



Issues Paper

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**Electricity Distribution: Service Quality**

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***September 2000***

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## SUBMISSIONS

The Queensland Competition Authority (the QCA or the Authority) considers public involvement to be an important element of its decision making processes. It therefore invites submissions from interested parties concerning the need for the Authority to establish formal service quality measures and reporting requirements as part of its current electricity distribution pricing review.

To facilitate the publication of submissions on the QCA's website, it is preferred if submissions could be made electronically by disk or by email. However, if this is not possible, submissions can be made in writing. **Submissions, comments or inquiries regarding this paper should be directed to:**

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The **closing date** for submissions is **Friday 27 October 2000**.

### Confidentiality

In the interests of transparency and to promote informed discussion, the Authority would prefer submissions to be made publicly available. However, if a person making a submission does not want their submission to be public, that person should claim confidentiality in respect of the document (or any part of the document). Claims for confidentiality should be clearly noted on the front page of the submission and the relevant sections of the submission should be marked as confidential, so that the remainder of the document can be made publicly available. Again, it would be appreciated if each version (ie. the complete version and another excising confidential information) could be provided electronically (whether or not with a printed copy). Where it is unclear why a submission has been marked 'confidential', the status of the submission will be discussed with the person making the submission.

While the Authority will endeavour to identify and protect material claimed as confidential as well as exempt documents (within the meaning of the *Freedom of Information (FOI) Act 1989*), it cannot guarantee that submissions will not become public. As stated in s187 of the *Queensland Competition Authority Act 1997*, the Authority must take all reasonable steps to ensure the information is not disclosed without the person's consent, provided the Authority is satisfied that the person's belief is justified and that the disclosure of the information would not be in the public interest.

### Public access to submissions

Subject to the above, submissions will normally be made available for public inspection at the Brisbane office of the Authority, or on its website at [www.qca.org.au](http://www.qca.org.au).

Information about the role and current activities of the Authority, including copies of reports, papers and submissions can also be found on the Authority's website.

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**GLOSSARY**

The Act	The Queensland Competition Authority Act
CAIDI	Customer Average Interruption Duration Index
CBD	Central Business District
The Code	The National Electricity Code
DNSP	Distribution Network Service Provider
GSL	Guaranteed Service Level
MAIFI	Momentary Average Interruption Frequency Index
NCP	National Competition Policy
ORG	Office of the Regulator General
QCA	The Queensland Competition Authority
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index

## 1. INTRODUCTION

The Queensland Competition Authority (the QCA or the Authority) is a statutory body established under the *Queensland Competition Authority Act 1997* (the Act). The Act gives the Authority certain responsibilities and functions with respect to National Competition Policy (NCP). Broadly, these include:

- subject to reference or declaration by the Ministers (the Premier and the Treasurer), undertaking prices oversight of monopoly or near monopoly Government business activities;
- receiving and investigating competitive neutrality complaints against significant Government and local government business activities;
- overseeing and arbitrating third party access to infrastructure; and
- undertaking such other activities relating to NCP as the Ministers may direct.

The Authority's responsibilities with respect to electricity are set out in:

- the *Electricity Act 1994*, which provides that the Authority may prepare and enforce conduct rules, and requires the Authority to monitor standards of service quality if issued by the Minister for Mines and Energy;
- the *Electricity – National Scheme (Queensland) Act 1997*, which commenced on 22 May 1997 and gives effect to the National Electricity Code (the Code). The Code sets out the objectives for the National Electricity Market and provides for “a regime of light-handed regulation of the market to achieve the market objectives”. The Code provides for the Authority to regulate distribution prices from 19 December 2000, to prepare ring-fencing guidelines and to undertake several other roles eg. with respect to network connection; and
- the *Queensland Competition Authority Act 1997*, which provides that the Authority's functions include regulation of market conduct of electricity entities, development of conduct rules, monitoring of service quality standards and performing functions given to the Authority under another Act.

Chapter 6 Parts D and E of the Code outline the objectives, principles and processes in relation to distribution service pricing.

The Code requires that any jurisdictional regulator, in meeting its distribution pricing requirements, must publish full and reasonable details of the basis and rationale of the decision including:

- reasonable details of qualitative and quantitative methodologies applied including any calculations and formulae; and
- full reasons for all material judgments and qualitative decisions made and options considered, and all discretions exercised which have a material bearing on the outcome of a jurisdictional regulator's decision.

The Code also requires reasonable regulatory accountability through transparency and public disclosure of regulatory processes. The Authority therefore desires to provide an opportunity for distribution entities, their customers and other stakeholders to participate constructively and at an early stage in the development of the regulatory regime for distribution entities.

The aim of this paper is to seek comment on a range of issues arising from Part D of Chapter 6 of the National Electricity Code, which requires that, in setting a regulatory cap for network owners, the jurisdictional regulator should have regard to the service standards applicable to the distribution network owner under the Code and any other standards imposed by the jurisdictional regulator (section 6.10.5(d)(2)).

The Authority's interest in this issue relates to its responsibility to regulate distribution prices and is separate from the Minister's right to set service quality standards under the *Electricity Act 1994*.

## 2. THE NEED FOR SERVICE QUALITY MEASURES

The objective of service quality monitoring is to ensure that users of regulated distribution networks receive an appropriate standard of service and that this level of service is at least maintained throughout the regulatory period.

Inefficient levels of service quality may result from service quality that is above that required by consumers as well as from poor service quality. Excessive service quality may occur where the form of economic regulation rewards inefficient over-investment, as could occur under 'cost plus' or 'rate of return' regulatory mechanisms. Poor service quality may occur where incentives are aimed at reducing expenditure, as could occur under a price cap or in the case of an unregulated monopoly.

Given the adoption of an incentive based regulatory framework in Queensland, and associated revenue or price controls, there may well be incentives for distributors to reduce costs in order to maximise their profits. As a result, service standards could be compromised.

Under an incentive regulation framework, the regulator would prefer to establish baseline service quality targets and provide appropriate rewards and sanctions for Distribution Network Service Providers (DNSPs) who over or under perform against this baseline.

Given sufficient information, it would be possible and desirable to establish a service quality baseline and targets that reflect DNSP's relative performance against peers within Queensland, nationally and possibly internationally. This would require that service quality data be collected on a nationally (or internationally) consistent basis while still recognising the need for any service quality regime to be applicable to Queensland conditions and to be cost effective.

In addition, introduction of a mandatory service quality monitoring and reporting regime could provide incentives for DNSPs to maintain and improve service quality by providing information to customers, the media and stakeholders enabling them to critically assess DNSP service quality performance. This information would facilitate informed negotiations between DNSPs and customers on local or general service quality improvements.

### 3. MEASURES OF SERVICE QUALITY

Historically, electricity distribution service quality has been measured in broadly similar ways both in Australia and overseas although no single set of standard measures has been defined or universally accepted. Nevertheless, it is possible to separate electricity distribution service quality measures into a number of broad categories as follows:

- network reliability;
- technical quality; and
- customer service.

#### 3.1 Network Reliability

Network reliability refers to the ability of a distribution service provider to maintain the availability of electricity supply to consumers. It attempts to measure how often and for how long customers go without electricity supply during a given period.

Network-wide reliability measures are generally derived from aggregates of interruption duration, interruption frequency, and the number of customers affected. Four measures, or indices, are commonly used in practice plus a fifth measure representing energy not supplied:

1. average minutes off supply per customer – System Average Interruption Duration Index, (SAIDI);
2. average number of interruptions per customer – System Average Interruption Frequency Index, (SAIFI);
3. average interruption duration – Customer Average Interruption Duration Index, (CAIDI);
4. average number of momentary interruptions per customer – Momentary Average Interruption Frequency Index, (MAIFI); and
5. energy not supplied - an estimate of load not supplied to customers due to interruption. This is a proxy for the impact of an interruption.

The above four reliability measures are defined in Appendix A. It should be noted that these are average measures and as such they will not identify areas with exceptionally poor service quality which affected customers will be critically concerned about.

#### **The Authority seeks comment on:**

- **whether these five measures are appropriate and adequate measures of network reliability and whether there are likely to be any particular difficulties in reporting against these measures; and**
- **approaches to identifying exceptionally poor service quality such as reporting on worst performing feeders or providing statistical measures of service quality variability such as standard deviation.**

#### 3.2 Technical Quality

Technical quality of supply refers to the electrical specification of supply, and involves measures such as voltage levels, frequency, and harmonic content. In Queensland these requirements are regulated by the *Queensland Electricity Act (1994)* and the National Electricity Code, with the Minister for Mines and Energy being the technical regulator.

The technical quality of supply has always been of concern to industrial consumers and is becoming of greater concern to domestic consumers as increasing amounts of voltage sensitive equipment, such as computers and other electronically controlled items, are installed in homes.

While the technical quality of supply is the subject of fairly detailed regulation, what is generally not covered is monitoring and reporting the efficiency of response to, and prevention of, technical problems. The response to solving technical issues could be seen as an element of service quality that should be included in a comprehensive service quality monitoring regime.

A general approach to monitoring technical effectiveness of distributors is through customer feedback, or complaints, with respect to voltage problems. The Office of the Regulator General (ORG), in their 2001 Electricity Distribution Price Review Draft Decision, have gone further than this and also proposed monitoring voltage levels at each zone substation and at the extremity of one feeder from each zone substation. This approach has the benefit of deriving quantitative primary data rather than relying on secondary customer reporting of problems.

One approach for Queensland could be to specify the monitoring of over-voltage events, with the possible inclusion of system voltage monitoring. Over-voltage events would require distributors to report high voltage injections, lightning, and voltage regulation events that lead to customers reporting a voltage event. A sample reporting schedule is attached in Appendix B – item number 4. The inclusion of system voltage monitoring would involve reporting by zone substation and one feeder per substation in a similar manner to that proposed by the ORG.

**The Authority seeks comment on:**

- **the appropriateness of including technical quality measures in service quality reporting;**
- **whether monitoring customer feedback alone should be sufficient;**
- **the appropriate over-voltage events to monitor, if any; and**
- **the appropriate approach to monitoring system voltage, if included.**

### **3.3 Customer Service**

Customer service refers to the DNSP's interaction with individual customers and is generally monitored in terms of the DNSP's responsiveness and dependability, and in relation to the level of complaints in areas such as new connections, street lighting, and the number of complaints received by fault line call centres. These are high volume, non-technical, core business activity issues that directly involve customers and are readily measurable.

A general approach to monitoring customer service levels would be to establish the number of times a particular service is provided (for example, the number of new connections) and record how often the DNSP fails to meet reasonable customer expectations in relation to that service.

For example, possible activities that might be monitored include:

- network call centres;
- appointments made with customers;
- connections;
- street lights;

- Guaranteed Service levels (GSLs);
- planned interruptions; and
- general complaints;

The data fields that facilitate monitoring of these activities are itemised and defined in item Appendix B – item number 5. These fields are closely based on the reporting regime established by the ORG in their 2001 Electricity Distribution Price Review Draft Decision.

#### *Guaranteed Service Levels*

Generally, guaranteed service levels are activities to which the DNSPs attach a penalty for failure to perform on their part. For example, if the DNSP fails to turn-up for an appointment, a fixed dollar payment is made to the customer. At this stage, rather than specify guaranteed service levels, the Authority is inclined to simply monitor the activity level of existing GSLs (Appendix B – item number 5.7).

#### **The Authority seeks comment on:**

- **whether customer service should be monitored and if so which activities should be monitored;**
- **the appropriateness of the data fields proposed in Appendix B – item number 5;**
- **any additional activities and data fields which should be reported and monitored; and**
- **whether the Authority should monitor the activity level of voluntary guaranteed service levels or impose a set of guaranteed service levels.**

#### 4. SEGMENTATION OF SERVICE QUALITY DATA

Electricity customer density varies dramatically across Queensland and this variation has a direct impact on the level of service quality provided. For example, the very high customer density found in the Brisbane Central Business District (CBD) results in a supply network characterised by multiple redundancy.

Conversely, the very low customer density found in remote rural locations means that there will be limited, if any, redundancy in the local distribution system.

As a result, a failure in a component of the CBD local network is likely to have only a minor impact on supply whereas a similar failure in a remote area may result in a major power outage for some consumers.

As discussed in Section 2, service quality monitoring is intended to assess the individual, as well as relative, performance of the DNSPs. Measures of service quality therefore need to not only reflect the performance of the DNSP, but also the basic geographic and demographic characteristics of the region, thereby allowing a comparison with distribution systems with broadly similar characteristics.

In Queensland, Ergon Energy and Energex have widely different geographic and demographic characteristics. It would therefore be reasonable to expect raw service quality data to be very different and not necessarily indicative of actual relative performance.

One method of resolving this problem would be to segment distribution networks into appropriate categories. Such segmentation could be based on population density, for example:

- high density (CBD) - distribution networks representing the central business districts of large cities;
- urban areas – areas with ten or more customers per route kilometre of line. This category covers most areas in and around cities and large towns. On the extremities of these areas this category would include all residential properties (up to approximately 4 hectares);
- rural areas – areas with less than ten customers per route kilometre of line, but more than one customer per two route kilometres of line. This category would typically represent farming regions covering small and large properties; and
- remote areas - this category would cover the remote parts of a supply system having less than one customer per 2 route kilometres of line.

**The Authority seeks comment on:**

- **the need for segmentation of service quality data;**
- **appropriate categories for segmentation; and**
- **appropriate definitions of segmentation categories.**

## 5. DATA COLLECTION

Monitoring of the service quality measures outlined in this paper would require significant data reporting.

Data would be required to allow assessment of service quality performance and to enable appropriate allowance to be made for the environmental and operating factors of each DNSP.

### 5.1 Possible Data Collection Framework

Ideally, service quality targets will reflect the DNSP's relative performance against national and possibly international peers. In terms of a national service quality reporting regime, the data collection framework outline by the ORG in its "2001 Electricity Distribution Pricing Review Draft Decision" appears to be robust and provides a suitable model for the Queensland regime to be based upon.

The ORG framework involves collecting around 50 items of information on a feeder by feeder basis. The items are reported in a combination of monthly, quarterly and annual reports. The data is then processed and published as measures of service quality.

A data collection proforma suitable to collect the required information is attached as Appendix B. The data fields are identified, defined, and allocated one or more reporting periods in the proforma.

Collection of this data would enable the QCA to report on the full range of service quality measures discussed in this paper.

**The Authority seeks comment on:**

- **the appropriateness of the proposed data collection framework and associated data fields;**
- **any additional data fields that should be included; and**
- **the appropriateness of the reporting periods proposed**

### 5.2 Implementation Issues

The preceding sections have outlined a possible approach to constructing a service quality regime in Queensland. A critical issue still outstanding is how to operationalise such a regime in the lead up to the Authority establishing its pricing determination on 1 July 2001.

As noted at the outset, the preferred approach would be to collect a time series of historical data based on the preferred service quality regime enabling the establishment of baseline service quality standards, and potentially allowing the adoption of financial incentives for DNSPs to improve service quality in line with customer desires and willingness to pay.

However, as no service quality measures have been prescribed in Queensland in the past, service quality data has been collected in an ad-hoc and fragmented manner.

In order to establish some reasonable baseline measures of service quality, it may be necessary to accept alternative data that is internally consistent for each DNSP but not necessarily comparable between DNSPs where consistent historical data is not available on the preferred basis. While such data would establish baseline measures of service quality, it would be unlikely to form an adequate base for a financial incentive scheme as such a scheme would

normally reflect each DNSP's relative efficiency at delivering a defined level of service quality together with the marginal costs and benefits associated with any improvement.

Where proprietary data is used to establish baseline levels of service quality it would be necessary to continue collecting this data into the future in parallel with data supporting a preferred service quality regime. This would enable the Authority to ensure that service quality did not decline over the regulatory period, while enabling the establishment of a time series of consistent data to support a more comprehensive service quality incentive regime in the lead up to the next regulatory review.

**The Authority seeks comment on:**

- **the feasibility of adopting a service quality regime based on consistent standardised data; and**
- **where consistent standardised data is not available, what alternative measures based on proprietary data should be adopted to establish baseline measures of service quality?**

## 6. SERVICE QUALITY INCENTIVE MECHANISMS

In October 1999, the Utility Regulators Forum released a discussion paper titled Quality of Service Monitoring. This paper included discussion of the incentive effects of five regulatory approaches to service quality control. These were.

### i. Comparative reporting of service quality

This approach encourages service providers to maintain and improve service quality by exposing them to critical assessment by informed customers, media, and other stakeholders. It also facilitates informed negotiations between customers and service providers on local or generalised quality improvements.

### ii. Enforcement of service standards through the application of statutory penalties by the regulator

This approach carries high transaction costs and is allocatively inefficient, in that penalties do not necessarily reflect the loss of consumer value and are not paid to the affected consumers in proportion to their loss of value. However, this can be an effective incentive of last resort, in that service providers generally seek to avoid such a consequence. The establishment of standards requires sound historical data on quality performance (or sound standards from elsewhere) to ensure the standards are realistic and meaningful.

### iii. Price control adjustments in response to service performance

The usual form of this incentive is to reduce prices when performance falls below benchmark levels, and conversely increase prices when performance exceeds benchmark service levels. The size of the adjustment would generally be proportional to the difference between actual and benchmark levels, but may be capped at particular intervals.

### iv. Guaranteed payments

Under this approach, the service provider may be required to make guaranteed payments to customers that receive service below a certain benchmark. Generally guaranteed payment schemes provide a minor financial incentive, although they may have a significant symbolic value to customers and service providers. Transaction costs are low but allocative efficiency is moderate given that payments are of a fixed size and bear no necessary relationship to the value placed by the customer on the reduced service.

### v. Legal compensation

Under this approach, service providers face incentives from the possibility of awards of compensation by the courts or complaints handling bodies for sub-standard service that causes loss or damage. This form of incentive is allocatively efficient but carries high transaction costs that limit its impact.

The first three forms of regulation require the regulator to implement a service quality monitoring program. Approaches 2 (enforcement) and 3 (price adjustment incentives) have potential benefits but also significant limitations. Approach 1 (the comparative reporting option) is relatively straight forward to implement and is arguably a pre-requisite of other forms of incentive.

It is recognised that DNSPs are already using some of these approaches and that none of the above options preclude the use of any other option. Indeed, it is considered that a comprehensive approach to service quality incentive regulation may well make use of all of the above approaches.

**The Authority seeks comment on the most appropriate approach to incentive regulation of service quality**

## APPENDIX A – RELIABILITY INDICES DESCRIPTIONS

### Average minutes off supply per customer

- Definition: Total minutes, on average, that customers are without electricity in a year, and includes both planned and unplanned minutes off supply.
- Index: System Average Interruption Duration Index – SAIDI.
- Calculation: 
$$\frac{\sum_{\text{interruptions}} [\text{Interruption duration (minutes)} \times \text{Number of customers affected}]}{\text{Total number of customers}} \quad \text{mins / period}$$

### Average number of interruptions per customer

- Definition: The average number of occasions per year each customer is interrupted.
- Index: System Average Interruption Frequency Index – SAIFI.
- Calculation: 
$$\frac{\text{Total number of interruptions}}{\text{Total number of customers}} \quad \text{interruptions/customer/period}$$

### Average interruption duration

- Definition: Average duration of each interruption (=SAIDI/SAIFI).
- Index: Customer Average Interruption Duration Index – CAIDI.
- Calculation: 
$$\frac{\sum_{\text{interruptions}} [\text{Interruption duration} \times \text{Number of customers affected}]}{\text{Total number of interruptions}} \quad \text{mins/interruption}$$

### Average number of momentary interruptions per customer

- Definition: Total number of momentary interruptions per customer per period.
- Index: Momentary Average Interruption Frequency Index – MAIFI.
- Calculation: 
$$\frac{\text{Number of momentary interruptions}}{\text{Total number of customers}} \quad \text{interruptions/customer}$$

**APPENDIX B –REPORTING FOR RELIABILITY MEASURES**

Data to be collected on a per feeder basis.

Reporting Specification is made up of five sections:

1. Administrative Data;
2. Aggregate Data;
3. Reliability Data;
4. Quality of Supply Data; and
5. Customer Service Data.

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD
1	<b>Administrative Data</b>		
1.1	DNSP business	ie: Ergon Energy/Energex.	Monthly
1.2	Start date	First day of reporting period.	Monthly
1.3	End date	Last day of reporting period.	Monthly
1.4	Region	Classification of region served by feeder: CBD, urban, rural, remote.	Monthly
1.5	Feeder ID	Code used by DNSP.	Monthly

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD
2	<b>Aggregate Data</b>		
2.1	Total distribution customers	<ul style="list-style-type: none"> <li>— The customer numbers on which minutes off supply and interruption figures are based (for the business, business centres, and feeders).</li> <li>— The sum of domestic and non-domestic customer numbers may not balance with this figure.</li> </ul>	Monthly
2.2	Domestic distribution customers	<p>A distribution customer is defined as a supply point through which electricity is distributed to an end user with a separate account.</p> <ul style="list-style-type: none"> <li>— Unmetered supplies are included.</li> <li>— All distribution customers in the DNSP's area to be counted (ie: including 'lost' retail customers, and excluding 'won' retail customers in other DNSPs' areas).</li> <li>— The number of customers at the end of the reporting period to be reported.</li> </ul>	Monthly
2.3	Non-Domestic distribution customers	See Item No. 2.2: 'Domestic distribution customers'.	Monthly
2.4	Length of high voltage overhead distribution lines	<p>Route length in kilometres of lines in service (the total length of feeders including all spurs).</p> <ul style="list-style-type: none"> <li>— Each SWER line, single phase line, and three phase line counts as one line.</li> <li>— A double circuit line counts as two lines.</li> </ul>	Annual
2.5	Length of high voltage underground distribution lines	See Item No. 2.4: 'Length of high voltage overhead distribution lines'.	Annual
2.6	Maximum demand (MVA)	Maximum demand over the reporting period for the feeder, calculated from the nominal feeder voltage and maximum feeder current.	Annual

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD
3	<b>Reliability Data</b>		
3.1	Reliability of supply complaints	The number of complaints of relating to the reliability of supply.	Quarterly
3.2	Unplanned outages	<ul style="list-style-type: none"> <li>— Unplanned events causing interruptions to customers on the high voltage and low voltage systems.</li> <li>— Does not include momentary outages and single premise outages.</li> </ul>	Monthly
3.3	Momentary feeder outages	<ul style="list-style-type: none"> <li>— A momentary outage is an outage less than 1 minute in duration.</li> <li>— A feeder outage includes any outage of an entire feeder (including due to a sub-transmission fault) and does not include an outage of a feeder section.</li> <li>— Each successful auto re-close is counted as one momentary outage.</li> <li>— Re-closes which are followed by lock-out are to be included in the unplanned outage indicator, not the momentary outage indicator.</li> </ul>	Monthly
3.4	Momentary feeder section outages	<ul style="list-style-type: none"> <li>— A momentary outage is an outage less than 1 minute in duration.</li> <li>— Includes outages of a feeder section; feeder outages are not included.</li> <li>— Each successful auto re-close is counted as one momentary outage.</li> <li>— Re-closes which are followed by lock-out are to be included in the unplanned outage indicator, not the momentary outage indicator.</li> </ul>	Annual
3.5	Planned outages	<p>Planned events causing interruptions to customers.</p> <ul style="list-style-type: none"> <li>— Does not include single premise outages.</li> </ul>	Monthly
3.6	Unplanned minutes off supply	<p>To be reported as gross (or aggregate) unplanned customer minutes off supply per customer.</p> <ul style="list-style-type: none"> <li>— An interruption begins when supply is lost, not when the interruption is reported.</li> <li>— Where there is no automatic recording of the duration of an interruption, the best estimate is to be recorded.</li> <li>— When reported for a feeder, minutes off supply for the customers on that feeder at the end of the reporting period should be reported.</li> <li>— Includes single premise interruptions .</li> <li>— Does not include momentary interruptions.</li> </ul>	Monthly
3.7	Planned minutes off supply	<p>To be reported as gross (or aggregate) planned customer minutes off supply per customer.</p> <ul style="list-style-type: none"> <li>— Includes single premise interruptions.</li> </ul>	Monthly
3.8	Unplanned interruptions	<p>Customer interruptions caused by unplanned outages.</p> <ul style="list-style-type: none"> <li>— Includes single premise interruptions.</li> <li>— Does not include momentary interruptions.</li> </ul>	Monthly
3.9	Momentary interruptions (due to feeder outages)	Customer interruptions caused by momentary feeder outages.	Annual
3.10	Planned interruptions	<p>Customer interruptions caused by planned outages.</p> <ul style="list-style-type: none"> <li>— Includes single premise interruptions.</li> </ul>	Monthly
3.11	Energy not supplied - unplanned (MWh)	<p>Estimate of energy not supplied to be based on average customer demand (multiplied by number of customers interrupted and the duration of the interruption).</p> <p>Average customer demand to be determined from (in order of preference):</p> <ul style="list-style-type: none"> <li>— average consumption of the customers interrupted based on their billing history;</li> <li>— feeder demand at the time of the interruption divided by the number of customers on the feeder;</li> <li>— average consumption of customers on the feeder based on their billing history; and</li> <li>— average feeder demand derived from maximum demand and estimated load factor, divided by the number of customers on the feeder.</li> </ul>	Annual
3.12	Energy not supplied - planned (MWh)	See Item No. 3.11: 'Energy not supplied – unplanned (MWh)'.	Annual

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD
4	<b>Quality of Supply Data</b>		
4.1	Quality of supply complaints	Complaints of quality of supply – over-voltage.	Quarterly
4.2	Over-voltage events due to high voltage injection	The number of over-voltage events in the distribution or transmission system leading to at least one customer complaint.	Annual
4.3	Customers receiving over-voltage due to high voltage injection	The estimated number of customers affected by over-voltage events, based on customer complaints and the DNSP's investigation.	Annual
4.4	Over-voltage events due to lightning	The number of over-voltage events in the distribution or transmission system leading to at least one customer complaint.	Annual
4.5	Customers receiving over-voltage due to lightning	The estimated number of customers affected by over-voltage events, based on customer complaints and the DNSP's investigation.	Annual
4.6	Over-voltage events due to voltage regulation or other cause	The number of over-voltage events in the distribution or transmission system leading to at least one customer complaint. — Includes events due to unknown cause.	Annual
4.7	Customers receiving over-voltage due to voltage regulation or other cause	The estimated number of customers affected by over-voltage events, based on customer complaints and the DNSP's investigation. — Includes events due to unknown cause.	Annual

5	<b>Customer Service</b>		
5.1	Calls to network call centre	All calls to the network call centre to be reported, including any answered by an automated response service and terminated without being answered by an operator.	Quarterly
5.11	Calls to network call centre forwarded to an operator	Includes abandoned calls not answered within 30 seconds.	Quarterly
5.12	Calls to network call centre answered within 30 seconds	The time to answer begins when the call is diverted to an operator, and includes any time spent in a queue.	Quarterly
5.2	Customer arranged appointments	Appointments requested by the customer for a meeting with the DNSP's staff, at any location.	Quarterly
5.21	Appointments not met within 15 minutes of agreed time	The number of appointments, requested by a customer for a meeting with the DNSP's staff, not met within 15 minutes of appointed time.	Quarterly
5.3	Connections made	The number of supply connections made to customers' premises.	Quarterly
5.31	Connections not made on agreed date	The number of connections to customers' premises made after the date agreed to with the customer.	Quarterly
5.32	Connections 4 day delay	The number of supply connections to customers' premises that are one to four business days after the date agreed with the customer.	Quarterly
5.33	Connections 5+ day delay	The total number of supply connections to customers' premises that are five or more business days after the date agreed with the customer.	Quarterly
5.34	Connection & augmentation complaints	Includes complaints about: <ul style="list-style-type: none"> <li>— the quality and timeliness of a new connection; and</li> <li>— the cost, timeliness and quality of augmentation works.</li> </ul>	Quarterly
5.4	Street lights	The number of street lights in the distribution area.	Quarterly
5.41	Street lights out during period	The number of street lights reported by customers as not working.	Quarterly
5.42	Street lights not repaired by agreed date	The total number of street lights reported as not working which were not fixed by the date agreed with the customer.	Quarterly
5.43	Street lights not repaired within 2 working days	The total number of street lights that were reported as not working which were not fixed within 2 business days of the customer's report.	Quarterly
5.5	Number of GSL payments made	The total number of events that attracted a GSL payment	Quarterly
5.51	Amount paid out in GSL payments	The total amount paid in GSL payments	Quarterly
5.6	Planned interruptions for which 4 days notice not given	The number of planned interruptions of which customers were given less than four days notice.	Quarterly
5.7	General complaints - distribution	Includes any complaints about the quality and timeliness of service provided by the DNSP not covered elsewhere, for example in relation to: <ul style="list-style-type: none"> <li>— fault repair;</li> <li>— vegetation control;</li> <li>— request for information on quality and reliability of supply; and</li> <li>— other service issues.</li> </ul>	Quarterly