Electricity Network Performance Report New South Wales

Distribution

Annual Report Outline

Revised June 2015

New South Wales Electricity Network Performance Report

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Issued June 2015.

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Introduction

The *Electricity Supply (Safety and Network Management) Regulation 2014* (the Regulation) confers technical (safety and reliability) regulation functions, powers and duties on NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS). The Regulation (Clause 10) requires network operators to measure, report on, and publish network performance on an annual basis. This *Electricity Network Performance Annual Report Outline* (the Outline), provides the Secretary's requirements for inclusion in the Electricity Network Performance Reports (ENPRs) in accordance with the Regulation and the *Design, Reliability and Performance Licence Conditions 2007* (Licence Conditions).

This ENPR is designed to report actual performance, in each financial year, against the criteria and key performance indicators established in the Network Management Plan (NMP). Therefore the report should complement, not duplicate the NMP. It is not expected that textual elements of the ENPR would duplicate elements already documented in the NMP.

Network operators should keep textual commentary to the bare minimum required to provide comments on significant trends or issues. Graphics should not be included for decorative purposes. The report is expected to be no more than 50 pages in length. The headings in this Outline correspond to those required in the network operator's report, but some network operators may not report transmission data. Detailed formatting and presentation of the information is at the discretion of network operators.

The Final ENPRs are to be provided as follows:

- 30 September– Electronic copy of the final draft of the ENPR is to be provided to the Manager, Energy Supply and Networks Performance, Office of Resources and Energy, DTIRIS
- 31 October – DTIRIS will provide any comment and or request further information on the final draft ENPR.
- 30 November – Hard copy of the Final ENPR with CEO certification is to be lodged with the Deputy Director-General, DTIRIS.
- 31 December – Each network operator is to publish the ENPR on its web site.

1. Profile

1.1 Overview

This section is to provide an overview of the organisation in terms of size, resources and details of the network at the end of the reporting year. It should include:

- Network area map
- Overview of the organisation, the network and any relevant trends or major issues
- All data as listed in Table 1.1
- Any other statistics that may provide an understanding of the nature of the network.

Table 1.1 Distributor Statistics

	Number at end of Previous Year	Number at end of Current Year
Distribution Customer Numbers (Total)		
Distribution Customer Numbers (By Region)		
Maximum Demand (Aggregated System MW)		
Feeder Numbers CBD		
Feeder Numbers Urban		
Feeder Numbers Short Rural		
Feeder Numbers Long Rural		
Energy Received by Dist Network to Year End (GWh)		
Energy Distributed to Year End (Residential) (GWh)		
Energy Distributed to Year End (Non-Residential Including un-metered supplies) (GWh)		
Energy Distributed to Year End (GWh)		
System Loss Factor (%)		
Transmission System (km)		
Transmission Substation (Number)		
Sub Transmission System (km)		
Substation - Zone (Number)		
Substation - Distribution (Number)		
High Voltage Overhead (km)		
High Voltage Underground (km)		
Low Voltage Overhead (km)		
Low Voltage Underground (km)		
Poles (Number)		
Streetlights (Number)		
Employees (Full Time Equivalent Number)		
Contractors (Full Time Equivalent Number)		

Notes: Distances for overhead and underground lines are circuit km.

System Loss Factor (%), being the difference between electricity received by the distribution network and electricity received by customers (including un-metered supplies) divided by electricity received by the distribution network (allowing for embedded generation), expressed as a percentage.

1.2 Capital works program

Network operators should provide a brief overview of their capital works program including reasons for any unusual items.

Table 1.2 Capital works program trend

	Previous Years				Current Year
Year					
Capital works program ($M)					

2. Network Management

2.1 Overview

This section is to cross-reference the published NMP and to outline briefly any issues, new initiatives and achievements during the reporting year against the published technical service or performance standards, and previous performance reports.

2.2 Network Complaints

Table 2.1 Complaint Performance Data

	Previous Years				Current Year
Year					
Complaints Total					
Complaints per 1,000 Distribution Customers					
Complaints regarding Vegetation Management					

Table 2.2 Network Complaint Investigations Completed Current Year

	Number	Number Valid*
Voltage		
Current		
Other Quality		
Reliability		
Safety		

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

2.3 Customer Service Standards Reporting

Table 2.3 provides the customer service standards that distributors report every quarter to DTIRIS, in accordance with the Licence Conditions. A short narrative should be included to cover the basis for non-payment of claims.

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				
Non-Metropolitan				

3. Network Planning

3.1 Overview

This section is to cross-reference the published NMP and outline any issues, new initiatives and achievements during the reporting year against the published network planning approach/methodology and how this relates to the legislative framework and the NSW Government's Total Asset Management (TAM) System (100 words).

3.2 Design Planning Criteria Compliance Reporting

The Design Planning Criteria Compliance Report *are no longer required* by the Licence Conditions (formerly Sections 18.1, and 18.17).

3.3 Demand Management

The *Electricity Supply Act 1995* requires that a Distribution Licence Holder must investigate whether it would be cost-effective to avoid or postpone extending or increasing the capacity of the network by implementing Demand Management (DM) strategies.

The report shall provide a brief description of the distributor's DM philosophy and strategies with reference to the provisions of the *Demand Management for Electricity Distributors, NSW Code of Practice* (100 words). Guidelines for the reporting of DM is provided at Appendix A.

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	PV of Total of Capital Expenditure Deferment plus Op Ex Savings
Individual large projects				
1				
2 etc				
Sub-totals				
Consolidated projects				
1				
2 etc				
Sub-totals				
Totals				

Explanatory notes for Table 3.5:

Reports are required for large projects reported individually and for small projects reported collectively. Optionally, small projects may be individually listed, but must not be counted again in the consolidated report. Small projects could conveniently be grouped into headings such as: Customer Negotiations (Demand Reduction) or Installation of Local Generator etc. A large project is defined as proposed network expansions or augmentations, which would cost in excess of $500,000. Such large projects may be at zone substation level. Demand reductions should relate to permanent reductions only, and are the figures for the reporting year.

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
1		
2 etc		

4. Asset Management

4.1 Overview

Include a very brief narrative of the approach, objectives and main elements of your asset management strategy (100 words as this is covered in the NMP).

4.2 Technical Service Standards

Provide a commentary on the technical service standards used and where they may be obtained

4.3 Quality of Supply

4.3.1 Overview

Identify issues with the quality of supply and describe the method for monitoring supply quality (100 words).

4.3.2 Performance Data

Provide the data that are available for the current year and the previous year. Describe the results and conclusions drawn from the data.

4.4 Distribution Reliability

4.4.1 Overview

Distributors should provide a narrative overview including comment on:

- performance overview and trends such as general weather conditions, including influences on performance (positive and negative)
- feeders or regions requiring remedial actions, and overview of remedial actions.

4.4.2 Organisational Performance (Normalised) Trend

Reliability data for SAIDI and SAIFI (Normalised) are also to be reported showing the organisation trends over five years in accordance with Table 4.1.

Reporting of $MAIFI_e$ for the 2013/2014 year is likely to be required as part of revised Design, Reliability and Performance Licence Conditions. Definition included in Attachment A.

Table 4.1 Organisational Performance Trends (Normalised)

	Previous Years				Current Year
Year					
SAIDI					
SAIFI					

Table 4.1 data is also to be shown in the form of a bar graph for SAIDI and a bar graph for SAIFI.

Comment on Performance

Distributors should comment on reliability performance and trends (200 words).

4.4.3 Organisational Detailed Performance Current Year

Network reliability is measured in terms of their duration (SAIDI) and their frequency (SAIFI) (see Licence Conditions for definitions). SAIDI and SAIFI are to be reported for the whole organisation and feeder categories in accordance with 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						
SAIDI	Overall					
	Planned					
	Unplanned					
	Normalised					
SAIFI	Overall					
	Planned					
	Unplanned					
	Normalised					

* 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

Reliability data for SAIDI and SAIFI (Normalised) by feeder categories are to be reported showing the five year trend in accordance with Tables 4.3, 4.4, 4.5 and 4.6. The tables include the targets from the Licence Conditions.

Table 4.3 CBD Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year						
SAIDI	Actual					
	Target					
SAIFI	Actual					
	Target					

Table 4.4 Urban Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year						
SAIDI	Actual					
	Target					
SAIFI	Actual					
	Target					

Table 4.5 Rural Short Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year						
SAIDI	Actual					
	Target					
SAIFI	Actual					
	Target					

Table 4.6 Rural Long-Feeder Performance (Normalised) Trend

		Previous Years				Current Year
Year						
SAIDI	Actual					
	Target					
SAIFI	Actual					
	Target					

Comment on Performance

Distributors should comment on reliability performance and trends.

Where performance is worse than the targets, briefly include reasons for this and any plans to improve performance, for example through increased capital expenditure, improved maintenance planning or other innovative asset management methods.

Excluded Events

Each excluded interruption is to be listed in Table 4.7 with a description of the basis on which the event meets the exclusion criteria (if in doubt, DTIRIS should be consulted).

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

4.4.5 Performance against Individual Feeder Standards

The SAIDI and SAIFI criteria (after 'excluded interruptions' are disregarded), which act as a trigger for investigation and exception reporting purposes are to be shown in Table 4.8.

Table 4.8 Individual Feeder Standards for Exception Reporting Specified in the Licence Conditions Applicable to your Organisation

	Feeder Categories			
Category	CBD	Urban	Short Rural	Long Rural
SAIDI				
SAIFI				

Individual feeder performance shall be indicated in the Table 4.9, in accordance with Clause 16.2 of the Licence Conditions.

Table 4.9 Individual Feeder Performance against the Standard Summary

	Feeder Type			
	CBD	**Urban**	**Short Rural**	**Long Rural**
Feeders (Total Number each Type)				
Feeders that Exceeded the Standard During the Year (Total Number)				
Feeders Not Immediately Investigated (Total Number)				
Feeders Not Subject to a Completed Investigation Report by Due Date (Total Number)				
Feeders Not Having Identified Operational Actions Completed by Due Date (Total Number)				
Feeders Not Having a Project Plan Completed by Due Date (Total Number)				

Distributors should include a general narrative comment on performance (100 words).

4.5 Transmission Reliability

Distributors who have transmission networks should complete this section and provide brief comments on performance. A short description of initiatives undertaken to improve or maintain performance may be included (100 words).

Reporting is to be generally in line with the Australian Energy Regulator (AER) requirements but on a financial year basis.

4.5.1 Transmission Reliability Performance Data

Table 4.10 Transmission Circuit Availability (%) Trend

	Previous Years				Current Year
Objective					

Table 4.11 Network Reliability Trend

		Previous Years				Current Year
	Objective					
Network Reliability (Off Supply Event Numbers)						

Table 4.12 Outage (Un-Planned) Average Duration (Minutes) Trend

	Previous Years				Current Year
Objective					

Table 4.13 Connection Point Interruptions (Unplanned) Current Year

Connection Point	Interruption Number	Interruption Duration Total (Minutes)

Note: This table provides a listing of customer connection points off supply events.

Table 4.14 Connection Point Numbers Current Year

	Year
Number of Connection Points (Total Number)	

5. Network Safety

5.1 Overview

This section is to cross-reference the chapters on safety in the published NMP and provide a narrative of policies and principles and objectives, safety strategies and approach to safety management covering public and network worker safety. Distributors who also have transmission networks should include accidents on the transmission network in this section.

The injuries reportable in this section are defined in the guidelines for the Significant Electricity Network Incidents (SENI) Scheme that was current at the time of the incident.

5.2 Public Injuries

This section relates to injuries involving the public, which includes public workers and public general. A summary of performance, trends, causes and preventative action implemented are to be provided. Initiatives may be addressed in more detail under Section 9 – Public Electrical Safety Awareness Campaign.

Table 5.1 Public Injuries

	Previous Years			Current Year
Year				
Non-Fatal				
Fatal				
Total				

5.3 Worker Injuries

This section relates to injuries involving workers, contractors and ASPs. The distributor contestable work ring fenced operation shall be shown in the ASP section of Table 5.2.

Table 5.2 Worker, contractor and ASP injuries

	Previous Years				Current Year
Year					
Workers					
Contractors					
ASPs					
Total					

Distributors shall provide a narrative description for significant incidents, including the number of fatalities, the number of persons injured, circumstances, probable cause and preventative actions taken.

ASPs when contracted to carry out network work for distributors shall be considered as distributor contractors.

5.4 Major Incident Reports

Distributors shall list all major incidents where reports were provided to the Minister, as required under the Licence Conditions.

6. Customer Installations

Brief commentary on the installation inspection process and management strategies, including:

- Overview of contractor performance trends and any actions taken
- Overview of major causes of customer shocks
- Implications for adherence to Chapter 3 of the NMP.

6.1 Reports against Customer Installation Safety Plans

A report in the format provided in Table 6.1, based on Appendix 1 of *Code of Practice Installation Safety Management* is required on:

- The notifications of electrical work received
- The number of inspections performed
- The inspection findings according to the following categories:
  - Safety Breach Notices issued
  - The number of audits performed
  - The audit findings
  - Disciplinary action taken, broken down into warnings issued and referrals to the Office of Fair Trading
- Comments on the notification process, performance of contractors, inspection and audit programs, expected progress and corrective actions.

Note: The Major Safety Breach Rate is the number of Major Safety Breaches detected by or for a distributor as a percentage of the number of installation inspections carried out in the reporting year.

6.2 Customer Installation Shock Reports

Table 6.1 Installation Inspections Trend

	Previous Years				Current Year
Year					
Number of Notifications (CCEW)					
Number of Inspections					
Installation Inspection Rate (%)					
Major Safety Defect Rate (%)					
Safety Breach Notices Issued (%)					
Number of Warnings Issued					
Reports to Fair Trading (No.)					
Number of Audits by Distributor					

A report is also required in the format provided in Table 6.2 on:

- Reported shocks to customers.
- Fatalities on customer's installations

Table 6.2 Customer Installation Shock Reports Trend

	Previous Years				Current Year
Year					
Shocks on Customer's Premises (Number Reported)					

Note: Shocks found to be caused by static electricity are to be included in the report.

7. Contestable Works Scheme

ASPs are accredited to carry out contestable services being the connection of a new supply or upgrade of an existing supply to a customer.

Distributors should comment on the operation of the ASP scheme and provide data in Table 7.1 to indicate the general level of work being carried out.

Table 7.1 Contestable Works Trend

	Previous Years								Current Year	
Year										
Category	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Int	Ext
Network Work (Level 1)										
Project approvals										
Projects inspected by the DNSP										
No. of projects with initial major defects										
Customer Connection Work (Level 2)										
Notifications (NOSW)										
Projects inspected by the DNSP										
No. with initial major defects										
Network Design Work (Level 3)										
Designs Certified										

Note:

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

Distributors may provide additional information if available that will provide a clarification of procedures and practices they have adopted in administering the Contestable Works scheme.

Notification refers to a notice from an ASP to the Distributor of work being carried out.

8. Bush Fire Risk Management

Each distributor is to report on measures it has in place to indicate compliance with Chapter 4 Bush fire risk management, of their NMP (3 pages only).

Example performance indicators, which should be provided separately for the network and private installations, may relate to:

- Progress/Compliance/Outcomes of inspection activities (including extent of inspections and rate of defects identified)
- Progress/Compliance/Outcomes of audit activities
- Progress/Compliance/Outcomes of follow-up maintenance activities
- Numbers of disconnections due to adherence to Chapter 4 Bush fire risk management, of the NMP.
- Progress with preventative programs (e.g. fitting of LV spreaders, undergrounding/ABC in high risk areas, protection upgrades)
- Progress with other proactive programs (e.g. customer education).

Table 8.1 Bushfire risk management

	Previous Years				Current Year
Year					
Assets in bush fire prone areas checked by pre-summer inspection %					
Private lines in bush fire prone areas checked by pre-summer inspection %					
Fire ignitions by network assets (Number)					
Complaints from the public regarding preparation for the bush fire season (Number)					

9. Public Electrical Safety Awareness

Provide a report on the key issues, adherence to Chapter 3 Public electrical safety awareness, of the NMP, any additional initiatives taken and any associated campaigns and initiatives (1000 words maximum).

The report should also **summarise** the communications strategy (based on the Plan), setting out:

- Communications media and mechanisms/strategies (including key messages and target audience)
- Analysis of effectiveness of the Plan and campaigns.

10. Power Line Crossings of Navigable Waterways

A report is to be provided on power line crossings of navigable waters. Australian Standard AS 6947-2000 Crossing of waterways by electricity infrastructure provides the design requirements for new crossings and the NSW Maritime Power line Crossings of Navigable Waterways Electricity Industry Code provides the maintenance procedures for existing crossings. The report should provide a textual description of activities undertaken to achieve compliance with the requirements of this Code. Operators should also complete Table 10.1.

Table 10.1 Power Line 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					
Submarine Crossings					

* Description of incident to be given below.

Description of the modification carried out including sign replacement to be given below.

11. CEO / Managing Director Declaration

[Name of Distributor]

ELECTRICITY NETWORK PERFORMANCE REPORT [Year]

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.

NAME: .....

SIGNATURE: .....

CHIEF EXECUTIVE OFFICER/ CHIEF OPERATING OFFICER/ MANAGING DIRECTOR

.....

DATE: .....

ATTACHMENT A: Distribution Reliability of Supply: Definitions and Notes

Note 1: Where a distributor is unable to report in accordance with these definitions (e.g. estimating customer numbers interrupted where distributors' information systems do not provide connectivity data that links individual customers to the part of the physical network necessary to accurately calculate reliability measures), this must be noted in the annual report, together with a report on plans and expected timeframe to fix the problem. Where exact data is not available, estimates should be made together with the methodology for making estimates. Where appropriate, estimated reliability ranges could be provided.

Note 2: The following definitions and notes are in accordance with the 'Design, Reliability and Performance Licence Conditions' imposed on distributors by the Minister for Energy and Utilities on 1 August 2005 and revised in December 2007. The report outline is the implementation of this reporting framework, with some necessary additions, by I & I NSW for this annual Electricity Network Performance Report required under the Electricity Supply (Safety and Network Management) Regulation 2008.

A **Distribution Network** is a system of electricity lines and associated equipment at nominal voltages of up to and including 132kV, used for the distribution of electricity.

The distribution network generally ends where the service line connects to the customer's electrical installation. For an overhead service line, this is generally at the first connection on the customer's property. For an underground service line, this is generally at either the pit or pillar located near the property boundary or at the first connection on the customer's property. The distribution network for this purpose does not include the meter, service fuses or other service equipment on the customer's side of the consumer's terminals.

Note: A distribution network does not include assets operating as part of the South-East Australian interconnected transmission network.

A **Distribution Customer** means a metered entity who receives electricity supply at a point of connection from a distribution network and who has been assigned a unique National Metering Identifier (NMI) or an agreed point of supply otherwise. See note 3 below.

Reliability Measures

Index	Definition
SAIDI System Average Interruption Duration Index	The sum of the duration of each sustained customer interruption (in minutes), divided by the total number of distribution customers. SAIDI excludes momentary interruptions.
SAIFI System Average Interruption Frequency Index	The total number of sustained customer interruptions, divided by the total number of distribution customers. SAIFI excludes momentary interruptions (one minute or less duration).
$MAIFI_e$ Momentary Average Interruption Frequency Index	The number of momentary interruption events (faults) per year (of 1 minute or less) divided by the number of customers (averaged over the financial year) of that licence holder. In calculating MAIFIe, each reclose operation of an automatic reclose device is not counted as a separate interruption. The successful automatic restoration of supply after any number of reclose attempts (1, 2, 3, 4 etc) is counted as one Momentary Incident (MAIFIe). The operations of a number of reclose devices in series due to a transient fault should thus be combined and counted as one event. The relevant clauses of scheduled interruptions may be applied.

Notes

1. A customer interruption is any loss of electricity supply to a customer associated with an outage of any part of the electricity supply network of more than 0.5 seconds, including outages affecting a single premise. The customer interruption starts when recorded by equipment such as SCADA or, where such equipment does not exist, at the time of the first customer call relating to the network outage. An interruption may be planned or unplanned. Each individual customer interruption is assigned to the high voltage feeder that carries the supply of electricity to that customer.
2. The number of distribution customers is calculated as the average of the number of customers at the beginning of the reporting period and the number of customers at the end of the reporting period.
3. Un-metered Street Lighting supplies are excluded.. Inactive accounts are excluded.

Reliability Data Sets – Sustained Interruptions

Title	Data Set
Overall interruptions	All sustained interruptions including transmission, directed load shedding, planned and unplanned.
Planned interruptions only	Excludes: • Transmission outages, and • directed load shedding.
Unplanned interruptions	
Normalised	Further excludes those outages which are defined as 'excluded interruptions'.

Notes

1. Distribution network interruptions are disaggregated into planned and unplanned interruptions. Planned interruptions are those for which the required notice has or should have been given.
2. Normalised interruptions are calculated by subtracting allowable excluded interruptions from unplanned interruptions.
3. Details of all events which result in excluded interruptions, including the overall SAIDI impact (distribution unplanned), are to be reported.
4. Sustained Interruption means an *interruption* of a duration in excess of one minute.
5. The following types of *interruptions* (and no others) are *excluded interruptions*:
   (a) an *interruption* of a duration of one minute or less
   (b) an *interruption* resulting from:
      (i) load shedding due to a shortfall in generation
      (ii) a direction or other instrument issued under the *National Electricity Law, Energy and Utilities Administration Act 1987*, the *Essential Services Act 1988* or the *State Emergency and Rescue Management Act 1989* to interrupt the supply of electricity
      (iii) automatic shedding of load under the control of under-frequency relays following the occurrence of a power system under-frequency condition described in the *Power System Security and Reliability Standards* made under the National Electricity Rules
      (iv) a failure of the shared *transmission system*
   (c) a *planned interruption*

(d) any *interruption* to the supply of electricity on a licence holder's distribution system which commences on a *major event day*

(e) an *interruption* caused by a customer's electrical installation or failure of that electrical installation.

6. Major Event Day

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Explanation and Purpose

The following process ("**Beta Method**") is used to identify *major event days* which are to be excluded from the *reliability standards* and *individual feeder standards*.

Its purpose is to allow major events to be studied separately from daily operation, and in the process, to better reveal trends in a daily operation that would be hidden by the large statistical effect of major events.

A *major event day* under the Beta Method is one in which the daily total system (i.e. not on a *feeder type basis*) *SAIDI* value ("**daily SAIDI value**") exceeds a threshold value, TMED. The SAIDI is used as the basis of determining whether a day is a *major event day* since it leads to consistent results regardless of utility size and because *SAIDI* is a good indicator of operational and design stress.

In calculating the daily total system *SAIDI*, any *interruption* that spans multiple days is deemed to accrue on the day on which *the interruption* begins. That is, all minutes without supply resulting from an *interruption* beginning on a *major event day* are deemed to have occurred in the *major event day*, including those minutes without supply occurring on following days.

Determining a major event day

The *major event day* identification threshold value T_{MED} is calculated at the end of each *financial year* for each *distributor* for use during the next *financial year* as follows:

a) Collect daily SAIDI values (Exclude transmission and directed load shedding but include planned outages.) for the last five *financial years*. If fewer than five years of historical data are available, use all available historical data for the lesser period.

b) Only those days that have a daily *SAIDI* value will be used to calculated the T_{MED} (i.e. days that did not have any *interruptions* are not included).

c) Take the natural logarithm (ln) of each daily SAIDI value in the data set.

d) Find α (Alpha), the average of the logarithms (also known as the log-average) of the data set.

e) Find β (Beta), the standard deviation of the logarithms (also knows as the log-standard deviation) of the data set.

f) Complete the major event day threshold T_{MED} using the following equation:

g) $T_{MED} = e^{(\alpha + 2.5\beta)}$

h) Any day with daily *SAIDI* value greater than the threshold value TMED which occurs during the subsequent *financial year* is classified as a *major event day*.

Treatment of a major event day

To avoid doubt, a *major event day,* and all *interruptions* beginning on that day, are excluded from the calculation of a *distributor's SAIDI* and *SAIFI* in respect of all of its *feeder types*.

Feeder Classifications

Feeder category	Description
CBD	A feeder supplying predominantly commercial, high-rise buildings, supplied by a predominantly underground distribution network containing significant interconnection and redundancy when compared to urban areas.
Urban	A feeder, which is not a CBD feeder, with actual maximum demand over the reporting period per total feeder route length greater than 0.3 MVA/km.
Short Rural	A feeder which is not a CBD or Urban feeder with total feeder route length less than 200 km.
Long Rural	A feeder which is not a CBD or Urban feeder with total feeder route length greater than 200 km.

Notes

1. Short Rural feeders may include feeders in urban areas with low load densities.
2. Back up feeders should be given the same classification as the normal supply feeder.

ATTACHMENT B: Transmission Reliability: Network Indices

A **Transmission Network** is a system of electricity lines and associated equipment operating at nominal voltages of 220 kV and above plus:

a) any part of a network operating at nominal voltages between 66 kV and 220 kV that operates in parallel to and provides support to the higher voltage transmission network

b) any part of a network operating at nominal voltages between 66 kV and 220 kV that is not referred to in paragraph (a) but is deemed by the AER to be part of the transmission network.

Indices:

- **Transmission Circuit Availability (%):**

  Transmission circuit availability is measured as a percentage of the total possible circuit hours that would be available if no outages of circuits occurred.

  $$\% \text{ Availability} = 1 - \frac{\text{Sum (Number of transmission circuit outage hours)}}{\text{Total possible circuit hours available}}$$

  Circuits include regulated overhead lines and underground transmission cables.

  Number of transmission circuit outage hours means in relation to each circuit, the number of hours during each reporting period in which a circuit was unavailable because of planned, un-planned, forced and emergency outages.

  Total possible circuit hours available is the number of circuits multiplied by 8760 hours.

- **System Reliability (Un-Planned Off Supply Event Numbers):**

  System reliability is measured by numbers of off supply events, either as:

– Measure A: Number of events per annum greater than 0.05 up to 0.40 *system minutes*; and

– Measure B: Number of events per annum greater than 0.40 system minutes;

OR

– Measure C: Total number of events per annum.

$$\textit{System minutes} = \frac{\text{(Total MWh unsupplied x 60)}}{\text{MW peak demand}}$$

MWh unsupplied is the energy not supplied during the 'off supply' period.

Where restoration or loss of supply is multi-staged, the total MWh unsupplied is the sum of MWh unsupplied over the various stages until restoration of full supply.

MW peak demand means the maximum aggregated electricity demand recorded at entry points to the TransGrid transmission network and interconnector connection points during the year.

Note: 1. TransGrid will report Measures A & B

2. EnergyAustralia will report Measure C.

- **Outage (Un-Planned) Duration Average (Minutes)**

$$\text{Measure} = \frac{\text{Aggregate minutes duration of all unplanned plant outages}}{\text{Number of unplanned plant outage events}}$$

The summation of all the unplanned outage duration times for the reporting period, divided by the number of unplanned plant outage events during the period, where:

Outage duration time for an item of plant starts when an outage occurs and ends when TransGrid either returns the item to service or the item is repaired, switching instructions are completed and the item is ready for energisation.

- **Unplanned Off Supply Events for Transmission Connection Points (Number and Duration)**

Operators are to provide a tabulated list of 'off supply' events.

Exclusions:

Outage data does not include transient outages of less than one minute; outages caused by a third party; force majeure events. Long duration outages are capped, EnergyAustralia at 14 days and TransGrid at 7 days.

Connection Point:

"The agreed point of supply established between Network Service Provider(s) and another Registered Participant, Non-Registered Customer or franchise customer."

Note: 1. The definition for Connection Point is taken from the National Electricity Rules and the terms within the definition have the meanings defined in that Code.

2. The connection points for the EnergyAustralia distribution network are not to be included.

ATTACHMENT C: Safety

Annual Reporting of Accidents and Incidents

The report (in accordance with this Outline and the accompanying tables) should summarise the number and type of electrical network accidents and incidents that have occurred during the year. The report should be a summary of reports already forwarded to the Department during the year and should indicate whether the injured persons or people placed at risk were network workers, contractors, ASPs or members of the public. The report should indicate the causes and contributory causes of the incidents; and for each cause, indicate the measures taken to prevent similar incidents occurring in the future.

Reporting is to generally follow the Department's Significant Electrical Network Incident (SENI) reporting arrangements which commenced in April 2012.

ATTACHMENT D: Definitions

D1 Network Safety Context

ASP: A person contracted directly by a distribution customer to undertake contestable services, includes distributor employees or contractors carrying out contestable services.

Contestable Service: Means:

a) any service provided for the connection of customers to the *electricity network*, and

b) any service comprising work relating to an extension of an *electricity network* or an increase in the capacity of an *electricity network*.

Distributor: Means the owner, controller or operator of an *electricity distribution network*.

Distributor Contractor: Means persons employed by contractors or sub-contractors engaged by a *Distributor* to carry out work for the *Distributor* in any capacity. ASPs when contracted by the *distributor* to carry out network work shall be included in this category.

Distributor Employee: Means a person engaged by a *Distributor* under a contract of employment or apprenticeship. This may include permanent, part-time, casual or temporary staff.

Network Worker: Means persons employed or contracted by the *Distributor* (includes *Distributor Employees* and *Network Contractors*).

Public: Means persons other than Network Workers and ASPs.

D2 Customer Installations Context

Audit is defined as a review of the distributor's system of ensuring compliance with Legislation, Standards and Service and Installation Rules, installations, installing contractors and inspectors, as a check on the operation of installation safety management systems.

Major Safety Breach in a customer's installation occurs when an inspection or test of an electrical installation by or for the distributor detects a serious departure from the SAA Wiring Rules presenting an immediate danger to life, health or property. At least one of the following would be present:

- Exposed live parts
- Earthing system defects
- Insufficient insulation resistance
- Overloaded equipment
- Inadequate protection
- Incorrect polarity
- Unsuitable equipment.

Customer Installation Shock is defined as any electric shock reported to the distributor as received by a person on a customer's premises and not involving the electricity supply network.
Note: A shock received as a result of a faulty network neutral connection is to be reported as a Network Incident/Accident. Faulty neutral connections at the point of attachment or customer's switchboard are considered to not involve the electricity supply network and therefore should be included here.

Inspection is defined as being an especially careful examination by a person representing the distributor who has sufficient knowledge and experience. It may include testing where appropriate, of completed Authorised Work to ensure it complies with the Service and Installation Rules and the distributor's network standards and specifications. Inspections are generally carried out on an audit basis in accordance with the past performance results of the installing contractor.

Guidelines for the reporting of Demand Management

- Demand Management Projects and Negotiation Outcomes to be Reported:
  - Projects that have been investigated by the distributor in response to expected network constraints and which have either been approved for implementation (Table 3.5) or determined to be non viable (Table 3.6)
  - Projects are to be reported once only (in the year in which implementation commenced)
  - Projects are only to be reported if they have resulted in an actual reduction in demand on the network. Where reductions are not permanent, the expected duration of the reduction must be indicated
  - Negotiations with existing or new customers which result in actual reductions in the customer's demand requirements may be reported as a Negotiation Outcome
  - Capacitor installations located either at the customer's premises or on the network may be reported as they will provide a reduction in kVA demand, and will also provide loss reduction. Reporting is only permitted, however, where the installation occurs as a direct result of intervention by the distributor
  - Expenditure on Frequency Injection (FI) control systems may be reported if the installation does achieve real demand reduction results. For example simple replacement of time clocks with an FI system may perhaps more appropriately be regarded as simply continuation of the "status quo" and be without any overall additional demand reduction and would not be reported.
- Demand Management Activities not to be Reported:
  - Network configuration changes (e.g. alter feeder open points) are not to be reported, as negligible demand reduction and expenditure is likely to occur
  - Acceptance of additional risk and therefore deferring projects does not reduce demand, and is not to be reported
  - Discussions which reduce the stated demand of the customer by the clarification of loading information, but do not change the type or size of actual equipment to be connected are not DM and should not be reported
  - Investigations which have not progressed to approval or rejection are not to be reported in this report (information on these may be required in other forums).
- Costs and Benefits, Reporting Format:
  - Costs and benefits to be reported in Present Value (PV) terms using Treasury guidelines and best estimates of years of deferment, and expected savings
  - Capital deferral and operating expenditure savings are to be combined. Operating expenditure savings are generally small relative to capital deferral and can be negative where projects are deferred and older assets must be maintained
  - Where the period of deferment is altered due to external causes, i.e. change in general economic conditions, then no alteration in reporting is required. However, a new strategy which further extends the period of deferment of a particular project, may be reported, list only the additional incremental savings
  - Projects which continue over several years are to be reported in Table 3.5 in one year only (preferably in the year of commencement of implementation). All costs which are estimated to be incurred in the future should be included in the PV figure for costs of the strategy
  - Some projects may have benefits which are difficult to quantify. These intangible benefits should be described in qualitative terms.
- Reporting on Non-viable Projects:

- A number of investigations may not proceed. These are also to be reported in line with the obligations to carry out DM investigations before investing in network expansion. They give an indication of the level of DM activity being undertaken.