

Electricity Network Performance Report

FY2015/16



Submitted to:
NSW Independent Pricing and Regulatory Tribunal 2016



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1. Profile

1.1 Overview

A State Owned Corporation, Essential Energy delivers electricity distribution services more than 830,000 customers across New South Wales.

With around 200,000 kilometres of powerlines, 1.4 million power poles and 138,000 distribution substations spanning 95 per cent of New South Wales, Essential Energy is responsible for managing and operating Australia's most extensive electricity distribution network.

Essential Water, an operating division of Essential Energy, currently services approximately 9,500 water services customers in Broken Hill, Menindee, Sunset Strip and Silverton and 9,000 sewerage services customers in Broken Hill.

Essential Energy continues to support regional development and economies through its almost 3,200 locally based employees.

Essential Energy's field operations are divided into three regions, reflecting the environmental and geographic diversity of our network footprint. This includes sub-tropical areas in mid to northern NSW, the alpine highlands of the Snowy Mountains, and dry arid conditions in the regional western centres of Broken Hill and Wentworth.

Essential Energy's business purpose is to be of service to our communities by efficiently distributing electricity to our customers in a way that is safe, reliable, and sustainable.

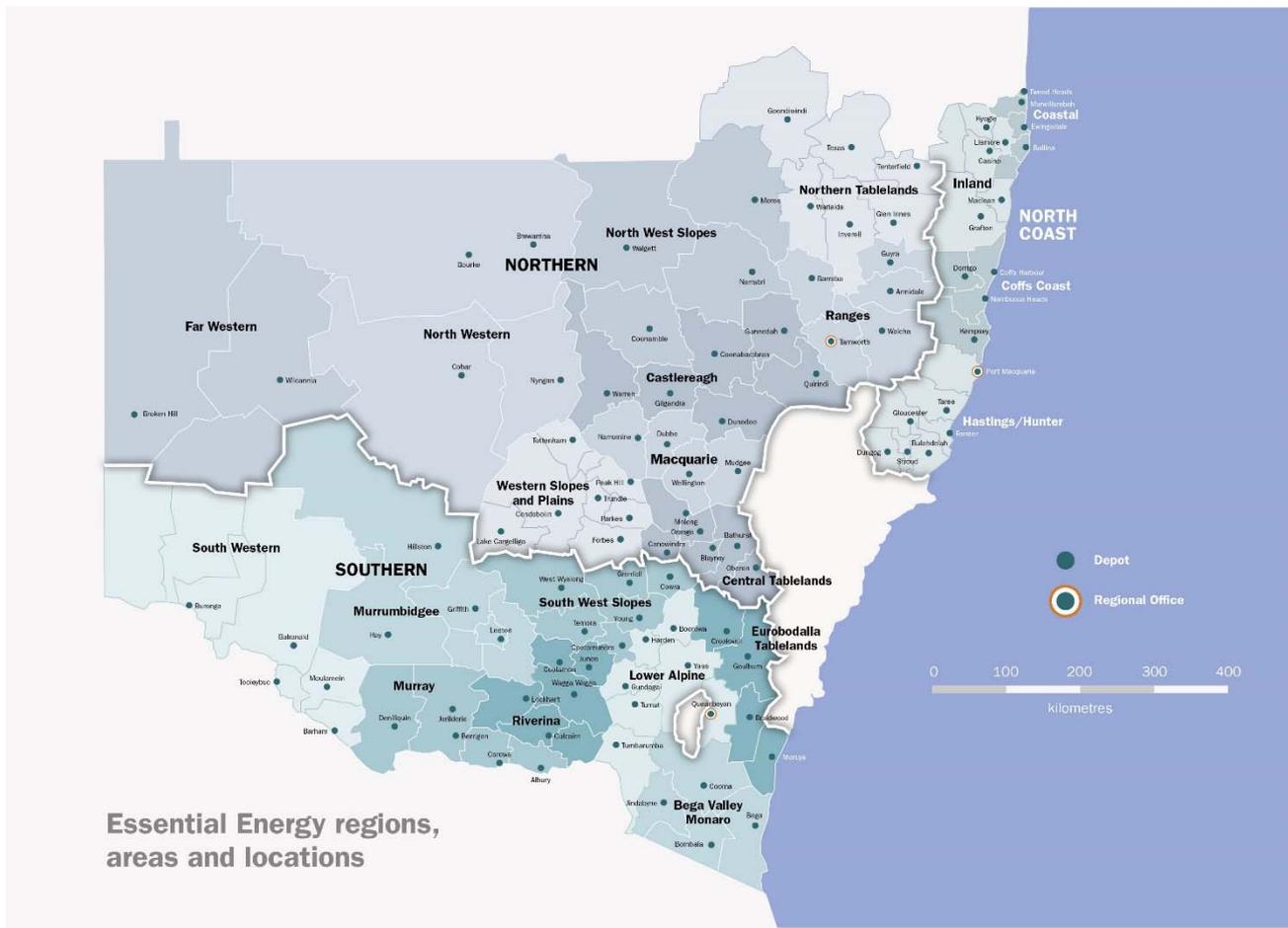


Figure 1 - Essential Energy locations

Table 1.1 Distributor Statistics

	Number at 30/6/15	Number at 30/6/16
Distribution Customer Numbers (Total)	824,459	834,594
Customer Numbers at Year End (Southern)	168,165	282,495
Customer Numbers at Year End (Northern)	171,317	242,384
Customer Numbers at Year End (South Eastern)	179,635	n/a ¹
Customer Numbers at Year End (North Coast)	305,342	309,715
Maximum Demand (MW)	2,162	2,327
Feeder Number CBD	-	-
Feeder Number Urban	294	299
Feeder Number Short Rural	915	912
Feeder Numbers Long Rural	244	243
Energy Received by Dist Network to Year End GWh	13,085	13,108
Energy Distributed to Year End (Residential) GWh	4,457	4,554
Energy Distributed to Year End (Non-Residential including un-metered supplies) GWh	7,814	7,759
Energy Distributed to Year End (Southern) GWh	3,191	4,518
Energy Distributed to Year End (Northern) GWh	3,105	4,918
Energy Distributed to Year End (South Eastern) GWh	3,080	n/a
Energy Distributed to Year End (North Coast) GWh	2,859	2,877
System Loss Factor (%)	6.22	6.07
Transmission System (km)	-	-
Transmission Substation (Number) ²	20	20
Sub Transmission System (km)	10,752	11,409
Substation - Zone (Number)	333	325
Substation - Distribution (Number)	137,678	138,592
High Voltage Overhead (km)	146,901	146,454
High Voltage Underground (km)	2,405	2,488
Low Voltage Overhead (km)	20,162	28,899 ³
Low Voltage Underground (km)	6,805	6,517
Pole (Number)	1,386,609	1,389,888
Streetlights (Number)	158,284	157,227
Employees (Full Time Equivalent Number)	3,807	3,178
Contractors (Full Time Equivalent Number)	81	48

¹ Essential Energy further consolidated its field operations from four to three regions during the financial year.

² Essential Energy assumes any substation that converts to a voltage that is not used for distribution is a Transmission Substation.

³ LV Services classification has changed from 2015 data. Services used to contain the road crossing section. Now it is only the last span from the pole to the Point of Attachment.

1.2 Capital Works Program

Essential Energy planned to deliver the capital work program necessary to meet objectives outlined in its Network Asset Management Plan.

The capital works program for the 2015 to 2019 regulatory period was submitted to the AER in Essential Energy's Regulatory Proposal and Revised Regulatory Proposal. Over the regulatory period, the capital program is subject to ongoing review to incorporate new requirements and efficiencies achieved through business improvement initiatives.

Several factors have contributed to a reduction in capital expenditure including a decline in network demand, improved network reliability performance and compliance to licence conditions and realised efficiencies.

Year to year variations to the plan are expected and required to allow for changes due to funding constraints, work delivery scheduling and assessment of network performance and load growth.

Table 1.2 Capital Works Program Trend

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Capital works program (\$M)	745.1	640.58	564.3	468.84	423.74

2. Network Management

2.1 Overview

Essential Energy's network is unique in terms of the geographic area it covers, the terrain it traverses, the vegetation that grows within it and the diversity of weather that passes over it. The scale of assets required to ensure the network physically reaches customers in the most far reaching corners of NSW, is one of the most complex and expansive in Australia. To ensure our decisions are localised and reflect the needs and concerns of the local population, the network is managed through a regional management structure.

Essential Energy's Electricity Network Management System (ENSMS) Plan was established to meet its statutory and public responsibilities and to provide a safe, reliable, and sustainable electricity supply to our customers. The *Electricity Supply (Safety and Network Management) Regulation 2014* (the Regulation) came into effect on 1 September 2014. This Regulation requires that an ENSMS be put into place for each Network Operator that complies with the Regulation and AS5577 – Electricity network safety management systems.

The plan (CEOM8047 Electricity Network Safety Management System Plan) documents a 'map' of Essential Energy's Business Management System (BMS) to facilitate the navigation and auditing of the system itself. The plan retains three of the former chapters of the previous Network Management Plan. These are:

- > CEOP8004 Customer Installation Safety Plan – ensures the provision of safe electrical installations within Essential Energy's network area and their safe connection to Essential Energy's sub-transmission and distribution system, helping to provide a safe working environment for our employees, service providers, contractors, customer's and the public (See section 6).
- > CEOP8005 Public Electrical Safety Awareness Plan – provides a framework and strategies to warn the public of the hazards associated with electricity, particularly hazards associated with overhead powerlines, and to provide simple but effective ways to minimise their risk exposure (See section 9).
- > CEOP8022 Bush Fire Risk Management Plan – aims to ensure that Essential Energy's assets are managed in a way that will minimise the risk of bush fires, as well as protect our assets and maintain customer supply reliability at times of bush fire (See section 8).

Essential Energy's commitment to safety management procedures can also be seen in its continuous improvements in safety measures (See section 5).

2.2 Network Complaints

Table 2.1 Complaint Performance Data

	Previous Years				Current Year
Year	2011/12	2012/13	2013/14	2014/15	2015/16
Complaints Total	4,323	4,447	2,781	2,809	3,978
Complaints per 1,000 Distribution Customers	5.4	5.5	3.4	3.4	4.8
Complaints regarding Vegetation Management	376	432	270	375	430

There was a 42 per cent increase in complaints over the financial year, which is mostly attributed to transitional issues associated with outsourcing of meter reading services. Essential Energy enforced the requirement for customers to provide clear access to meter boxes to ensure the safety of staff and to provide uniform processes. This initially caused a spike in complaints, which decreased as access issues were resolved between customers and contractors.

Vegetation Management complaints increased by 15 per cent on the previous year, which can be attributed to the transition of Essential Energy's vegetation management contract's across the North Coast, Southern and Northern areas. Responsibility for vegetation inspections (scoping) with customer consultation performed by contractors.

Other areas of significant reform included:

- > Changes to our vegetation clearing standards that resulted in increased clearing requirements for longer spans; and
- > The continued use of Light Detection and Ranging (LiDAR) technology to identify priority works ahead of the Bushfire Danger Period. This resulted in a substantial increase in pre-summer vegetation management activity.

Table 2.2 Network Complaint Investigations Completed Current Year

Summary

Table 2.2 - Network Complaint Investigations Completed Current Year	2015/16	
	Number	Valid*
Voltage	532	325
Current	1	-
Other Quality	269	128
Reliability	138	70
Safety	-	-

* A complaint is valid where non-compliance with published service and network standards occurs.

Detailed

Table 2.2 – Network Complaint Investigations Completed		2015/16	
Category	Nature of Complaint	Number	Valid*
Voltage	Sustained over voltage	96	82
	Sustained under voltage	70	48
	Voltage fluctuations	193	100
	Voltage dips	81	44
	Voltage swell	1	-
	Switching transients	-	-
	N-E voltage difference	83	46
	Ground fault voltage	-	-
	Voltage unbalance	7	4
	Mains signalling voltages (Outside defined range)	1	1
	HV injection (HV/LV Intermix)	-	-
Notching	-	-	
Sub-total (Supply Voltage Complaints)		532	325
Current	Direct current	-	-
	Harmonic content	1	-
	Inter Harmonics	-	-
Sub-total (Supply Current Complaints)		1	-
Other Quality	Mains signalling reliability	-	-
	Noise & Interference	82	31
	Level of supply capacity	23	13
	Embedded Generation (Solar)	79	54
	Embedded Generation (Wind)	-	-
	Supply frequency	1	-
	Level of EMF	1	-
Customer Equipment Failure	83	30	
Sub-total (Other Quality of Supply Complaints)		269	128
Sub-total (All Quality of Supply Complaints)		802	453
Reliability	No. of supply failures	33	13
	Duration of supply failures	3	1
	Outages Miscellaneous	30	12
	No. of <1 min. interruptions	72	44
Sub-total (Reliability of Supply)		138	70
Safety	Overhead line safety	-	-
	Underground safety	-	-
	Electrical station safety	-	-
	Service line safety	-	-
Sub-total (Network Safety)		-	-
Total Completed		940	523
Other	Under Investigation (not validated)	19	-
Totals		959	523

When compared against the previous financial year, the following observations can be made:

- > Network Complaints reduced by 8 per cent;
- > Voltage fluctuation, sustained over voltage and embedded generation were the leading cause of complaints overall;
- > Number of Voltage Complaints increased by 5 per cent; and
- > Other Quality category which includes: embedded generation solar: customer equipment failure: level of supply capacity and noise and interference decreased by 25 per cent.

2.3 Customer Service Standards Reporting

Table 2.3 Customer Service Standards Current Year Data

	Payments Given Based on Interruption Duration (Total Number)	Claims Not Paid Based on Interruption Duration (Total Number)	Payments Given Based on Interruption Frequency (Total Number)	Claims Not Paid Based on Interruption Frequency (Total Number)
Metropolitan	N/A	N/A	N/A	N/A
Non-Metropolitan	21	14	-	3

Table 2.3 shows a total of 14 Claims not paid based on Interruption Duration and 3 based on Interruption Frequency.

Claims based on duration were not paid for the following reasons:

- > Seven interruptions occurred during severe weather events; and
- > Seven did not meet the requirement of the interruption being more than 18 hours in duration.

Eleven of the paid claims for Interruption Duration relate to an event on 31 May 2015, with customer's claims being received and paid in the first quarter of the 2015/16 Financial Year.

3. Network Planning

3.1 Overview

Essential Energy is committed to providing a safe, secure, and reliable supply of energy in a cost effective manner. Essential Energy achieves this by planning its network and making investment decisions in line with its CEOM8018 Network Asset Management Plan (NAMP).

The NAMP outlines Essential Energy's obligations in relation to network planning, including the need to compile and publish an annual Distribution Annual Planning Report (DAPR). The NAMP has been prepared in accordance with the compliance obligations of network management legislation, regulations, and related codes of practice, and reflects recognised industry best practices and standards relating to the management of electricity infrastructure assets. It is designed to conform with the NSW Government policy and planning guidelines on total asset management, which addresses strategic planning relating to capital investments, renewal, and maintenance.

Essential Energy's network development is undertaken in accordance with the *Electricity Supply Act 1995*, the *National Electricity Code*, the *NSW Code of Practice - Demand Management for Electricity Distributors* and our policy CEOP8003 Sub-transmission and Distribution Network Planning Criteria and Guidelines.

In general, Essential Energy plans the development of its network to ensure:

- > Network capacity is adequate to meet power transfer requirements;
- > Electrical and thermal design ratings (normal and overload) of equipment are not exceeded;
- > Supply reliability is in accordance with published standards or as negotiated to meet the special requirements of individual major network customers;
- > Quality of supply meets published standards and system voltage levels are maintained within acceptable standard limits;
- > Safety standards are maintained or exceeded;
- > Environmental constraints are satisfied; and
- > The above requirements are met in a cost effective manner.

3.2 Demand Management

Essential Energy internal demand management procedures for 2015/16 complied with the requirements of the *National Electricity Rules*.

The process for the 2015/16 provided for:

- > The Distribution Annual Planning Report;
- > Maintenance of a Register of Interested Parties;
- > Review of emerging constraints with a network augmentation exceeding \$5 million;
- > Screening of all projects with an augmentation component exceeding \$250,000;
- > Publication of consultation papers where appropriate;
- > Notification to Interested Parties of Demand Management opportunities;
- > Use of non-network service providers to investigate and advise on demand management options;
- > Consultation with prospective Demand Management Service Providers;
- > Collaborative agreements with leading academic institutions; and
- > Participation in related industry working groups.

One zone substation capacitor bank installation was completed in 2015/16, resulting in reduced demand across the sub-transmission and transmission networks.

Essential Energy continues to invest in upgraded load control functionality.

Table 3.5 Demand Management Projects Implemented During Current Year

	Description of Demand Management Project Implemented	Peak Demand Reduction (kVA)	PV of Costs of Demand Management Project (000's)	PV of Total of CAPEX Expenditure Deferral plus Op Ex Savings (000's)
Individual large projects				
	Zone Substation Koorringal - Installation of 6MVAR Capacitor Bank	663	\$ 1,383	\$ 1,653
Consolidated projects				
	Nil	-	-	-
Totals		663	\$1,383	\$1,653

Table 3.6 Demand Management Investigations in Current Year Found Non-Viable

	Description of Potential Demand Management Project Investigated and Reason for Non-viability	PV of Costs of Investigations
	Two projects not viable due to network option presenting least cost, one not viable due to safety issues not being addressed by Demand Management option.	\$4,237

Non-network alternative options are constantly evaluated as part of Essential Energy's internal process and in compliance with the National Electricity Rules.

There were no demand management investigations requiring external consultation for major network augmentations undertaken in 2015/16 due to the network demand levels and growth rates. As part of the ongoing internal investigations Essential Energy completed three detailed Demand Management investigations, with one detailed investigation ongoing.

Essential Energy continued several Demand Management trials to ascertain the benefits and practicality of such least cost solutions, details can be found in the 2015/16 Demand Management Innovation (DMIA) Report. Essential Energy also progressed ground work for future trials, as outlined within the 2015 DAPR.

4. Asset Management

4.1 Overview

Asset management is a critical component of Essential Energy's overall network management strategy and has an important role in determining the outcomes for the business and its customers.

The NAMP provides a framework for strategic management of our physical system assets to best support network service delivery. It includes our asset management strategies, policies, processes, resources, and our planned capital investments, asset maintenance and demand management. The NAMP is closely related to annual budgets and forecasts for capital, operating and maintenance expenditure planning.

The NAMP's primary objectives include:

- > Establishing priorities in line with organisational objectives and statutory obligations, namely safety, reliability, and sustainability;
- > Planning and controlling financing and expenditure in accordance with these priorities; and
- > Ensuring resources are used as effectively and efficiently as possible so that the government and the community receive the most value for money.

These objectives cover the three major elements of asset management outlined in the NAMP:

- > Capital investment strategic planning;
- > Asset renewal and replacement strategic planning; and
- > Asset maintenance strategic planning.

The NAMP is designed to comply with the State Government's policy on Total Asset Management (TAM). It includes a five-year forecast and reviews capital investment, refurbishment, and asset maintenance strategies to ensure a focus on long-term, system-wide, and whole of life management. These strategies ensure delivery of a secure, high quality, reliable and safe electricity network service that meets the needs and expectations of customers, community, shareholders, and other stakeholders at the lowest possible price, and complies with related statutory and regulatory requirements.

Essential Energy reviews this plan annually.

4.2 Technical Service Standards

The Electricity Supply Standards adopted by Essential Energy are set out in the document CEOP8026 Electricity Supply Standard, in accordance with the *Code of Practice – Electricity Service Standards*.

The main areas addressed include:

- > Voltage fluctuations managed in accordance with Australian Standards *AS/NZS 61000.3.3:2012*, *61000.3.5:1998* and *61000.3.7:2012*;
- > Switching transients (voltage waveform distortion) limited where possible to less than two times normal supply voltage;
- > Frequency variation and Essential Energy's role in notifying the AEMO of any sustained fluctuations;
- > Voltage dips managed through best practice network improvement and augmentation;
- > Steady state voltage differences between neutral and earth limited to less than 10 volts at the customer's point of supply;

- > Lightning strikes limited in their impact on supply where possible by adherence to industry best practice system design and maintenance principles;
- > Limitation of 'step and touch' voltage differentials managed in accordance with industry standards, namely *ENA Earthing Guide AS/NZS 7000*;
- > Limiting of voltage imbalance to a 6 per cent difference on the LV network using 10 min average values between the highest and lowest phase to neutral or phase to phase steady state voltages (This may be exceeded on occasions in rural areas);
- > Harmonic content of voltage and current waveforms managed in accordance with Australian Standard *AS 61000.3.6:2012*; and
- > Mains signalling reliability set at a target of 99.5 per cent failsafe to ensure correct switching and metering functions.

A copy of CEOP8026 Electricity Supply Standard can be downloaded from essentialenergy.com.au.

CEOP8026 also outlines Essential Energy's adoption of the Australian Standard *AS 60038 – 2000 Standard Voltages*.

4.3 Quality of Supply

4.3.1 Overview

Essential Energy actively participates in the Power Quality Compliance Audit (PQCA) formerly the Long Term National Power Quality Survey (LTNPQS), a national power quality survey conducted by the University of Wollongong (UoW) along with several other distributors throughout Australia.

This survey studies parameters such as steady state voltage, voltage total harmonic distortion (THD), voltage sags and voltage unbalance on three phase sites. The data requires large amounts of analysis by the UoW and is only available for the previous financial year; in this case it is FY 2014/15.

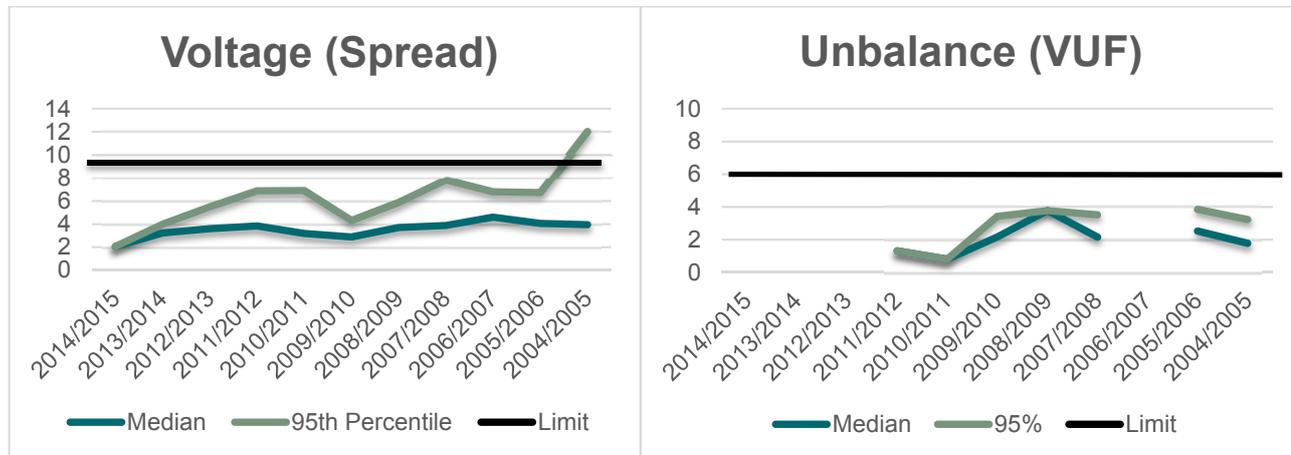
4.3.2 Performance Data

Low Voltage Sites

Utility Median Index Value

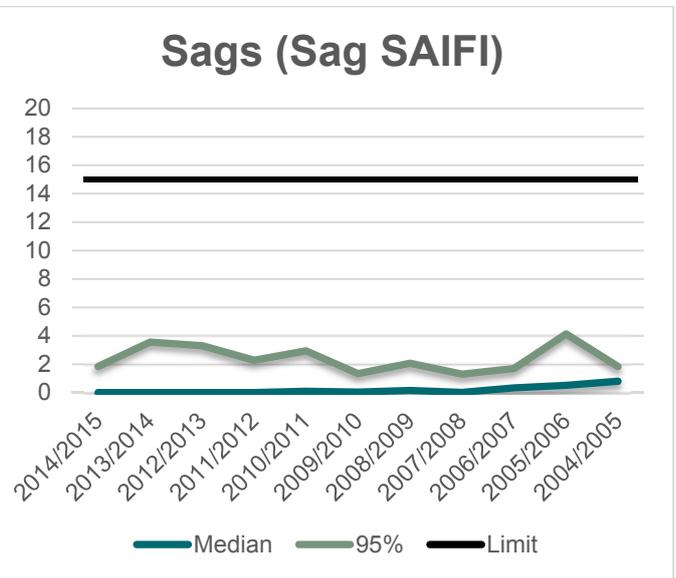
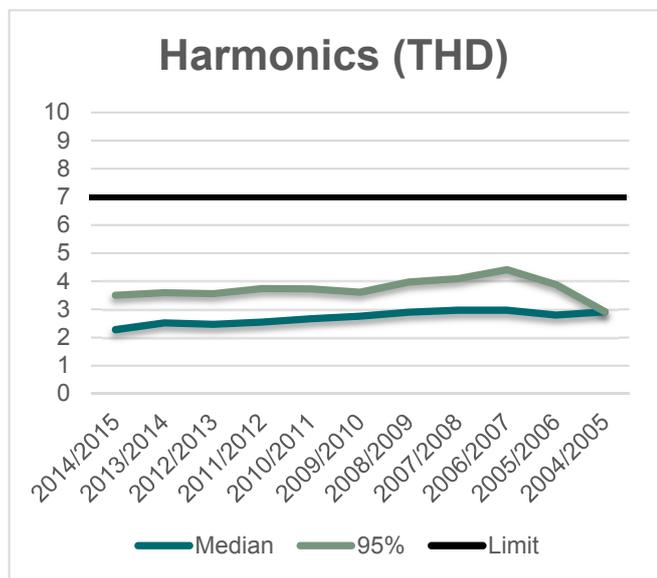
Disturbance Limits	Voltage (AVD) 8%		Unbalance 6%		Harmonics (THD) 7%		Sags (Sag SAIFI) 17*	
	Index	% of limit	Index	% of limit	Index	% of limit	Index	% of limit
2014/15	6.17	77	-	-	2.28	31	-	-
2013/14	5.93	74	-	-	2.52	34	-	-
2012/13	6.39	80	-	-	2.47	34	0.01	-
2011/12	6.83	85	1.32	22	2.55	35	-	-
2010/11	6.61	83	0.81	14	2.67	37	0.1	1
2009/10	6.54	82	2.17	36	2.76	38	0.04	-
2008/09	7.04	88	3.78	63	2.9	40	0.16	1
2007/08	6.7	84	2.16	36	2.97	41	0.02	-
2006/07	7.17	90	-	-	2.97	41	0.33	2
2005/06	7.22	90	2.53	42	2.8	38	0.51	3
2004/05	7.46	93	1.78	30	2.91	40	0.8	5

Absolute Voltage Deviation Index (AVDI) – AVDI is a measure of the spread of voltage around the middle of the nominal voltage range. AVDI is the average of the three (one for each phase) 99th percentile AVDI levels at a site. AVDI is expressed as a percentage of 230V.



Voltage Spread – is a measure of the ‘strength’ of a site. It is the difference between light load and heavy load voltage. Voltage spread is calculated as the difference between the 99th percentile from above and the 1st percentile value from above. Voltage Spread is expressed in percent of 230 V. The reported voltage spread is the maximum of the voltage spread values calculated for each phase.

Voltage Unbalance Factor Index (VUFI) – VUFI is the 95th percentile level of measured or calculated unbalance at a site. VUFI is expressed as a percentage.



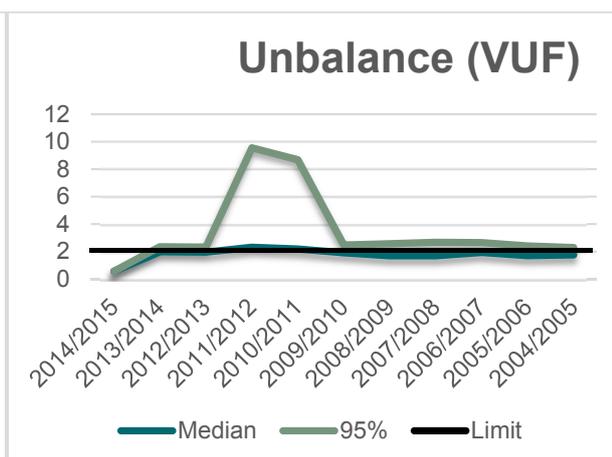
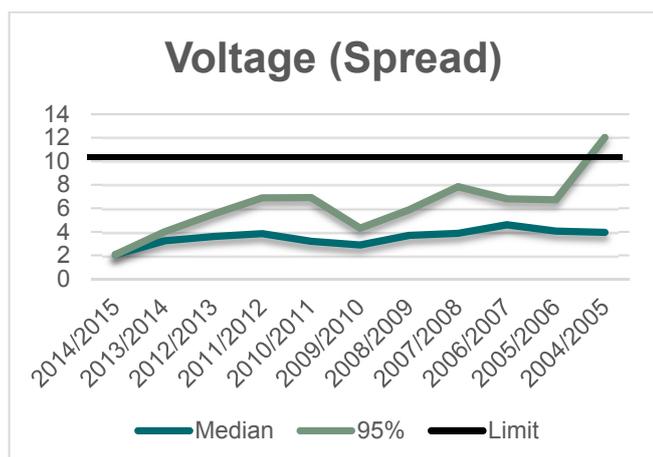
Total Harmonic Distortion Index (THDI) – THDI is the average of the three (one for each phase) 95th percentile THD levels at each site. THDI is expressed as a percentage of the reference voltage.

Voltage Sag SAIFI Index - The Voltage Sag SAIFI Index allows a comparison of voltage sag performance with the well-known reliability measure SAIFI.

Medium Voltage Sites

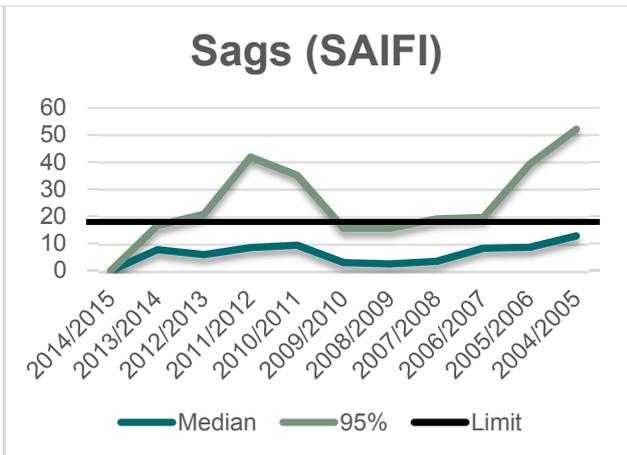
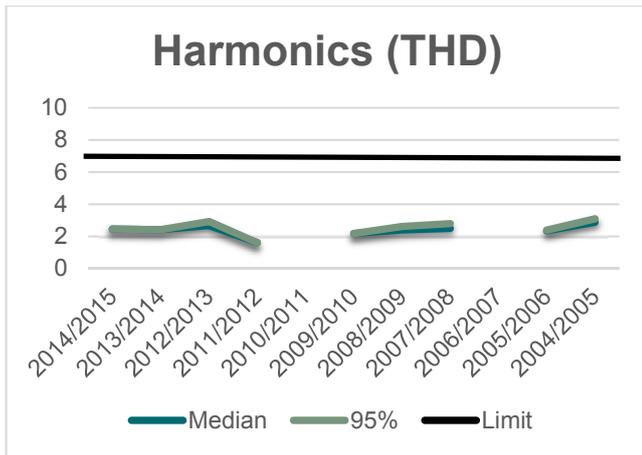
Utility Median Index Value

Disturbance Limits	Voltage (Spread)		Unbalance		Harmonics (THD)		Sags (Sag SAIFI)	
	Index	% of limit	Index	% of limit	Index	% of limit	Index	% of limit
2014/15	2.06	21	0.55	28	2.45	38	-	-
2013/14	3.24	32	1.98	99	2.42	37	7.69	45
2012/13	3.61	36	1.95	98	2.67	41	5.86	34
2011/12	3.85	38	2.3	115	1.61	25	8.46	50
2010/11	3.2	32	2.18	109	-	-	9.35	55
2009/10	2.89	29	1.9	95	2.18	34	2.94	17
2008/09	3.7	37	1.68	84	2.4	37	2.43	14
2007/08	3.88	39	1.68	84	2.49	38	3.38	20
2006/07	4.6	46	1.92	96	-	-	8.23	48
2005/06	4.06	41	1.69	84	2.35	36	8.55	50
2004/05	3.96	40	1.75	87	2.88	44	12.75	75



Voltage Spread – The voltage spread is a measure of the ‘strength’ of a site. It is the difference between light load and heavy load voltage. Voltage spread is calculated as the difference.

Voltage Unbalance Factor Index (VUFI) – VUFI is the 95th percentile level of measured or calculated unbalance at a site. VUFI is expressed as a percentage.



Total Harmonic Distortion Index (THDI) – THDI is the average of the three (one for each phase) 95th percentile THD levels at each site. THDI is expressed as a percentage of the reference voltage.

Voltage Sag SAIFI Index - The Voltage Sag SAIFI Index allows a comparison of voltage sag performance with the well-known reliability measure SAIFI.

4.4 Distribution Reliability

4.4.1 Overview

Essential Energy conducts its reliability reporting in accordance with the *NSW Reliability and Performance Licence Conditions for Electricity Distributors* (Licence Conditions).

From July 2015, Essential Energy became subject to the Service Target Performance Incentive Scheme (STPIS) with reliability targets set, based on the average performance for the years 2009 to 2014.

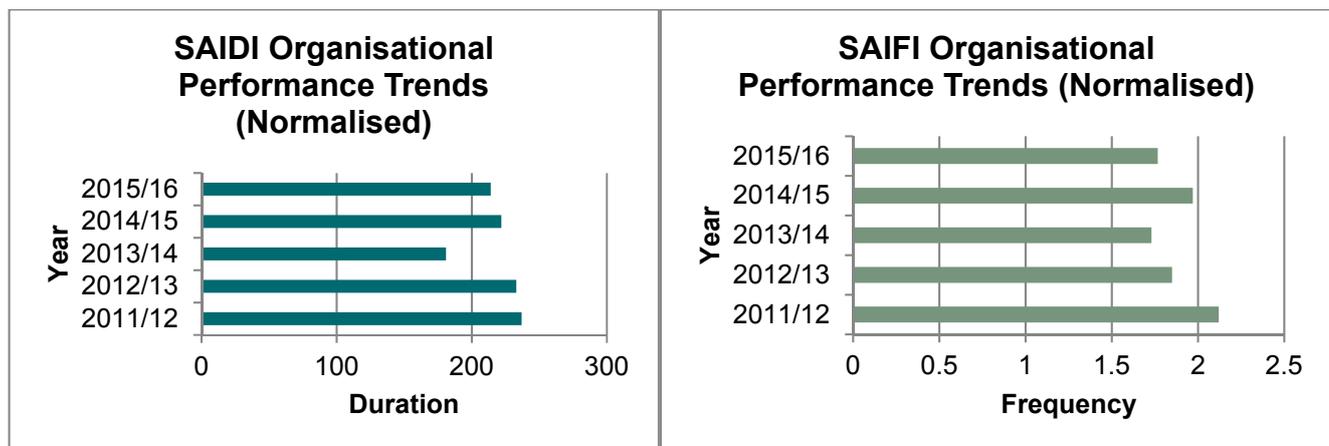
Essential Energy has 299 Urban Feeders, 912 Short Rural Feeders and 243 Long Rural Feeders. Over 62 per cent of our customers are on Short Rural Feeders and the average length of these feeders is approximately 56 kilometres.

4.4.2 Organisational Performance (Normalised) Trend

Reliability data for SAIDI and SAIFI (Normalised) is reported in Table 4.1, with the graphs showing the organisation trends over five years.

Table 4.1 Organisational Performance Trends (Normalised)

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
SAIDI	237	233	181	222	214
SAIFI	2.12	1.85	1.73	1.97	1.77



Comment on Performance

Essential Energy's network performance during the year is better than mandated in licence conditions and a testament to the network improvement strategies that Essential Energy has implemented.

4.4.3 Organisational Detailed Performance Current Year

Reliability data sets for SAIDI and SAIFI are reported for the whole organisation and feeder categories in Table 4.2.

Table 4.2 Organisational Detailed Performance Current Year

Sustained Interruption Data Sets		Whole Organisation and Feeder Category				
Category		ORG*	CBD	Urban	Short Rural	Long Rural
Customer Numbers		873,765	N/A	186,110	551,161	136,494
SAIDI	Overall	447	N/A	166	444	842
	Planned	188	N/A	91	185	335
	Unplanned	249	N/A	71	249	493
	Normalised	214	N/A	66	204	458
SAIFI	Overall	2.78	N/A	1.24	2.86	4.60
	Planned	0.67	N/A	0.31	0.64	1.30
	Unplanned	1.92	N/A	0.82	2.01	3.06
	Normalised	1.77	N/A	0.75	1.83	2.91

* Refers to the average performance of the organisation overall.

Note: Normalised data represents unplanned outages with 'excluded interruptions' subtracted e.g. those defined as being outside the control of the distributor.

4.4.4 Reliability Report against Standards

Table 4.3 CBD Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2011/12	2012/13	2013/14	2014/15	2015/16
SAIDI	Actual	N/A	N/A	N/A	N/A	N/A
	Target	N/A	N/A	N/A	N/A	N/A
SAIFI	Actual	N/A	N/A	N/A	N/A	N/A
	Target	N/A	N/A	N/A	N/A	N/A

Table 4.4 Urban Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2011/12	2012/13	2013/14	2014/15	2015/16
SAIDI	Actual	80	73	63	72.2	66
	Target	125	125	125	125	125
SAIFI	Actual	1.16	0.86	0.78	0.97	0.75
	Target	1.8	1.8	1.8	1.8	1.8

Table 4.5 Rural Short Feeder Performance (Normalised) Trend

Year		Previous Years				Current Year
		2011/12	2012/13	2013/14	2014/15	2015/16
SAIDI	Actual	238	237	180	207	204
	Target	300	300	300	300	300
SAIFI	Actual	2.21	1.94	1.83	2.00	1.83
	Target	3.00	3.00	3.00	3.00	3.00

Table 4.6 Rural Long-Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year		2011/12	2012/13	2013/14	2014/15	2015/16
SAIDI	Actual	478	450	357	489	458
	Target	700	700	700	700	700
SAIFI	Actual	3.28	2.94	2.69	3.28	2.91
	Target	4.50	4.50	4.50	4.50	4.50

Comment on Performance

Tables 4.3 to 4.6 demonstrate Essential Energy's consistent out-performance against targets across all feeder categories.

Excluded Events

Table 4.7 Excluded Interruptions for Current Year

Date of Event	Description of Event	Number of Customers Interrupted	Maximum Duration of Interruption (minutes)	Effect of Event on SAIDI Figure (minutes)	Basis for Exclusion
29/11/2015	Storm activity in the North Coast Region, especially around the Murwillumbah, Lismore and Ewingsdale areas	18,752	2,728	5.94	Major Event Day
29/01/2016	Storm activity in the North Coast and Southern Regions, especially around the Woodburn, Urbenville and Bungendore areas	16,835	4,173	5.38	Major Event Day
4/06/2016	Storm activity spread across the North Coast Region due to an East coast low pressure system	37,689	3,401	10.01	Major Event Day
5/06/2016	Storm activity spread across the North Coast Region due to an East coast low pressure system	31,523	4,337	7.75	Major Event Day
24/06/2016	Storm activity in the North Coast Region, especially around Murwillumbah and Mullumbimby areas	27,922	9,125	5.96	Major Event Day

Threshold Major Event Days

The value of TMED for 2015/16 was 4.92 minutes.

4.4.5 Performance against Individual Feeder Standards

The performance objectives for organisational average performances for each feeder category are not sufficient to identify when customers on a feeder experience unsatisfactory reliability performance. For this reason, SAIDI and SAIFI criteria (after 'excluded interruptions' are disregarded) act as a trigger for investigation and exception reporting purposes. The figures contained in the Licence Conditions are shown in Table 4.8.

Table 4.8 Individual Feeder Standards for Exception Reporting Specified in the Licence Conditions Applicable to Essential Energy

Category	Feeder Categories			
	CBD	Urban	Short Rural	Long Rural
SAIDI	N/A	400	1,000	1,400
SAIFI	N/A	6	8	10

Performance outside this range results in the following actions:

- > Immediate investigation of the causes for each feeder exceeding the individual feeder standards;
- > By the end of the quarter, following the quarter in which the feeder first exceeded the individual feeder standard, complete an investigation report identifying the causes and action required to improve the performance;
- > Complete any operational actions identified in the investigation report by the end of the third quarter following the quarter in which the feeder first exceeded the standard; and
- > Where the investigation report identifies actions, other than operational actions, required to improve the performance of each feeder to the individual feeder standards, develop a project plan, including implementation timetable, and commence its implementation by the end of the second quarter following the quarter in which the feeder first exceeded the individual feeder standards.

Summarised performance against the above licence conditions is shown in Table 4.9.

Table 4.9 Individual Feeder Performance against the Standard Summary

	Feeder Type			
	CBD	Urban	Short Rural	Long Rural
Feeders (Total Number each Type)	N/A	299	912	243
Feeders that Exceeded the Standard During the Year (Total Number)	N/A	14	69	34
Feeders Not Immediately Investigated (Total Number)	N/A	-	-	-
Feeders Not Subject to a Completed Investigation Report by Due Date (Total Number)	N/A	2	15	13
Feeders Not Having Identified Operational Actions Completed by Due Date (Total Number)	N/A	1	5	4
Feeders Not Having a Project Plan Completed by Due Date (Total Number)	N/A	1	2	6

Comment on Performance

The number of feeders exceeding license conditions and those requiring corrective actions has remained stable over the reporting period.

4.5 Transmission Reliability

Essential Energy has no requirement to provide this data.

5 Network Safety

5.1 Overview

Safety is Essential Energy's number one priority and is the responsibility of every employee. Our goal is to keep our workers safe and healthy. Our overarching safety objective is to continue to build a committed safety culture with strong safety leaders and a workplace where no-one knowingly participates in an unsafe act.

Essential Energy's Health, Safety and Environment (HSE) Strategic Plan seeks to develop a HSE framework that enables the exercise and application of due diligence to:

- > Manage our risk profile by eliminating health, safety and environmental risks, as is reasonably practicable, supported by an evidence and risk based approach to decision making, responsible management and good governance and assurance;
- > Eliminate the potential for fatalities and permanent disabilities while systematically reducing high frequency low consequence injuries;
- > Establish better practice HSE Management Systems that are compliant with legislation, regulations, and relevant codes of practice that define minimum requirements for controlling the risks associated with our business operations;
- > Build resilient HSE leadership capability across the business with a focus on developing skills, knowledge, competency, and positive safety behaviours at all levels especially in those who hold safety critical roles; and
- > Build a fair and just culture to embed and support cultural and behavioural change to personal safety.

Essential Energy publishes a Public Electrical Safety Awareness Plan (PESAP) to educate the public, industry workers and emergency services on the hazards associated with electricity in relation to its transmission and distribution system.

The PESAP outlines Essential Energy's commitment to safety and its responsibilities under the relevant Regulation. The key objectives of the 2015/16 PESAP were to:

- > Raise awareness and improve understanding by the community and priority industry sectors about safety hazards associated with the electrical distribution network;
- > Foster positive and proactive association with our communities to increase awareness about electrical safety;
- > Identify areas of risk and implement strategies to prevent incidents occurring after contacting Essential Energy's network; and
- > Demonstrate Essential Energy's commitment to safety.

5.2 Public Injuries

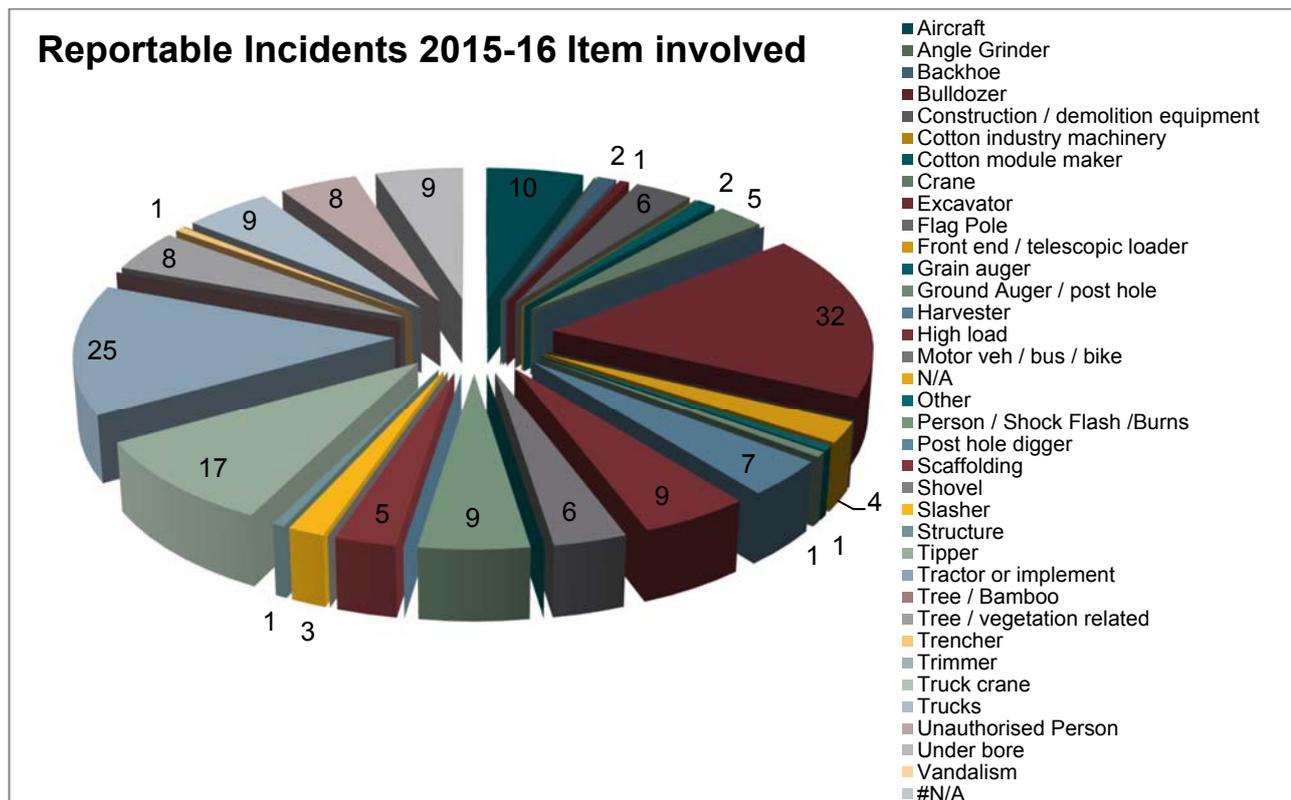
Essential Energy's PESAP provides strategies to raise public awareness of the numerous hazards that may result from contact with electricity network assets and provide systematic ways to minimise identified risks.

The strategies included in the PESAP were developed using a risk based approach and analysis of historical, industry-related incidents. Our strategy of targeting 'at risk' groups and the development of tailored strategies is key to reducing the number of public safety incidents.

Much has been done to raise awareness throughout the community, and 'at risk' groups, regarding identified hazards including targeted print media and radio campaigns, electronic distribution of safety information and Electrical Hazard Awareness presentations to industry groups.

The 'at risk' areas identified in the 2015/16 PESAP include road transport (truck wire strikes - high loads), agriculture (agricultural wire strikes), aircraft wire strikes, construction, and trades (including local councils and authorities), construction equipment wire-strikes (tippers, excavators, bulldozers etc.), vegetation contractors and

the community (shocks and tingles, vehicle pole impacts, vegetation, and life support customers). A break-down of reportable incidents for FY2015/16 is shown in the graph below:



The details of the Public Injuries are detailed beneath Table 5.1.

Table 5.1 Public Injuries

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Non-Fatal	14	25	7	15	8
Fatal	-	1	2	1	1
Total	14	26	9	16	9

Fatal incident

- > A harvester contacted an overhead high voltage pole which resulted in the powerlines contacting the machine. The harvester operator exited, contacting the header, receiving a fatal shock.

Non-Fatal incidents

- > Mine equipment contacted overhead high voltage powerlines and resulted in network trip to lockout. The person received an electric shock.
- > The loading race of a stock truck contacted overhead powerlines while the driver was working on the top of the truck. The worker received an electric shock and was conveyed to hospital where he was released following a check-up.
- > A property owner received shock while working on their fence. This cause was faulty wiring at the nearby transformer. Low Voltage active in contact with earthing system.
- > Two members of the public contacted a streetlight pole that was supplied by underground low voltage. Both received an electric shock with one attending hospital and released the same day.
- > A member of the public accessed a pad mount substation and received an electric shock and burns.
- > A tip truck contacted overhead high voltage powerlines which resulted in the driver receiving an electric shock.

- > A member of the public received an electric shock after coming into contact with fallen powerlines.
- > Two children were playing with tent poles that contacted overhead high voltage powerlines. Both children suffered burns and were conveyed to hospital.

Preventative actions for all incidents were implemented in accordance with the PESAP. Where applicable, public electrical hazard awareness collateral was provided and offers made to conduct Electrical Hazard Awareness presentations.

5.3 Worker Injuries

One incident occurred that resulted in injuries to a worker for the 2015/16 financial year. Investigations were undertaken to determine the causal factors that contributed to the incident and preventative actions were implemented as part of Essential Energy’s incident and investigation management processes. A summary of worker injuries is included in Table 5.2 below.

Table 5.2 Worker Injuries

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Workers	7	9	5	3	1
Contractors	6	2	1	-	-
ASPs	1	1	-	-	-

Worker Injuries:

- > An Essential Energy worker was testing a low voltage pillar when a flashover occurred. The employee received burns.

5.4 Major Incident Reports

Essential Energy reported two major safety incidents (as per Department of Trade and Investment, Resources, and Energy reporting guidelines for Significant Electricity Network Incidents). A summary of each incident is detailed below.

Table 5.3 Summary of Major Incident Reports

Date	Incident Description	Locality
19/07/2015	Two children were playing with tent poles that contacted overhead high voltage powerlines. Both children suffered burns and were conveyed to hospital.	Tumbarumba
30/12/2015	A harvester contacted an overhead high voltage power-pole causing the powerlines to contact the machine. The harvester operator exited, contacting the header, and received a fatal shock.	Khancoban

6 Customer Installations

Monitoring of installations is carried out in accordance with regulations and industry codes of practice. In addition to the Regulation, installations must be consistent with the *Electricity (Consumer Safety) Regulation 2015*, the *Code of Practice for Installation Safety Management*, and the *Code of Practice for Contestable Works Accreditation*.

Essential Energy's CEOP8004 Customer Installation Safety Plan outlines the approach taken to managing all aspects of customer installation work. The plan defines our approach with respect to the roles of both contractors and Essential Energy.

Installation and inspection data is managed within Essential Energy's Web Form Manager which enables management of Certificate of Compliance for Electrical Work (CCEW) and Notification of Service Work (NOSW) information. The auditing of individual contractors to ensure adherence to CEOP8004 is also monitored.

6.1 Reports against Customer Installation Safety Plans

Table 6.1 Installation Inspections Trend

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Number of Notifications (CCEW)	31,085	32,025	29,843	33,884	32,516
Number of Inspections	12,634	11,940	14,857	13,116	9,878
Installation Inspection Rate (%)	40	37	50	39	30
Major Safety Defect Rate (%)	1.6	0.66	0.78	0.68	0.75
Safety Breach Notices Issued (%)	3.93	1.77	1.58	1.75	2.46
Number of Warnings Issued	496	211	235	230	243
Reports to Fair Trading (No.)	6	2	5	3	-
Number of Audits by Distributor	247	223	356	233	199

6.2 Customer Installation Shock Reports

Table 6.2 Customer Installation Shock Reports Trend

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Shocks on Customer's Premises (Number Reported)	666	613	540	562	506

Table 6.3 Customer Installation Safety- Categories of Shocks Analysed

Category	Number		% of Total
	Fatal	Non-Fatal	
Cause Category Installation Related			
Contact with Consumer's Mains – Faulty Mains	-	4	1
Contact with Consumer's Mains – Human error	-	4	1
Contact with Live Parts at Switchboard – Faulty Switchboard	-	4	1
Contact with Live Parts at Switchboard – Human Error	-	7	1
Faulty Mains Box	-	40	8
Faulty underground Consumer Mains	-	1	-
Faulty underground Consumer Mains Joint	-	4	1
Induced Voltage	-	18	4
Long Low Voltage Run (Customer responsibility)	-	3	1
Poor Earthing	-	16	3
Unsafe Installation Work by Licensed Contractor	-	2	-
Failure of Part of Installation (not water related)	-	14	3
Defective or Unsuitable Appliance	-	18	4
Working on or Interference with Installation	-	1	-
Working on or Interference with Appliance	-	-	-
Water Damage or Ingress	-	6	1
Static Electricity	-	5	1
No Cause Found	-	48	9
Other (Installation Related)	-	52	10
Sub Total	-	247	49
Cause Category Network Related			
Contact with Network Mains - Faulty mains	-	-	-
Contact with Network Mains - Human error	-	-	-
Contact with overhead Service Mains - Faulty mains	-	1	-
Contact with overhead Service Mains - Human error	-	1	-
Faulty overhead Mains Joint	-	46	9
Faulty overhead Service Joint	-	71	14
Faulty overhead Network Splice	-	3	1
Faulty overhead Open Service	-	3	1
Faulty overhead Twisted Service	-	17	3
Faulty underground Distribution Mains Joint	-	6	1
Faulty underground Service	-	-	-
Faulty underground Service Joint	-	11	2
Faulty underground Mains	-	2	-
Long Low Voltage Run (Network responsibility)	-	20	4
Low Voltage Leakage (salt/dust)	-	4	1
High Voltage Leakage	-	1	-
Nuisance Tingles <10 volts	-	27	5
Incorrect Polarity	-	-	-
Other (Network Related)	-	23	5
Sub total	-	236	46

Other Cause Categories			
Lightning/Storm	-	10	2
N/A	-	8	2
Undefined (under investigation)	-	5	1
Subtotal	-	23	5
TOTAL			
	0	506	100
Total per 1,000 customers			
		0.6062	

The overall total of 506 reported shocks for 2015/16 was a decrease of 56, or 10 per cent compared to the last reporting period. This is the lowest recorded number over the past 5 years.

Customer related shocks were relatively stable, however network related shocks decreased by 46, or 16 per cent.

The leading cause of network related shocks was overhead service joints, accounting for 14 per cent of the total reported jobs. Line Taps accounted for 36 per cent of the faulty overhead service joints and aerial bundled cable (ABC) piercing and house service connectors (HSC) were responsible for a further 27 per cent of the faulty service joints.

The leading cause of installation related shocks were faulty mains boxes which accounted for 8 per cent of the total reported shocks, followed by defective or unsuitable appliances and induced voltages which both accounted for 3.6 per cent of the total reported shocks.

7 Contestable Works Scheme

Essential Energy Monitors Level 2 works in its Web Form Manager (WFM) system, Level 1 and Level 3 information is collected regionally by Quality Control Co-ordinators in the Contestable Works Database, and internal inspection information is collected in CRM Red back.

The 2015/16 financial year has seen the following trends:

- > **Level 1** –Project notifications and inspection rates remain steady with the number of initially non-conforming projects slightly lower than the previous year.
- > **Level 2** – Notifications have increased from the previous year due to continued solar installations, additions to solar sites and the preparation for the NSW Solar Bonus Scheme roll-off. The decrease in inspections is a result of prioritisation of work tasks and resource levels.
- > **Level 3** – Design submissions from Level 3 Accredited Service Providers (ASPs) remain steady, reflective of continued economic activity.

Table 7.1 Contestable Works Trend

	Previous Years								Current Year	
	2011/12		2012/13		2013/14		2014/15		2015/16	
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Int	Ext
Network Work (Level 1)										
Project Notifications	54	1,266	26	1,587	14	1,690	15	1,515	7	1,369
Initial Inspections of Completed Projects	4	1,654	6	1,303	-	1,098	-	1,138	-	1,013
Of Projects Inspected, Number Initially Nonconforming	-	294	4	319	-	353	-	166	-	140
Customer Connection Work (Level 2)										
Notifications (NOSW)	723	32,193	573	34,376	408	33,915	327	44,305	243	57,381
Inspections by Network Operator	359	16,783	358	13,945	182	21,903	77	15,460	57	10,666
Major Defects	-	477	-	123	2	275	-	242	-	273
Network Design Work (Level 3)										
Designs Certified	46	1,410	26	1,440	14	1,429	15	1,650	7	1,514

Note: 'Int' refers to contestable work done by the distributor's ASP entity and 'Ext' refers to work done by independent ASPs.

8 Bush Fire Risk Management

Table 8.1 Bushfire Risk Management

Year	Previous Years				Current Year
	2011/12	2012/13	2013/14	2014/15	2015/16
Assets in bushfire prone areas checked by pre-summer inspection %	100	100	100	100	100
Private lines in bushfire prone areas checked by pre-summer inspection %	100	100	100	100	100
Fire ignitions by network assets (Number) ⁴	183	338	351	253	270
Complaints from the public regarding preparation for the bush fire season (Number)	22	18	19	39	20

Inspections

Network inspections take several forms including ground line inspection of assets, aerial inspection of pole tops and vegetation surveys.

The results of the FY2015/16 asset inspection program are shown in Table 8.2 below.

Table 8.2 Asset Inspection Program

Poles Inspected	Target Pole Population	Inspection Completion Rate %	Poles for replacement or reinforcement	Condemn Rate %
329,940	343,116	96.16	5,695	1.7

Annual Bushfire Patrol

Results of the FY2015/16 Aerial inspections are shown in Table 8.3 below. These include urgent tasks identified by all aerial inspection programs (visual annual pre-summer patrols, radio imagery (LiDAR) capture) across the whole rural network, not just high fire risk locations.

Table 8.3 Annual Patrol Defects Identified

Annual Bushfire Patrol Defects Identified in Rural Areas			
Defect Category	Assets	Vegetation	Total Urgent Risk Defects
Urgent risk task identified as at 29/08/2016	852	190	1,042
Urgent Risk tasks completed as at 29/08/2016	805	130	935

Urgent tasks identified by annual bushfire patrols are completed by the commencement of the Rural Fire Service (RFS) declared fire danger periods each year. These are treated as priority tasks to be completed one month after being reported.

⁴ Fire ignitions from network assets are those fires where the network was the ignition source regardless of causes. This includes network ignitions caused by 3rd parties e.g. machinery contacting lines and excludes fire damage to assets by non-network ignition sources e.g. bushfires, grassfires, uncontrolled burn-offs.

Audit of Activities

The Essential Energy internal audit office carried out the following audits relating to bushfire risk during FY2015/16:

- > Bushfire preparedness; and
- > Vegetation.

The following functional areas associated with bushfire risk are scheduled for audit in during FY2016/17:

- > Asset Inspection;
- > Vegetation Management;
- > Zone substation maintenance; and
- > Bushfire preparedness.

Community Awareness

Essential Energy proactively promoted bushfire awareness and risk minimisation strategies to the public. Information pertaining to the following safety topics was published on Essential Energy's website and the Vegetation Management Plan and Bushfire Risk Management Plan;

- > Bushfire and storm safety tips;
- > Dangers of trees near powerlines;
- > Electrical safety for emergency personnel;
- > Safety advice on burning off near electrical assets; and
- > Safe operation of farm machinery and equipment when working near electrical assets.

Essential Energy remains an active member of local Bush Fire Management Committees, with employee representatives on over 40 committees across the state. This provides the opportunity to consult with community representatives and other agencies regarding fire risk.

Bushfire Mitigation Initiatives

Essential Energy has either implemented or is in the process of implementing various initiatives associated with bushfire mitigation. This includes continued development of programs started since the review of the Victorian Bushfires Royal Commission recommendations.

These include;

- > Bushfire risk modelling based on network locations and community consequence of a network related fire;
- > Strategic review of the application of aerial inspection technologies such as LiDAR for accurate measurement of conductor clearances and high definition image capture for close inspection of pole-tops;
- > Capital programs to renew or replace assets which may cause fires (e.g. installation of low voltage spreaders, underground conversion of rural low voltage lines and conductor replacement programs);
- > Changes in network operating procedures for high risk fire days including preventing powerlines from automatically re-energising after fault detection on Total Fire Ban days;
- > Strategic review of vegetation management programs;
- > Review of policy and practices associated with management of fire risk associated with private powerlines; and
- > Changes in network design and construction such as requiring the undergrounding of new service connections in fire prone areas.

9 Public Electrical Safety Awareness

The number of reportable Public Safety incidents decreased from 221 for FY2014/15 to 177 for FY2015/16. This decrease was attributed to a reduction in incidents for the following categories - trucks, excavators; construction/demolition equipment, tractors/implements and aircraft.

Construction related strikes on our network (trucks, excavators, and general construction equipment) will continue to be our focus for FY2016/17.

Public Safety Initiatives:

Essential Energy's Network Risk Management Plan identified several 'at risk' / public safety target groups for the FY2015/16 - road transport (truck wire strikes - high loads), agriculture (agricultural wire strikes), aircraft wire strikes, construction, and trades (including local councils and authorities), construction-equipment wire strikes (tippers, excavators, bulldozers, etc.), vegetation contractors and the community (with additional focus on life support customers). This section includes details on each of the programs established for each of the 'at risk' groups.

Transport Trucks Wire Strikes

Program Objectives: To communicate Electrical Hazard Awareness (EHA) safety information to educate workers of the clearances required when working near electricity infrastructure, provide a means of reducing the risks, outline emergency response actions and define reporting obligations.

Targeted safety communications included:

- > Social media posts and media releases promoting the "Look up and Live" message (Facebook and Twitter);
- > Essential Energy public safety website information – access to free fact sheets, DVDs;
- > High load DVD – a shared initiative with Ausgrid and Endeavour Energy; and
- > Provision of collateral to target groups at AgQuip and Henty Machinery Field Days.

Agricultural Wire Strikes

Program Objectives: To communicate Electrical Hazard Awareness (EHA) safety information to the operators of agricultural businesses to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing the risks, outline emergency response actions and define reporting obligations.

Targeted safety communications included:

- > Electrical safety awareness video message for the agricultural sector (available on Essential Energy's website and YouTube channel);
- > Industry safety DVD – including rural chapter;
- > Grain harvest video message (on Essential Energy's website and YouTube channel);
- > Radio advertising – safety messages during harvest times;
- > Media releases on topics such as cotton harvest safety, grain and sugar cane harvest safety, high machinery safety and general workplace safety messaging;
- > Social media updates (Facebook and Twitter);
- > Provision of fact sheets/brochures;
- > Direct contact by dedicated Public Safety manager with people and companies following reported incidents on the distribution network;
- > Developed a dedicated flag marker (in conjunction with an external partner) that complies with civil aviation requirements;
- > Promotion of the L.A.N.D safety message during grain and cotton harvest periods;
- > Grain Harvest campaign that included press, radio, rural press and Fairfax digital advertising, electronic direct mail to over 2000 recipients as well as targeted social media posts (grain belt); and

- > Cotton Harvest campaign that included press, radio, Facebook advertising, cross promotion of safety messages with Cotton Australia and electronic direct mails.

Aircraft Wire Strikes

Program Objectives: To communicate Electrical Hazard Awareness (EHA) safety information to the operators of aircraft to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing the risks, outline emergency response actions and define reporting obligations.

Targeted safety communications included:

- > Aviation safety press advertisement (RA-Aus Sports Pilot Magazine);
- > 30 second aerial safety radio advertisement;
- > Aviation safety fact sheet; and
- > The development of a dedicated flag marker (in conjunction with an external partner) that complies with civil aviation requirements.

Construction Machinery Wire Strikes

Program Objectives: To communicate Electrical Hazard Awareness (EHA) safety information to the construction industry to ensure they are aware of the hazards when working near electricity infrastructure, provide a means of reducing the risks, outline emergency response actions and define reporting obligations.

Targeted safety communications included:

- > Media releases on topics including electricity and scaffolding, electricity, and their worksite, working near overhead powerlines, 'are you being safe?' and high loads;
- > Radio safety advertising;
- > Provision of DVD – Industry safety (construction chapter);
- > Social media updates;
- > Website information – fact sheets and electrical safety awareness information; and
- > Provision of EHA poster and safety stickers (six stickers).

Community

Program Objectives: Shocks and Tingles: To communicate Electrical Hazard Awareness (EHA) safety information to the public to ensure they are aware of the electrical hazards associated with domestic installations

Targeted safety communications included:

- > Vegetation Wire Strike Public Involvement - communicating Electrical Hazard Awareness (EHA) safety information to the public to ensure they are aware of the hazards associated with vegetation works around the electricity network;
- > Vehicle Pole Impact - to ensure that any new construction work aligns with current design standards for pole placement and set back zones;
- > Direct mail to Life Support customers - mail-out included a magnet for important numbers such as doctors and nearest hospital. The letter informed Life Support customers to have a back-up plan in place in the event of an unplanned outage, and to ensure they updated their contact details with Essential Energy and their energy retailer. An SMS initiative was also trialled to alert Life Support customers of planned outages – this will be expanded in FY2016/17;
- > Social media was used to remind customers to keep at least 8 metres away from fallen powerlines, and provided updates on unplanned power outages. Following the outages, press and radio were utilised to thank communities who experienced long outages due to extensive network damage. The proactive campaign ran throughout February 2016 across the network area with press, radio, geo-targeted digital and in app advertising, social media, and local media releases;

- > A trial initiative was undertaken that saw SMS messaging to customers experiencing long power outages. The use of SMS as a customer communication tool will continue to increase in FY2016/17;
- > As part of our commitment to provide safety information to the communities in our network, Essential Energy ran a school safety program that culminated in Electricity Safety Week, held 7 to 9 September 2015. It is an annual state-wide program designed to teach students how to be safe around electricity and make them more aware of associated dangers. Activities were developed in conjunction with the Department of Education to meet the requirements of the NSW Board of Studies Science and Technology Syllabus for the Australian Curriculum. Essential Energy jointly ran the program with Ausgrid and Endeavour Energy. In 2015, 96 per cent of the 916 primary schools in Essential Energy's footprint registered for the program, and 73,000 students were engaged in electricity safety activities.

New initiatives included:

- > Liaising with Cotton Australia to deliver critical 'look up and live' safety resources such as fact sheets, posters, brochures, and videos;
- > Development of an underground construction safety film in partnership with Endeavour Energy and SafeWork NSW;
- > The launch of a campaign educating customers about the new clearance distance requirements for vegetation management to reduce bushfire hazards;
- > An innovative electrostatic sticker was developed to remind the industry to 'Look up and live'. Stickers are distributed to workers involved in grain, cotton, and sugar cane harvest to go in the cab of headers, trucks, and tractors;
- > Posting of actual incidents on social media showing tractors that have contacted the network. These posts created great engagement and will continue to be used to promote the look up and live message.

Learnings

Essential Energy continued its close working relationship with industry leaders such as Ausgrid, Endeavour Energy and SafeWork NSW to identify high risk groups, and targeted media campaigning including a recent safety DVD sponsored by Essential Energy. Safety discussion groups with these stakeholders also identified social media, such as Facebook, as an effective and timely safety communication channel.

10 Powerline Crossings of Navigable Waterways

Existing crossing numbers

Essential Energy currently has a total of 1,124 crossings identified as Navigable waterways.

These sites are part of an ongoing inspection and risk assessment program. The table below provides the number of sites and works carried out during FY2015/16.

Table 10.1 Powerline Crossings of Navigable Waterways Summary

	Existing (Number)	New (Number)	Incidents (Number)	Crossings Reconstructed (Number)	Crossings Identified as Requiring Conversion to Submarine Crossings (Number)
Overhead Crossings	1,053	-	-	63	-
Submarine Crossings	71	-	-	-	-

Crossings Incidents

Essential Energy had no reportable incidents for the FY2015/16 reporting period

Crossings Reconstructed

63 overhead crossings were reconstructed and six overhead crossings were removed in FY2015/16.

Activities to comply with the NSW Transport, Roads and Maritime Services (previously NSW Maritime) Crossings of Navigable Waters: Electricity Industry Code (the Code).

1. Essential Energy Navigable Waterways Risk Assessment Program

63 High and Very High navigable crossings were augmented during FY2015/16 to reduce the risk level from High or Very High to a Low risk rating with a further six being removed altogether. 53 remaining crossings in the High and Very High risk category are programmed for augmentation or removal in 2016/17.

2. Signage Replacement Program

A staged signage program is scheduled to start in the second quarter of FY2016/17. All signs will be progressively upgraded in accordance with AS6947 Crossings of waterways by electricity infrastructure.

A total of 100 boat ramp awareness signs installed on the North Coast in FY2015/16. A further 32 will be on the South Coast and 10 on the South West Coast will be installed as part of the FY2016/17 program.

11 Chief Executive Officer Declaration

Essential Energy

ELECTRICITY NETWORK PERFORMANCE REPORT 2015/16

Declaration by Chief Executive Officer

In submitting this Electricity Network Performance Report (the Report), I declare that the Report:

1. Complies with reporting requirements prescribed under the *Electricity Supply (Safety and Network Management) Regulation 2014*, and the “Distribution Network Service Provider Annual Report Outline” (the Outline), as provided by DTIRIS.
2. Has been checked in accordance with recognised quality procedures; and in my opinion, there are reasonable grounds to believe the data, and notes in respect of data contained in this Report, give a true and fair view of the organisation’s performance in respect of the matters contained in the Outline.



John Cleland

Chief Executive Officer

Date: 28 November 2016