



ANNUAL SERVICE QUALITY REPORT JULY 2008 TO JUNE 2009

ENERGEN LIMITED

August 2009

For media enquiries, please contact ENERGEN Corporate Communications on (07) 3407 4420

Introduction

This annual report is prepared in accordance with the Queensland Competition Authority's *Electricity Distribution: Service Quality Reporting Guidelines Version 2.0 2005* (Guidelines).

In this annual report, ENERGEX provides a range of information on the state of its distribution network, including information on the size of the network, the total amount of electricity supplied to customers, and areas of the network where reliability is significantly less than the majority of similar areas in the network.

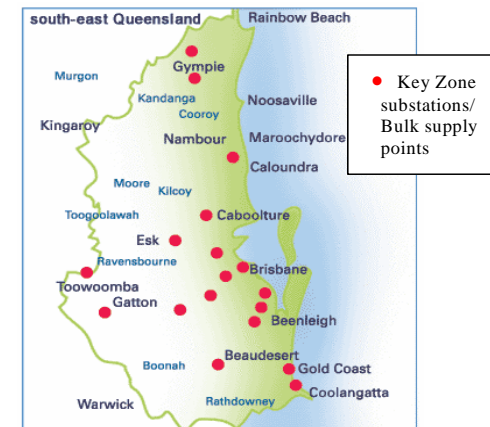
In order to keep customers up to date, ENERGEX also reports a wide range of service quality measures on a quarterly basis, covering the quarters from January to March, April to June, July to September, and October to December. These quarterly reports include extensive information on the reliability of supply, the quality of supply (voltage), and many different measures of customer service such as the performance of the call centre, the time taken to fix street lights, and punctuality in keeping appointments with customers.

About ENERGEX's electricity distribution network

This report focuses on the performance of ENERGEX's electricity distribution network, which is the network of poles, wires, underground cables and transformers that takes electricity from the high voltage wires operated by the electricity transmission company, and delivers them to customers in south-east Queensland.

ENERGEX provides electricity distribution services to customers in south-east Queensland, in a region stretching from Gympie in the north to Gatton in the west and Coolangatta in the south.

Within this supply area, ENERGEX supplies electricity to more than 1.2 million customers, including 913,000 urban customers and over 339,000 short rural customers.



Map of ENERGEX's electricity distribution network

Measuring ENERGEX's performance

ENERGEX's performance is assessed in a number of ways to provide a complete picture of the quality of services provided to customers. This report provides information on ENERGEX's distribution network, including:

- a summary of reliability performance over the financial year, which is reported in detail in the quarterly ENERGEX service quality reports. Reliability performance reports on the number and duration of interruptions in electricity supply experienced by customers;

- the size and characteristics of the network (the physical size in square kilometres of ENERGEX's network, the length of overhead and underground lines, the number of poles, the number of transformers in the network, and the amount of energy delivered to customers);
- the utilisation of ENERGEX's transformers, and maximum demand on the network;
- the performance of the 10 worst performing feeders in urban and rural sections of ENERGEX's network; and
- measures taken to address quality of supply (ie. voltage) problems reported by customers.

ENERGEX monitors the performance of all parts of its distribution network to ensure that all customers receive an acceptable level of service. One way we do this is to examine and report on the performance of different areas of the network with a special focus on the reliability of the feeders that deliver electricity to customers connected to the network. We classify and analyse reliability performance looking at three important industry measures of reliability:

- the total duration of interruptions to supply during the year to these feeders (called System Average Interruption Duration Index or SAIDI);
- the number of times supply was interrupted during the year to these feeders (called System Average Interruption Frequency Index or SAIFI); and

- the average length of time to restore power after an interruption (called Customer Average Interruption Duration Index or CAIDI).

Another important measure of ENERGEX's performance is its ability to provide good quality of supply. This means supplying electricity at a constant voltage (generally 240 volts) and to a standard technical specification suitable for customers' electrical equipment. This report provides information on any quality of supply problems reported by customers, and classifies these reported problems by cause, and by the type of remedial action taken to fix them.

Summary of ENERGEX's Performance

Reliability Performance

For the distribution network as a whole, to the end of June 2009 (and after removal of excluded events) the reliability performance results were:

- the average duration of interruptions for the distribution system (as measured by SAIDI) was 127.620 which was lower than the 130.836 minutes reported for 2007-08;
- the average number of interruptions for the distribution system (as measured by SAIFI) was 1.450, which was lower than the 1.538 interruptions reported for 2007-08; and
- the average time taken to restore power after an interruption for the distribution system (as measured by CAIDI) was 88.005 which was higher than the 85.054 minutes reported for 2007-08.

Breaking down the overall reliability performance into the geographical categories of CBD, urban and short rural, the ENERGEX reliability performance can be assessed for different customer groups. The reliability performance by category for 2008-09 compared to the 2007-08 financial year (after removal of excluded events) is summarised in Table 1.

A similar number of events occurred on ENERGEX's CBD network in 2008-09 compared to 2007-08. However, on average, these events tended to impact a greater number of customers, resulting in a higher SAIFI contribution in 2008-09. These events were able to be restored quickly, resulting in a lower CBD SAIDI than in 2007-08.

Table 1 **ENERGEX Reliability performance by feeder category**

Category	measure	2008-09	2007-08
CBD	SAIDI	2.868	3.811
	SAIFI	0.053	0.032
	CAIDI	54.019	118.265
Urban	SAIDI	90.540	83.863
	SAIFI	1.040	1.044
	CAIDI	87.083	80.310
Short rural	SAIDI	226.866	240.949
	SAIFI	2.549	2.699
	CAIDI	88.997	89.275

The increase in Urban SAIDI in 2008-09 was predominantly due to an increase in planned SAIDI on the urban network. Storms also had a greater impact on the urban network in 2008-09 than in 2007-08.

Network Characteristics

ENERGEX has continued to invest heavily in the network to accommodate the high customer growth in south-east Queensland and improve reliability standards. This investment can be seen in the following network characteristics data:

- The underground sub-transmission network increased by 73 km from 1,087 km to 1,160 km;
- 12 sub-transmission transformers were installed during 2008-09 taking the total number of sub-transmission transformers to 543, with an installed capacity of 13,308 MVA;
- 1,193 distribution transformers were installed taking the total number of distribution transformers to 44,613 and raising the total capacity to 11,997 MVA;
- The total length of distribution lines in the urban area increased by 1,234 km to 21,425 km;
- Within ENERGEX's network service area of 25,064 square kilometres, the number of poles increased by 8,195 to 630,259 poles.
- The total amount of energy delivered was 21,855 GWh, which is an increase on the 20,920 GWh recorded for the previous financial year; and
- The amount of distribution losses experienced by the network was 5.66 per cent for the financial year, which decreased by 0.08 per cent to that recorded in 2007-08.

Worst performing feeders

The worst performing feeders were selected according to normalised distribution SAIDI minutes. The normalised data selects the worst performing feeders excluding the impact of severe and unpredictable events.

1. Administrative Data

Item No.	Measure	Descriptor	Value
1.1	<i>DNSP Business</i>	Name	ENERGEX Limited
1.2	<i>First day of reporting period</i>	date	01-07-2008
1.3	<i>Last day of reporting period</i>	date	30-06-2009

2. Aggregate Data

Item No.	Measure	Descriptor	Value
2.2 ^a	<i>Length of distribution lines</i>		
	Sub-transmission lines		
	sub-transmission – overhead	kilometres	3,801
	sub-transmission – underground	kilometres	1,160
	CBD		
	high voltage – overhead	kilometres	0
	high voltage – underground	kilometres	108
	low voltage – overhead	kilometres	0
	low voltage – underground	kilometres	20
	Urban		
	high voltage – overhead ^b	kilometres	3,766
	high voltage – underground	kilometres	3,785
	low voltage – overhead	kilometres	7,061
	low voltage – underground	kilometres	6,813

Item No.	Measure	Descriptor	Value
	Short rural		
	high voltage – overhead ^b	kilometres	14,187
	high voltage – underground	kilometres	1,206
	low voltage – overhead	kilometres	7,675
	low voltage – underground	kilometres	2,779
	Long rural		
	high voltage – overhead	kilometres	N/A
	high voltage – underground	kilometres	N/A
	low voltage – overhead	kilometres	N/A
	low voltage – underground	kilometres	N/A
2.3 ^c	<i>Number of poles</i>	number	630,259
2.4	<i>Network service area</i>	square kilometres	25,064
2.5 ^d	<i>Energy delivered</i>	GW.h	21,855
	CBD	GW.h	N/A
	Urban	GW.h	N/A
	Short rural	GW.h	N/A
	Long rural	GW.h	N/A
2.6	<i>Distribution losses</i>	percentage	5.66
2.7	<i>Transformers</i>		
	sub-transmission (ST/HV)		
	total number	number	543
	installed capacity	MVA	13,308

Item No.	Measure	Descriptor	Value
	distribution (HV/LV)		
	total number	number	44,613
	installed capacity	MVA	11,997
2.8 ^e	<i>Sub-transmission transformer utilisation factor</i>	percentage	26.2
2.81	<i>Zone substations maximum demand divided by nameplate rating</i>	percentage	56.5
2.9	<i>Coincident maximum demand for the total network over the reporting period</i>	MVA	4,714

Source: NFM

3. Reliability measures^f

Item No.	Measure									
3.4	<i>System Average Interruption Duration Index (SAIDI) – worst performing feeders</i>									
Urban										
Number	Locale ^g	Customer Numbers	Feeder Length (km)	SAIDI Generation	SAIDI Transmission	Distribution Only Total Feeder SAIDI	SAIDI Exclusions ^h	Normalised Distribution Only Feeder SAIDI ⁱ	SAIDI Planned	SAIDI Unplanned
KBN3A	Karrabin	3	0.705	0.000	0.000	1355.000	0.000	1355.000	400.000	955.000
RCN9	Runcorn	2	0.504	0.000	0.000	823.000	0.000	823.000	287.000	536.000
CPRGBP3	Coorparoo	12	1.461	0.000	0.000	813.333	0.000	813.333	813.333	0.000
BDB6A	Bundamba	12	4.755	0.000	12.000	810.833	0.000	810.833	810.833	0.000
CCYUPC2	Upper Coomera	936	7.995	0.000	0.000	691.416	0.000	691.416	286.866	404.550
MTNQBI9	Myrtletown	8	4.502	0.000	0.000	687.000	0.000	687.000	0.000	687.000
SDS5	Surfers Paradise	31	0.159	0.000	0.000	522.242	0.000	522.242	552.242	0.000
DRA1A	Darra	267	6.598	0.000	0.000	493.054	0.000	493.054	0.000	493.054
LYT1	Lytton	9	1.600	0.000	0.000	492.506	0.000	492.506	0.000	492.506
MLB13A	Mooloolaba	2781	9.333	0.000	0.000	485.335	0.000	485.335	4.695	480.640

Source: NFM

Item No.	Measure									
3.5	<i>System Average Interruption Frequency Index (SAIFI) – worst performing feeders</i>									
Urban										
Number	Locale	Customer Numbers	Feeder Length (km)	SAIFI Generation	SAIFI Transmission	Distribution Only Total Feeder SAIFI	SAIFI Exclusions	Normalised Distribution Only Feeder SAIFI	SAIFI Planned	SAIFI Unplanned
KBN3A	Karrabin	3	0.705	0.000	0.000	3.000	0.000	3.000	1.000	2.000
RCN9	Runcorn	2	0.504	0.000	0.000	3.000	0.000	3.000	1.000	2.000
CPRGBP3	Coorparoo	12	1.461	0.000	0.000	1.833	0.000	1.833	1.833	0.000
BDB6A	Bundamba	12	4.755	0.000	1.500	0.417	0.000	0.417	0.417	0.000
CCYUPC2	Upper Coomera	936	7.995	0.000	0.000	4.006	0.000	4.006	1.006	3.000
MTNQBI9	Myrtle town	8	4.502	0.000	0.000	3.000	0.000	3.000	0.000	3.000
SDS5	Surfers Paradise	31	0.159	0.000	0.000	0.976	0.000	0.976	0.976	0.000
DRA1A	Darra	267	6.598	0.000	0.000	2.379	0.000	2.379	0.000	2.379
LYT1	Lytton	9	1.600	0.000	0.000	1.820	0.000	1.820	0.000	1.820
MLB13A	Mooloolaba	2781	9.333	0.000	0.000	3.279	0.000	3.279	0.025	3.255

Source: NFM

Item No.	Measure									
3.6	<i>Customer Average Interruption Duration Index (CAIDI) – worst performing feeders</i>									
Urban										
Number	Locale	Customer Numbers	Feeder Length (km)	CAIDI Generation	CAIDI Transmission	Distribution Only Total Feeder CAIDI	CAIDI Exclusions	Normalised Distribution Only Feeder CAIDI	CAIDI Planned	CAIDI Unplanned
KBN3A	Karrabin	3	0.705	0.000	0.000	451.666	0.000	451.666	400.000	477.500
RCN9	Runcorn	2	0.504	0.000	0.000	274.333	0.000	274.333	287.000	268.000
CPRGBP3	Coorparoo	12	1.461	0.000	0.000	443.717	0.000	443.717	443.717	0.000
BDB6A	Bundamba	12	4.755	0.000	8.000	1944.444	0.000	1944.444	1944.444	0.000
CCYUPC2	Upper Coomera	936	7.995	0.000	0.000	172.595	0.000	172.595	285.155	134.850
MTNQBI9	Myrtletown	8	4.502	0.000	0.000	229.000	0.000	229.000	0.000	229.000
SDS5	Surfers Paradise	31	0.159	0.000	0.000	535.084	0.000	535.084	565.821	0.000
DRA1A	Darra	267	6.598	0.000	0.000	207.252	0.000	207.252	0.000	207.252
LYT1	Lytton	9	1.600	0.000	0.000	270.607	0.000	270.607	0.000	270.607
MLB13A	Mooloolaba	2781	9.333	0.000	0.000	148.013	0.000	148.013	187.800	147.662

Source: NFM

Item No.	Measure									
3.4	System Average Interruption Duration Index (SAIDI) – worst performing feeders									
Short Rural										
Number	Locale	Customer Numbers	Feeder Length (km)	SAIDI Generation	SAIDI Transmission	Distribution Only Total Feeder SAIDI	SAIDI Exclusions	Normalised Distribution Only Feeder SAIDI	SAIDI Planned	SAIDI Unplanned
HLG1	Herring Lagoon	14	11.745	0.000	0.000	1109.260	0.000	1109.261	110.881	998.380
WFD3	Woodford	1320	153.170	0.000	0.000	1022.690	1.402	1021.283	506.208	515.075
MTB5A	Mt Tamborine	937	89.162	0.000	0.000	1142.460	147.589	994.870	151.766	843.104
MTB3A	Mt Tamborine	673	51.694	0.000	0.000	1193.860	229.199	964.662	187.007	777.655
KWH2	Kenilworth	845	105.382	0.000	0.000	935.760	0.000	935.760	420.604	515.156
NBR8	Nambour	1934	90.270	0.000	0.000	913.295	0.000	913.295	91.883	821.412
TGW3	Toogoolawah	621	208.787	0.000	0.000	932.689	39.803	892.886	721.325	171.561
MGP5	Mudgeeraba	1053	90.062	0.000	0.000	2129.870	1251.081	878.791	388.271	490.520
WHO1	Wivenhoe	540	106.986	0.000	0.000	963.714	117.668	846.046	308.17	537.876
BLHSTN16	Beenleigh	362	11.400	0.000	0.000	2048.570	1222.630	825.938	254.351	571.587

Source: NFM

Item No.	Measure									
3.5	<i>System Average Interruption Frequency Index (SAIFI) – worst performing feeders</i>									
Short Rural										
Number	Locale	Customer Numbers	Feeder Length (km)	SAIFI Generation	SAIFI Transmission	Distribution Only Total Feeder SAIFI	SAIFI Exclusions	Normalised Distribution Only Feeder SAIFI	SAIFI Planned	SAIFI Unplanned
HLG1	Herring Lagoon	14	11.745	0.000	0.000	5.079	0.000	5.079	0.809	4.27
WFD3	Woodford	1320	153.170	0.000	0.000	8.289	0.002	8.287	1.480	6.808
MTB5A	Mt Tamborine	937	89.162	0.000	0.000	6.366	0.285	6.081	0.507	5.574
MTB3A	Mt Tamborine	673	51.694	0.000	0.000	10.960	2.002	8.958	0.608	8.350
KWH2	Kenilworth	845	105.382	0.000	0.000	9.438	0.000	9.438	1.316	8.123
NBR8	Nambour	1934	90.270	0.000	0.000	7.595	0.000	7.595	0.327	7.268
TGW3	Toogoolawah	621	208.787	0.000	0.000	6.615	0.886	5.729	2.188	3.542
MGP5	Mudgeeraba	1053	90.062	0.000	0.000	6.314	1.624	4.689	0.915	3.775
WHO1	Wivenhoe	540	106.986	0.000	0.000	8.231	0.515	7.717	0.882	6.835
BLHSTN16	Beenleigh	362	11.400	0.000	0.000	5.519	1.000	4.519	0.679	3.840

Source: NFM

Item No.	Measure									
3.6	<i>Customer Average Interruption Duration Index (CAIDI) – worst performing feeders</i>									
Short Rural										
Number	Locale	Customer Numbers	Feeder Length (km)	CAIDI Generation	CAIDI Transmission	Distribution Only Total Feeder CAIDI	CAIDI Exclusions	Normalised Distribution Only Feeder CAIDI	CAIDI Planned	CAIDI Unplanned
HLG1	Herring Lagoon	14	11.745	0.000	0.000	218.401	0.000	218.401	137.206	233.812
WFD3	Woodford	1320	153.170	0.000	0.000	123.379	701.000	123.239	341.891	75.657
MTB5A	Mt Tamborine	937	89.162	0.000	0.000	179.462	517.856	163.603	299.802	151.256
MTB3A	Mt Tamborine	673	51.694	0.000	0.000	108.928	114.485	107.687	307.565	93.132
KWH2	Kenilworth	845	105.382	0.000	0.000	99.148	0.000	99.148	319.908	63.419
NBR8	Nambour	1934	90.270	0.000	0.000	120.249	0.000	120.249	281.345	113.017
TGW3	Toogoolawah	621	208.787	0.000	0.000	140.996	44.924	155.853	329.524	48.436
MGP5	Mudgeeraba	1053	90.062	0.000	0.000	337.325	770.370	187.415	424.043	129.939
WHO1	Wivenhoe	540	106.986	0.000	0.000	117.083	228.481	109.634	349.206	78.694
BLHSTN16	Beenleigh	362	11.400	0.000	0.000	371.185	1222.630	182.770	374.079	148.850

Source: NFM

3.7 CBD Outages

Event	Cause	Feeder	SAIDI	SAIFI	CAIDI	Customers Affected
1	Cable dug up by contractor at building site in Charlotte St	AQECST25	69.000	1.000	69	8
		QSC4	231.000	1.000	231	0.38
		QSCT5	44.000	1.000	44	0.38
		QSCT6	44.000	1.000	44	0.38
2	Incorrect operation of automatic changeover scheme during planned works	EVLTR1H	26.000	1.000	26	4
		EVLTRFGSH	26.000	1.000	26	1
		LAWT2	26.000	1.000	26	1
		LAWTKS5	26.000	1.000	26	59
		TKST2	26.000	1.000	26	15
3	Faulty feeder differential relay in SSCHA	BRCRFW35	34.000	1.000	34	1
		BRCT1	34.000	1.000	34	1
		CHAT2	34.000	1.000	34	1
		KGST1	34.000	1.000	34	1
		KGST2	34.000	1.000	34	1
		KGST3	34.000	1.000	34	1
		MLET1	34.000	1.000	34	0.5
		MLET2	34.000	1.000	34	28.5
		RFWT1	34.000	1.000	34	1
		RFWT2	34.000	1.000	34	1
		RFWT3	34.000	1.000	34	1
4	Protection fault due to sticking mechanism	CSTMAC17	67.000	1.000	67	59.25
		MHST1	67.000	1.000	67	0.25
5	Maloperation of protection during planned switching	AMIWIB32	14.000	1.000	14	1
		AMIT1	14.000	1.000	14	1
		WIB2	14.000	1.000	14	1

Source: NFM

Item No.	Measure	Descriptor	Value
3.8	<i>Energy not supplied – planned</i>	MWh	2,001
3.81	<i>Energy not supplied –unplanned</i>	MWh	5,439

Source: NFM

4. Quality of supply data

Item No.	Measure	Descriptor	Value
Quality of supply complaints – possible causes and response^j			
4.2	<i>Network initiated quality of supply complaints</i>	number	681
4.21 ^k	Faulty network equipment	number	62
4.22	Network interference – standard breached by ENERGEX	number	85
4.23	Network interference caused by another customer	number	23
4.24	Network limitation	number	380
4.25	Environment	number	2
4.26 ^l	Other	number	129
4.3	<i>Quality of supply complaints initiated on the customer side of the meter</i>	number	98
4.4	<i>Quality of supply complaints for which no cause was found</i>	number	344

Source: Ellipse

Notes to 2008-09 Service Quality Report

- ^a “Subtransmission” lines mean lines rated at 22 kV or above; “High voltage” lines mean 11, 5.5, and 3.3 kV lines; and “Low voltage” lines mean 415/240 volt lines.
- ^b At the end of each financial year, ENERGEX reviews the categorisation of its 11kV network by reviewing: (a) the actual load on each 11kV feeder; and (b) the actual length of the 11kV feeder. The result from the re-classification exercise for this financial year was that a number of Short rural 11kV feeders were re-classified as Urban 11kV feeders.
- ^c Includes steel lattice towers and other non-wooded poles.
- ^d Represents estimate of total sales to customers. Includes 55 GWh supplied through our subtransmission network to South West Power for distribution in their network. ENERGEX does not have the capacity to estimate the breakdown of energy delivered by feeder type to an adequate level of accuracy.
- ^e Required as Energy delivered (MWh) as a percentage of sub-transmission transformer capacity (MVA) multiplied by number of hours per year.
- ^f SAIDI, SAIFI and CAIDI are based on actual customer numbers for each feeder type.

Due to the intermeshed nature of the network in the area, the concept of Worst Performing Feeder does not apply to the CBD.

In the CBD, customers are typically served by more than one feeder. Accordingly, the chance of a customer’s supply being interrupted is extremely infrequent. An interruption will generally only occur when there is a second contingency problem. For example:

- the network is configured in an abnormal state for maintenance (non-meshed) during which time a fault occurs;
- the network is configured normally (meshed), but there is a maloperation in protection systems following a fault; or
- there is a problem in the wider system such as a fault on the 110 kV system or 110/11 kV substations.

SAIDI, SAIFI and CAIDI are calculated on the basis of a customer actually experiencing an interruption to supply. Because of the meshed 11 kV feeder arrangements in the CBD, there is no longer a clear link between an 11 kV feeder fault and an interruption to customer supply. This is in contrast to the remainder of the 11kV system, which is predominantly non-meshed. As a result, calculating these reliability indices at the feeder level, and subsequently, identifying the worst performing feeders on very rare events, is not meaningful.

Accordingly, ENERGEX has reported any HV feeder event that has resulted in a customer interruption. The CBD feeders identified should not be classified as ‘worst performing’ in the context adopted for the other network categories because of the two-fold nature of the event, being dependent upon wider failure before registering.

- ^g The locale of the feeder is designated by the suburb in which the feeder originates.

h. There were a number of exclusion events during the period, which have been excluded from the calculations for the SAIDI, SAIFI and CAIDI measures:

(i)	Natural Disaster	16 November 2008
(ii)	Severe Storms	20 November 2008
(iii)	Loss of Bulk Supply Substation at Hays Inlet	10 February 2009
(iv)	Severe wet weather	20 May 2009

i. Normalised SAIDI, SAIFI and CAIDI data is calculated by deducting the exclusion related data from the total or raw SAIDI, SAIFI and CAIDI data.

j. As the database is live, the number of quality of supply complaints reported may not correspond exactly with the total of the four quarterly quality of supply complaints due to removal of possible double entries and misclassified complaints.

k. This figure does not include severe voltage dip complaints identified from retailer queries, on behalf of their large commercial customers.

l. Includes complaints in the Voltrac system that are not classified.