



**ANNUAL SERVICE QUALITY REPORT
JULY 2006 TO JUNE 2007**

ENERGEN LIMITED

Updated April 2008

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Annual service quality report

Introduction

As the electricity distributor in south-east Queensland, ENERGEX is committed to delivering excellent service to its customers.

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.

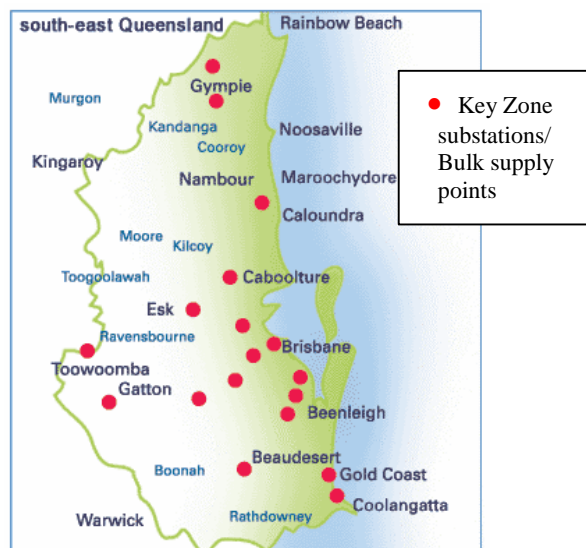
About ENERGEX's electricity distribution network

This report focuses on the performance of ENERGEX's electricity distribution network. The distribution network 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' factories, shops, and houses 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 1.19 million customers, including 859,811 urban customer and over 330,000 short rural customers.

ENERGEX is very conscious of the impact of outages on customers, and is always striving to improve its reliability performance. ENERGEX has invested heavily in our network to improve reliability and the results can be seen throughout the information provided in this report.



Map of ENERGEX's electricity distribution network

Measuring ENERGEX's performance

ENERGEX 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 whole distribution network to the end of June 2007 (and after removal of excluded events) the reliability performance results show sustained levels of service quality since the previous financial year. Summarising the overall reliability performance:

- the average duration of interruptions for the distribution system – whole of network during 2006-07 (as measured by SAIDI) was 114.456 minutes, which was a significant improvement on the 154.787 minutes reported for 2005-06;
- the average number of interruptions for the distribution system – whole of network during 2006-07 (as measured by SAIFI) was 1.382, which was an improvement on the 1.882 reported for 2005-06; and
- the average time taken to restore power after an interruption for the distribution system – whole of network during 2006-07 (as measured by CAIDI) was 82.814 minutes, which is slightly higher than the 82.259 minutes reported for 2005-06.

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 2006-07 compared to the 2005-06 financial year (after removal of excluded events) is summarised in Table 1.

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

Category	measure	2006-07	2005-06
CBD	SAIDI	1.273	3.90
	SAIFI	0.015	0.02
	CAIDI	86.975	170.20
Urban	SAIDI	80.444	103.82
	SAIFI	1.016	1.41
	CAIDI	79.186	73.59
Short rural	SAIDI	202.681	306.35
	SAIFI	2.327	3.29
	CAIDI	87.110	93.19

The reliability performance across the categories shows strong CBD, urban and short rural performance in SAIDI and SAIFI results. The strong improvements in urban SAIDI and SAIFI performance have resulted from increased operating and maintenance activity. In particular, tree trimming has reduced the impact of severe storms and winds on the overhead urban network.

Network Characteristics

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

- the overhead sub-transmission network increased by 573 km from 3,198 km to 3,771 km. The underground sub-transmission network also increased by 54.8 km from 989.8 km to 1,044.6 km;
- 35 sub-transmission transformers were installed during 2006-07 taking the total number of sub-transmission transformers to 524, with an installed capacity of 10,359 MVA;
- 1,192 distribution transformers were installed taking the total number of distribution transformers to 42,261 and raising the total capacity to 10,359 MVA;
- the physical characteristics of the CBD network continued to be upgraded through the major Citigrid project;
- the physical characteristics of the short rural network showed growth across both the underground and overhead networks;
- within ENERGEX's network service area of 25,256 square kilometres, the number of poles increased by 9,498 during 2006-07 to 612,638 poles.
- the total amount of energy delivered was 20,758 GWh, which is a slight increase on the 20,750 GWh recorded for the previous financial year and below forecast due to the mild summer season; and

- the amount of distribution losses experienced by the network was 6.65 per cent for the financial year, which was above the 6.50 recorded for 2005-06.

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.

Quality of Supply

Network initiated customer complaints regarding the quality of supply decreased to 1,544 compared to 1,811 in the previous financial year.

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	01-07-2006
1.3	<i>Last day of reporting period</i>	date	30-06-2007

2. Aggregate Data

Item No.	Measure	Descriptor	Value
2.2 ^a	<i>Length of distribution lines</i>		
	Sub-transmission lines		
	sub-transmission – overhead	kilometres	3,771.0
	sub-transmission – underground	kilometres	1,044.6
	CBD		
	high voltage – overhead	kilometres	0
	high voltage – underground	kilometres	93.6
	low voltage – overhead	kilometres	1.9
	low voltage – underground	kilometres	27.4
	Urban		
	high voltage – overhead ^b	kilometres	3,931.9
	high voltage – underground	kilometres	3,184.1
	low voltage – overhead	kilometres	6,551.1

Item No.	Measure	Descriptor	Value
	low voltage – underground	kilometres	5,592.7
	Short rural		
	high voltage – overhead ^b	kilometres	13,760.1
	high voltage – underground	kilometres	946.3
	low voltage – overhead	kilometres	8,320.5
	low voltage – underground	kilometres	2,991.5
	Long rural		
	high voltage – overhead	kilometres	Nil
	high voltage – underground	kilometres	Nil
	low voltage – overhead	kilometres	Nil
	low voltage – underground	kilometres	Nil
2.3 ^c	<i>Number of poles</i>	number	612,638
2.4	<i>Network service area</i>	square kilometres	25,256
2.5 ^d	<i>Energy delivered</i>	GW.h	20,758
	CBD	GW.h	NA
	Urban	GW.h	NA
	Short rural	GW.h	NA
	Long rural	GW.h	NA
2.6	<i>Distribution losses</i>	percentage	6.65
2.7	<i>Transformers</i>		
	sub-transmission (ST/HV)		

Item No.	Measure	Descriptor	Value
	total number	number	524
	installed capacity	MVA	8,155
	distribution (HV/LV)		
	total number	number	42,261
	installed capacity	MVA	10,359
2.8 ^e	<i>Sub-transmission transformer utilisation factor</i>	percentage	29.3
2.81	<i>Zone substations maximum demand divided by nameplate rating</i>	percentage	59.6
2.9	<i>Coincident maximum demand for the total network over the reporting period</i>	MVA	4,432

Source: NFM

3. Reliability measures^f

Item No.	Measure
3.4	<i>System Average Interruption Duration Index (SAIDI) – worst performing feeders</i>
3.5	<i>System Average Interruption Frequency Index (SAIFI) – worst performing feeders</i>
3.6	<i>Customer Average Interruption Duration Index (CAIDI) – worst performing feeders</i>
CBD^g	
1.	Nil

Source: NFM

Item No.	Measure									
3.4	<i>System Average Interruption Duration Index (SAIDI) – worst performing feeders</i>									
Urban										
Number	Locale ^a	Customer Numbers	Feeder Length (km)	SAIDI Generation	SAIDI Transmission	Distribution Only Total Feeder SAIDI	SAIDI Exclusions ^b	Normalised Distribution Only Feeder SAIDI ^c	SAIDI Planned	SAIDI Unplanned
MDH5B	Meeandah	72	4.171	0.000	0.000	901.616	0.000	901.616	0.000	901.616
WRD25B	Wellington Road	1002	3.428	0.000	0.000	780.626	0.000	780.626	0.000	780.626
MDH3A	Meeandah	53	3.493	0.000	0.000	601.707	0.000	601.707	0.000	601.707
BHD23B	Burleigh Heads	1218	12.453	0.000	0.000	505.833	0.000	505.833	0.000	505.833
MDR8A	Molendinar	506	10.472	0.000	0.000	445.297	0.000	445.297	0.000	445.297
PBH8	Palm Beach	2060	14.019	0.000	0.000	435.271	0.000	435.271	0.000	435.271
NRA15A	Narangba	2245	34.078	0.000	0.000	424.162	0.000	424.162	0.000	424.162
MDR2A	Molendinar	1047	8.587	0.000	0.000	422.799	0.000	422.799	0.000	422.799
WRD19A	Wellington Road	1211	5.145	0.000	0.000	393.493	0.000	393.493	0.000	393.493
CLD10	Caloundra	2815	12.522	0.000	0.000	377.719	0.000	377.719	0.000	377.719

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
MDH5B	Meeandah	72	4.171	0.000	0.000	2.031	0.000	2.031	0.000	2.031
WRD25B	Wellington Road	1002	3.428	0.000	0.000	4.990	0.000	4.990	0.000	4.990
MDH3A	Meeandah	53	3.493	0.000	0.000	1.000	0.000	1.000	0.000	1.000
BHD23B	Burleigh Heads	1218	12.453	0.000	0.000	1.990	0.000	1.990	0.000	1.990
MDR8A	Molendinar	506	10.472	0.000	0.000	3.405	0.000	3.405	0.000	3.405
PBH8	Palm Beach	2060	14.019	0.000	0.000	2.965	0.000	2.965	0.000	2.965
NRA15A	Narangba	2245	34.078	0.000	0.000	3.252	0.000	3.252	0.000	3.252
MDR2A	Molendinar	1047	8.587	0.000	0.000	3.994	0.000	3.994	0.000	3.994
WRD19A	Wellington Road	1211	5.145	0.000	0.000	5.973	0.000	5.973	0.000	5.973
CLD10	Caloundra	2815	12.522	0.000	0.000	2.000	0.000	2.000	0.000	2.000

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
MDH5B	Meeandah	72	4.171			444.014		444.014		444.014
WRD25B	Wellington Road	1002	3.428			156.437		156.437		156.437
MDH3A	Meeandah	53	3.493			601.707		601.707		601.707
BHD23B	Burleigh Heads	1218	12.453			254.220		254.220		254.220
MDR8A	Molendinar	506	10.472			130.784		130.784		130.784
PBH8	Palm Beach	2060	14.019			146.783		146.783		146.783
NRA15A	Narangba	2245	34.078			130.428		130.428		130.428
MDR2A	Molendinar	1047	8.587			105.857		105.857		105.857
WRD19A	Wellington Road	1211	5.145			65.881		65.881		65.881
CLD10	Caloundra	2815	12.522			188.859		188.859		188.859

Source: NFM

Item No.	Measure									
3.4	<i>System Average Interruption Duration Index (SAIDI) – worst performing feeders</i>									
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
SDM3	Somerset Dam	159	69.575	0.000	0.000	991.210	0.000	991.210	0.000	991.210
PWC3	Palmwoods	1706	51.45	0.000	0.000	830.805	0.000	830.805	39.856	790.949
IBS1	Bay Islands	3114	64.079	0.000	0.000	796.204	0.000	796.204	19.743	776.461
NBR8	Nambour	1709	91.592	0.000	5.000	665.075	0.000	665.075	0.000	665.075
TWT12A	Tewantin	1585	38.032	0.000	0.000	718.892	0.000	718.892	25.127	693.765
TPT4	Toorbul Point	1316	45.443	0.000	0.000	635.833	0.000	635.833	154.281	481.552
KWH2	Kenilworth	813	108.127	0.000	0.000	778.823	205.497	573.326	40.946	532.379
NBR4	Nambour	1635	78.621	0.000	5.000	707.371	0.000	707.371	4.804	702.567
NBR6	Nambour	2700	85.213	0.000	5.000	482.881	0.000	482.881	14.843	468.037
CRY5A	Cooroy	131	21.118	0.000	0.000	756.845	264.132	492.713	99.862	392.851

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
SDM3	Somerset Dam	159	69.575	0.000	0.000	11.640	0.000	11.640	0.000	11.640
PWC3	Palmwoods	1706	51.45	0.000	0.000	7.763	0.000	7.763	0.125	7.637
IBS1	Bay Islands	3114	64.079	0.000	0.000	6.457	0.000	6.457	0.053	6.404
NBR8	Nambour	1709	91.592	0.000	1.000	3.727	0.000	3.727	0.000	3.727
TWT12A	Tewantin	1585	38.032	0.000	0.000	5.060	0.000	5.060	0.069	4.991
TPT4	Toorbul Point	1316	45.443	0.000	0.000	8.523	0.000	8.523	0.615	7.908
KWH2	Kenilworth	813	108.127	0.000	0.000	5.981	0.753	5.228	0.138	5.090
NBR4	Nambour	1635	78.621	0.000	1.000	5.417	0.000	5.417	0.013	5.405
NBR6	Nambour	2700	85.213	0.000	1.000	5.074	0.000	5.074	0.042	5.032
CRY5A	Cooroy	131	21.118	0.000	0.000	4.961	0.996	3.965	0.265	3.700

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
SDM3	Somerset Dam	159	69.575			85.152		85.152		85.152
PWC3	Palmwoods	1706	51.45			107.026		107.026	318.149	103.563
IBS1	Bay Islands	3114	64.079			123.317		123.317	375.000	121.248
NBR8	Nambour	1709	91.592		5.000	178.452		178.452		178.452
TWT12A	Tewantin	1585	38.032			142.084		142.084	363.529	139.017
TPT4	Toorbul Point	1316	45.443			74.601		74.601	250.825	60.894
KWH2	Kenilworth	813	108.127			130.214	273.035	109.655	296.000	104.591
NBR4	Nambour	1635	78.621		5.000	130.576		130.576	375.984	129.996
NBR6	Nambour	2700	85.213		5.000	95.160		95.160	352.333	93.007
CRY5A	Cooroy	131	21.118			152.553	265.164	124.262	376.277	106.184

Source: NFM

Item No.	Measure	Descriptor	Value
3.8	<i>Energy not supplied – unplanned</i>	MWh	4,036
3.81	<i>Energy not supplied – planned</i>	MWh	353

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	1,544
4.21 ^k	Faulty network equipment	number	126
4.22	Network interference – standard breached by ENERGEX	number	171
4.23	Network interference caused by another customer	number	59
4.24	Network limitation	number	481
4.25	Environment	number	7
4.26 ^l	Other	number	138
4.3	<i>Quality of supply complaints initiated on the customer side of the meter</i>	number	206
4.4	<i>Quality of supply complaints for which no cause was found</i>	number	356

Source: Ellipse

Notes to 2005-06 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 42 GWh supplied through our subtransmission network to South Western Power for distribution in their network, and generated energy of 175 GWh supplied by embedded generation. 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 Worse 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 The following exclusion events occurred in the reporting period:

Date: 16 December 2006 Incident: Severe Storms

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 do not correspond exactly with the total of the four quarterly quality of supply complaints due to removal of possible double entries and misclassified complaints. ENERGEX migrated quality of supply complaints to Ellipse during 2004-05, which is expected to reduce the incidence of misclassification and improve database controls.

^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.
