

**Performance against minimum
service standards (MSS) by
Energex and Ergon Energy for the
2016-17 financial year**

This publication has been compiled by Susie Cupitt of Regulation, Governance and Analytics, Department of Energy and Water Supply.

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Distributor performance

Background

There are currently two Queensland distribution entities: Energex Limited (Energex) in South East Queensland and Ergon Energy Corporation Limited (Ergon Energy) in regional Queensland. Both entities operate distribution networks under Distribution Authorities issued to them by the Regulator under the *Electricity Act 1994* and administered by the Department of Energy and Water Supply (DEWS).

From 1 July 2014, as part of ongoing reforms to the Queensland electricity sector, the minimum service standards (MSS) of electricity distributors, and the requirement for them to report their performances against the MSS, were incorporated into their respective Distribution Authorities.

Prior to this date, the MSS and reporting requirements were contained within the Electricity Industry Code, and the reports were published online by the Queensland Competition Authority (QCA).

Minimum Service Standards

The conditions of the Distribution Authorities held by Energex and Ergon Energy require that they use their best endeavours to meet MSS in relation to the frequency and duration of electricity distribution outages. The MSS are put in place to ensure that Queensland electricity customers receive a minimum prescribed level of supply reliability. If a distributor does not meet its MSS limits, it must provide reasons for any failure and a proposal to improve its performance.

The MSS limits for Energex and Ergon Energy differ, with those set for Energex being more stringent. This reflects the differences in their distribution networks, and the environments in which they operate.

Under the conditions of their Distribution Authorities, each entity is required to report on its performance against MSS limits within two months of the end of each quarter. Once the June quarterly report of each entity is received, DEWS can ascertain whether the distributor has performed within its MSS limits for the financial year.

This report details the performance of Energex and Ergon Energy against the MSS limits set for the 2016-17 financial year.

Distribution Networks

The MSS reports are not intended to enable performance comparisons between Energex and Ergon Energy. Due to their very different operating environments and distribution network characteristics, any such comparison would be inappropriate. The MSS reports can, however, be used to gauge the year-on-year performance of each distributor.

The Energex distribution network supplies largely urbanised areas of South East Queensland. Ergon Energy's network is spread across the remainder of the state with a significant number of long, isolated feeders and lower customer densities. The individual prescribed MSS limits for each distribution entity reflect these network differences.

MSS requirements

The MSS requirements are set in relation to the frequency and duration of interruptions to the distribution services provided by Energex and Ergon Energy. An interruption includes any temporary unavailability of electricity supply to a customer associated with an outage of the electricity distribution network.

The MSS are average measures of performance across each distribution network (categorised by feeder type) excluding the impact of certain excluded events such as severe weather events. To ensure a low probability of exceeding their MSS limits in a particular year, distributors must aim to achieve a higher level of performance than the MSS limits. The MSS limits for each financial year are detailed in the Distribution Authority of each distribution entity.

There are six MSS limits for each distributor. Three MSS limits relate to the average duration of service interruptions and three to the average frequency of service interruptions. Reliability performance is expressed using the following measures:

- a) **System average interruption duration index (SAIDI)** is the sum of all customer interruption durations (measured in minutes) divided by the total number of customers (averaged over the financial year) for each distributor; and
- b) **System average interruption frequency index (SAIFI)** is the total number of customer interruptions, divided by the total number of customers (averaged over the financial year) for each distributor.

SAIDI and SAIFI performance is measured and reported based on the broad feeder categories of central business district (CBD), urban, short rural and long rural feeders. The MSS limits differ between feeder types, reflecting the performance that should reasonably be achieved on each type.

Some interruptions may be excluded by the distributors when reporting performance against MSS limits. Possible exclusions include interruptions commencing on a major event day, interruptions of one minute or less (momentary interruptions), interruptions resulting from a failure of the shared transmission grid, and interruptions caused by the failure of a customer's electrical installation. Interruptions resulting from a direction by a police officer or other authorised person who is exercising powers in relation to public safety are also excluded. A complete list of excluded interruptions is set out in the Distribution Authority of each distribution entity.

Failure to perform within MSS limits

If a distributor exceeds the same MSS limit (i.e. SAIDI limit or SAIFI limit) for three financial years in a row, this is considered a 'systemic failure' and represents a contravention of the conditions of the entity's distribution authority.

Under the *Electricity Act 1994*, any such contravention may incur disciplinary action such as the cancellation or suspension of a distribution authority and/or the imposition of a pecuniary civil penalty.

Summary of Energex performance

Performance against the MSS limits

The reliability performance for 2016-17 was favourable to the Minimum Service Standards (MSS) for all six performance measures. Energex's SAIDI and SAIFI performance before and after exclusions, and its MSS limits for 2016-17 (as prescribed in its distribution authority) are presented in Tables 1 and 2.

By comparison to the 2015-16 regulatory year, Energex's overall normalised SAIDI and SAIFI results (with exclusions removed) for the 2016-17 regulatory year improved by 4% and 5% respectively. Further, unplanned SAIDI and SAIFI (exclusive of major event days and excluded outages) performance improved by 13% and 8% respectively.

These improvements are a reflection of lower impacts from weather events which were not classified as major event days in 2016-17. These lower impacts were predominantly due to improvements to the resilience of the network made over a period of years such as:

- augmentation programs to reduce the number of customers impacted by events;
- replacement programs which reduced the failure rates of equipment; and
- vegetation management programs which delivered improved performance outcomes during storms.

Conversely, planned SAIDI and SAIFI (exclusive of major event days and excluded outages) performance declined by 13% and 10% respectively. This change in performance is mostly due to an increase in the average number of customers being interrupted for planned work. The increase in the number of customers interrupted is attributed to an increase in refurbishment works on the 11 kV network in 2016-17, which required interruptions to larger areas of supply.

Table 3 details the interruptions that Energex has excluded in determining performance against its SAIDI and SAIFI limits during 2016-17.

Performance against the SAIDI limits

Table 1 Energex SAIDI performance (minutes)

	2013-14*	2014-15	2015-16	2016-17	SAIDI MSS limits 2016-17
Total before exclusions					
CBD feeders	4.069	3.699	28.278	7.953	
Urban feeders	94.944	190.512	85.916	131.562	
Short rural feeders	232.873	263.357	258.085	520.825	
Total net of exclusions					
CBD feeders	3.560	3.699	4.680	3.840	15
Urban feeders	74.864	90.813	76.670	76.261	106
Short rural feeders	173.392	178.592	180.890	164.641	218

Performance against the SAIFI limits

Table 2 Energex SAIFI performance (number of interruptions)

	2013-14*	2014-15	2015-16	2016-17	SAIFI MSS limits 2016-17
Total before exclusions					
CBD feeders		0.158	0.131	0.044	
Urban feeders	0.184	0.957	0.793	0.842	
Short rural feeders	0.916	1.861	1.760	1.991	
Total net of exclusions					
CBD feeders	0.058	0.158	0.032	0.024	0.150
Urban feeders	0.804	0.786	0.740	0.671	1.260
Short rural feeders	1.556	1.546	1.562	1.453	2.460

* previously reported by the QCA

Excluded interruptions

Table 3 Energex exclusions from MSS reporting for 2016-17

	Exclusions from SAIDI (minutes)	Exclusions from SAIFI (interruptions)
Interruption of a duration of one minute or less		
None in 2016-17		
Interruption resulting from load shedding due to a shortfall in generation		
None in 2016-17		
Interruption resulting from a direction by AEMO, a system operator or any other body exercising a similar function under the Electricity Act, National Electricity Rules or National Electricity Law		
None in 2016-17		
Interruption resulting from automatic shedding of load under the control of under-frequency relays following the occurrence of a power system under-frequency condition described in the power system security and reliability standards		
None in 2016-17		
Interruption resulting from failure of the shared transmission grid		
None in 2016-17		

Interruption from direction by police officer or other authorised person in relation to public safety		
	SAIDI	SAIFI
CBD feeder	4.113	0.020
Urban feeder	0.022	0.001
Short rural feeder	0.001	0.000
Interruption to the supply of electricity on a distribution entity's supply network which commences on a major event day		
	SAIDI	SAIFI
CBD feeder	0.000	0.000
Urban feeder	55.257	0.171
Short rural feeder	356.166	0.538
Interruption caused by customer electrical installations		
	SAIDI	SAIFI
CBD feeder	0.000	0.000
Urban feeder	0.022	0.000
Short rural feeder	0.017	0.000
Total exclusions		
	SAIDI	SAIFI
CBD feeder	4.113	0.020
Urban feeder	55.301	0.171
Short rural feeder	356.184	0.538

Major event days

A major event day is one where the daily SAIDI value exceeds a certain threshold, which is based on the distributor's historical reliability performance. Major event days are often associated with severe weather events that cause significant, widespread and prolonged customer supply interruptions. Major event days are excluded when assessing the performance of distributors against MSS limits.

Energex reported eight major event days during 2016-17:

- 12-13 November, 3 and 18 December 2016, and 13 February 2017 due to storms impacting the Energex network;
- 30 and 31 March 2017 storms, heavy rain and flooding due to Ex-Tropical cyclone Debbie, and 1 April 2017 - flooding due to Ex-Tropical cyclone Debbie.

Summary of Ergon Energy performance

Performance against the MSS limits

Ergon Energy's SAIDI and SAIFI performance before and after exclusions and its MSS limits for 2016-17 as prescribed in its distribution authority are presented in Tables 4 and 5.

The reliability performance for the 2016-17 regulatory year was favourable to the MSS for six of the six measures. Except for the outage frequency on the Long Rural network, Ergon returned the best performance against the MSS since the standards were established in 2005-06.

By comparison to the 2015-16 regulatory year, Ergon's overall network SAIDI and SAIFI for the 2016-17 regulatory year improved by 18.9% and 12.6% respectively. Furthermore, unplanned SAIDI and SAIFI performance improved by 20.4% and 13.4% respectively, and planned SAIDI and SAIFI improved by 13.5% and 7.6% respectively.

Ergon's capital investment program for reliability improvement is considerably less than recent years. The reliability improvement capital investment for 2016-17 is primarily limited to the progression of the Worst Performing Feeder (WPF) Improvement Program, as an obligation within Ergon's Distribution Authority. Whilst the WPF improvement program is not targeted towards improving the average system level reliability, it continues to address the reliability issues faced by the customers supplied by the poorly performing feeders or a section of these feeders. Ergon continues to implement the targeted low cost solutions to improve average outage duration on its Long Rural network. Beyond the capital investments, Ergon remains committed to the continual improvement of operational practices to achieve optimal reliability performance outcomes and operating efficiencies using our existing network infrastructure.

Managing the annual variability in reliability of supply performance across the rural networks continues to be a significant challenge for Ergon. The rural networks are defined by geographically dispersed assets and an extensively radial distribution network with a high exposure to the influences of severe weather events. The variability of weather causes significant reliability performance variation. Ergon continues to use its best endeavours to maintain and operate the distribution network to manage this annual variability and with an aim of consistently achieving MSS.

Table 6 details the interruptions that Ergon Energy has excluded in determining performance against its SAIDI and SAIFI limits during 2016-17.

Performance against the SAIDI limits

Table 4 Ergon Energy SAIDI performance (minutes)

	2013-14*	2014-15	2015-16	2016-17	SAIDI MSS limits 2016-17
Total before exclusions					
Urban feeders	165.62	836.4232	145.3321	482.095	
Short rural feeders	440.11	1042.8636	397.0792	1225.878	
Long rural feeders	850.86	1590.7802	1040.4344	1235.369	
Total net of exclusions					
Urban feeders	118.49	133.6567	127.7016	106.988	149
Short rural feeders	291.91	359.0826	349.5913	279.380	424
Long rural feeders	798.42	1052.7546	954.7147	780.761	964

Performance against the SAIFI limits

Table 5 Ergon Energy SAIFI performance (number of interruptions)

	2013-14*	2014-15	2015-16	2016-17	SAIFI MSS limits 2016-17
Total before exclusions					
Urban feeders	1.714	1.8846	1.3957	1.378	
Short rural feeders	3.169	3.8963	3.1983	3.098	
Long rural feeders	6.476	7.3054	7.1775	6.457	
Total net of exclusions					
Urban feeders	1.394	1.2686	1.2723	1.135	1.98
Short rural feeders	2.767	3.1501	3.0234	2.637	3.95
Long rural feeders	6.118	6.7643	6.7663	5.804	7.40

* previously reported by the QCA

Excluded interruptions

Table 6 Ergon Energy exclusions from MSS reporting for 2016-17

	Exclusions from SAIDI (minutes)	Exclusions from SAIFI (interruptions)
Interruption of a duration of one minute or less		
None in 2016-17		
Interruption resulting from load shedding due to a shortfall in generation		
None in 2016-17		
Interruption resulting from a direction by AEMO, a system operator or any other body exercising a similar function under the Electricity Act, National Electricity Rules or National Electricity Law		
None in 2016-17		
Interruption resulting from automatic shedding of load under the control of under-frequency relays following the occurrence of a power system under-frequency condition described in the power system security and reliability standards		
	SAIDI	SAIFI
Urban feeder	1.959	0.017
Short rural feeder	1.299	0.011
Long rural feeder	3.858	0.024
Interruption resulting from failure of the shared transmission grid		
	SAIDI	SAIFI
Urban feeder	3.256	0.064
Short rural feeder	3.313	0.066
Long rural feeder	10.667	0.166
Interruption from direction by police officer or other authorised person in relation to public safety		
	SAIDI	SAIFI
Urban feeder	11.746	0.022
Short rural feeder	2.942	0.018
Long rural feeder	14.530	0.008

Interruption to the supply of electricity on a distribution entity's supply network which commences on a major event day		
	SAIDI	SAIFI
Urban feeder	358.136	0.139
Short rural feeder	938.837	0.366
Long rural feeder	425.328	0.455

Interruption caused by customer electrical installations		
	SAIDI	SAIFI
Urban feeder	0.011	0.000
Short rural feeder	0.109	0.001
Long rural feeder	0.225	0.0004
Total exclusions		
	SAIDI	SAIFI
Urban feeder	375.107	0.242
Short rural feeder	946.499	0.461
Long rural feeder	454.608	0.654

Major event days

Ergon Energy reported the six following major event days during 2016-17:

- 12-13 November 2016 - Severe thunderstorms with hail and strong winds affecting Maryborough and Bundaberg region.
- 27, 28, 29 and 30 March 2017 – Ex-Tropical Cyclone Debbie impacted North Queensland.