# Mark up of the NSW distribution licence conditions for the AEMC's scenarios for distribution reliability in NSW

## Review of distribution reliability outcomes and standards - NSW workstream

8 June 2012

# DESIGN, RELIABILITY AND PERFORMANCE

# LICENCE CONDITIONS

**for**

# DISTRIBUTION NETWORK SERVICE PROVIDERS

## Scenario 1: Modest reduction in reliability outcomes

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**MINISTER FOR ENERGY**

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## EXPLANATORY NOTE

### Purpose of the design, reliability and performance conditions:

On 1 August 2005, the then Minister for Energy imposed additional conditions relating to reliability performance on licences held by distribution network service providers under the *Electricity Supply Act 1995*.

Following a review of the licence conditions conducted by the *Minister*, those conditions are being replaced with updated and revised conditions relating to reliability performance, with effect from 1 December 2007.

The purpose of the conditions is to facilitate the delivery of a safe and reliable supply of electricity. The conditions impose design, reliability and performance standards on distribution network service providers. Distribution network service providers will be required to report to the *Minister* to ensure compliance with the conditions. The new standards are as follows:

### Design planning criteria:

The *design planning criteria* set out:

- input standards to be used by a *licence holder* in planning its network; and
- requirements for load-forecasting and contingency-planning methodologies intended to achieve operational outcomes.

The baseline levels of planned redundancy required under the *design planning criteria* will underpin the *licence holder*'s plans and strategies designed to ensure, as far as is reasonably practicable, that it:

- meets the *reliability standards*; and
- provides an adequate supply of electricity with an appropriate level of redundancy, consistent with its regulatory obligations.

### Reliability standards:

The purposes of the *reliability standards* are to:

- define minimum average reliability performance, by *feeder type*, for a distribution network service provider across its distribution network; and
- provide a basis against which a distribution network service provider's reliability performance can be assessed.

### Individual feeder standards:

The purposes of the *individual feeder standards* are to:

- specify minimum standards of reliability performance for individual feeders;

- require a distribution network service provider to focus continually on improving the reliability of its feeders; and
- enable the reliability performance of feeders to be monitored over time.

**Customer service standards:**

The purpose of the *customer service standards* is to provide financial recognition to eligible *customer*s who have experienced poor reliability of supply from a distribution network service provider.

**Commencement:**

The licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Electricity Supply Act 1995*. The conditions are imposed on 1 December 2007 and take effect from that date, except where expressly stated otherwise.

**Relationship with existing conditions and other obligations:**

These conditions are additional to conditions that the *Minister* has previously imposed on licences held by distribution network service providers and licence conditions imposed under the *Electricity Supply Act 1995* and other regulatory instruments, other than the conditions relating to reliability performance imposed by the Minister on 1 August 2005. These conditions replace the design, reliability and performance licence conditions imposed by the Minister on 1 August 2005 (as amended on 1 July 2006).

These conditions are also supplementary to obligations imposed on distribution network service providers by the *Electricity Supply Act 1995*, the *Electricity Supply (General) Regulation 2001*, the *Electricity Supply (Safety and Network Management) Regulation 2002*, and other regulatory instruments.

**Network management generally**

Network management requires long-term planning, investment decisions and prioritisation of work to ensure, as far as is reasonably practicable, reliable supply. The *licence holder* has discretion to plan its investment for compliance with these licence conditions to suit its individual circumstances.

These conditions do not reduce or alter the responsibility of *licence holder*s under their Network Management Plans to assure delivery of a safe and reliable supply. Design Planning Criteria described in these conditions provide minimum standards for various categories of network elements.

Higher standards may apply when it is prudent to do so. Capital investment plans cannot be limited by exclusive adherence to input standards. Key operating and risk management requirements to meet reliability outcomes also need to be addressed when developing capital plans.

**Enforcement:**

These conditions are enforceable under the *Electricity Supply Act 1995* by *IPART* and the *Minister*. These conditions are not intended to create standards which are enforceable against a *licence holder* by individual *customer*s.

**Consultation:**

Before imposing these conditions the *Minister* undertook consultation with stakeholders including the *licence holder*s, *IPART* and the *Minister* administering the *Protection of the Environment Administration Act 1991*. The *Minister* has given due consideration to submissions received during consultation.

**Reporting:**

Performance and audit reports will be required under these licence condition. Reliability performance reporting will continue to be implemented under the *Electricity Supply (Safety and Network Management) Regulation 2002*.

**Review:**

It is intended that these licence conditions will be reviewed by the *Minister* by June 2010 with any changes or amendments to become effective from 1 July 2014 to coincide with the commencement of the 2014 - 2019 regulatory period.

The *Minister* may, at his discretion, review the licence conditions at other times in accordance with the *Electricity Supply Act 1995.*

## DESIGN, RELIABILITY AND PERFORMANCE CONDITIONS

### 14. Design planning criteria

**14.1** A *licence holder* must develop and implement a plan to comply with the applicable *design planning criteria* in Schedule 1 in relation to all new *network elements* for which planning commences after the commencement of these conditions.

**14.2** A *licence holder* must be, in relation to all existing *network elements*:

- as compliant as reasonably practicable with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2014; and
- fully compliant with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2019.

**14.3** In undertaking network planning processes, a *licence holder* must adopt methodologies:

- for determining the *forecast demand* and *expected demand* (as applicable); and
- for contingency planning for credible *network element* maintenance and/or failure;

which ensure that, as far as is reasonably practicable, the *thermal capacity* of *network elements* is sufficient to meet the actual load through the *network elements* under the following conditions:

- all *network elements* in service, for *network elements* required to meet *N security standards* in Schedule 1;
- *credible contingencies* involving any one *network element* out of service, for *network elements* required to meet *N-1 security standards* in Schedule 1, except as permitted by Schedule 1; and
- *credible contingencies* involving any two *network elements* out of service, for *network elements* required to meet *N-2 security standards* in Schedule 1, except as permitted by Schedule 1.

**14.4** For Country Energy *sub-transmission* lines, 10 *MVA* in Schedule 1 is replaced by 15 *MVA*.

**14.5** For Country Energy zone *substations*, 10 *MVA* in Schedule 1 is replaced by 15 *MVA* until 30 June 2014.

**14.6** A *licence holder* may only apply higher design planning criteria where the *licence holder* considers it is prudent to do so. When considering what is prudent, the *licence holder* must take into account:

- the costs and benefits of the revised *design planning criteria*;

- the actual configuration and limitations of *the network elements* (which may not be reflected in Schedule 1);
- the specific condition of the *network elements* in service; and
- the likely impact of alternative investment options on the reliability of the *network elements*.

*Note: For example very large or geographically and electrically remote zone substations may prudently have N-1 redundancy for all forecast demand levels (rather than 99% of time as described in Schedule 1).*

**14.7** A *licence holder* may agree with a *customer* to apply higher or lower standards of service at the *customer*'s point of supply than the *design planning criteria* relevant to that *customer*. In cases where negotiations are with developers rather than the ultimate end-use *customer*, the *licence holder* must take into account anticipated end-use *customer* expectations and asset management considerations before agreeing to apply higher or lower standards of service at the *customer's* point of supply. Where a lower standard of service is agreed with a *customer*, compliance with the *design planning criteria* is not required at the *customer's* point of supply.

## 15. Reliability standards

15.1 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 75% confidence level, that it will not exceed in any *financial year* the *SAIDI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

15.2 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 75% confidence level, that it will not exceed in any *financial year* the *SAIFI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

~~Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIDI average standards* that apply to its *feeder types*.~~

~~15.2 Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIFI average standards* that apply to its *feeder types*.~~

15.3 The requirements under this condition 15 are the *reliability standards* and take effect from 1 December 2007.

15.4 The *reliability standards* for the 6 month period from 1 January 2008 to 30 June 2008, are to be calculated by applying 1/2 of the *SAIDI average standards* and 1/2 of the *SAIFI average standards.*

## 16. Individual feeder performance

16.1 This condition applies where one or more of the feeders of a *licence holder* exceed the relevant *individual feeder standards* for any 12 month period ending at the end of March, June, September or December, when *excluded interruptions* are disregarded.

16.2 Subject to condition 16.5, ~~A~~a *licence holder* must:

(a) immediately investigate the causes for each *feeder* exceeding the *individual feeder standards*;

(b) by the end of the quarter following the quarter in which the *feeder* first exceeded the *individual feeder standards*, complete an investigation report identifying the causes and as appropriate, any action required to improve the performance of each feeder to the *individual feeder standards*;

(c) complete any operational actions identified in the investigation report to improve the performance of each feeder to the *individual feeder standards* by the end of the third quarter following the quarter in which each feeder first exceeded the *individual feeder standards*;

(d) except as permitted by condition 16.2(e), 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*;

(e) where non-network solutions would provide acceptable alternative outcomes for *customer*s in a more cost-effective manner, these solutions may be adopted where they are separately justified in the investigation report;

(f) ensure that the implementation timetable for the network project plan or alternative non-network solutions is as short as is reasonably practicable.

16.3 The investigation report is to include a documented rectification plan where action is found to be warranted in order to improve the performance of a feeder to the *individual feeder* standards. The action that is required may involve work to other network elements, or may involve only repair or maintenance work where capital works are not warranted taking into account any one-off events and previous performance trends.

16.4 The requirements under this condition 16 take effect from 1 January 2008.

16.5 In any *financial year*, the number of feeders in relation to which a *licence holder* is required to complete an investigation report and take action to improve the performance of the feeder to meet the *individual feeder standards* is limited to the worst performing 4% of total feeders, as determined by the *licence holder* on the basis of the variance to the relevant *individual feeder standard*. In relation to any feeders over this limit, the *licence holder* must investigate the cause of the feeder exceeding the *individual feeder standard* in accordance with condition 16.2(a), but conditions 16.2(b) to (f) and 16.3 do not apply.

## 17. Customer service standards

17.1 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption duration standard* at the *customer*'s premises and the *customer* has made a claim to the *licence holder* within three months of the interruption.

17.2 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption frequency standard* at the *customer*'s premises in a *financial year* and the *customer* has made

a claim to the *licence holder* within three months of the end of the *financial year* to which the interruptions relate.

17.3 A *licence holder* must determine a claim for payment under condition 17, and notify the *customer* of the determination in writing, within one month of receipt of a claim. For *customer*s eligible for payment, the notice of determination must include the amount to be paid, the manner of payment and the timing of payment. Where the claim is not paid (whether in part or in full), the notice of determination must include reasons for the decision.

17.4 A *licence holder* is required to take reasonable steps to make *customer*s aware of the availability of payments on the terms set out in condition 17. Reasonable steps include, as a minimum, publication of information on the *licence holder's* website and annual newspaper advertisements. On request from a *customer*, a licence holder must provide written information on the availability of payments on the terms set out in condition 17.

17.5 A *licence holder* is required to make only one payment of $80 to a *customer* per premises in a financial year for exceeding the *interruption frequency standard*.

17.6 A *licence holder* is required to pay no more than $320 under condition 17 to a *customer* per premises in any one financial year.

17.7 A payment under this condition does not:

(a) In any way alter or diminish any rights that a *customer* may have against any person under any trade practices or other applicable legislation, common law or contract;

(b) Represent any admission of legal liability by the *licence holder*; or

(c) Alter, vary or exclude the operation of the section 119 of the *National Electricity Law* or any other statutory limitations on liability or immunities applicable to a *licence holder*.

17.8 The requirements under this condition 17 (aside from condition 17.4) take effect from 1 December 2007.

## 18. Performance monitoring and reporting

### *Design planning criteria report*

18.1 Subject to condition 18.17 a *licence holder* must submit an annual *design planning criteria* report to the *Minister* by 30 September each year in relation to the following matters:

(a) The *licence holder*'s strategy and plan to comply with condition 14 for each class of *network element* in Schedule 1;

(b) Progress against the *licence holder*'s plan for each class of *network element*;

(c) For sub-transmission lines, sub-transmission substations and zone substations, each of its *network elements* that will not, from a planning perspective, comply with condition 14.1 or condition 14.2;

(d) For distribution feeders and substations, a summary report for each class of network element that will not, from a planning perspective, comply with condition 14.1 or condition 14.2; and

(e) any other matter formally notified by the *Minister* in writing.

18.1A Conditions 18.1 (c) and (d) do not apply to *network elements* during routine maintenance, provided planning requirements are met at all other times and the *licence holder*, acting reasonably, schedules routine maintenance (and develops contingency plans) to minimise the impact of outages in the event of a *credible contingency* during routine maintenance.

***Reliability standards report***

18.2 Subject to condition 18.17, a *licence holder* must submit an annual reliability standards report to the *Minister* by 30 September each year.

18.3 Subject to condition 18.17, each reliability standards report must include the following matters for the previous *financial year*:

(a) performance against the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(b) a detailed description of the methodologies adopted by the *licence holder* for determining its level of confidence of compliance with the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(c) evidence demonstrating that the *licence holder* complies with conditions 15.1 and 15.2; and

(d) any other matter formally notified by the *Minister* in writing.

~~Subject to condition 18.17 a *licence holder* must submit a quarterly reliability standards report to the *Minister* within one month of the end of each *quarter*.~~

~~18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous 12 month period to the end of that *quarter*:~~

~~(a) performance against the pro-rata *SAIDI average standards* and pro-rata *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;~~

~~(b) reasons for any non-compliance by the *licence holder* with the pro-rata *reliability standards* and plans to improve performance; and~~

~~(c) any other matter formally notified by the *Minister* in writing.~~

***Individual feeder standards report***

18.4 Subject to condition 18.17 a *licence holder* must submit, within one month of the end of each *quarter*, a quarterly *individual feeder standards* report to the *Minister* on feeders that exceeded the relevant *individual feeder standards* during the previous 12 month period to the end of that quarter, together with, for each feeder:

(a) the date at which the feeder first exceeded the relevant *individual feeder standard*, together with the actual *SAIDI* and *SAIFI* performance of the feeder for the 12 month period;

(b) details of the remedial action that the *licence holder* intends taking, or has taken, to improve the performance of those feeders; and

(c) the date of completion, or the date of planned completion, of the remedial action plan.

***Customer service standards report***

18.5 Subject to condition 18.17 a *licence holder* must submit a quarterly *customer service standards* report to the *Minister* on the following matters within one month of the end of each *quarter*, for the preceding *quarter* and for the previous 12 month period to the end of that *quarter:*

(a) the number of payments given under condition 17 to *customer*s by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1

(b) the number of claims not paid (whether in part or full) under condition 17 by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1.

***Major incident reporting***

18.6 A *licence holder* must report to the *Minister* within 24 hours any major network incidents involving significant injury to persons, loss of property or widespread supply interruptions. High level severity incidents are to be advised immediately.

***Independent audit report***

18.7 Subject to condition 18.17, an independent audit must be conducted after the end of each financial year to audit the *licence holder*'s performance against the:

(a) *design planning criteria;*

(b) *reliability standards*;

(c) *individual feeder standards*; and

(d) *customer service standards*.

18.8 A *licence holder* is required to nominate a person to conduct the independent audit by notice in writing to IPART. The *licence holder* must give notice in accordance with any time specified by IPART in writing to the *licence holder*, or, if no time has been specified, no later than 1 July of the year in which the report is to be submitted to the *Minister* and IPART.

18.9 The person nominated is to be a person who is:

(a) independent of the *licence holder*; and

(b) competent to exercise the functions of an auditor in respect of the matters to be audited.

18.10 The nomination of an auditor by a *licence holder* ceases to have effect if IPART advises the *licence holder*, by notice in writing, that the nomination is not acceptable or has ceased to be acceptable.

18.11 IPART may nominate an auditor to carry out an audit, and the person so nominated is taken to have been nominated by the *licence holder*, if:

(a) the nomination of an auditor by the *licence holder* ceases to have effect; or

(b) the *licence holder* fails to nominate an auditor to carry out the audit in accordance with any requirements specified by IPART by notice in writing to the *licence holder*.

18.12 Subject to condition 18.17 a *licence holder* must provide a copy of the auditor's report by 30 September each year to IPART and the *Minister*.

***General matters concerning reports***

18.13 Where the *Minister* determines the format of a report required by this condition, a *licence holder* must submit the report in that format.

18.14 The *Minister* may from time to time establish guidelines to be followed by the *licence holder* in complying with reports required by this condition and the *licence holder* must comply with any such guidelines.

18.15 The *Minister* may from time to time require, by notice in writing to the *licence holder*, further reports relating to these licence conditions including, without limitation, reports relating to capital expenditure works, network refurbishment and maintenance programs.

18.16 A *licence holder* must provide a report submitted to the *Minister* under this condition to IPART, if requested to do so by IPART by notice in writing.

***Timing of initial reports***

18.17 Reports against the new standards will be submitted as follows:

(a) Within three months of the end of each financial year on compliance with *design planning criteria*, the first being by 30 September 2008;

(b) Within three months of the end of each financial year, for each annual audit report, the first being by 30 September 2008; and

(c) Within one month of the end of each quarter for reports on *reliability standards*, *individual feeder standards* and *customer service standards*, the first being by 31 January 2008.

## 19 Interpretation and definitions

19.1 These licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Act*.

19.2 These licence conditions replace the design, reliability and performance licence conditions imposed by the *Minister* on distribution network service providers on 1 August 2005 (as amended on 1 July 2006).

19.3 These licence conditions are in addition to other licence conditions imposed by the *Minister*, licence conditions under the *Act* or *Regulations*, and other obligations imposed on *licence holder*s by the *Act* and *Regulations*.

19.4 These conditions are imposed on 1 December 2007 and take effect from that date, except where otherwise stated in the conditions or the Schedules to the conditions.

19.5 Expressions used in these licence conditions that are defined in the *Act* or the *Regulations* made under the *Act* have, unless otherwise stated, the meanings set out in the *Act* or the *Regulations*.

19.6 The Explanatory Note to these licence conditions does not form part of the licence conditions.

19.7 Footnotes contained in these licence conditions do form part of the licence conditions.

19.8 In these licence conditions:

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| *Act* | means the *Electricity Supply Act 1995.* |
| *Best practice repair time* | means the minimum practicable time period to restore supply. |
| *CBD* | means the area within the City of Sydney that is supplied by the triplex 11kV cable system. |
| *CBD feeder* | means a feeder supplying predominantly commercial high-rise buildings, supplied by the City of Sydney's triplex 11kV cable system. |
| *Credible contingency* | means an outage on one line or item of *electrical apparatus*, or a coincident outage on more than one line and /or items of *electrical apparatus* that a *licence holder*, acting reasonably, could expect to arise as a result of a single electrical failure or mechanical event affecting those lines or items.<br><br>*Note: Credible contingencies are generally limited to major items of equipment with significant probabilities of failure or outage.* |

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| *customer* | means a wholesale customer or a retail customer in the *licence holder*'s distribution district. |
| *customer service standards* | means the customer service standards in Schedule 5 to these conditions. |
| *design planning criteria* | means the load magnitude, security standard and customer interruption time specified in Schedule 1 to these conditions. |
| *distribution feeder* | means a high-voltage line operating over 1000V and at or below 22kV that connects between a zone substation and a distribution substation, excluding short radial sections off the trunk feeder used to supply a small number of distribution substations (eg a spur line into a peninsula or valley). |
| *distribution substation* | means a *substation* forming part of the distribution system, which provides the network link between a *distribution feeder* and elements of the distribution system below 1000V. |
| *electrical apparatus* | means a transformer within a *substation* |
| *Emergency service organisation* | has the same meaning as in section 3 of the *State Emergency and Rescue Management Act 1989.* |
| *excluded interruptions* | means excluded interruptions listed in Schedule 4 to these conditions. |
| *expected demand* | means peak demand expected to occur for *distribution feeders* and *distribution substations*, based on:<br>• loads connected or expected to be connected, and/or<br>• actual demand and/or<br>• underlying growth rates |
| *feeder* | means a *distribution feeder.* |
| *feeder type* | means a *CBD feeder*, *long rural feeder*, *short rural feeder* or *urban feeder* as the case may be. |
| *financial year* | means a year commencing 1 July and ending 30 June. |
| *forecast demand* | means the *licence holder*'s seasonal peak demand forecast with 50% probability of being exceeded |

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| | (i.e. 1 in 2 years), normally performed on an annual basis, and based on underlying growth rates plus an allowance for spot loads and transfers. |
| *GST* | has the meaning it has in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth). |
| *individual feeder standards* | means the individual feeder standards in Schedule 3 to these conditions. |
| *interruption* | means any temporary unavailability of electricity supply to a *customer* associated with an outage of the distribution system including outages affecting a single premises, but does not include disconnection. |
| *interruption duration standards* | means the interruption duration standards set out in Schedule 5 to these conditions. |
| *interruption frequency standards* | means the interruption frequency standards set out in Schedule 5 to these conditions. |
| *IPART* | means the Independent Pricing and Regulatory Tribunal established under the *Independent Pricing and Regulatory Tribunal Act 1992*. |
| *licence holder* | means the holder of a distribution network service provider's licence. |
| *local government area* | has the same meaning as in the *Local Government Act 1993* |
| *long rural feeder* | means a feeder with a total feeder length greater than 200 km which is not a *CBD feeder* or an *urban feeder*. |
| *major event day* | means a day determined under Schedule 6. |
| *metropolitan* | means the areas comprising the *local government areas* and *suburbs* listed in Schedule 7 |
| *Minister* | means the Minister administering the *Act*. |
| *MVA* | means mega volt amperes. |
| *N, N-1, N-2* | N is designing the *network elements* for no *credible contingencies;* N-1 is designing for a single *credible contingency* (normally involving an outage of one line or one item of *electrical* |

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| | *apparatus* within a *substation*) and N-2 is designing for *credible contingencies* (normally involving outages of two lines or two items of *electrical apparatus* within a *substation*).<br><br>The relevant number of *credible contingencies* will result in:<br>▪ *interruption* to *customer*s up to the time indicated in Schedule 1;<br>▪ acceptable voltage levels being maintained at the secondary busbars of transformers;<br>▪ remaining in-service *network elements* and *electrical apparatus* being loaded within their thermal limits. |
| *network elements* | means the following parts of a *licence holder*'s distribution system: *sub-transmission lines, sub-transmission substations, zone substations, distribution feeders and distribution substations*. |
| *non-metropolitan* | means areas in New South Wales other than areas defined as *metropolitan* |
| *non-urban* | means areas which are not *urban*. |
| *planned interruption* | means an *interruption* for which advance notice has been provided or which has been requested by a *customer*. |
| *quarter* | means a period of three months commencing 1 January, 1 April, 1 July and 1 October as the case may be. |
| *regional centre* | means:<br><br>until 30 June 2014, the towns of Tweed Heads, Wagga Wagga, Coffs Harbour (including Sawtell), Albury, Port Macquarie, Queanbeyan, Orange, Tamworth, Dubbo, Bathurst and Lismore; and<br><br>from 1 July 2014, the towns listed above as well as the towns of Goulburn, Forster-Tuncurry, Armidale, Broken Hill, Grafton, Griffith, Ballina and Taree. |
| *Regulations* | means Regulations made under the *Act*. |
| *regulatory period* | means the period for which the economic regulator provides for a price path for network income and for the purpose of this document will be taken to be a period of five years. |

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| *reliability standards* | means the requirements imposed under condition 15 of these conditions. |
| *SAIDI* | means the sum of the duration of each sustained *customer* interruption (measured in minutes), divided by the total number of *customer*s (averaged over the *financial year*) of the *licence holder*. |
| *SAIFI* | means the total number of sustained *customer* interruptions divided by the total number of *customer*s (averaged over the *financial year*) of that *licence holder*. |
| *SAIDI average standards* | means the standards set out in item 1, Schedule 2. |
| *SAIFI average standards* | means the standards set out in item 2, Schedule 2. |
| *SAIDI individual feeder standards* | means the standards set out in item 1, Schedule 3. |
| *SAIFI individual feeder standards* | means the standards set out in item 2, Schedule 3. |
| *Security Standards* | means the *Security Standards* specified in Schedule 1 which require the network to be planned to supply all *forecast demand* or *expected demand* (as applicable), except where varied by the notes to Schedule 1, within the *thermal capacity* of all *network elements* and maintain voltage levels within limits published by *licence holder*s with:<br>• all lines and *electrical apparatus* in service, N<br>• outages of lines and *electrical apparatus* arising from any one *credible contingency* N-1<br>• outages of lines and *electrical apparatus* arising from any two *credible contingencies*, N-2 |
| *Severe thunderstorm or Severe weather* | *means an event set out in Column 2 or Column 3 of table 2* |
| *short rural feeder* | means a feeder with a total feeder route length less than 200 km, and which is not a *CBD feeder* or an *urban feeder*. |
| *suburb* | means an area defined by boundaries determined and gazetted by the Geographical Names Board of New South Wales. |

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| *substation* | means a part of an electrical network, confined to a given area, mainly including ends of transmission or distribution lines, electrical switchgear and control gear, and one or more transformers. A substation generally includes safety or control devices (for example protection). |
| *sub-transmission* | means those parts of the distribution system (including power lines and towers, cables and substations as the case may be) that transfer electricity from the regional bulk supply points supplying areas of consumption to individual *zone substations*, operating at nominal voltages between 132 kV and 33 kV inclusive, that may also fulfil a transmission role by operating in parallel to, and providing support to, the higher voltage transmission network. |
| *sub-transmission line – Overhead* | means *sub-transmission* generally of overhead construction which would reasonably be expected to have a restoration time of less than 8 hours following a *credible contingency.* |
| *sub-transmission line – Underground* | means *sub-transmission* generally of underground construction, or *sub-transmission overhead* with a section of underground construction which would reasonably be expected to have a restoration time in excess of 8 hours following a *credible contingency.* |
| *table 1* | means Table 1 in Schedule 5 to these conditions. |
| *table 2* | means Table 2 in Schedule 5 to these conditions. |
| *thermal capacity* | means the maximum allowable thermal capability of a particular *network element*, taking into consideration the supply security level (N, N-1, N-2) required of the *network element(s)* and having regard to the technical and economic life of the *network element(s)*. When considering *thermal capacity* of more than one *network element* operating in parallel, the actual load sharing characteristics of the parallel network elements should be considered. |
| *third party* | does not include a person or body contracted or authorised by the *licence holder* to take action, or any animal or plant life. |

| | |
|---|---|
| *urban feeder* | means a feeder with actual maximum demand over the reporting period per total feeder route length greater than 0.3 *MVA*/km and which is not a *CBD Feeder*. |
| *urban* | For EnergyAustralia and Integral Energy, means an area where the majority of land is zoned for residential and/or commercial and/or industrial use within a town or city type of area which is contiguous with other similar town or city areas with an aggregated population of at least 5,000 people.<br><br>For Country Energy, means areas within a *regional centre*. |
| *zone substation* | means a *substation* forming part of the distribution system, which provides the network link between the *sub-transmission* network and elements of the distribution system at or below 22kV. |

## SCHEDULE 1 DESIGN PLANNING CRITERIA

| ***Network Element*** | ***Load Type*** | ***Forecast Demand or Expected Demand*** | ***Security Standard*** | ***Customer Interruption Time*** |
|---|---|---|---|---|
| Sub Transmission Line | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ 10 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < 10 *MVA* | N[2] | *Best practice repair time* |
| Sub Transmission Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | Any | N-1[1] | < 1 minute |
| Zone Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ 10*MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < 10 *MVA* | N[2] | *Best practice repair time* |
| Distribution Feeder | CBD | Any | N-1[3] | Nil |
| | Urban | Any | N-1[4] | < 4 Hours[5] |
| | Non-Urban | Any | N | *Best practice repair time* |
| Distribution Substation | CBD | Any | N-1[3] | Nil |
| | Urban & Non-Urban | Any | N[7] | *Best practice repair time* |

1. For a *Sub-transmission line - Overhead* and a Zone Substation:
   a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time i.e. a total aggregate time of 88 hours per annum, up to a maximum of 20% above the *thermal capacity* under N-1 conditions. For Country Energy, in other than regional centres, the *forecast demand* must not exceed the *thermal capacity* under N-1 conditions.
   b. under N conditions, a further criterion is that the *thermal capacity* is required to meet ~~at~~ the *licence holder*'s seasonal peak demand forecast with 10% probability of being exceeded (i.e. 1 in 10 years), up to a maximum of ~~least~~ 115% of forecast demand.

For a *Sub-transmission line - Underground* and a Subtransmission Substation:
a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 0.5% of the time (i.e. a total aggregate time of 44 hours per annum), up to a maximum of 40MVA above the *thermal capacity* under N-1 conditions .
b. under N conditions, a further criterion is that the *thermal capacity* is required to meet the *licence holder*'s seasonal peak demand forecast with 10% probability of being exceeded (i.e. 1 in 10 years), up to a maximum of 115% of forecast demand.

~~For a *Sub-transmission line – Underground*, any overhead section may be designed as if it was a *Sub-transmission line – Overhead*, providing the *forecast demand* does not exceed the *thermal capacity* of the underground section at any time under N-1 conditions.~~

2. Under N conditions, *thermal capacity* is required to meet the *licence holder*'s seasonal peak demand forecast with 10% probability of being exceeded (i.e. 1 in 10 years), up to a maximum of ~~to be provided for greater than~~ 115% of *forecast demand*.

3. Under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 0.5% of the time (i.e. a total aggregate time of 44 hours per annum). The actual *Security Standard* is an enhanced N-1. For a second coincident credible contingency on the CBD triplex system, restricted essential load can still be supplied.

4. For Distribution feeders:
   a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 0.5% of the time (i.e. a total aggregate time of 44 hours per annum).
   b.under N conditions, ~~B~~by 30 June 2014, expected demand is to be no more than 80% of feeder *thermal capacity* (under system normal operating conditions) with switchable interconnection to adjacent feeders enabling restoration for an unplanned *network element* failure. ~~By 30 June 2019, *expected demand* is to be no more than 75% of feeder *thermal capacity*.~~ In order to achieve compliance, feeder reinforcement projects may need to be undertaken over more than one *regulatory period*. In those cases where a number of feeders form an interrelated system (such as a meshed network), the limits apply to the average loading of the feeders within the one system.

5. The timeframe is expected only, and is based on the need to carry out the isolation and restoration switching referred to in note 4. This standard does not apply to interim/staged supplies, i.e. prior to completion of the entire development or to *excluded interruptions* outside the control of the *licence holder*.

6. ~~In the *CBD* area,~~ Under N-2 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 0.5% of the time (ie. a total aggregate time of 44 hours per annum), up to a maximum of 40MVA above the *thermal capacity* under N-2 conditions. N-2 equivalent is achieved by the network being normally configured on the basis of N-1 with no interruption of supply when any one line or item of *electrical apparatus* within a *substation* is out of service. The *licence holder* must plan the *CBD* network to cater for two *credible contingencies* involving the loss of multiple lines or items of electrical apparatus within a substation, by being able to restore supply to all *forecast demand* (except if the forecast demand exceeds the *thermal capacity*) within 1 hour.

   Restoration may be via alternative arrangements (e.g. 11kV interconnections).

7. Urban Distribution substations shared, or available to be shared, by multiple *customer*s are generally expected to have some level of redundancy for an unplanned contingency, eg via low voltage manual interconnection to adjacent substations enabling at least partial restoration.

# SCHEDULE 2 – RELIABILITY STANDARDS

## 1. SAIDI average standards

| SAIDI – Average Reliability Duration Standards (Minutes per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 60 | 57 | 54 | 51 | 48 | 45 |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 400 | 380 | 360 | 340 | 320 | 300 |
| *Long-rural* | 900 | 860 | 820 | 780 | 740 | 700 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 300 | 300 | 300 | 300 | 300 | 300 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 140 | 137 | 134 | 131 | 128 | 125 |
| *Short-rural* | 340 | 332 | 324 | 316 | 308 | 300 |
| *Long-rural* | 750 | 740 | 730 | 720 | 710 | 700 |

## *2. SAIFI average standards*

| SAIFI – Average Reliability Frequency Standards (Number per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 0.35 | 0.34 | 0.33 | 0.32 | 0.31 | 0.3 |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 4.4 | 4.2 | 3.9 | 3.7 | 3.4 | 3.2 |
| *Long-rural* | 8.5 | 8 | 7.5 | 7 | 6.5 | 6 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 2 | 1.96 | 1.92 | 1.88 | 1.84 | 1.8 |
| *Short-rural* | 3.3 | 3.24 | 3.18 | 3.12 | 3.06 | 3.0 |
| *Long-rural* | 5 | 4.9 | 4.8 | 4.7 | 4.6 | 4.5 |

# SCHEDULE 3 – INDIVIDUAL FEEDER STANDARDS

## *1. SAIDI Individual Feeder Standards*

| **SAIDI – Standards (Minutes per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *CBD* | 100 |
| *Urban* | 350 |
| *Short-rural* | 1000 |
| *Long-rural* | 1400 |
| ***Integral Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | 350 |
| *Short-rural* | 1000 |
| *Long-rural* | 1400 |
| ***Country Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | 400 |
| *Short-rural* | 1000 |
| *Long-rural* | 1400 |

## *2. SAIFI Individual Feeder Standards*

| **SAIFI – Standards (Number per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Number per *customer*** |
| *CBD* | 1.4 |
| *Urban* | 4 |
| *Short-rural* | 8 |
| *Long-rural* | 10 |
| ***Integral Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | 4 |
| *Short-rural* | 8 |
| *Long-rural* | 10 |
| ***Country Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | 6 |
| *Short-rural* | 8 |
| *Long-rural* | 10 |

## SCHEDULE 4 - EXCLUDED INTERRUPTIONS

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*; and

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

## SCHEDULE 5 – CUSTOMER SERVICE STANDARDS

**Interruption duration standard:**

1. The *interruption duration standard* is the maximum duration, set out in column 2 of *table 1*, of an *interruption* to a customer's premises located in the relevant area in column 1 of *table 1*.

**Interruption frequency standard:**

2. The *interruption frequency standard* is the maximum number of *interruptions* in a financial year set out in column 3 of *table 1*, to a customer's premises located in the relevant area in column 1 of *table 1*:

**Table 1**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Type of area in which customer's premises is located** | **Interruption duration standard (hours)** | **Interruption frequency standard (number of interruptions of ≥hours)** |
| *metropolitan* | 12 | 4 interruptions ≥ 4 hours |
| *non-metropolitan* | 18 | 4 interruptions ≥ 5 hours |

**Interruptions to be disregarded**

3. In calculating the *interruption duration standard* or the *interruption frequency standard* the following types of *interruptions* (and no others) are excluded:

   (a) an *interruption* resulting from the following external causes:

   (i) a shortfall in generation;

   (ii) a failure or instability of the shared *transmission system*;

   (iii) a request or direction from an *emergency service organisation;*

   (b) a *planned* interruption;

   (c) an *interruption* within a region in which a natural disaster has occurred and:

   (i) the responsible Minister has notified the Commonwealth of the occurrence of an eligible disaster under the *Natural Disaster Relief Arrangements* in respect of that natural disaster for that region; and

   (ii) the *interruption* occurred during the period for which *Natural Disaster Relief Arrangements* have been notified;

   (d) an *interruption* caused by the effects of a *severe thunderstorm or severe weather*. These effects may include the necessary operation of

a circuit protection device which interrupts supply to *customer*s in areas not directly impacted by the *severe thunderstorm or severe weather.*

(e) an *interruption* caused by *third party* actions other than animal or vegetation interference (e.g. vehicle-hit-pole, vandalism) where the interruption is not also caused by any failure of the *licence holder* to comply with relevant plans, codes, guides or standards (e.g. low conductor clearance).

**Table 2**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Phenomenon** | **Severe Thunderstorm Warning** | **Severe Weather Warning** |
| Wind (Gusts) | Gusts 90km/h or more | Gusts 90km/h or more |
| Wind (Average) | | Widespread winds over land of 63km/h or more (Gale force) |
| Tornado | All tornados | |
| Blizzard | | Widespread blizzards in Alpine areas |
| Flash Flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood |
| Large Hail | Hail with diameter of at least 2cm | |

# SCHEDULE 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, $T_{MED.}$ 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 *DNSP* for use during the next *financial year* as follows:

a) Collect daily *SAIDI* values 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 calculate 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 known as the log-standard deviation) of the data set.

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

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

g) Any day with daily *SAIDI* value greater than the threshold value $T_{MED}$ 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 *DNSP's SAIDI* and *SAIFI* in respect of all of its *feeder types*.

| SCHEDULE 7 – LIST OF METROPOLITAN AREAS | | |
|---|---|---|
| **1. Local Government Areas** | | |
| ASHFIELD | HUNTERS HILL | PITTWATER |
| AUBURN | HURSTVILLE | RANDWICK |
| BANKSTOWN | KOGARAH | ROCKDALE |
| BAULKHAM HILLS | KU-RING-GAI | RYDE |
| BLACKTOWN | LAKE MACQUARIE | SHELLHARBOUR |
| BOTANY BAY | LANE COVE | STRATHFIELD |
| BURWOOD | LEICHHARDT | SUTHERLAND |
| CAMDEN | LIVERPOOL | SYDNEY |
| CAMPBELLTOWN | MANLY | WARRINGAH |
| CANTERBURY | MARRICKVILLE | WAVERLEY |
| CANADA BAY | MOSMAN | WILLOUGHBY |
| FAIRFIELD | NEWCASTLE | WOLLONGONG |
| GOSFORD | NORTH SYDNEY | WOOLLAHRA |
| HOLROYD | PARRAMATTA | WYONG |
| HORNSBY | PENRITH | |

| **2. Suburbs** | |
|---|---|
| **A.** ***Blue Mountains area*** | |
| BLACKHEATH | LINDEN |
| BLAXLAND | MEDLOW BATH |
| BULLABURRA | MOUNT RIVERVIEW |
| FAULCONBRIDGE | MOUNT VICTORIA |
| GLENBROOK | SPRINGWOOD |
| HAWKESBURY HEIGHTS | VALLEY HEIGHTS |
| HAZELBROOK | WARRIMOO |
| KATOOMBA | WENTWORTH FALLS |
| LAPSTONE | WINMALEE |
| LAWSON | WOODFORD |

| | |
|---|---|
| LEURA | YELLOW ROCK |
| **B. *Cessnock-Bellbird area*** | |
| ABERDARE | CESSNOCK |
| BELLBIRD | KEARSLEY |
| BELLBIRD HEIGHTS | NULKABA |
| **C. *Kiama area*** | |
| BOMBO | KIAMA HEIGHTS |
| KIAMA | MINNAMURRA |
| KIAMA DOWNS | |
| **D. *Kurri Kurri-Weston area*** | |
| ABERMAIN | PELAW MAIN |
| HEDDON GRETA | STANFORD MERTHYR |
| KURRI KURRI | WESTON |
| NEATH | |
| **E. *Maitland area*** | |
| ABERGLASSLYN | MOUNT DEE |
| ASHTONFIELD | OAKHAMPTON |
| BOLWARRA | OAKHAMPTON HEIGHTS |
| BOLWARRA HEIGHTS | PITNACREE |
| EAST MAITLAND | RAWORTH |
| HORSESHOE BEND | RUTHERFORD |
| LARGS | SOUTH MAITLAND |
| LORN | TELARAH |
| LOUTH PARK | TENAMBIT |
| MAITLAND | THORNTON |
| METFORD | WOODBERRY |
| MORPETH | |

| | |
|---|---|
| **F. *Newcastle Industrial area*** | |
| FERN BAY | WILLIAMTOWN |
| FULLERTON COVE | |
| **G. *Port Stephens area*** | |
| CORLETTE | SALAMANDER BAY |
| FINGAL BAY | SHOAL BAY |
| NELSON BAY | SOLDIERS POINT |
| **H. *Raymond Terrace area*** | |
| HEATHERBRAE | TOMAGO |
| RAYMOND TERRACE | |
| **I. *Richmond-Windsor area*** | |
| BLIGH PARK | NORTH RICHMOND |
| CLARENDON | RICHMOND |
| HOBARTVILLE | SOUTH WINDSOR |
| MCGRATHS HILL | VINEYARD |
| MULGRAVE | WINDSOR |
| | |

# DESIGN, RELIABILITY AND PERFORMANCE

# LICENCE CONDITIONS

**for**

# DISTRIBUTION NETWORK SERVICE PROVIDERS

## Scenario 2: Large reduction in reliability outcomes

**Ian Macdonald, MLC**
**MINISTER FOR ENERGY**

**1 DECEMBER 2007**

## EXPLANATORY NOTE

### Purpose of the design, reliability and performance conditions:

On 1 August 2005, the then Minister for Energy imposed additional conditions relating to reliability performance on licences held by distribution network service providers under the *Electricity Supply Act 1995*.

Following a review of the licence conditions conducted by the *Minister*, those conditions are being replaced with updated and revised conditions relating to reliability performance, with effect from 1 December 2007.

The purpose of the conditions is to facilitate the delivery of a safe and reliable supply of electricity. The conditions impose design, reliability and performance standards on distribution network service providers. Distribution network service providers will be required to report to the *Minister* to ensure compliance with the conditions. The new standards are as follows:

### Design planning criteria:

The *design planning criteria* set out:

- input standards to be used by a *licence holder* in planning its network; and
- requirements for load-forecasting and contingency-planning methodologies intended to achieve operational outcomes.

The baseline levels of planned redundancy required under the *design planning criteria* will underpin the *licence holder*'s plans and strategies designed to ensure, as far as is reasonably practicable, that it:

- meets the *reliability standards*; and
- provides an adequate supply of electricity with an appropriate level of redundancy, consistent with its regulatory obligations.

### Reliability standards:

The purposes of the *reliability standards* are to:

- define minimum average reliability performance, by *feeder type*, for a distribution network service provider across its distribution network; and
- provide a basis against which a distribution network service provider's reliability performance can be assessed.

### Individual feeder standards:

The purposes of the *individual feeder standards* are to:

- specify minimum standards of reliability performance for individual feeders;

- require a distribution network service provider to focus continually on improving the reliability of its feeders; and
- enable the reliability performance of feeders to be monitored over time.

**Customer service standards:**

The purpose of the *customer service standards* is to provide financial recognition to eligible *customer*s who have experienced poor reliability of supply from a distribution network service provider.

**Commencement:**

The licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Electricity Supply Act 1995*. The conditions are imposed on 1 December 2007 and take effect from that date, except where expressly stated otherwise.

**Relationship with existing conditions and other obligations:**

These conditions are additional to conditions that the *Minister* has previously imposed on licences held by distribution network service providers and licence conditions imposed under the *Electricity Supply Act 1995* and other regulatory instruments, other than the conditions relating to reliability performance imposed by the Minister on 1 August 2005. These conditions replace the design, reliability and performance licence conditions imposed by the Minister on 1 August 2005 (as amended on 1 July 2006).

These conditions are also supplementary to obligations imposed on distribution network service providers by the *Electricity Supply Act 1995*, the *Electricity Supply (General) Regulation 2001*, the *Electricity Supply (Safety and Network Management) Regulation 2002*, and other regulatory instruments.

**Network management generally**

Network management requires long-term planning, investment decisions and prioritisation of work to ensure, as far as is reasonably practicable, reliable supply. The *licence holder* has discretion to plan its investment for compliance with these licence conditions to suit its individual circumstances.

These conditions do not reduce or alter the responsibility of *licence holder*s under their Network Management Plans to assure delivery of a safe and reliable supply. Design Planning Criteria described in these conditions provide minimum standards for various categories of network elements.

Higher standards may apply when it is prudent to do so. Capital investment plans cannot be limited by exclusive adherence to input standards. Key operating and risk management requirements to meet reliability outcomes also need to be addressed when developing capital plans.

**Enforcement:**

These conditions are enforceable under the *Electricity Supply Act 1995* by *IPART* and the *Minister*. These conditions are not intended to create standards which are enforceable against a *licence holder* by individual *customer*s.

**Consultation:**

Before imposing these conditions the *Minister* undertook consultation with stakeholders including the *licence holder*s, *IPART* and the *Minister* administering the *Protection of the Environment Administration Act 1991*. The *Minister* has given due consideration to submissions received during consultation.

**Reporting:**

Performance and audit reports will be required under these licence condition. Reliability performance reporting will continue to be implemented under the *Electricity Supply (Safety and Network Management) Regulation 2002*.

**Review:**

It is intended that these licence conditions will be reviewed by the *Minister* by June 2010 with any changes or amendments to become effective from 1 July 2014 to coincide with the commencement of the 2014 - 2019 regulatory period.

The *Minister* may, at his discretion, review the licence conditions at other times in accordance with the *Electricity Supply Act 1995.*

## DESIGN, RELIABILITY AND PERFORMANCE CONDITIONS

### 14. Design planning criteria

**14.1** A *licence holder* must develop and implement a plan to comply with the applicable *design planning criteria* in Schedule 1 in relation to all new *network elements* for which planning commences after the commencement of these conditions.

**14.2** A *licence holder* must be, in relation to all existing *network elements*:

- as compliant as reasonably practicable with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2014; and
- fully compliant with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2019.

**14.3** In undertaking network planning processes, a *licence holder* must adopt methodologies:

- for determining the *forecast demand* and *expected demand* (as applicable); and
- for contingency planning for credible *network element* maintenance and/or failure;

which ensure that, as far as is reasonably practicable, the *thermal capacity* of *network elements* is sufficient to meet the actual load through the *network elements* under the following conditions:

- all *network elements* in service, for *network elements* required to meet *N security standards* in Schedule 1;
- *credible contingencies* involving any one *network element* out of service, for *network elements* required to meet *N-1 security standards* in Schedule 1, except as permitted by Schedule 1; and
- *credible contingencies* involving any two *network elements* out of service, for *network elements* required to meet *N-2 security standards* in Schedule 1, except as permitted by Schedule 1.

~~**14.4** For Country Energy *sub-transmission* lines, 10 *MVA* in Schedule 1 is replaced by 15 *MVA*.~~

~~**14.5** For Country Energy zone *substations*, 10 *MVA* in Schedule 1 is replaced by 15 *MVA* until 30 June 2014.~~

**14.6** A *licence holder* may only apply higher design planning criteria where the *licence holder* considers it is prudent to do so. When considering what is prudent, the *licence holder* must take into account:

- the costs and benefits of the revised *design planning criteria*;

- the actual configuration and limitations of *the network elements* (which may not be reflected in Schedule 1);
- the specific condition of the *network elements* in service; and
- the likely impact of alternative investment options on the reliability of the *network elements*.

*Note: For example very large or geographically and electrically remote zone substations may prudently have N-1 redundancy for all forecast demand levels (rather than 99% of time as described in Schedule 1).*

**14.7** A *licence holder* may agree with a *customer* to apply higher or lower standards of service at the *customer*'s point of supply than the *design planning criteria* relevant to that *customer*. In cases where negotiations are with developers rather than the ultimate end-use *customer*, the *licence holder* must take into account anticipated end-use *customer* expectations and asset management considerations before agreeing to apply higher or lower standards of service at the *customer's* point of supply. Where a lower standard of service is agreed with a *customer*, compliance with the *design planning criteria* is not required at the *customer's* point of supply.

## 15. Reliability standards

15.1 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 50% confidence level, that it will not exceed in any *financial year* the *SAIDI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

15.2 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 50% confidence level, that it will not exceed in any *financial year* the *SAIFI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

~~Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIDI average standards* that apply to its *feeder types*.~~

~~15.2 Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIFI average standards* that apply to its *feeder types*.~~

15.3 The requirements under this condition 15 are the *reliability standards* and take effect from 1 December 2007.

15.4 The *reliability standards* for the 6 month period from 1 January 2008 to 30 June 2008, are to be calculated by applying 1/2 of the *SAIDI average standards* and 1/2 of the *SAIFI average standards.*

## 16. Individual feeder performance

16.1 This condition applies where one or more of the feeders of a *licence holder* exceed the relevant *individual feeder standards* for any 12 month period ending at the end of March, June, September or December, when *excluded interruptions* are disregarded.~~.~~

16.2 Subject to condition 16.5, ~~A~~a *licence holder* must:

(a) immediately investigate the causes for each *feeder* exceeding the *individual feeder standards*;

(b) by the end of the quarter following the quarter in which the *feeder* first exceeded the *individual feeder standards*, complete an investigation report identifying the causes and as appropriate, any action required to improve the performance of each feeder to the *individual feeder standards*;

(c) complete any operational actions identified in the investigation report to improve the performance of each feeder to the *individual feeder standards* by the end of the third quarter following the quarter in which each feeder first exceeded the *individual feeder standards*;

(d) except as permitted by condition 16.2(e), 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*;

(e) where non-network solutions would provide acceptable alternative outcomes for *customer*s in a more cost-effective manner, these solutions may be adopted where they are separately justified in the investigation report;

(f) ensure that the implementation timetable for the network project plan or alternative non-network solutions is as short as is reasonably practicable.

16.3 The investigation report is to include a documented rectification plan where action is found to be warranted in order to improve the performance of a feeder to the *individual feeder* standards. The action that is required may involve work to other network elements, or may involve only repair or maintenance work where capital works are not warranted taking into account any one-off events and previous performance trends.

16.4 The requirements under this condition 16 take effect from 1 January 2008.

16.5 In any *financial year*, the number of feeders in relation to which a *licence holder* is required to complete an investigation report and take action to improve the performance of the feeder to meet the *individual feeder standards*, is limited to the worst performing 2% of total feeders, as determined by the *licence holder* on the basis of the variance to the relevant *individual feeder standard*. In relation to any feeders over this limit, the *licence holder* must investigate the cause of the feeder exceeding the *individual feeder standard* in accordance with condition 16.2(a), but conditions 16.2(b) to (f) and 16.3 do not apply.

**17. Customer service standards**

17.1 A *licence holder* must pay the sum of $80 (including GST) to a *customer*

where the *licence holder* exceeds the *interruption duration standard* at the *customer*'s premises and the *customer* has made a claim to the *licence holder* within three months of the interruption.

17.2 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption frequency standard* at the *customer*'s premises in a *financial year* and the *customer* has made

a claim to the *licence holder* within three months of the end of the *financial year* to which the interruptions relate.

17.3 A *licence holder* must determine a claim for payment under condition 17, and notify the *customer* of the determination in writing, within one month of receipt of a claim. For *customer*s eligible for payment, the notice of determination must include the amount to be paid, the manner of payment and the timing of payment. Where the claim is not paid (whether in part or in full), the notice of determination must include reasons for the decision.

17.4 A *licence holder* is required to take reasonable steps to make *customer*s aware of the availability of payments on the terms set out in condition 17. Reasonable steps include, as a minimum, publication of information on the *licence holder's* website and annual newspaper advertisements. On request from a *customer*, a licence holder must provide written information on the availability of payments on the terms set out in condition 17.

17.5 A *licence holder* is required to make only one payment of $80 to a *customer* per premises in a financial year for exceeding the *interruption frequency standard*.

17.6 A *licence holder* is required to pay no more than $320 under condition 17 to a *customer* per premises in any one financial year.

17.7 A payment under this condition does not:

(a) In any way alter or diminish any rights that a *customer* may have against any person under any trade practices or other applicable legislation, common law or contract;

(b) Represent any admission of legal liability by the *licence holder*; or

(c) Alter, vary or exclude the operation of the section 119 of the *National Electricity Law* or any other statutory limitations on liability or immunities applicable to a *licence holder*.

17.8 The requirements under this condition 17 (aside from condition 17.4) take effect from 1 December 2007.

## 18. Performance monitoring and reporting

### *Design planning criteria report*

18.1 Subject to condition 18.17 a *licence holder* must submit an annual *design planning criteria* report to the *Minister* by 30 September each year in relation to the following matters:

(a) The *licence holder*'s strategy and plan to comply with condition 14 for each class of *network element* in Schedule 1;

(b) Progress against the *licence holder*'s plan for each class of *network element*;

(c) For sub-transmission lines, sub-transmission substations and zone substations, each of its *network elements* that will not, from a planning perspective, comply with condition 14.1 or condition 14.2;

(d) For distribution feeders and substations, a summary report for each class of network element that will not, from a planning perspective, comply with condition 14.1 or condition 14.2; and

(e) any other matter formally notified by the *Minister* in writing.

18.1A Conditions 18.1 (c) and (d) do not apply to *network elements* during routine maintenance, provided planning requirements are met at all other times and the *licence holder*, acting reasonably, schedules routine maintenance (and develops contingency plans) to minimise the impact of outages in the event of a *credible contingency* during routine maintenance.

***Reliability standards report***

18.2 Subject to condition 18.17 a *licence holder* must submit an annual reliability standards report to the *Minister* by 30 September each year.

18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous *financial year*:

(a) performance against the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(b) a detailed description of the methodologies adopted by the *licence holder* for determining its level of confidence of compliance with the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(c) evidence demonstrating that the *licence holder* complies with conditions 15.1 and 15.2; and

(d) any other matter formally notified by the *Minister* in writing.

~~Subject to condition 18.17 a *licence holder* must submit a quarterly reliability standards report to the *Minister* within one month of the end of each *quarter*.~~

~~18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous 12 month period to the end of that *quarter*:~~

~~(a) performance against the pro-rata *SAIDI average standards* and pro-rata *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;~~

~~(b) reasons for any non-compliance by the *licence holder* with the pro-rata *reliability standards* and plans to improve performance; and~~

~~(c) any other matter formally notified by the *Minister* in writing.~~

***Individual feeder standards report***

18.4 Subject to condition 18.17 a *licence holder* must submit, within one month of the end of each *quarter*, a quarterly *individual feeder standards* report to the *Minister* on feeders that exceeded the relevant *individual feeder standards* during the previous 12 month period to the end of that quarter, together with, for each feeder:

(a) the date at which the feeder first exceeded the relevant *individual feeder standard*, together with the actual *SAIDI* and *SAIFI* performance of the feeder for the 12 month period;

(b) details of the remedial action that the *licence holder* intends taking, or has taken, to improve the performance of those feeders; and

(c) the date of completion, or the date of planned completion, of the remedial action plan.

***Customer service standards report***

18.5 Subject to condition 18.17 a *licence holder* must submit a quarterly *customer service standards* report to the *Minister* on the following matters within one month of the end of each *quarter*, for the preceding *quarter* and for the previous 12 month period to the end of that *quarter:*

(a) the number of payments given under condition 17 to *customer*s by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1

(b) the number of claims not paid (whether in part or full) under condition 17 by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1.

***Major incident reporting***

18.6 A *licence holder* must report to the *Minister* within 24 hours any major network incidents involving significant injury to persons, loss of property or widespread supply interruptions. High level severity incidents are to be advised immediately.

***Independent audit report***

18.7 Subject to condition 18.17, an independent audit must be conducted after the end of each financial year to audit the *licence holder*'s performance against the:

(a) *design planning criteria;*

(b) *reliability standards*;

(c) *individual feeder standards*; and

(d) *customer service standards*.

18.8 A *licence holder* is required to nominate a person to conduct the independent audit by notice in writing to IPART. The *licence holder* must give notice in accordance with any time specified by IPART in writing to the *licence holder*, or, if no time has been specified, no later than 1 July of the year in which the report is to be submitted to the *Minister* and IPART.

18.9 The person nominated is to be a person who is:

(a) independent of the *licence holder*; and

(b) competent to exercise the functions of an auditor in respect of the matters to be audited.

18.10 The nomination of an auditor by a *licence holder* ceases to have effect if IPART advises the *licence holder*, by notice in writing, that the nomination is not acceptable or has ceased to be acceptable.

18.11 IPART may nominate an auditor to carry out an audit, and the person so nominated is taken to have been nominated by the *licence holder*, if:

(a) the nomination of an auditor by the *licence holder* ceases to have effect; or

(b) the *licence holder* fails to nominate an auditor to carry out the audit in accordance with any requirements specified by IPART by notice in writing to the *licence holder*.

18.12 Subject to condition 18.17 a *licence holder* must provide a copy of the auditor's report by 30 September each year to IPART and the *Minister*.

***General matters concerning reports***

18.13 Where the *Minister* determines the format of a report required by this condition, a *licence holder* must submit the report in that format.

18.14 The *Minister* may from time to time establish guidelines to be followed by the *licence holder* in complying with reports required by this condition and the *licence holder* must comply with any such guidelines.

18.15 The *Minister* may from time to time require, by notice in writing to the *licence holder*, further reports relating to these licence conditions including, without limitation, reports relating to capital expenditure works, network refurbishment and maintenance programs.

18.16 A *licence holder* must provide a report submitted to the *Minister* under this condition to IPART, if requested to do so by IPART by notice in writing.

***Timing of initial reports***

18.17 Reports against the new standards will be submitted as follows:

(a) Within three months of the end of each financial year on compliance with *design planning criteria*, the first being by 30 September 2008;

(b) Within three months of the end of each financial year, for each annual audit report, the first being by 30 September 2008; and

(c) Within one month of the end of each quarter for reports on *reliability standards*, *individual feeder standards* and *customer service standards*, the first being by 31 January 2008.

## 19 Interpretation and definitions

19.1 These licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Act*.

19.2 These licence conditions replace the design, reliability and performance licence conditions imposed by the *Minister* on distribution network service providers on 1 August 2005 (as amended on 1 July 2006).

19.3 These licence conditions are in addition to other licence conditions imposed by the *Minister*, licence conditions under the *Act* or *Regulations*, and other obligations imposed on *licence holder*s by the *Act* and *Regulations*.

19.4 These conditions are imposed on 1 December 2007 and take effect from that date, except where otherwise stated in the conditions or the Schedules to the conditions.

19.5 Expressions used in these licence conditions that are defined in the *Act* or the *Regulations* made under the *Act* have, unless otherwise stated, the meanings set out in the *Act* or the *Regulations*.

19.6 The Explanatory Note to these licence conditions does not form part of the licence conditions.

19.7 Footnotes contained in these licence conditions do form part of the licence conditions.

19.8 In these licence conditions:

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| *Act* | means the *Electricity Supply Act 1995.* |
| *Best practice repair time* | means the minimum practicable time period to restore supply. |
| *CBD* | means the area within the City of Sydney that is supplied by the triplex 11kV cable system. |
| *CBD feeder* | means a feeder supplying predominantly commercial high-rise buildings, supplied by the City of Sydney's triplex 11kV cable system. |
| *Credible contingency* | means an outage on one line or item of *electrical apparatus*, or a coincident outage on more than one line and /or items of *electrical apparatus* that a *licence holder*, acting reasonably, could expect to arise as a result of a single electrical failure or mechanical event affecting those lines or items.<br><br>*Note: Credible contingencies are generally limited to major items of equipment with significant probabilities of failure or outage.* |

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| *customer* | means a wholesale customer or a retail customer in the *licence holder*'s distribution district. |
| *customer service standards* | means the customer service standards in Schedule 5 to these conditions. |
| *design planning criteria* | means the load magnitude, security standard and customer interruption time specified in Schedule 1 to these conditions. |
| *distribution feeder* | means a high-voltage line operating over 1000V and at or below 22kV that connects between a zone substation and a distribution substation, excluding short radial sections off the trunk feeder used to supply a small number of distribution substations (eg a spur line into a peninsula or valley). |
| *distribution substation* | means a *substation* forming part of the distribution system, which provides the network link between a *distribution feeder* and elements of the distribution system below 1000V. |
| *electrical apparatus* | means a transformer within a *substation* |
| *Emergency service organisation* | has the same meaning as in section 3 of the *State Emergency and Rescue Management Act 1989.* |
| *excluded interruptions* | means excluded interruptions listed in Schedule 4 to these conditions. |
| *expected demand* | means peak demand expected to occur for *distribution feeders* and *distribution substations*, based on:<br>• loads connected or expected to be connected, and/or<br>• actual demand and/or<br>• underlying growth rates |
| *feeder* | means a *distribution feeder.* |
| *feeder type* | means a *CBD feeder*, *long rural feeder*, *short rural feeder* or *urban feeder* as the case may be. |
| *financial year* | means a year commencing 1 July and ending 30 June. |
| *forecast demand* | means the *licence holder*'s seasonal peak demand forecast with 50% probability of being exceeded |

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| | (i.e. 1 in 2 years), normally performed on an annual basis, and based on underlying growth rates plus an allowance for spot loads and transfers. |
| *GST* | has the meaning it has in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth). |
| *individual feeder standards* | means the individual feeder standards in Schedule 3 to these conditions. |
| *interruption* | means any temporary unavailability of electricity supply to a *customer* associated with an outage of the distribution system including outages affecting a single premises, but does not include disconnection. |
| *interruption duration standards* | means the interruption duration standards set out in Schedule 5 to these conditions. |
| *interruption frequency standards* | means the interruption frequency standards set out in Schedule 5 to these conditions. |
| *IPART* | means the Independent Pricing and Regulatory Tribunal established under the *Independent Pricing and Regulatory Tribunal Act 1992*. |
| *licence holder* | means the holder of a distribution network service provider's licence. |
| *local government area* | has the same meaning as in the *Local Government Act 1993* |
| *long rural feeder* | means a feeder with a total feeder length greater than 200 km which is not a *CBD feeder* or an *urban feeder*. |
| *major event day* | means a day determined under Schedule 6. |
| *metropolitan* | means the areas comprising the *local government areas* and *suburbs* listed in Schedule 7 |
| *Minister* | means the Minister administering the *Act*. |
| *MVA* | means mega volt amperes. |
| *N, N-1, N-2* | N is designing the *network elements* for no *credible contingencies;* N-1 is designing for a single *credible contingency* (normally involving an outage of one line or one item of *electrical* |

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| | *apparatus* within a *substation*) and N-2 is designing for *credible contingencies* (normally involving outages of two lines or two items of *electrical apparatus* within a *substation*).<br><br>The relevant number of *credible contingencies* will result in:<br>▪ *interruption* to *customer*s up to the time indicated in Schedule 1;<br>▪ acceptable voltage levels being maintained at the secondary busbars of transformers;<br>▪ remaining in-service *network elements* and *electrical apparatus* being loaded within their thermal limits. |
| *network elements* | means the following parts of a *licence holder*'s distribution system: *sub-transmission lines, sub-transmission substations, zone substations, distribution feeders and distribution substations*. |
| *non-metropolitan* | means areas in New South Wales other than areas defined as *metropolitan* |
| *non-urban* | means areas which are not *urban*. |
| *planned interruption* | means an *interruption* for which advance notice has been provided or which has been requested by a *customer*. |
| *quarter* | means a period of three months commencing 1 January, 1 April, 1 July and 1 October as the case may be. |
| *regional centre* | means:<br><br>until 30 June 2014, the towns of Tweed Heads, Wagga Wagga, Coffs Harbour (including Sawtell), Albury, Port Macquarie, Queanbeyan, Orange, Tamworth, Dubbo, Bathurst and Lismore; and<br><br>from 1 July 2014, the towns listed above as well as the towns of Goulburn, Forster-Tuncurry, Armidale, Broken Hill, Grafton, Griffith, Ballina and Taree. |
| *Regulations* | means Regulations made under the *Act*. |
| *regulatory period* | means the period for which the economic regulator provides for a price path for network income and for the purpose of this document will be taken to be a period of five years. |

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| *reliability standards* | means the requirements imposed under condition 15 of these conditions. |
| *SAIDI* | means the sum of the duration of each sustained *customer* interruption (measured in minutes), divided by the total number of *customer*s (averaged over the *financial year*) of the *licence holder*. |
| *SAIFI* | means the total number of sustained *customer* interruptions divided by the total number of *customer*s (averaged over the *financial year*) of that *licence holder*. |
| *SAIDI average standards* | means the standards set out in item 1, Schedule 2. |
| *SAIFI average standards* | means the standards set out in item 2, Schedule 2. |
| *SAIDI individual feeder standards* | means the standards set out in item 1, Schedule 3. |
| *SAIFI individual feeder standards* | means the standards set out in item 2, Schedule 3. |
| *Security Standards* | means the *Security Standards* specified in Schedule 1 which require the network to be planned to supply all *forecast demand* or *expected demand* (as applicable), except where varied by the notes to Schedule 1, within the *thermal capacity* of all *network elements* and maintain voltage levels within limits published by *licence holder*s with:<br>• all lines and *electrical apparatus* in service, N<br>• outages of lines and *electrical apparatus* arising from any one *credible contingency* N-1<br>• outages of lines and *electrical apparatus* arising from any two *credible contingencies*, N-2 |
| *Severe thunderstorm or Severe weather* | *means an event set out in Column 2 or Column 3 of table 2* |
| *short rural feeder* | means a feeder with a total feeder route length less than 200 km, and which is not a *CBD feeder* or an *urban feeder*. |
| *suburb* | means an area defined by boundaries determined and gazetted by the Geographical Names Board of New South Wales. |

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| *substation* | means a part of an electrical network, confined to a given area, mainly including ends of transmission or distribution lines, electrical switchgear and control gear, and one or more transformers. A substation generally includes safety or control devices (for example protection). |
| *sub-transmission* | means those parts of the distribution system (including power lines and towers, cables and substations as the case may be) that transfer electricity from the regional bulk supply points supplying areas of consumption to individual *zone substations*, operating at nominal voltages between 132 kV and 33 kV inclusive, that may also fulfil a transmission role by operating in parallel to, and providing support to, the higher voltage transmission network. |
| *sub-transmission line – Overhead* | means *sub-transmission* generally of overhead construction which would reasonably be expected to have a restoration time of less than 8 hours following a *credible contingency.* |
| *sub-transmission line – Underground* | means *sub-transmission* generally of underground construction, or *sub-transmission overhead* with a section of underground construction which would reasonably be expected to have a restoration time in excess of 8 hours following a *credible contingency.* |
| *table 1* | means Table 1 in Schedule 5 to these conditions. |
| *table 2* | means Table 2 in Schedule 5 to these conditions. |
| *thermal capacity* | means the maximum allowable thermal capability of a particular *network element*, taking into consideration the supply security level (N, N-1, N-2) required of the *network element(s)* and having regard to the technical and economic life of the *network element(s)*. When considering *thermal capacity* of more than one *network element* operating in parallel, the actual load sharing characteristics of the parallel network elements should be considered. |
| *third party* | does not include a person or body contracted or authorised by the *licence holder* to take action, or any animal or plant life. |

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| *urban feeder* | means a feeder with actual maximum demand over the reporting period per total feeder route length greater than 0.3 *MVA*/km and which is not a *CBD Feeder*. |
| *urban* | For EnergyAustralia and Integral Energy, means an area where the majority of land is zoned for residential and/or commercial and/or industrial use within a town or city type of area which is contiguous with other similar town or city areas with an aggregated population of at least 5,000 people.<br><br>For Country Energy, means areas within a *regional centre*. |
| *zone substation* | means a *substation* forming part of the distribution system, which provides the network link between the *sub-transmission* network and elements of the distribution system at or below 22kV. |

## SCHEDULE 1 DESIGN PLANNING CRITERIA

| ***Network Element*** | ***Load Type*** | ***Forecast Demand or Expected Demand*** | ***Security Standard*** | ***Customer Interruption Time*** |
|---|---|---|---|---|
| Sub Transmission Line | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ ~~10~~ 15 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < ~~10~~ 15 *MVA* | N[2] | *Best practice repair time* |
| Sub Transmission Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban ~~& Non-Urban~~ | Any | N-1[1] | < 1 minute |
| | Non-Urban | ≥ 15 MVA | N-1[1] | < 1 minute |
| | Non-Urban | < 15 MVA | N[2] | *Best practice repair time* |
| Zone Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ ~~10~~15 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < ~~10~~ 15 *MVA* | N[2] | *Best practice repair time* |
| Distribution Feeder | CBD | Any | N-1[3] | Nil |
| | Urban | Any | N-1[4] | < 4 Hours[5] |
| | Non-Urban | Any | N | *Best practice repair time* |
| Distribution Substation | CBD | Any | N-1[3] | Nil |
| | Urban & Non-Urban | Any | N[7] | *Best practice repair time* |

1. ~~For a *Sub-transmission line - Overhead* and a Zone Substation:~~

~~a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time i.e. a total aggregate time of 88 hours per annum, up to a maximum of 20% above the *thermal capacity* under N-1 conditions. For Country Energy, in other than regional centres, the *forecast demand* must not exceed the *thermal capacity* under N-1 conditions.~~

~~b. under N conditions, a further criterion is that the *thermal capacity* is required to meet at least 115% of forecast demand.~~

a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1.5% of the time (i.e. a total aggregate time of 132 hours per annum), up to a maximum of 50MVA above the *thermal capacity* under N-1 conditions.

b. under N conditions, a further criterion is that the *thermal capacity* is required to meet the *licence holder*'s seasonal peak demand forecast with 10% probability of being exceeded (i.e. 1 in 10 years), up to a maximum of 115% of forecast demand.

~~For a *Sub-transmission line – Underground*, any overhead section may be designed as if it was a *Sub-transmission line – Overhead*, providing the *forecast demand* does not exceed the *thermal capacity* of the underground section at any time under N-1 conditions.~~

2. Under N conditions, *thermal capacity* is required to meet the *licence holder*'s seasonal peak demand forecast with 10% probability of being exceeded (i.e. 1 in 10 years), up to a maximum of ~~to be provided for greater than~~ 115% of *forecast demand*.

3. Under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time (i.e. a total aggregate time of 88 hours per annum). The actual *Security Standard* is an enhanced N-1. For a second coincident credible contingency on the CBD triplex system, restricted essential load can still be supplied.

4. For Distribution feeders:
   a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time (i.e. a total aggregate time of 88 hours per annum).

   ~~By 30 June 2014, expected demand is to be no more than 80% of feeder *thermal capacity* (under system normal operating conditions) with switchable interconnection to adjacent feeders enabling restoration for an unplanned *network element* failure. By 30 June 2019, *expected demand* is to be no more than 75% of feeder *thermal capacity*.In order to achieve compliance, feeder reinforcement projects may need to be undertaken over more than one *regulatory period*. In those cases where a number of feeders form an interrelated system (such as a meshed network), the limits apply to the average loading of the feeders within the one system.~~

5. The timeframe is expected only, and is based on the need to carry out the isolation and restoration switching referred to in note 4. This standard does not apply to interim/staged supplies, i.e. prior to completion of the entire development or to *excluded interruptions* outside the control of the *licence holder*.

6. In the *CBD* area:
   a. under N-2 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time (ie. a total aggregate time of 88 hours per annum), up to a maximum of 50MVA above the *thermal capacity* under N-2 conditions. N-2 equivalent is achieved by the network being normally configured on the basis of N-1 with no interruption of supply when any one line or item of *electrical apparatus* within a *substation* is out of service. The *licence holder* must plan the *CBD* network to cater for two *credible contingencies* involving the loss of multiple lines or items of electrical apparatus within a substation, by being able to restore supply to all *forecast demand* (except if the *forecast demand* exceeds the *thermal capacity*) within 1 hour.

      Restoration may be via alternative arrangements (e.g. 11kV interconnections).

7. Urban Distribution substations shared, or available to be shared, by multiple *customer*s are generally expected to have some level of redundancy for an unplanned contingency, eg via low voltage manual interconnection to adjacent substations enabling at least partial restoration.

# SCHEDULE 2 – RELIABILITY STANDARDS

## 1. SAIDI average standards

| SAIDI – Average Reliability Duration Standards (Minutes per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 60 | 57 | 54 | 51 | 48 | 45 |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 400 | 380 | 360 | 340 | 320 | 300 |
| *Long-rural* | 900 | 860 | 820 | 780 | 740 | 700 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 300 | 300 | 300 | 300 | 300 | 300 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 140 | 137 | 134 | 131 | 128 | 125 |
| *Short-rural* | 340 | 332 | 324 | 316 | 308 | 300 |
| *Long-rural* | 750 | 740 | 730 | 720 | 710 | 700 |

## *2. SAIFI average standards*

| SAIFI – Average Reliability Frequency Standards (Number per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 0.35 | 0.34 | 0.33 | 0.32 | 0.31 | 0.3 |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 4.4 | 4.2 | 3.9 | 3.7 | 3.4 | 3.2 |
| *Long-rural* | 8.5 | 8 | 7.5 | 7 | 6.5 | 6 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 2 | 1.96 | 1.92 | 1.88 | 1.84 | 1.8 |
| *Short-rural* | 3.3 | 3.24 | 3.18 | 3.12 | 3.06 | 3.0 |
| *Long-rural* | 5 | 4.9 | 4.8 | 4.7 | 4.6 | 4.5 |

# SCHEDULE 3 – INDIVIDUAL FEEDER STANDARDS

## *1. SAIDI Individual Feeder Standards*

| **SAIDI – Standards (Minutes per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *CBD* | ~~100~~110 |
| *Urban* | ~~350~~385 |
| *Short-rural* | ~~1000~~1100 |
| *Long-rural* | ~~1400~~1540 |
| ***Integral Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | ~~350~~385 |
| *Short-rural* | ~~1000~~1100 |
| *Long-rural* | ~~1400~~1540 |
| ***Country Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | ~~400~~440 |
| *Short-rural* | ~~1000~~1100 |
| *Long-rural* | ~~1400~~1540 |

## *2. SAIFI Individual Feeder Standards*

| **SAIFI – Standards (Number per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Number per *customer*** |
| *CBD* | ~~1.4~~ 1.54 |
| *Urban* | ~~4~~ ~~4~~.4 |
| *Short-rural* | ~~8~~ 8.8 |
| *Long-rural* | ~~10~~ 11 |
| ***Integral Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | ~~4~~ 4.4 |
| *Short-rural* | ~~8~~8.8 |
| *Long-rural* | ~~10~~11 |
| ***Country Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | ~~6~~6.6 |
| *Short-rural* | ~~8~~8.8 |
| *Long-rural* | ~~10~~11 |

## SCHEDULE 4 - EXCLUDED INTERRUPTIONS

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*; and

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

## SCHEDULE 5 – CUSTOMER SERVICE STANDARDS

**Interruption duration standard:**

1. The *interruption duration standard* is the maximum duration, set out in column 2 of *table 1*, of an *interruption* to a customer's premises located in the relevant area in column 1 of *table 1*.

**Interruption frequency standard:**

2. The *interruption frequency standard* is the maximum number of *interruptions* in a financial year set out in column 3 of *table 1*, to a customer's premises located in the relevant area in column 1 of *table 1*:

**Table 1**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Type of area in which customer's premises is located** | **Interruption duration standard (hours)** | **Interruption frequency standard (number of interruptions of ≥hours)** |
| *metropolitan* | 12 | 4 interruptions ≥ 4 hours |
| *non-metropolitan* | 18 | 4 interruptions ≥ 5 hours |

**Interruptions to be disregarded**

3. In calculating the *interruption duration standard* or the *interruption frequency standard* the following types of *interruptions* (and no others) are excluded:

   (a) an *interruption* resulting from the following external causes:

   (i) a shortfall in generation;

   (ii) a failure or instability of the shared *transmission system*;

   (iii) a request or direction from an *emergency service organisation;*

   (b) a *planned* interruption;

   (c) an *interruption* within a region in which a natural disaster has occurred and:

   (i) the responsible Minister has notified the Commonwealth of the occurrence of an eligible disaster under the *Natural Disaster Relief Arrangements* in respect of that natural disaster for that region; and

   (ii) the *interruption* occurred during the period for which *Natural Disaster Relief Arrangements* have been notified;

   (d) an *interruption* caused by the effects of a *severe thunderstorm or severe weather*. These effects may include the necessary operation of

a circuit protection device which interrupts supply to *customer*s in areas not directly impacted by the *severe thunderstorm or severe weather.*

(e) an *interruption* caused by *third party* actions other than animal or vegetation interference (e.g. vehicle-hit-pole, vandalism) where the interruption is not also caused by any failure of the *licence holder* to comply with relevant plans, codes, guides or standards (e.g. low conductor clearance).

**Table 2**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Phenomenon** | **Severe Thunderstorm Warning** | **Severe Weather Warning** |
| Wind (Gusts) | Gusts 90km/h or more | Gusts 90km/h or more |
| Wind (Average) | | Widespread winds over land of 63km/h or more (Gale force) |
| Tornado | All tornados | |
| Blizzard | | Widespread blizzards in Alpine areas |
| Flash Flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood |
| Large Hail | Hail with diameter of at least 2cm | |

# SCHEDULE 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, $T_{MED.}$ 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 *DNSP* for use during the next *financial year* as follows:

a) Collect daily *SAIDI* values 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 calculate 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 known as the log-standard deviation) of the data set.

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

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

g) Any day with daily *SAIDI* value greater than the threshold value $T_{MED}$ 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 *DNSP's SAIDI* and *SAIFI* in respect of all of its *feeder types*.

| SCHEDULE 7 – LIST OF METROPOLITAN AREAS | | |
|---|---|---|
| **1. Local Government Areas** | | |
| ASHFIELD | HUNTERS HILL | PITTWATER |
| AUBURN | HURSTVILLE | RANDWICK |
| BANKSTOWN | KOGARAH | ROCKDALE |
| BAULKHAM HILLS | KU-RING-GAI | RYDE |
| BLACKTOWN | LAKE MACQUARIE | SHELLHARBOUR |
| BOTANY BAY | LANE COVE | STRATHFIELD |
| BURWOOD | LEICHHARDT | SUTHERLAND |
| CAMDEN | LIVERPOOL | SYDNEY |
| CAMPBELLTOWN | MANLY | WARRINGAH |
| CANTERBURY | MARRICKVILLE | WAVERLEY |
| CANADA BAY | MOSMAN | WILLOUGHBY |
| FAIRFIELD | NEWCASTLE | WOLLONGONG |
| GOSFORD | NORTH SYDNEY | WOOLLAHRA |
| HOLROYD | PARRAMATTA | WYONG |
| HORNSBY | PENRITH | |

| **2. Suburbs** | |
|---|---|
| **A.** ***Blue Mountains area*** | |
| BLACKHEATH | LINDEN |
| BLAXLAND | MEDLOW BATH |
| BULLABURRA | MOUNT RIVERVIEW |
| FAULCONBRIDGE | MOUNT VICTORIA |
| GLENBROOK | SPRINGWOOD |
| HAWKESBURY HEIGHTS | VALLEY HEIGHTS |
| HAZELBROOK | WARRIMOO |
| KATOOMBA | WENTWORTH FALLS |
| LAPSTONE | WINMALEE |
| LAWSON | WOODFORD |

| | |
|---|---|
| LEURA | YELLOW ROCK |
| **B. *Cessnock-Bellbird area*** | |
| ABERDARE | CESSNOCK |
| BELLBIRD | KEARSLEY |
| BELLBIRD HEIGHTS | NULKABA |
| **C. *Kiama area*** | |
| BOMBO | KIAMA HEIGHTS |
| KIAMA | MINNAMURRA |
| KIAMA DOWNS | |
| **D. *Kurri Kurri-Weston area*** | |
| ABERMAIN | PELAW MAIN |
| HEDDON GRETA | STANFORD MERTHYR |
| KURRI KURRI | WESTON |
| NEATH | |
| **E. *Maitland area*** | |
| ABERGLASSLYN | MOUNT DEE |
| ASHTONFIELD | OAKHAMPTON |
| BOLWARRA | OAKHAMPTON HEIGHTS |
| BOLWARRA HEIGHTS | PITNACREE |
| EAST MAITLAND | RAWORTH |
| HORSESHOE BEND | RUTHERFORD |
| LARGS | SOUTH MAITLAND |
| LORN | TELARAH |
| LOUTH PARK | TENAMBIT |
| MAITLAND | THORNTON |
| METFORD | WOODBERRY |
| MORPETH | |

| | |
|---|---|
| **F. *Newcastle Industrial area*** | |
| FERN BAY | WILLIAMTOWN |
| FULLERTON COVE | |
| **G. *Port Stephens area*** | |
| CORLETTE | SALAMANDER BAY |
| FINGAL BAY | SHOAL BAY |
| NELSON BAY | SOLDIERS POINT |
| **H. *Raymond Terrace area*** | |
| HEATHERBRAE | TOMAGO |
| RAYMOND TERRACE | |
| **I. *Richmond-Windsor area*** | |
| BLIGH PARK | NORTH RICHMOND |
| CLARENDON | RICHMOND |
| HOBARTVILLE | SOUTH WINDSOR |
| MCGRATHS HILL | VINEYARD |
| MULGRAVE | WINDSOR |
| | |

# DESIGN, RELIABILITY AND PERFORMANCE

# LICENCE CONDITIONS

**for**

# DISTRIBUTION NETWORK SERVICE PROVIDERS

## Scenario 3: Extreme reduction in reliability outcomes

**Ian Macdonald, MLC**
**MINISTER FOR ENERGY**

**1 DECEMBER 2007**

## EXPLANATORY NOTE

### Purpose of the design, reliability and performance conditions:

On 1 August 2005, the then Minister for Energy imposed additional conditions relating to reliability performance on licences held by distribution network service providers under the *Electricity Supply Act 1995*.

Following a review of the licence conditions conducted by the *Minister*, those conditions are being replaced with updated and revised conditions relating to reliability performance, with effect from 1 December 2007.

The purpose of the conditions is to facilitate the delivery of a safe and reliable supply of electricity. The conditions impose design, reliability and performance standards on distribution network service providers. Distribution network service providers will be required to report to the *Minister* to ensure compliance with the conditions. The new standards are as follows:

### Design planning criteria:

The *design planning criteria* set out:

- input standards to be used by a *licence holder* in planning its network; and
- requirements for load-forecasting and contingency-planning methodologies intended to achieve operational outcomes.

The baseline levels of planned redundancy required under the *design planning criteria* will underpin the *licence holder*'s plans and strategies designed to ensure, as far as is reasonably practicable, that it:

- meets the *reliability standards*; and
- provides an adequate supply of electricity with an appropriate level of redundancy, consistent with its regulatory obligations.

### Reliability standards:

The purposes of the *reliability standards* are to:

- define minimum average reliability performance, by *feeder type*, for a distribution network service provider across its distribution network; and
- provide a basis against which a distribution network service provider's reliability performance can be assessed.

### Individual feeder standards:

The purposes of the *individual feeder standards* are to:

- specify minimum standards of reliability performance for individual feeders;

- require a distribution network service provider to focus continually on improving the reliability of its feeders; and
- enable the reliability performance of feeders to be monitored over time.

**Customer service standards:**

The purpose of the *customer service standards* is to provide financial recognition to eligible *customer*s who have experienced poor reliability of supply from a distribution network service provider.

**Commencement:**

The licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Electricity Supply Act 1995*. The conditions are imposed on 1 December 2007 and take effect from that date, except where expressly stated otherwise.

**Relationship with existing conditions and other obligations:**

These conditions are additional to conditions that the *Minister* has previously imposed on licences held by distribution network service providers and licence conditions imposed under the *Electricity Supply Act 1995* and other regulatory instruments, other than the conditions relating to reliability performance imposed by the Minister on 1 August 2005. These conditions replace the design, reliability and performance licence conditions imposed by the Minister on 1 August 2005 (as amended on 1 July 2006).

These conditions are also supplementary to obligations imposed on distribution network service providers by the *Electricity Supply Act 1995*, the *Electricity Supply (General) Regulation 2001*, the *Electricity Supply (Safety and Network Management) Regulation 2002*, and other regulatory instruments.

**Network management generally**

Network management requires long-term planning, investment decisions and prioritisation of work to ensure, as far as is reasonably practicable, reliable supply. The *licence holder* has discretion to plan its investment for compliance with these licence conditions to suit its individual circumstances.

These conditions do not reduce or alter the responsibility of *licence holder*s under their Network Management Plans to assure delivery of a safe and reliable supply. Design Planning Criteria described in these conditions provide minimum standards for various categories of network elements.

Higher standards may apply when it is prudent to do so. Capital investment plans cannot be limited by exclusive adherence to input standards. Key operating and risk management requirements to meet reliability outcomes also need to be addressed when developing capital plans.

**Enforcement:**

These conditions are enforceable under the *Electricity Supply Act 1995* by *IPART* and the *Minister*. These conditions are not intended to create standards which are enforceable against a *licence holder* by individual *customer*s.

**Consultation:**

Before imposing these conditions the *Minister* undertook consultation with stakeholders including the *licence holder*s, *IPART* and the *Minister* administering the *Protection of the Environment Administration Act 1991*. The *Minister* has given due consideration to submissions received during consultation.

**Reporting:**

Performance and audit reports will be required under these licence condition. Reliability performance reporting will continue to be implemented under the *Electricity Supply (Safety and Network Management) Regulation 2002*.

**Review:**

It is intended that these licence conditions will be reviewed by the *Minister* by June 2010 with any changes or amendments to become effective from 1 July 2014 to coincide with the commencement of the 2014 - 2019 regulatory period.

The *Minister* may, at his discretion, review the licence conditions at other times in accordance with the *Electricity Supply Act 1995.*

## DESIGN, RELIABILITY AND PERFORMANCE CONDITIONS

### 14. Design planning criteria

**14.1** A *licence holder* must develop and implement a plan to comply with the applicable *design planning criteria* in Schedule 1 in relation to all new *network elements* for which planning commences after the commencement of these conditions.

**14.2** A *licence holder* must be, in relation to all existing *network elements*:

- as compliant as reasonably practicable with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2014; and
- fully compliant with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2019.

**14.3** In undertaking network planning processes, a *licence holder* must adopt methodologies:

- for determining the *forecast demand* and *expected demand* (as applicable); and
- for contingency planning for credible *network element* maintenance and/or failure;

which ensure that, as far as is reasonably practicable, the *thermal capacity* of *network elements* is sufficient to meet the actual load through the *network elements* under the following conditions:

- all *network elements* in service, for *network elements* required to meet *N security standards* in Schedule 1;
- *credible contingencies* involving any one *network element* out of service, for *network elements* required to meet *N-1 security standards* in Schedule 1, except as permitted by Schedule 1; and
- *credible contingencies* involving any two *network elements* out of service, for *network elements* required to meet *N-2 security standards* in Schedule 1, except as permitted by Schedule 1.

~~**14.4** For Country Energy *sub-transmission* lines, 10 *MVA* in Schedule 1 is replaced by 15 *MVA*.~~

~~**14.5** For Country Energy zone *substations*, 10 *MVA* in Schedule 1 is replaced by 15 *MVA* until 30 June 2014.~~

**14.6** A *licence holder* may only apply higher design planning criteria where the *licence holder* considers it is prudent to do so. When considering what is prudent, the *licence holder* must take into account:

- the costs and benefits of the revised *design planning criteria*;

- the actual configuration and limitations of *the network elements* (which may not be reflected in Schedule 1);
- the specific condition of the *network elements* in service; and
- the likely impact of alternative investment options on the reliability of the *network elements*.

*Note: For example very large or geographically and electrically remote zone substations may prudently have N-1 redundancy for all forecast demand levels (rather than 99% of time as described in Schedule 1).*

**14.7** A *licence holder* may agree with a *customer* to apply higher or lower standards of service at the *customer*'s point of supply than the *design planning criteria* relevant to that *customer*. In cases where negotiations are with developers rather than the ultimate end-use *customer*, the *licence holder* must take into account anticipated end-use *customer* expectations and asset management considerations before agreeing to apply higher or lower standards of service at the *customer's* point of supply. Where a lower standard of service is agreed with a *customer*, compliance with the *design planning criteria* is not required at the *customer's* point of supply.

## 15. Reliability standards

15.1 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 50% confidence level, that it will not exceed in any *financial year* the *SAIDI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

15.2 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 50% confidence level, that it will not exceed in any *financial year* the *SAIFI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

~~Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIDI average standards* that apply to its *feeder types*.~~

~~15.2 Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIFI average standards* that apply to its *feeder types*.~~

15.3 The requirements under this condition 15 are the *reliability standards* and take effect from 1 December 2007.

15.4 The *reliability standards* for the 6 month period from 1 January 2008 to 30 June 2008, are to be calculated by applying 1/2 of the *SAIDI average standards* and 1/2 of the *SAIFI average standards.*

## 16. Individual feeder performance

16.1 This condition applies where one or more of the feeders of a *licence holder* exceed the relevant *individual feeder standards* for any 12 month period ending at the end of March, June, September or December, when *excluded interruptions* are disregarded.

16.2 Subject to condition 16.5, ~~A~~a *licence holder* must:

(a) immediately investigate the causes for each *feeder* exceeding the *individual feeder standards*;

(b) by the end of the quarter following the quarter in which the *feeder* first exceeded the *individual feeder standards*, complete an investigation report identifying the causes and as appropriate, any action required to improve the performance of each feeder to the *individual feeder standards*;

(c) complete any operational actions identified in the investigation report to improve the performance of each feeder to the *individual feeder standards* by the end of the third quarter following the quarter in which each feeder first exceeded the *individual feeder standards*;

(d) except as permitted by condition 16.2(e), 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*;

(e) where non-network solutions would provide acceptable alternative outcomes for *customer*s in a more cost-effective manner, these solutions may be adopted where they are separately justified in the investigation report;

(f) ensure that the implementation timetable for the network project plan or alternative non-network solutions is as short as is reasonably practicable.

16.3 The investigation report is to include a documented rectification plan where action is found to be warranted in order to improve the performance of a feeder to the *individual feeder* standards. The action that is required may involve work to other network elements, or may involve only repair or maintenance work where capital works are not warranted taking into account any one-off events and previous performance trends.

16.4 The requirements under this condition 16 take effect from 1 January 2008.

16.5 In any *financial year*, the number of feeders in relation to which a *licence holder* is required to complete an investigation report and take action to improve the performance of the feeder to meet the *individual feeder standards* is limited to the worst performing 1% of total feeders, as determined by the *licence holder* on the basis of the variance to the relevant *individual feeder standard*. In relation to any feeders over this limit, the *licence holder* must investigate the cause of the feeder exceeding the *individual feeder standard* in accordance with condition 16.2(a), but conditions 16.2(b) to (f) and 16.3 do not apply.

## 17. Customer service standards

17.1 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption duration standard* at

the *customer*'s premises and the *customer* has made a claim to the *licence holder* within three months of the interruption.

17.2 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption frequency standard* at the *customer*'s premises in a *financial year* and the *customer* has made

a claim to the *licence holder* within three months of the end of the *financial year* to which the interruptions relate.

17.3 A *licence holder* must determine a claim for payment under condition 17, and notify the *customer* of the determination in writing, within one month of receipt of a claim. For *customer*s eligible for payment, the notice of determination must include the amount to be paid, the manner of payment and the timing of payment. Where the claim is not paid (whether in part or in full), the notice of determination must include reasons for the decision.

17.4 A *licence holder* is required to take reasonable steps to make *customer*s aware of the availability of payments on the terms set out in condition 17. Reasonable steps include, as a minimum, publication of information on the *licence holder's* website and annual newspaper advertisements. On request from a *customer*, a licence holder must provide written information on the availability of payments on the terms set out in condition 17.

17.5 A *licence holder* is required to make only one payment of $80 to a *customer* per premises in a financial year for exceeding the *interruption frequency standard*.

17.6 A *licence holder* is required to pay no more than $320 under condition 17 to a *customer* per premises in any one financial year.

17.7 A payment under this condition does not:

(a) In any way alter or diminish any rights that a *customer* may have against any person under any trade practices or other applicable legislation, common law or contract;

(b) Represent any admission of legal liability by the *licence holder*; or

(c) Alter, vary or exclude the operation of the section 119 of the *National Electricity Law* or any other statutory limitations on liability or immunities applicable to a *licence holder*.

17.8 The requirements under this condition 17 (aside from condition 17.4) take effect from 1 December 2007.

## 18. Performance monitoring and reporting

### *Design planning criteria report*

18.1 Subject to condition 18.17 a *licence holder* must submit an annual *design planning criteria* report to the *Minister* by 30 September each year in relation to the following matters:

(a) The *licence holder*'s strategy and plan to comply with condition 14 for each class of *network element* in Schedule 1;

(b) Progress against the *licence holder*'s plan for each class of *network element*;

(c) For sub-transmission lines, sub-transmission substations and zone substations, each of its *network elements* that will not, from a planning perspective, comply with condition 14.1 or condition 14.2;

(d) For distribution feeders and substations, a summary report for each class of network element that will not, from a planning perspective, comply with condition 14.1 or condition 14.2; and

(e) any other matter formally notified by the *Minister* in writing.

18.1A Conditions 18.1 (c) and (d) do not apply to *network elements* during routine maintenance, provided planning requirements are met at all other times and the *licence holder*, acting reasonably, schedules routine maintenance (and develops contingency plans) to minimise the impact of outages in the event of a *credible contingency* during routine maintenance.

***Reliability standards report***

18.2 Subject to condition 18.17 a *licence holder* must submit an annual reliability standards report to the *Minister* by 30 September each year.

18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous *financial year*:

(a) performance against the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(b) a detailed description of the methodologies adopted by the *licence holder* for determining its level of confidence of compliance with the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(c) evidence demonstrating that the *licence holder* complies with conditions 15.1 and 15.2; and

(d) any other matter formally notified by the *Minister* in writing.

~~Subject to condition 18.17 a *licence holder* must submit a quarterly reliability standards report to the *Minister* within one month of the end of each *quarter*.~~

~~18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous 12 month period to the end of that *quarter*:~~

~~(a) performance against the pro-rata *SAIDI average standards* and pro-rata *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;~~

~~(b) reasons for any non-compliance by the *licence holder* with the pro-rata *reliability standards* and plans to improve performance; and~~

~~(c) any other matter formally notified by the *Minister* in writing.~~

***Individual feeder standards report***

18.4 Subject to condition 18.17 a *licence holder* must submit, within one month of the end of each *quarter*, a quarterly *individual feeder standards* report to the *Minister* on feeders that exceeded the relevant *individual feeder standards* during the previous 12 month period to the end of that quarter, together with, for each feeder:

(a) the date at which the feeder first exceeded the relevant *individual feeder standard*, together with the actual *SAIDI* and *SAIFI* performance of the feeder for the 12 month period;

(b) details of the remedial action that the *licence holder* intends taking, or has taken, to improve the performance of those feeders; and

(c) the date of completion, or the date of planned completion, of the remedial action plan.

***Customer service standards report***

18.5 Subject to condition 18.17 a *licence holder* must submit a quarterly *customer service standards* report to the *Minister* on the following matters within one month of the end of each *quarter*, for the preceding *quarter* and for the previous 12 month period to the end of that *quarter:*

(a) the number of payments given under condition 17 to *customer*s by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1

(b) the number of claims not paid (whether in part or full) under condition 17 by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1.

***Major incident reporting***

18.6 A *licence holder* must report to the *Minister* within 24 hours any major network incidents involving significant injury to persons, loss of property or widespread supply interruptions. High level severity incidents are to be advised immediately.

***Independent audit report***

18.7 Subject to condition 18.17, an independent audit must be conducted after the end of each financial year to audit the *licence holder*'s performance against the:

(a) *design planning criteria;*

(b) *reliability standards*;

(c) *individual feeder standards*; and

(d) *customer service standards*.

18.8 A *licence holder* is required to nominate a person to conduct the independent audit by notice in writing to IPART. The *licence holder* must give notice in accordance with any time specified by IPART in writing to the *licence holder*, or, if no time has been specified, no later than 1 July of the year in which the report is to be submitted to the *Minister* and IPART.

18.9 The person nominated is to be a person who is:

(a) independent of the *licence holder*; and

(b) competent to exercise the functions of an auditor in respect of the matters to be audited.

18.10 The nomination of an auditor by a *licence holder* ceases to have effect if IPART advises the *licence holder*, by notice in writing, that the nomination is not acceptable or has ceased to be acceptable.

18.11 IPART may nominate an auditor to carry out an audit, and the person so nominated is taken to have been nominated by the *licence holder*, if:

(a) the nomination of an auditor by the *licence holder* ceases to have effect; or

(b) the *licence holder* fails to nominate an auditor to carry out the audit in accordance with any requirements specified by IPART by notice in writing to the *licence holder*.

18.12 Subject to condition 18.17 a *licence holder* must provide a copy of the auditor's report by 30 September each year to IPART and the *Minister*.

***General matters concerning reports***

18.13 Where the *Minister* determines the format of a report required by this condition, a *licence holder* must submit the report in that format.

18.14 The *Minister* may from time to time establish guidelines to be followed by the *licence holder* in complying with reports required by this condition and the *licence holder* must comply with any such guidelines.

18.15 The *Minister* may from time to time require, by notice in writing to the *licence holder*, further reports relating to these licence conditions including, without limitation, reports relating to capital expenditure works, network refurbishment and maintenance programs.

18.16 A *licence holder* must provide a report submitted to the *Minister* under this condition to IPART, if requested to do so by IPART by notice in writing.

***Timing of initial reports***

18.17 Reports against the new standards will be submitted as follows:

(a) Within three months of the end of each financial year on compliance with *design planning criteria*, the first being by 30 September 2008;

(b) Within three months of the end of each financial year, for each annual audit report, the first being by 30 September 2008; and

(c) Within one month of the end of each quarter for reports on *reliability standards*, *individual feeder standards* and *customer service standards*, the first being by 31 January 2008.

## 19 Interpretation and definitions

19.1 These licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Act*.

19.2 These licence conditions replace the design, reliability and performance licence conditions imposed by the *Minister* on distribution network service providers on 1 August 2005 (as amended on 1 July 2006).

19.3 These licence conditions are in addition to other licence conditions imposed by the *Minister*, licence conditions under the *Act* or *Regulations*, and other obligations imposed on *licence holder*s by the *Act* and *Regulations*.

19.4 These conditions are imposed on 1 December 2007 and take effect from that date, except where otherwise stated in the conditions or the Schedules to the conditions.

19.5 Expressions used in these licence conditions that are defined in the *Act* or the *Regulations* made under the *Act* have, unless otherwise stated, the meanings set out in the *Act* or the *Regulations*.

19.6 The Explanatory Note to these licence conditions does not form part of the licence conditions.

19.7 Footnotes contained in these licence conditions do form part of the licence conditions.

19.8 In these licence conditions:

| | |
|---|---|
| *Act* | means the *Electricity Supply Act 1995.* |
| *Best practice repair time* | means the minimum practicable time period to restore supply. |
| *CBD* | means the area within the City of Sydney that is supplied by the triplex 11kV cable system. |
| *CBD feeder* | means a feeder supplying predominantly commercial high-rise buildings, supplied by the City of Sydney's triplex 11kV cable system. |
| *Credible contingency* | means an outage on one line or item of *electrical apparatus*, or a coincident outage on more than one line and /or items of *electrical apparatus* that a *licence holder*, acting reasonably, could expect to arise as a result of a single electrical failure or mechanical event affecting those lines or items.<br><br>*Note: Credible contingencies are generally limited to major items of equipment with significant probabilities of failure or outage.* |

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| *customer* | means a wholesale customer or a retail customer in the *licence holder*'s distribution district. |
| *customer service standards* | means the customer service standards in Schedule 5 to these conditions. |
| *design planning criteria* | means the load magnitude, security standard and customer interruption time specified in Schedule 1 to these conditions. |
| *distribution feeder* | means a high-voltage line operating over 1000V and at or below 22kV that connects between a zone substation and a distribution substation, excluding short radial sections off the trunk feeder used to supply a small number of distribution substations (eg a spur line into a peninsula or valley). |
| *distribution substation* | means a *substation* forming part of the distribution system, which provides the network link between a *distribution feeder* and elements of the distribution system below 1000V. |
| *electrical apparatus* | means a transformer within a *substation* |
| *Emergency service organisation* | has the same meaning as in section 3 of the *State Emergency and Rescue Management Act 1989.* |
| *excluded interruptions* | means excluded interruptions listed in Schedule 4 to these conditions. |
| *expected demand* | means peak demand expected to occur for *distribution feeders* and *distribution substations*, based on:<br>• loads connected or expected to be connected, and/or<br>• actual demand and/or<br>• underlying growth rates |
| *feeder* | means a *distribution feeder.* |
| *feeder type* | means a *CBD feeder*, *long rural feeder*, *short rural feeder* or *urban feeder* as the case may be. |
| *financial year* | means a year commencing 1 July and ending 30 June. |
| *forecast demand* | means the *licence holder*'s seasonal peak demand forecast with 50% probability of being exceeded |

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| | (i.e. 1 in 2 years), normally performed on an annual basis, and based on underlying growth rates plus an allowance for spot loads and transfers. |
| *GST* | has the meaning it has in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth). |
| *individual feeder standards* | means the individual feeder standards in Schedule 3 to these conditions. |
| *interruption* | means any temporary unavailability of electricity supply to a *customer* associated with an outage of the distribution system including outages affecting a single premises, but does not include disconnection. |
| *interruption duration standards* | means the interruption duration standards set out in Schedule 5 to these conditions. |
| *interruption frequency standards* | means the interruption frequency standards set out in Schedule 5 to these conditions. |
| *IPART* | means the Independent Pricing and Regulatory Tribunal established under the *Independent Pricing and Regulatory Tribunal Act 1992*. |
| *licence holder* | means the holder of a distribution network service provider's licence. |
| *local government area* | has the same meaning as in the *Local Government Act 1993* |
| *long rural feeder* | means a feeder with a total feeder length greater than 200 km which is not a *CBD feeder* or an *urban feeder*. |
| *major event day* | means a day determined under Schedule 6. |
| *metropolitan* | means the areas comprising the *local government areas* and *suburbs* listed in Schedule 7 |
| *Minister* | means the Minister administering the *Act*. |
| *MVA* | means mega volt amperes. |
| *N, N-1, N-2* | N is designing the *network elements* for no *credible contingencies;* N-1 is designing for a single *credible contingency* (normally involving an outage of one line or one item of *electrical* |

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| | *apparatus* within a *substation*) and N-2 is designing for *credible contingencies* (normally involving outages of two lines or two items of *electrical apparatus* within a *substation*).<br><br>The relevant number of *credible contingencies* will result in:<br>▪ *interruption* to *customer*s up to the time indicated in Schedule 1;<br>▪ acceptable voltage levels being maintained at the secondary busbars of transformers;<br>▪ remaining in-service *network elements* and *electrical apparatus* being loaded within their thermal limits. |
| *network elements* | means the following parts of a *licence holder*'s distribution system: *sub-transmission lines, sub-transmission substations, zone substations, distribution feeders and distribution substations*. |
| *non-metropolitan* | means areas in New South Wales other than areas defined as *metropolitan* |
| *non-urban* | means areas which are not *urban*. |
| *planned interruption* | means an *interruption* for which advance notice has been provided or which has been requested by a *customer*. |
| *quarter* | means a period of three months commencing 1 January, 1 April, 1 July and 1 October as the case may be. |
| *regional centre* | means:<br><br>until 30 June 2014, the towns of Tweed Heads, Wagga Wagga, Coffs Harbour (including Sawtell), Albury, Port Macquarie, Queanbeyan, Orange, Tamworth, Dubbo, Bathurst and Lismore; and<br><br>from 1 July 2014, the towns listed above as well as the towns of Goulburn, Forster-Tuncurry, Armidale, Broken Hill, Grafton, Griffith, Ballina and Taree. |
| *Regulations* | means Regulations made under the *Act*. |
| *regulatory period* | means the period for which the economic regulator provides for a price path for network income and for the purpose of this document will be taken to be a period of five years. |

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| *reliability standards* | means the requirements imposed under condition 15 of these conditions. |
| *SAIDI* | means the sum of the duration of each sustained *customer* interruption (measured in minutes), divided by the total number of *customer*s (averaged over the *financial year*) of the *licence holder*. |
| *SAIFI* | means the total number of sustained *customer* interruptions divided by the total number of *customer*s (averaged over the *financial year*) of that *licence holder*. |
| *SAIDI average standards* | means the standards set out in item 1, Schedule 2. |
| *SAIFI average standards* | means the standards set out in item 2, Schedule 2. |
| *SAIDI individual feeder standards* | means the standards set out in item 1, Schedule 3. |
| *SAIFI individual feeder standards* | means the standards set out in item 2, Schedule 3. |
| *Security Standards* | means the *Security Standards* specified in Schedule 1 which require the network to be planned to supply all *forecast demand* or *expected demand* (as applicable), except where varied by the notes to Schedule 1, within the *thermal capacity* of all *network elements* and maintain voltage levels within limits published by *licence holder*s with:<br>• all lines and *electrical apparatus* in service, N<br>• outages of lines and *electrical apparatus* arising from any one *credible contingency* N-1<br>• outages of lines and *electrical apparatus* arising from any two *credible contingencies*, N-2 |
| *Severe thunderstorm or Severe weather* | *means an event set out in Column 2 or Column 3 of table 2* |
| *short rural feeder* | means a feeder with a total feeder route length less than 200 km, and which is not a *CBD feeder* or an *urban feeder*. |
| *suburb* | means an area defined by boundaries determined and gazetted by the Geographical Names Board of New South Wales. |

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| *substation* | means a part of an electrical network, confined to a given area, mainly including ends of transmission or distribution lines, electrical switchgear and control gear, and one or more transformers. A substation generally includes safety or control devices (for example protection). |
| *sub-transmission* | means those parts of the distribution system (including power lines and towers, cables and substations as the case may be) that transfer electricity from the regional bulk supply points supplying areas of consumption to individual *zone substations*, operating at nominal voltages between 132 kV and 33 kV inclusive, that may also fulfil a transmission role by operating in parallel to, and providing support to, the higher voltage transmission network. |
| *sub-transmission line – Overhead* | means *sub-transmission* generally of overhead construction which would reasonably be expected to have a restoration time of less than 8 hours following a *credible contingency.* |
| *sub-transmission line – Underground* | means *sub-transmission* generally of underground construction, or *sub-transmission overhead* with a section of underground construction which would reasonably be expected to have a restoration time in excess of 8 hours following a *credible contingency.* |
| *table 1* | means Table 1 in Schedule 5 to these conditions. |
| *table 2* | means Table 2 in Schedule 5 to these conditions. |
| *thermal capacity* | means the maximum allowable thermal capability of a particular *network element*, taking into consideration the supply security level (N, N-1, N-2) required of the *network element(s)* and having regard to the technical and economic life of the *network element(s)*. When considering *thermal capacity* of more than one *network element* operating in parallel, the actual load sharing characteristics of the parallel network elements should be considered. |
| *third party* | does not include a person or body contracted or authorised by the *licence holder* to take action, or any animal or plant life. |

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| *urban feeder* | means a feeder with actual maximum demand over the reporting period per total feeder route length greater than 0.3 *MVA*/km and which is not a *CBD Feeder*. |
| *urban* | For EnergyAustralia and Integral Energy, means an area where the majority of land is zoned for residential and/or commercial and/or industrial use within a town or city type of area which is contiguous with other similar town or city areas with an aggregated population of at least 5,000 people.<br><br>For Country Energy, means areas within a *regional centre*. |
| *zone substation* | means a *substation* forming part of the distribution system, which provides the network link between the *sub-transmission* network and elements of the distribution system at or below 22kV. |

# SCHEDULE 1 DESIGN PLANNING CRITERIA

| ***Network Element*** | ***Load Type*** | ***Forecast Demand or Expected Demand*** | ***Security Standard*** | ***Customer Interruption Time*** |
|---|---|---|---|---|
| Sub Transmission Line | CBD | Any | N-1 ~~N-2~~[6] | Nil for 1st credible contingency ~~<1 hr for 2nd credible contingency~~ |
| | Urban & Non-Urban | ≥ ~~10~~ 20 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < ~~10~~ 20 *MVA* | N[2] | *Best practice repair time* |
| Sub Transmission Substation | CBD | Any | N-1 ~~N-2~~[6] | Nil for 1st credible contingency ~~<1 hr for 2nd credible contingency~~ |
| | Urban ~~& Non-Urban~~ | Any | N-1[1] | < 1 minute |
| | Non-Urban | ≥ 20 MVA | N-1[1] | < 1 minute |
| | Non-Urban | < 20 MVA | N[2] | *Best practice repair time* |
| Zone Substation | CBD | Any | N-1 ~~N-2~~[6] | Nil for 1st credible contingency ~~<1 hr for 2nd credible contingency~~ |
| | Urban & Non-Urban | ≥ ~~10~~20 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < ~~10~~ 20 *MVA* | N[2] | *Best practice repair time* |
| Distribution Feeder | CBD | Any | N-1[3] | Nil |
| | Urban | Any | N-1[4] | < 4 Hours[5] |
| | Non-Urban | Any | N | *Best practice repair time* |
| Distribution Substation | CBD | Any | N-1[3] | Nil |
| | Urban & Non-Urban | Any | N[7] | *Best practice repair time* |

1. ~~For a *Sub-transmission line - Overhead* and a Zone Substation:~~

~~a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time i.e. a total aggregate time of 88 hours per annum, up to a maximum of 20% above the *thermal capacity* under N-1 conditions. For Country Energy, in other than regional centres, the *forecast demand* must not exceed the *thermal capacity* under N-1 conditions.~~

~~b. under N conditions, a further criterion is that the *thermal capacity* is required to meet at least 115% of forecast demand.~~

a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 2% of the time (i.e. a total aggregate time of 176 hours per annum).

b. under N conditions, a further criterion is that the *thermal capacity* is required to meet the *licence holder*'s seasonal *forecast demand*.

~~For a *Sub-transmission line – Underground*, any overhead section may be designed as if it was a *Sub-transmission line – Overhead*, providing the *forecast demand* does not exceed the *thermal capacity* of the underground section at any time under N-1 conditions.~~

2. Under N conditions, *thermal capacity* is required to meet the *licence holder*'s seasonal ~~to be provided for greater than 115% of~~ *forecast demand*.

3. Under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 2% of the time (i.e. a total aggregate time of 176 hours per annum). The actual *Security Standard* is an enhanced N-1. For a second coincident credible contingency on the CBD triplex system, restricted essential load can still be supplied.

4. For Distribution feeders:
   a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 2% of the time (i.e. a total aggregate time of 176 hours per annum).

~~By 30 June 2014, expected demand is to be no more than 80% of feeder *thermal capacity* (under system normal operating conditions) with switchable interconnection to adjacent feeders enabling restoration for an unplanned *network element* failure. By 30 June 2019, *expected demand* is to be no more than 75% of feeder *thermal capacity*.In order to achieve compliance, feeder reinforcement projects may need to be undertaken over more than one *regulatory period*. In those cases where a number of feeders form an interrelated system (such as a meshed network), the limits apply to the average loading of the feeders within the one system.~~

5. The timeframe is expected only, and is based on the need to carry out the isolation and restoration switching referred to in note 4. This standard does not apply to interim/staged supplies, i.e. prior to completion of the entire development or to *excluded interruptions* outside the control of the *licence holder*.

~~6. In the *CBD* area:~~
~~N-2 equivalent is achieved by the network being normally configured on the basis of N-1 with no interruption of supply when any one line or item of *electrical apparatus* within a *substation* is out of service. The *licence holder* must plan the *CBD* network to cater for two *credible contingencies* involving the loss of multiple lines or items of electrical apparatus within a substation, by being able to restore supply all ,Up to a maximum of Mthe remaining 20MVA to be restored within 4 hours. The remaining 10MVA to be restored within 8 hours.Restoration may be via alternative arrangements (e.g. 11kV interconnections).~~

7. Urban Distribution substations shared, or available to be shared, by multiple *customer*s are generally expected to have some level of redundancy for an unplanned contingency, eg via low voltage manual interconnection to adjacent substations enabling at least partial restoration.

# SCHEDULE 2 – RELIABILITY STANDARDS

## 1. SAIDI average standards

| SAIDI – Average Reliability Duration Standards (Minutes per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 60 | 57 | 54 | 51 | 48 | 45 |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 400 | 380 | 360 | 340 | 320 | 300 |
| *Long-rural* | 900 | 860 | 820 | 780 | 740 | 700 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 300 | 300 | 300 | 300 | 300 | 300 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 140 | 137 | 134 | 131 | 128 | 125 |
| *Short-rural* | 340 | 332 | 324 | 316 | 308 | 300 |
| *Long-rural* | 750 | 740 | 730 | 720 | 710 | 700 |

## *2. SAIFI average standards*

| SAIFI – Average Reliability Frequency Standards (Number per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 0.35 | 0.34 | 0.33 | 0.32 | 0.31 | 0.3 |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 4.4 | 4.2 | 3.9 | 3.7 | 3.4 | 3.2 |
| *Long-rural* | 8.5 | 8 | 7.5 | 7 | 6.5 | 6 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 2 | 1.96 | 1.92 | 1.88 | 1.84 | 1.8 |
| *Short-rural* | 3.3 | 3.24 | 3.18 | 3.12 | 3.06 | 3.0 |
| *Long-rural* | 5 | 4.9 | 4.8 | 4.7 | 4.6 | 4.5 |

# SCHEDULE 3 – INDIVIDUAL FEEDER STANDARDS

## *1. SAIDI Individual Feeder Standards*

| **SAIDI – Standards (Minutes per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *CBD* | ~~100~~120 |
| *Urban* | ~~350~~420 |
| *Short-rural* | ~~1000~~1200 |
| *Long-rural* | ~~1400~~1680 |
| ***Integral Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | ~~350~~420 |
| *Short-rural* | ~~1000~~1200 |
| *Long-rural* | ~~1400~~1680 |
| ***Country Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | ~~400~~480 |
| *Short-rural* | ~~1000~~1200 |
| *Long-rural* | ~~1400~~1680 |

## *2. SAIFI Individual Feeder Standards*

| **SAIFI – Standards (Number per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Number per *customer*** |
| *CBD* | ~~1.4~~1.7 |
| *Urban* | 4.8 |
| *Short-rural* | 9.6~~8~~ |
| *Long-rural* | 12~~0~~ |
| ***Integral Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | 4.8~~4~~ |
| *Short-rural* | 9.6~~8~~ |
| *Long-rural* | 12~~0~~ |
| ***Country Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | 7.2~~6~~ |
| *Short-rural* | 9.6~~8~~ |
| *Long-rural* | ~~10~~12 |

## SCHEDULE 4 - EXCLUDED INTERRUPTIONS

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*; and

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

## SCHEDULE 5 – CUSTOMER SERVICE STANDARDS

**Interruption duration standard:**

1. The *interruption duration standard* is the maximum duration, set out in column 2 of *table 1*, of an *interruption* to a customer's premises located in the relevant area in column 1 of *table 1*.

**Interruption frequency standard:**

2. The *interruption frequency standard* is the maximum number of *interruptions* in a financial year set out in column 3 of *table 1*, to a customer's premises located in the relevant area in column 1 of *table 1*:

**Table 1**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Type of area in which customer's premises is located** | **Interruption duration standard (hours)** | **Interruption frequency standard (number of interruptions of ≥hours)** |
| *metropolitan* | 12 | 4 interruptions ≥ 4 hours |
| *non-metropolitan* | 18 | 4 interruptions ≥ 5 hours |

**Interruptions to be disregarded**

3. In calculating the *interruption duration standard* or the *interruption frequency standard* the following types of *interruptions* (and no others) are excluded:

   (a) an *interruption* resulting from the following external causes:

   (i) a shortfall in generation;

   (ii) a failure or instability of the shared *transmission system*;

   (iii) a request or direction from an *emergency service organisation;*

   (b) a *planned* interruption;

   (c) an *interruption* within a region in which a natural disaster has occurred and:

   (i) the responsible Minister has notified the Commonwealth of the occurrence of an eligible disaster under the *Natural Disaster Relief Arrangements* in respect of that natural disaster for that region; and

   (ii) the *interruption* occurred during the period for which *Natural Disaster Relief Arrangements* have been notified;

   (d) an *interruption* caused by the effects of a *severe thunderstorm or severe weather*. These effects may include the necessary operation of

a circuit protection device which interrupts supply to *customer*s in areas not directly impacted by the *severe thunderstorm or severe weather.*

(e) an *interruption* caused by *third party* actions other than animal or vegetation interference (e.g. vehicle-hit-pole, vandalism) where the interruption is not also caused by any failure of the *licence holder* to comply with relevant plans, codes, guides or standards (e.g. low conductor clearance).

**Table 2**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Phenomenon** | **Severe Thunderstorm Warning** | **Severe Weather Warning** |
| Wind (Gusts) | Gusts 90km/h or more | Gusts 90km/h or more |
| Wind (Average) | | Widespread winds over land of 63km/h or more (Gale force) |
| Tornado | All tornados | |
| Blizzard | | Widespread blizzards in Alpine areas |
| Flash Flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood |
| Large Hail | Hail with diameter of at least 2cm | |

# SCHEDULE 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, $T_{MED.}$ 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 *DNSP* for use during the next *financial year* as follows:

a) Collect daily *SAIDI* values 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 calculate 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 known as the log-standard deviation) of the data set.

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

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

g) Any day with daily *SAIDI* value greater than the threshold value $T_{MED}$ 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 *DNSP's SAIDI* and *SAIFI* in respect of all of its *feeder types*.

| SCHEDULE 7 – LIST OF METROPOLITAN AREAS | | |
|---|---|---|
| **1. Local Government Areas** | | |
| ASHFIELD | HUNTERS HILL | PITTWATER |
| AUBURN | HURSTVILLE | RANDWICK |
| BANKSTOWN | KOGARAH | ROCKDALE |
| BAULKHAM HILLS | KU-RING-GAI | RYDE |
| BLACKTOWN | LAKE MACQUARIE | SHELLHARBOUR |
| BOTANY BAY | LANE COVE | STRATHFIELD |
| BURWOOD | LEICHHARDT | SUTHERLAND |
| CAMDEN | LIVERPOOL | SYDNEY |
| CAMPBELLTOWN | MANLY | WARRINGAH |
| CANTERBURY | MARRICKVILLE | WAVERLEY |
| CANADA BAY | MOSMAN | WILLOUGHBY |
| FAIRFIELD | NEWCASTLE | WOLLONGONG |
| GOSFORD | NORTH SYDNEY | WOOLLAHRA |
| HOLROYD | PARRAMATTA | WYONG |
| HORNSBY | PENRITH | |

| **2. Suburbs** | |
|---|---|
| **A.** ***Blue Mountains area*** | |
| BLACKHEATH | LINDEN |
| BLAXLAND | MEDLOW BATH |
| BULLABURRA | MOUNT RIVERVIEW |
| FAULCONBRIDGE | MOUNT VICTORIA |
| GLENBROOK | SPRINGWOOD |
| HAWKESBURY HEIGHTS | VALLEY HEIGHTS |
| HAZELBROOK | WARRIMOO |
| KATOOMBA | WENTWORTH FALLS |
| LAPSTONE | WINMALEE |
| LAWSON | WOODFORD |

| | |
|---|---|
| LEURA | YELLOW ROCK |
| **B. *Cessnock-Bellbird area*** | |
| ABERDARE | CESSNOCK |
| BELLBIRD | KEARSLEY |
| BELLBIRD HEIGHTS | NULKABA |
| **C. *Kiama area*** | |
| BOMBO | KIAMA HEIGHTS |
| KIAMA | MINNAMURRA |
| KIAMA DOWNS | |
| **D. *Kurri Kurri-Weston area*** | |
| ABERMAIN | PELAW MAIN |
| HEDDON GRETA | STANFORD MERTHYR |
| KURRI KURRI | WESTON |
| NEATH | |
| **E. *Maitland area*** | |
| ABERGLASSLYN | MOUNT DEE |
| ASHTONFIELD | OAKHAMPTON |
| BOLWARRA | OAKHAMPTON HEIGHTS |
| BOLWARRA HEIGHTS | PITNACREE |
| EAST MAITLAND | RAWORTH |
| HORSESHOE BEND | RUTHERFORD |
| LARGS | SOUTH MAITLAND |
| LORN | TELARAH |
| LOUTH PARK | TENAMBIT |
| MAITLAND | THORNTON |
| METFORD | WOODBERRY |
| MORPETH | |

| | |
|---|---|
| **F. *Newcastle Industrial area*** | |
| FERN BAY | WILLIAMTOWN |
| FULLERTON COVE | |
| **G. *Port Stephens area*** | |
| CORLETTE | SALAMANDER BAY |
| FINGAL BAY | SHOAL BAY |
| NELSON BAY | SOLDIERS POINT |
| **H. *Raymond Terrace area*** | |
| HEATHERBRAE | TOMAGO |
| RAYMOND TERRACE | |
| **I. *Richmond-Windsor area*** | |
| BLIGH PARK | NORTH RICHMOND |
| CLARENDON | RICHMOND |
| HOBARTVILLE | SOUTH WINDSOR |
| MCGRATHS HILL | VINEYARD |
| MULGRAVE | WINDSOR |
| | |

# DESIGN, RELIABILITY AND PERFORMANCE

# LICENCE CONDITIONS

**for**

# DISTRIBUTION NETWORK SERVICE PROVIDERS

## Scenario 4: Improvement in reliability outcomes

**Ian Macdonald, MLC**
**MINISTER FOR ENERGY**

**1 DECEMBER 2007**

## EXPLANATORY NOTE

### Purpose of the design, reliability and performance conditions:

On 1 August 2005, the then Minister for Energy imposed additional conditions relating to reliability performance on licences held by distribution network service providers under the *Electricity Supply Act 1995*.

Following a review of the licence conditions conducted by the *Minister*, those conditions are being replaced with updated and revised conditions relating to reliability performance, with effect from 1 December 2007.

The purpose of the conditions is to facilitate the delivery of a safe and reliable supply of electricity. The conditions impose design, reliability and performance standards on distribution network service providers. Distribution network service providers will be required to report to the *Minister* to ensure compliance with the conditions. The new standards are as follows:

### Design planning criteria:

The *design planning criteria* set out:

- input standards to be used by a *licence holder* in planning its network; and
- requirements for load-forecasting and contingency-planning methodologies intended to achieve operational outcomes.

The baseline levels of planned redundancy required under the *design planning criteria* will underpin the *licence holder*'s plans and strategies designed to ensure, as far as is reasonably practicable, that it:

- meets the *reliability standards*; and
- provides an adequate supply of electricity with an appropriate level of redundancy, consistent with its regulatory obligations.

### Reliability standards:

The purposes of the *reliability standards* are to:

- define minimum average reliability performance, by *feeder type*, for a distribution network service provider across its distribution network; and
- provide a basis against which a distribution network service provider's reliability performance can be assessed.

### Individual feeder standards:

The purposes of the *individual feeder standards* are to:

- specify minimum standards of reliability performance for individual feeders;

- require a distribution network service provider to focus continually on improving the reliability of its feeders; and
- enable the reliability performance of feeders to be monitored over time.

**Customer service standards:**

The purpose of the *customer service standards* is to provide financial recognition to eligible *customer*s who have experienced poor reliability of supply from a distribution network service provider.

**Commencement:**

The licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Electricity Supply Act 1995*. The conditions are imposed on 1 December 2007 and take effect from that date, except where expressly stated otherwise.

**Relationship with existing conditions and other obligations:**

These conditions are additional to conditions that the *Minister* has previously imposed on licences held by distribution network service providers and licence conditions imposed under the *Electricity Supply Act 1995* and other regulatory instruments, other than the conditions relating to reliability performance imposed by the Minister on 1 August 2005. These conditions replace the design, reliability and performance licence conditions imposed by the Minister on 1 August 2005 (as amended on 1 July 2006).

These conditions are also supplementary to obligations imposed on distribution network service providers by the *Electricity Supply Act 1995*, the *Electricity Supply (General) Regulation 2001*, the *Electricity Supply (Safety and Network Management) Regulation 2002*, and other regulatory instruments.

**Network management generally**

Network management requires long-term planning, investment decisions and prioritisation of work to ensure, as far as is reasonably practicable, reliable supply. The *licence holder* has discretion to plan its investment for compliance with these licence conditions to suit its individual circumstances.

These conditions do not reduce or alter the responsibility of *licence holder*s under their Network Management Plans to assure delivery of a safe and reliable supply. Design Planning Criteria described in these conditions provide minimum standards for various categories of network elements.

Higher standards may apply when it is prudent to do so. Capital investment plans cannot be limited by exclusive adherence to input standards. Key operating and risk management requirements to meet reliability outcomes also need to be addressed when developing capital plans.

**Enforcement:**

These conditions are enforceable under the *Electricity Supply Act 1995* by *IPART* and the *Minister*. These conditions are not intended to create standards which are enforceable against a *licence holder* by individual *customer*s.

**Consultation:**

Before imposing these conditions the *Minister* undertook consultation with stakeholders including the *licence holder*s, *IPART* and the *Minister* administering the *Protection of the Environment Administration Act 1991*. The *Minister* has given due consideration to submissions received during consultation.

**Reporting:**

Performance and audit reports will be required under these licence condition. Reliability performance reporting will continue to be implemented under the *Electricity Supply (Safety and Network Management) Regulation 2002*.

**Review:**

It is intended that these licence conditions will be reviewed by the *Minister* by June 2010 with any changes or amendments to become effective from 1 July 2014 to coincide with the commencement of the 2014 - 2019 regulatory period.

The *Minister* may, at his discretion, review the licence conditions at other times in accordance with the *Electricity Supply Act 1995.*

## DESIGN, RELIABILITY AND PERFORMANCE CONDITIONS

### 14. Design planning criteria

**14.1** A *licence holder* must develop and implement a plan to comply with the applicable *design planning criteria* in Schedule 1 in relation to all new *network elements* for which planning commences after the commencement of these conditions.

**14.2** A *licence holder* must be, in relation to all existing *network elements*:

- as compliant as reasonably practicable with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2014; and
- fully compliant with the applicable *design planning criteria* in Schedule 1, except as varied by conditions 14.4 and 14.5, in relation to all *network elements* by 1 July 2019.

**14.3** In undertaking network planning processes, a *licence holder* must adopt methodologies:

- for determining the *forecast demand* and *expected demand* (as applicable); and
- for contingency planning for credible *network element* maintenance and/or failure;

which ensure that, as far as is reasonably practicable, the *thermal capacity* of *network elements* is sufficient to meet the actual load through the *network elements* under the following conditions:

- all *network elements* in service, for *network elements* required to meet *N security standards* in Schedule 1;
- *credible contingencies* involving any one *network element* out of service, for *network elements* required to meet *N-1 security standards* in Schedule 1, except as permitted by Schedule 1; and
- *credible contingencies* involving any two *network elements* out of service, for *network elements* required to meet *N-2 security standards* in Schedule 1, except as permitted by Schedule 1.

**14.4** For Country Energy *sub-transmission* lines, 10 *MVA* in Schedule 1 is replaced by 15 *MVA*.

**14.5** For Country Energy zone *substations*, 10 *MVA* in Schedule 1 is replaced by 15 *MVA* until 30 June 2014.

**14.6** A *licence holder* may only apply higher design planning criteria where the *licence holder* considers it is prudent to do so. When considering what is prudent, the *licence holder* must take into account:

- the costs and benefits of the revised *design planning criteria*;

- the actual configuration and limitations of *the network elements* (which may not be reflected in Schedule 1);
- the specific condition of the *network elements* in service; and
- the likely impact of alternative investment options on the reliability of the *network elements*.

*Note: For example very large or geographically and electrically remote zone substations may prudently have N-1 redundancy for all forecast demand levels (rather than 99% of time as described in Schedule 1).*

**14.7** A *licence holder* may agree with a *customer* to apply higher or lower standards of service at the *customer*'s point of supply than the *design planning criteria* relevant to that *customer*. In cases where negotiations are with developers rather than the ultimate end-use *customer*, the *licence holder* must take into account anticipated end-use *customer* expectations and asset management considerations before agreeing to apply higher or lower standards of service at the *customer's* point of supply. Where a lower standard of service is agreed with a *customer*, compliance with the *design planning criteria* is not required at the *customer's* point of supply.

## 15. Reliability standards

15.1 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 99% confidence level, that it will not exceed in any *financial year* the *SAIDI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

15.2 Subject to condition 15.4, a *licence holder* must plan its network so as to expect, to a 99% confidence level, that it will not exceed in any *financial year* the *SAIFI average standards* that apply to its *feeder types*, when *excluded interruptions* are disregarded.

~~Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIDI average standards* that apply to its *feeder types*.~~

~~15.2 Subject to 15.4, a *licence holder* must not, when *excluded interruptions* are disregarded, exceed in a *financial year* the *SAIFI average standards* that apply to its *feeder types*.~~

15.3 The requirements under this condition 15 are the *reliability standards* and take effect from 1 December 2007.

15.4 The *reliability standards* for the 6 month period from 1 January 2008 to 30 June 2008, are to be calculated by applying 1/2 of the *SAIDI average standards* and 1/2 of the *SAIFI average standards.*

## 16. Individual feeder performance

16.1 This condition applies where one or more of the feeders of a *licence holder* exceed the relevant *individual feeder standards* for any 12 month period ending at the end of March, June, September or December, when *excluded interruptions* are disregarded.

16.2 Subject to condition 16.5, ~~A~~a *licence holder* must:

(a) immediately investigate the causes for each *feeder* exceeding the *individual feeder standards*;

(b) by the end of the quarter following the quarter in which the *feeder* first exceeded the *individual feeder standards*, complete an investigation report identifying the causes and as appropriate, any action required to improve the performance of each feeder to the *individual feeder standards*;

(c) complete any operational actions identified in the investigation report to improve the performance of each feeder to the *individual feeder standards* by the end of the third quarter following the quarter in which each feeder first exceeded the *individual feeder standards*;

(d) except as permitted by condition 16.2(e), 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*;

(e) where non-network solutions would provide acceptable alternative outcomes for *customer*s in a more cost-effective manner, these solutions may be adopted where they are separately justified in the investigation report;

(f) ensure that the implementation timetable for the network project plan or alternative non-network solutions is as short as is reasonably practicable.

16.3 The investigation report is to include a documented rectification plan where action is found to be warranted in order to improve the performance of a feeder to the *individual feeder* standards. The action that is required may involve work to other network elements, or may involve only repair or maintenance work where capital works are not warranted taking into account any one-off events and previous performance trends.

16.4 The requirements under this condition 16 take effect from 1 January 2008.

16.5 In any *financial year*, the number of feeders in relation to which a *licence holder* is required to complete an investigation report and take action to improve the performance of the feeder to meet the *individual feeder standards* is limited to the worst performing 10% of total feeders, as determined by the *licence holder* on the basis of the variance to the relevant *individual feeder standard*. In relation to any feeders over this limit, the *licence holder* must investigate the cause of the feeder exceeding the *individual feeder standard* in accordance with condition 16.2(a), but conditions 16.2(b) to (f) and 16.3 do not apply.

**17. Customer service standards**

17.1 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption duration standard* at the *customer*'s premises and the *customer* has made a claim to the *licence holder* within three months of the interruption.

17.2 A *licence holder* must pay the sum of $80 (including GST) to a *customer* where the *licence holder* exceeds the *interruption frequency standard* at the *customer*'s premises in a *financial year* and the *customer* has made

a claim to the *licence holder* within three months of the end of the *financial year* to which the interruptions relate.

17.3 A *licence holder* must determine a claim for payment under condition 17, and notify the *customer* of the determination in writing, within one month of receipt of a claim. For *customer*s eligible for payment, the notice of determination must include the amount to be paid, the manner of payment and the timing of payment. Where the claim is not paid (whether in part or in full), the notice of determination must include reasons for the decision.

17.4 A *licence holder* is required to take reasonable steps to make *customer*s aware of the availability of payments on the terms set out in condition 17. Reasonable steps include, as a minimum, publication of information on the *licence holder's* website and annual newspaper advertisements. On request from a *customer*, a licence holder must provide written information on the availability of payments on the terms set out in condition 17.

17.5 A *licence holder* is required to make only one payment of $80 to a *customer* per premises in a financial year for exceeding the *interruption frequency standard*.

17.6 A *licence holder* is required to pay no more than $320 under condition 17 to a *customer* per premises in any one financial year.

17.7 A payment under this condition does not:

(a) In any way alter or diminish any rights that a *customer* may have against any person under any trade practices or other applicable legislation, common law or contract;

(b) Represent any admission of legal liability by the *licence holder*; or

(c) Alter, vary or exclude the operation of the section 119 of the *National Electricity Law* or any other statutory limitations on liability or immunities applicable to a *licence holder*.

17.8 The requirements under this condition 17 (aside from condition 17.4) take effect from 1 December 2007.

## 18. Performance monitoring and reporting

### *Design planning criteria report*

18.1 Subject to condition 18.17 a *licence holder* must submit an annual *design planning criteria* report to the *Minister* by 30 September each year in relation to the following matters:

(a) The *licence holder*'s strategy and plan to comply with condition 14 for each class of *network element* in Schedule 1;

(b) Progress against the *licence holder*'s plan for each class of *network element*;

(c) For sub-transmission lines, sub-transmission substations and zone substations, each of its *network elements* that will not, from a planning perspective, comply with condition 14.1 or condition 14.2;

(d) For distribution feeders and substations, a summary report for each class of network element that will not, from a planning perspective, comply with condition 14.1 or condition 14.2; and

(e) any other matter formally notified by the *Minister* in writing.

18.1A Conditions 18.1 (c) and (d) do not apply to *network elements* during routine maintenance, provided planning requirements are met at all other times and the *licence holder*, acting reasonably, schedules routine maintenance (and develops contingency plans) to minimise the impact of outages in the event of a *credible contingency* during routine maintenance.

***Reliability standards report***

18.2 Subject to condition 18.17 a *licence holder* must submit an annual reliability standards report to the *Minister* by 30 September each year.

18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous *financial year*:

(a) performance against the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(b) a detailed description of the methodologies adopted by the *licence holder* for determining its level of confidence of compliance with the *SAIDI average standards* and *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;

(c) evidence demonstrating that the *licence holder* complies with conditions 15.1 and 15.2; and

(d) any other matter formally notified by the *Minister* in writing.

~~Subject to condition 18.17 a *licence holder* must submit a quarterly reliability standards report to the *Minister* within one month of the end of each *quarter*.~~

~~18.3 Subject to condition 18.17 each reliability standards report must include the following matters for the previous 12 month period to the end of that *quarter*:~~

~~(a) performance against the pro-rata *SAIDI average standards* and pro-rata *SAIFI average standards* by *feeder type*, disregarding *excluded interruptions*;~~

~~(b) reasons for any non-compliance by the *licence holder* with the pro-rata *reliability standards* and plans to improve performance; and~~

~~(c) any other matter formally notified by the *Minister* in writing.~~

***Individual feeder standards report***

18.4 Subject to condition 18.17 a *licence holder* must submit, within one month of the end of each *quarter*, a quarterly *individual feeder standards* report to the *Minister* on feeders that exceeded the relevant *individual feeder standards* during the previous 12 month period to the end of that quarter, together with, for each feeder:

(a) the date at which the feeder first exceeded the relevant *individual feeder standard*, together with the actual *SAIDI* and *SAIFI* performance of the feeder for the 12 month period;

(b) details of the remedial action that the *licence holder* intends taking, or has taken, to improve the performance of those feeders; and

(c) the date of completion, or the date of planned completion, of the remedial action plan.

***Customer service standards report***

18.5 Subject to condition 18.17 a *licence holder* must submit a quarterly *customer service standards* report to the *Minister* on the following matters within one month of the end of each *quarter*, for the preceding *quarter* and for the previous 12 month period to the end of that *quarter:*

(a) the number of payments given under condition 17 to *customer*s by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1

(b) the number of claims not paid (whether in part or full) under condition 17 by each type of area listed in Column 1 of Table 1 and by the type of standard, as shown in Columns 2 and 3 of Table 1.

***Major incident reporting***

18.6 A *licence holder* must report to the *Minister* within 24 hours any major network incidents involving significant injury to persons, loss of property or widespread supply interruptions. High level severity incidents are to be advised immediately.

***Independent audit report***

18.7 Subject to condition 18.17, an independent audit must be conducted after the end of each financial year to audit the *licence holder*'s performance against the:

(a) *design planning criteria;*

(b) *reliability standards*;

(c) *individual feeder standards*; and

(d) *customer service standards*.

18.8 A *licence holder* is required to nominate a person to conduct the independent audit by notice in writing to IPART. The *licence holder* must give notice in accordance with any time specified by IPART in writing to the *licence holder*, or, if no time has been specified, no later than 1 July of the year in which the report is to be submitted to the *Minister* and IPART.

18.9 The person nominated is to be a person who is:

(a) independent of the *licence holder*; and

(b) competent to exercise the functions of an auditor in respect of the matters to be audited.

18.10 The nomination of an auditor by a *licence holder* ceases to have effect if IPART advises the *licence holder*, by notice in writing, that the nomination is not acceptable or has ceased to be acceptable.

18.11 IPART may nominate an auditor to carry out an audit, and the person so nominated is taken to have been nominated by the *licence holder*, if:

(a) the nomination of an auditor by the *licence holder* ceases to have effect; or

(b) the *licence holder* fails to nominate an auditor to carry out the audit in accordance with any requirements specified by IPART by notice in writing to the *licence holder*.

18.12 Subject to condition 18.17 a *licence holder* must provide a copy of the auditor's report by 30 September each year to IPART and the *Minister*.

***General matters concerning reports***

18.13 Where the *Minister* determines the format of a report required by this condition, a *licence holder* must submit the report in that format.

18.14 The *Minister* may from time to time establish guidelines to be followed by the *licence holder* in complying with reports required by this condition and the *licence holder* must comply with any such guidelines.

18.15 The *Minister* may from time to time require, by notice in writing to the *licence holder*, further reports relating to these licence conditions including, without limitation, reports relating to capital expenditure works, network refurbishment and maintenance programs.

18.16 A *licence holder* must provide a report submitted to the *Minister* under this condition to IPART, if requested to do so by IPART by notice in writing.

***Timing of initial reports***

18.17 Reports against the new standards will be submitted as follows:

(a) Within three months of the end of each financial year on compliance with *design planning criteria*, the first being by 30 September 2008;

(b) Within three months of the end of each financial year, for each annual audit report, the first being by 30 September 2008; and

(c) Within one month of the end of each quarter for reports on *reliability standards*, *individual feeder standards* and *customer service standards*, the first being by 31 January 2008.

## 19 Interpretation and definitions

19.1 These licence conditions are imposed by the *Minister* pursuant to item 6(1)(b) of Schedule 2 of the *Act*.

19.2 These licence conditions replace the design, reliability and performance licence conditions imposed by the *Minister* on distribution network service providers on 1 August 2005 (as amended on 1 July 2006).

19.3 These licence conditions are in addition to other licence conditions imposed by the *Minister*, licence conditions under the *Act* or *Regulations*, and other obligations imposed on *licence holder*s by the *Act* and *Regulations*.

19.4 These conditions are imposed on 1 December 2007 and take effect from that date, except where otherwise stated in the conditions or the Schedules to the conditions.

19.5 Expressions used in these licence conditions that are defined in the *Act* or the *Regulations* made under the *Act* have, unless otherwise stated, the meanings set out in the *Act* or the *Regulations*.

19.6 The Explanatory Note to these licence conditions does not form part of the licence conditions.

19.7 Footnotes contained in these licence conditions do form part of the licence conditions.

19.8 In these licence conditions:

| | |
|---|---|
| *Act* | means the *Electricity Supply Act 1995.* |
| *Best practice repair time* | means the minimum practicable time period to restore supply. |
| *CBD* | means the area within the City of Sydney that is supplied by the triplex 11kV cable system. |
| *CBD feeder* | means a feeder supplying predominantly commercial high-rise buildings, supplied by the City of Sydney's triplex 11kV cable system. |
| *Credible contingency* | means an outage on one line or item of *electrical apparatus*, or a coincident outage on more than one line and /or items of *electrical apparatus* that a *licence holder*, acting reasonably, could expect to arise as a result of a single electrical failure or mechanical event affecting those lines or items.<br><br>*Note: Credible contingencies are generally limited to major items of equipment with significant probabilities of failure or outage.* |

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| *customer* | means a wholesale customer or a retail customer in the *licence holder*'s distribution district. |
| *customer service standards* | means the customer service standards in Schedule 5 to these conditions. |
| *design planning criteria* | means the load magnitude, security standard and customer interruption time specified in Schedule 1 to these conditions. |
| *distribution feeder* | means a high-voltage line operating over 1000V and at or below 22kV that connects between a zone substation and a distribution substation, excluding short radial sections off the trunk feeder used to supply a small number of distribution substations (eg a spur line into a peninsula or valley). |
| *distribution substation* | means a *substation* forming part of the distribution system, which provides the network link between a *distribution feeder* and elements of the distribution system below 1000V. |
| *electrical apparatus* | means a transformer within a *substation* |
| *Emergency service organisation* | has the same meaning as in section 3 of the *State Emergency and Rescue Management Act 1989.* |
| *excluded interruptions* | means excluded interruptions listed in Schedule 4 to these conditions. |
| *expected demand* | means peak demand expected to occur for *distribution feeders* and *distribution substations*, based on:<br>• loads connected or expected to be connected, and/or<br>• actual demand and/or<br>• underlying growth rates |
| *feeder* | means a *distribution feeder.* |
| *feeder type* | means a *CBD feeder*, *long rural feeder*, *short rural feeder* or *urban feeder* as the case may be. |
| *financial year* | means a year commencing 1 July and ending 30 June. |
| *forecast demand* | means the *licence holder*'s seasonal peak demand forecast with ~~50~~10% probability of being exceeded |

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| | (i.e. 1 in ~~2~~ 10 years), normally performed on an annual basis, and based on underlying growth rates plus an allowance for spot loads and transfers. |
| *GST* | has the meaning it has in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth). |
| *individual feeder standards* | means the individual feeder standards in Schedule 3 to these conditions. |
| *interruption* | means any temporary unavailability of electricity supply to a *customer* associated with an outage of the distribution system including outages affecting a single premises, but does not include disconnection. |
| *interruption duration standards* | means the interruption duration standards set out in Schedule 5 to these conditions. |
| *interruption frequency standards* | means the interruption frequency standards set out in Schedule 5 to these conditions. |
| *IPART* | means the Independent Pricing and Regulatory Tribunal established under the *Independent Pricing and Regulatory Tribunal Act 1992*. |
| *licence holder* | means the holder of a distribution network service provider's licence. |
| *local government area* | has the same meaning as in the *Local Government Act 1993* |
| *long rural feeder* | means a feeder with a total feeder length greater than 200 km which is not a *CBD feeder* or an *urban feeder*. |
| *major event day* | means a day determined under Schedule 6. |
| *metropolitan* | means the areas comprising the *local government areas* and *suburbs* listed in Schedule 7 |
| *Minister* | means the Minister administering the *Act*. |
| *MVA* | means mega volt amperes. |
| *N, N-1, N-2* | N is designing the *network elements* for no *credible contingencies;* N-1 is designing for a single *credible contingency* (normally involving an outage of one line or one item of *electrical* |

| | |
|---|---|
| | *apparatus* within a *substation*) and N-2 is designing for *credible contingencies* (normally involving outages of two lines or two items of *electrical apparatus* within a *substation*).<br><br>The relevant number of *credible contingencies* will result in:<br>▪ *interruption* to *customer*s up to the time indicated in Schedule 1;<br>▪ acceptable voltage levels being maintained at the secondary busbars of transformers;<br>▪ remaining in-service *network elements* and *electrical apparatus* being loaded within their thermal limits. |
| *network elements* | means the following parts of a *licence holder*'s distribution system: *sub-transmission lines, sub-transmission substations, zone substations, distribution feeders and distribution substations*. |
| *non-metropolitan* | means areas in New South Wales other than areas defined as *metropolitan* |
| *non-urban* | means areas which are not *urban*. |
| *planned interruption* | means an *interruption* for which advance notice has been provided or which has been requested by a *customer*. |
| *quarter* | means a period of three months commencing 1 January, 1 April, 1 July and 1 October as the case may be. |
| *regional centre* | means:<br><br>until 30 June 2014, the towns of Tweed Heads, Wagga Wagga, Coffs Harbour (including Sawtell), Albury, Port Macquarie, Queanbeyan, Orange, Tamworth, Dubbo, Bathurst and Lismore; and<br><br>from 1 July 2014, the towns listed above as well as the towns of Goulburn, Forster-Tuncurry, Armidale, Broken Hill, Grafton, Griffith, Ballina and Taree. |
| *Regulations* | means Regulations made under the *Act*. |
| *regulatory period* | means the period for which the economic regulator provides for a price path for network income and for the purpose of this document will be taken to be a period of five years. |

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| *reliability standards* | means the requirements imposed under condition 15 of these conditions. |
| *SAIDI* | means the sum of the duration of each sustained *customer* interruption (measured in minutes), divided by the total number of *customer*s (averaged over the *financial year*) of the *licence holder*. |
| *SAIFI* | means the total number of sustained *customer* interruptions divided by the total number of *customer*s (averaged over the *financial year*) of that *licence holder*. |
| *SAIDI average standards* | means the standards set out in item 1, Schedule 2. |
| *SAIFI average standards* | means the standards set out in item 2, Schedule 2. |
| *SAIDI individual feeder standards* | means the standards set out in item 1, Schedule 3. |
| *SAIFI individual feeder standards* | means the standards set out in item 2, Schedule 3. |
| *Security Standards* | means the *Security Standards* specified in Schedule 1 which require the network to be planned to supply all *forecast demand* or *expected demand* (as applicable), except where varied by the notes to Schedule 1, within the *thermal capacity* of all *network elements* and maintain voltage levels within limits published by *licence holder*s with:<br>• all lines and *electrical apparatus* in service, N<br>• outages of lines and *electrical apparatus* arising from any one *credible contingency* N-1<br>• outages of lines and *electrical apparatus* arising from any two *credible contingencies*, N-2 |
| *Severe thunderstorm or Severe weather* | *means an event set out in Column 2 or Column 3 of table 2* |
| *short rural feeder* | means a feeder with a total feeder route length less than 200 km, and which is not a *CBD feeder* or an *urban feeder*. |
| *suburb* | means an area defined by boundaries determined and gazetted by the Geographical Names Board of New South Wales. |

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| *substation* | means a part of an electrical network, confined to a given area, mainly including ends of transmission or distribution lines, electrical switchgear and control gear, and one or more transformers. A substation generally includes safety or control devices (for example protection). |
| *sub-transmission* | means those parts of the distribution system (including power lines and towers, cables and substations as the case may be) that transfer electricity from the regional bulk supply points supplying areas of consumption to individual *zone substations*, operating at nominal voltages between 132 kV and 33 kV inclusive, that may also fulfil a transmission role by operating in parallel to, and providing support to, the higher voltage transmission network. |
| *sub-transmission line – Overhead* | means *sub-transmission* generally of overhead construction which would reasonably be expected to have a restoration time of less than 8 hours following a *credible contingency.* |
| *sub-transmission line – Underground* | means *sub-transmission* generally of underground construction, or *sub-transmission overhead* with a section of underground construction which would reasonably be expected to have a restoration time in excess of 8 hours following a *credible contingency.* |
| *table 1* | means Table 1 in Schedule 5 to these conditions. |
| *table 2* | means Table 2 in Schedule 5 to these conditions. |
| *thermal capacity* | means the maximum allowable thermal capability of a particular *network element*, taking into consideration the supply security level (N, N-1, N-2) required of the *network element(s)* and having regard to the technical and economic life of the *network element(s)*. When considering *thermal capacity* of more than one *network element* operating in parallel, the actual load sharing characteristics of the parallel network elements should be considered. |
| *third party* | does not include a person or body contracted or authorised by the *licence holder* to take action, or any animal or plant life. |

| | |
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| *urban feeder* | means a feeder with actual maximum demand over the reporting period per total feeder route length greater than 0.3 *MVA*/km and which is not a *CBD Feeder*. |
| *urban* | For EnergyAustralia and Integral Energy, means an area where the majority of land is zoned for residential and/or commercial and/or industrial use within a town or city type of area which is contiguous with other similar town or city areas with an aggregated population of at least 5,000 people.<br><br>For Country Energy, means areas within a *regional centre*. |
| *zone substation* | means a *substation* forming part of the distribution system, which provides the network link between the *sub-transmission* network and elements of the distribution system at or below 22kV. |

## SCHEDULE 1 DESIGN PLANNING CRITERIA

| ***Network Element*** | ***Load Type*** | ***Forecast Demand or Expected Demand*** | ***Security Standard*** | ***Customer Interruption Time*** |
|---|---|---|---|---|
| Sub Transmission Line | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ 10 *MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < 10 *MVA* | N[2] | *Best practice repair time* |
| Sub Transmission Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | Any | N-1 | < 1 minute |
| Zone Substation | CBD | Any | N-2[6] | Nil for 1st credible contingency<br><1 hr for 2nd credible contingency |
| | Urban & Non-Urban | ≥ 10*MVA* | N-1[1] | < 1 minute |
| | Urban & Non-Urban | < 10 *MVA* | N[2] | *Best practice repair time* |
| Distribution Feeder | CBD | Any | N-1[3] | Nil |
| | Urban | Any | N-1[4] | < 4 Hours[5] |
| | Non-Urban | Any | N | *Best practice repair time* |
| Distribution Substation | CBD | Any | N-1[3] | Nil |
| | Urban & Non-Urban | Any | N[7] | *Best practice repair time* |

1. For a *Sub-transmission line - Overhead* and a Zone Substation:
   a. under N-1 conditions, the *forecast demand* is not to exceed the *thermal capacity* for more than 1% of the time i.e. a total aggregate time of 88 hours per annum, up to a maximum of 20% above the *thermal capacity* under N-1 conditions. For Country Energy, in other than regional centres, the *forecast demand* must not exceed the *thermal capacity* under N-1 conditions.
   b. under N conditions, a further criterion is that the *thermal capacity* is required to meet at least 115% of forecast demand.

   For a *Sub-transmission line – Underground*, any overhead section may be designed as if it was a *Sub-transmission line – Overhead*, providing the *forecast demand* does not exceed the *thermal capacity* of the underground section at any time under N-1 conditions.

2. Under N conditions, *thermal capacity* is to be provided for greater than 115% of *forecast demand*.

3. The actual *Security Standard* is an enhanced N-1. For a second coincident credible contingency on the CBD triplex system, restricted essential load can still be supplied.

4. By 30 June 2014, expected demand is to be no more than 80% of feeder *thermal capacity* (under system normal operating conditions) with switchable interconnection to adjacent feeders enabling restoration for an unplanned *network element* failure. By 30 June 2019, *expected demand* is to be no more than 75% of feeder *thermal capacity*. In order to achieve compliance, feeder reinforcement projects may need to be undertaken over more than one *regulatory period*. In those cases where a number of feeders form an interrelated system (such as a meshed network), the limits apply to the average loading of the feeders within the one system.

5. The timeframe is expected only, and is based on the need to carry out the isolation and restoration switching referred to in note 4. This standard does not apply to interim/staged supplies, i.e. prior to completion of the entire development or to *excluded interruptions* outside the control of the *licence holder*.

6. In the *CBD* area, N-2 equivalent is achieved by the network being normally configured on the basis of N-1 with no interruption of supply when any one line or item of *electrical apparatus* within a *substation* is out of service. The *licence holder* must plan the *CBD* network to cater for two *credible contingencies* involving the loss of multiple lines or items of electrical apparatus within a substation, by being able to restore supply within 1 hour. Restoration may be via alternative arrangements (e.g. 11kV interconnections).

7. Urban Distribution substations shared, or available to be shared, by multiple *customer*s are generally expected to have some level of redundancy for an unplanned contingency, eg via low voltage manual interconnection to adjacent substations enabling at least partial restoration.

# SCHEDULE 2 – RELIABILITY STANDARDS

## 1. SAIDI average standards

| SAIDI – Average Reliability Duration Standards (Minutes per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 60 | 57 | 54 | 51 | 48 | 45 |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 400 | 380 | 360 | 340 | 320 | 300 |
| *Long-rural* | 900 | 860 | 820 | 780 | 740 | 700 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 90 | 88 | 86 | 84 | 82 | 80 |
| *Short-rural* | 300 | 300 | 300 | 300 | 300 | 300 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 140 | 137 | 134 | 131 | 128 | 125 |
| *Short-rural* | 340 | 332 | 324 | 316 | 308 | 300 |
| *Long-rural* | 750 | 740 | 730 | 720 | 710 | 700 |

## *2. SAIFI average standards*

| SAIFI – Average Reliability Frequency Standards (Number per *customer*) | | | | | | |
|---|---|---|---|---|---|---|
| ***EnergyAustralia*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *CBD* | 0.35 | 0.34 | 0.33 | 0.32 | 0.31 | 0.3 |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 4.4 | 4.2 | 3.9 | 3.7 | 3.4 | 3.2 |
| *Long-rural* | 8.5 | 8 | 7.5 | 7 | 6.5 | 6 |
| ***Integral Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 1.3 | 1.28 | 1.26 | 1.24 | 1.22 | 1.2 |
| *Short-rural* | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| *Long-rural* | n/a | n/a | n/a | n/a | n/a | n/a |
| ***Country Energy*** | | | | | | |
| **Feeder Type** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **From 2010/11** |
| *Urban* | 2 | 1.96 | 1.92 | 1.88 | 1.84 | 1.8 |
| *Short-rural* | 3.3 | 3.24 | 3.18 | 3.12 | 3.06 | 3.0 |
| *Long-rural* | 5 | 4.9 | 4.8 | 4.7 | 4.6 | 4.5 |

# SCHEDULE 3 – INDIVIDUAL FEEDER STANDARDS

## *1. SAIDI Individual Feeder Standards*

| **SAIDI – Standards (Minutes per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *CBD* | 90~~100~~ |
| *Urban* | ~~350~~315 |
| *Short-rural* | ~~1000~~900 |
| *Long-rural* | ~~1400~~1260 |
| ***Integral Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | 315~~350~~ |
| *Short-rural* | ~~1000~~900 |
| *Long-rural* | ~~1400~~1260 |
| ***Country Energy*** | |
| **Feeder Type** | **Minutes per *customer*** |
| *Urban* | ~~400~~360 |
| *Short-rural* | ~~1000~~900 |
| *Long-rural* | ~~1400~~1260 |

## *2. SAIFI Individual Feeder Standards*

| **SAIFI – Standards (Number per *customer*)** | |
|---|---|
| ***EnergyAustralia*** | |
| **Feeder Type** | **Number per *customer*** |
| *CBD* | 1.26 ~~1.4~~ |
| *Urban* | 3.6 ~~4~~ |
| *Short-rural* | 7.2 ~~8~~ |
| *Long-rural* | ~~10~~ 9 |
| ***Integral Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | ~~4~~ 3.6 |
| *Short-rural* | ~~8~~ 7.2 |
| *Long-rural* | ~~10~~ 9 |
| ***Country Energy*** | |
| **Feeder Type** | **Number per *customer*** |
| *Urban* | ~~6~~ 5.4 |
| *Short-rural* | ~~8~~ 7.2 |
| *Long-rural* | ~~10~~ 9 |

## SCHEDULE 4 - EXCLUDED INTERRUPTIONS

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*; and

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

## SCHEDULE 5 – CUSTOMER SERVICE STANDARDS

**Interruption duration standard:**

1. The *interruption duration standard* is the maximum duration, set out in column 2 of *table 1*, of an *interruption* to a customer's premises located in the relevant area in column 1 of *table 1*.

**Interruption frequency standard:**

2. The *interruption frequency standard* is the maximum number of *interruptions* in a financial year set out in column 3 of *table 1*, to a customer's premises located in the relevant area in column 1 of *table 1*:

**Table 1**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Type of area in which customer's premises is located** | **Interruption duration standard (hours)** | **Interruption frequency standard (number of interruptions of ≥hours)** |
| *metropolitan* | 12 | 4 interruptions ≥ 4 hours |
| *non-metropolitan* | 18 | 4 interruptions ≥ 5 hours |

**Interruptions to be disregarded**

3. In calculating the *interruption duration standard* or the *interruption frequency standard* the following types of *interruptions* (and no others) are excluded:

   (a) an *interruption* resulting from the following external causes:

   (i) a shortfall in generation;

   (ii) a failure or instability of the shared *transmission system*;

   (iii) a request or direction from an *emergency service organisation;*

   (b) a *planned* interruption;

   (c) an *interruption* within a region in which a natural disaster has occurred and:

   (i) the responsible Minister has notified the Commonwealth of the occurrence of an eligible disaster under the *Natural Disaster Relief Arrangements* in respect of that natural disaster for that region; and

   (ii) the *interruption* occurred during the period for which *Natural Disaster Relief Arrangements* have been notified;

   (d) an *interruption* caused by the effects of a *severe thunderstorm or severe weather*. These effects may include the necessary operation of

a circuit protection device which interrupts supply to *customer*s in areas not directly impacted by the *severe thunderstorm or severe weather.*

(e) an *interruption* caused by *third party* actions other than animal or vegetation interference (e.g. vehicle-hit-pole, vandalism) where the interruption is not also caused by any failure of the *licence holder* to comply with relevant plans, codes, guides or standards (e.g. low conductor clearance).

**Table 2**

| **Column 1** | **Column 2** | **Column 3** |
|---|---|---|
| **Phenomenon** | **Severe Thunderstorm Warning** | **Severe Weather Warning** |
| Wind (Gusts) | Gusts 90km/h or more | Gusts 90km/h or more |
| Wind (Average) | | Widespread winds over land of 63km/h or more (Gale force) |
| Tornado | All tornados | |
| Blizzard | | Widespread blizzards in Alpine areas |
| Flash Flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood | Heavy Rainfall that is conducive to flash flooding or a reported flash flood |
| Large Hail | Hail with diameter of at least 2cm | |

# SCHEDULE 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, $T_{MED.}$ 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 *DNSP* for use during the next *financial year* as follows:

a) Collect daily *SAIDI* values 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 calculate 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 known as the log-standard deviation) of the data set.

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

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

g) Any day with daily *SAIDI* value greater than the threshold value $T_{MED}$ 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 *DNSP's SAIDI* and *SAIFI* in respect of all of its *feeder types*.

| SCHEDULE 7 – LIST OF METROPOLITAN AREAS | | |
|---|---|---|
| **1. Local Government Areas** | | |
| ASHFIELD | HUNTERS HILL | PITTWATER |
| AUBURN | HURSTVILLE | RANDWICK |
| BANKSTOWN | KOGARAH | ROCKDALE |
| BAULKHAM HILLS | KU-RING-GAI | RYDE |
| BLACKTOWN | LAKE MACQUARIE | SHELLHARBOUR |
| BOTANY BAY | LANE COVE | STRATHFIELD |
| BURWOOD | LEICHHARDT | SUTHERLAND |
| CAMDEN | LIVERPOOL | SYDNEY |
| CAMPBELLTOWN | MANLY | WARRINGAH |
| CANTERBURY | MARRICKVILLE | WAVERLEY |
| CANADA BAY | MOSMAN | WILLOUGHBY |
| FAIRFIELD | NEWCASTLE | WOLLONGONG |
| GOSFORD | NORTH SYDNEY | WOOLLAHRA |
| HOLROYD | PARRAMATTA | WYONG |
| HORNSBY | PENRITH | |

| **2. Suburbs** | |
|---|---|
| **A.** ***Blue Mountains area*** | |
| BLACKHEATH | LINDEN |
| BLAXLAND | MEDLOW BATH |
| BULLABURRA | MOUNT RIVERVIEW |
| FAULCONBRIDGE | MOUNT VICTORIA |
| GLENBROOK | SPRINGWOOD |
| HAWKESBURY HEIGHTS | VALLEY HEIGHTS |
| HAZELBROOK | WARRIMOO |
| KATOOMBA | WENTWORTH FALLS |
| LAPSTONE | WINMALEE |
| LAWSON | WOODFORD |

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| LEURA | YELLOW ROCK |
| **B. *Cessnock-Bellbird area*** | |
| ABERDARE | CESSNOCK |
| BELLBIRD | KEARSLEY |
| BELLBIRD HEIGHTS | NULKABA |
| **C. *Kiama area*** | |
| BOMBO | KIAMA HEIGHTS |
| KIAMA | MINNAMURRA |
| KIAMA DOWNS | |
| **D. *Kurri Kurri-Weston area*** | |
| ABERMAIN | PELAW MAIN |
| HEDDON GRETA | STANFORD MERTHYR |
| KURRI KURRI | WESTON |
| NEATH | |
| **E. *Maitland area*** | |
| ABERGLASSLYN | MOUNT DEE |
| ASHTONFIELD | OAKHAMPTON |
| BOLWARRA | OAKHAMPTON HEIGHTS |
| BOLWARRA HEIGHTS | PITNACREE |
| EAST MAITLAND | RAWORTH |
| HORSESHOE BEND | RUTHERFORD |
| LARGS | SOUTH MAITLAND |
| LORN | TELARAH |
| LOUTH PARK | TENAMBIT |
| MAITLAND | THORNTON |
| METFORD | WOODBERRY |
| MORPETH | |

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| **F. *Newcastle Industrial area*** | |
| FERN BAY | WILLIAMTOWN |
| FULLERTON COVE | |
| **G. *Port Stephens area*** | |
| CORLETTE | SALAMANDER BAY |
| FINGAL BAY | SHOAL BAY |
| NELSON BAY | SOLDIERS POINT |
| **H. *Raymond Terrace area*** | |
| HEATHERBRAE | TOMAGO |
| RAYMOND TERRACE | |
| **I. *Richmond-Windsor area*** | |
| BLIGH PARK | NORTH RICHMOND |
| CLARENDON | RICHMOND |
| HOBARTVILLE | SOUTH WINDSOR |
| MCGRATHS HILL | VINEYARD |
| MULGRAVE | WINDSOR |
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