.5, 22.7 and 11.4 minutes respectively, SAIFI = 0.247, 0.050, 0.068 and 0.041 respectively)

Two storm fronts passed through the south west and propagated across the Western Power Network, resulting in widespread damage to overhead network assets and more than 272,000 customers with supply interruptions.

7.1.2 Transmission system interruptions

The following SAIDI (minutes) and SAIFI (events) were excluded for each feeder classification due to supply interruptions caused by the Transmission system for the previous three financial years.

Table 16: SAIDI and SAIFI exclusions due to the transmission system interruptions

		2009/10	2010/11	2011/12
SAIDI	CBD	3	1	3
	Urban	67	14	41
	Rural Short	16	23	18
	Rural Long	31	97	43
	SWIN	51	24	34
SAIFI	CBD	0.19	0.03	0.04
	Urban	0.35	0.23	0.16
	Rural Short	0.23	0.29	0.23
	Rural Long	0.57	0.42	0.52
	SWIN	0.36	0.26	0.21

7.1.3 Other third party system interruptions

The following SAIDI (minutes) and SAIFI (events) were excluded for each feeder classification due to supply interruptions due to generator unavailability or customer equipment.

Table 17: SAIDI and SAIFI exclusions due to other third party system interruptions

		2009/10	2010/11	2011/12
SAIDI	CBD	2	5	1
	Urban	8	5	7
	Rural Short	5	4	6
	Rural Long	3	7	12
	SWIN	7	5	7
SAIFI	CBD	0.06	0.13	0.004
	Urban	0.13	0.13	0.15
	Rural Short	0.07	0.07	0.09
	Rural Long	0.03	0.09	0.13
	SWIN	0.11	0.11	0.13

These third party system supply interruptions included:

- Generator failures on the 9 September and 4 November 2011, resulting in the automatic de-energisation of circuits to stabilise the frequency on the transmission network.
- Over 2,600 faults attributed to customer installations or other third party equipment.

7.1.4 Planned interruptions

The following SAIDI (minutes) and SAIFI (events) were excluded from each feeder classification due to planned supply interruptions for work on the distribution network necessary to expand and upgrade the network and to mitigate the risk of unplanned interruptions.

Table 18: SAIDI and SAIFI exclusions due to planned interruptions

		2010	2010/11	2011/12
SAIDI	CBD	6	3	5
	Urban	53	70	80
	Rural Short	59	88	86
	Rural Long	135	121	145
	SWIN	61	79	87
SAIFI	CBD	0.01	0.00	0.02
	Urban	0.21	0.25	0.27
	Rural Short	0.24	0.33	0.34
	Rural Long	0.52	0.59	0.55
	SWIN	0.25	0.30	0.31

7.1.5 Force Majeure

On the 23 November 2011, a bushfire in Margaret River that was caused by an agent external to Western Power resulted in significant damage to the network infrastructure in the associated area. This included (but is not limited to) the following assets being damaged:

- 85 wood poles
- 1 km of overhead conductor
- Other associated equipment

This significant supply interruption was caused and exacerbated by a number of circumstances beyond Western Power's control. In particular, Western Power was unable to mitigate the impact on customers in terms of:

- Limiting the numbers affected; and
- The length of time without power, due to not being allowed by FESA to access the area for a number of days.

Over 500 customers in the Shire of Augusta-Margaret River were without power for up to 5 days.

The nature and circumstances of this event are consistent with the definition of *force majeure* (as defined in the Electricity Networks Access Code 2004).

The impacts of this event on distribution reliability are shown in the following table.

Table 19 – SAIDI and SAIFI exclusions due to Force Majeure

		200910	2010/11	2011/12
SAIDI	CBD	0	0	0
	Urban	0	0	0
	Rural Short	0	0	0
	Rural Long	0	0	44
	SWIN	0	0	4
SAIFI	CBD	0.00	0.00	0.00
	Urban	0.00	0.00	0.00
	Rural Short	0.00	0.00	0.00
	Rural Long	0.00	0.00	0.033
	SWIN	0.00	0.00	0.003

7.2 Transmission performance

As indicated in section 5.2, the transmission performance for the AA2 period excludes the outages described below:

7.2.1 Force majeure

The following exclusions from the transmission service performance are due to force majeure events.

Table 20: Transmission exclusions due to force majeure

		200910	2010/11	2011/12
Circuit Unavailability		0.034%	0.008%	0.021%
System Minutes Interrupted	Meshed Network	9.617	2.864	3.790
	Radial Network	0.000	0.066	0.000

The discussion below is limited to the force majeure exclusions for 2011/12.

Two storm fronts passed through Western Australia, the first starting on Sunday 10 June and the second starting on Tuesday 12 June 2011/12.

The second storm front occurred whilst Western Power was still dealing with the impacts of the first storm. There is no clear delineation between the faults caused by the two storm fronts on 10 and 12 June.

The Bureau of Meteorology issued an Emergency Services Weather Briefing on 12 June that the storm front starting on the 12 June would be similar in strength to the system that moved through on the 10 June and would last from Tuesday 12 June through to Wednesday 13 June. Severe weather conditions, measured by high maximum wind gusts (>85-139kph) continued for the 4 days from the 10 to 13 June 2011/12.

More than 40,000 customers had their supply interrupted on these days as a direct result of the transmission faults. There were more than 30 faults on the transmission network.

In calculating Transmission Service Standard Performance for the 12 months to 30 June 2012, Western Power has excluded the transmission events that were directly attributed to these storms as *force majeure* events (as defined in the Electricity Networks Access Code 2004).

7.2.2 Planned interruptions for major construction work exceeding 14 days

In calculating circuit availability, planned outages for major construction work are capped at 14 days.

Table 21 shows the number of planned supply interruptions for major construction work that exceeded the 14 day cap in each financial year of the AA2 period.

Table 21: Planned interruptions for major construction work exceeding 14 days

	200910	2010/11	2011/12
Number of planned outages	33	50	20

8 Service Standard Adjustment Mechanism

The Authority applies a financial reward or penalty to Western Power in relation to the actual performance in respect to SAIDI, SAIFI, Circuit Availability and System Minutes Interrupted.

The reward or penalty is calculated using the following equations as per Western Power's Access Arrangement.

$SSD_{2009/10} = (SSB_{2009/10} - SSA_{2009/10})$

$SSD_{2010/11} = (SSB_{2010/11} - SSA_{2010/11}) - (SSB_{2009/10} - SSA_{2009/10})$

$SSD_{2011/12} = (SSB_{2011/12} - SSA_{2011/12}) - (SSB_{2010/11} - SSA_{2010/11})$

Where:

SSD_t is the service standard difference in year t;

SSB_t is the service standard benchmark in year t; and

SSA_t is the actual service performance in year t.

Table 22 shows the results of the service standard adjustment mechanism for the performance to 30 June 2012. All values are expressed in real dollars as at 30 June 2009.

Table 22: SSAM results for the AA2 period

	Service Standard Benchmark		Year	Incentive Rate ($ per unit)	SSB	SSA	SSD	Penalty (-) or Reward (+)
Distribution	SAIDI (minutes)	CBD	2009/10	$220,000	38	1	37	$8,140,000
			2010/11		38	30	-29	-$6,380,000
			2011/12		38	16	14	$3,080,000
			Total CBD SAIDI Penalty/Reward					**$4,840,000**
		Urban	2009/10	$220,000	165	156	9	$1,980,000
			2010/11		162	120	33	$7,260,000
			2011/12		153	119	-8	-$1,760,000
			Total Urban SAIDI Penalty/Reward					**$7,480,000**
		Rural Short	2009/10	$8,200	259	212	47	$385,400
			2010/11		253	192	14	$114,800
			2011/12		244	191	-8	-$65,600
			Total Rural Short SAIDI Penalty/Reward					**$434,600**
		Rural Long	2009/10	$8,200	612	661	-49	-$401,800
			2010/11		588	529	108	$885,600
			2011/12		556	563	-66	-$541,200
			Total Rural Long SAIDI Penalty/Reward					**-$57,400**
	SAIFI (events)	CBD	2009/10	$10,300,000	0.24	0.02	0.22	$2,266,000
			2010/11		0.24	0.23	-0.21	-$2,163,000
			2011/12		0.24	0.16	0.07	$721,000
			Total CBD SAIFI Penalty/Reward					**$824,000**
		Urban	2009/10	$10,300,000	1.92	1.55	0.37	$3,811,000
			2010/11		1.89	1.31	0.21	$2,163,000
			2011/12		1.83	1.20	0.05	$515,000
			Total Urban SAIFI Penalty/Reward					**$6,489,000**
		Rural Short	2009/10	$450,000	3.12	2.33	0.79	$355,500
			2010/11		3.06	2.11	0.16	$72,000
			2011/12		2.98	2.10	-0.07	-$31,500
			Total Rural Short SAIFI Penalty/Reward					**$396,000**
		Rural Long	2009/10	$450,000	5.00	4.17	0.83	$373,500
			2010/11		4.85	3.86	0.16	$72,000
			2011/12		4.80	4.33	-0.52	-$234,000
			Total Rural Long SAIFI Penalty/Reward					**$211,500**
Total Distribution Penalty/Reward								**$20,617,700**

	Service Standard Benchmark		Year	Incentive Rate ($ per unit)	SSB	SSA	SSD	Penalty (-) or Reward (+)
Transmission	Circuit Availability (%)		2009/10	(-) $375,000 per 0.1%	98.000%	98.432%	-0.432%	$1,620,000
			2010/11		98.000%	97.904%	0.528%	-$1,980,000
			2011/12		98.000%	98.473%	-0.569%	$2,133,750
			Total Circuit Avaliability Penalty/Reward					**$1,728,750**
	System Minutes Interrupted (minutes)	Meshed Network	2009/10	$75,000 per 0.1 minute	9.300	8.944	0.356	$267,000
			2010/11		9.300	6.685	2.259	$1,694,250
			2011/12		9.300	3.978	2.707	$2,030,250
			Total SMI Meshed Network Penalty/Reward					**$3,991,500**
		Radial Network	2009/10	$25,000 per 0.1 minute	1.400	0.750	0.650	$162,500
			2010/11		1.400	4.833	-4.083	-$1,020,750
			2011/12		1.400	2.541	2.292	$573,000
			Total SMI Radial Network Penalty/Reward					**-$285,250**
Total Transmission Penalty/Reward								**$5,480,000**

Total Penalty/Reward for 2009/10, 2010/11 and 2010/11/12	**$26,097,700**