Submission on

“Electricity Distribution: Service Quality”

27 October 2000

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1 Executive Summary

This document is the submission from Ergon Energy Corporation Limited to the Queensland Competition Authority (the Authority) in response to the Issues paper titled:

"Electricity Distribution: Service Quality" dated July 2000.

The significant issues raised by Ergon Energy in this submission are summarised below.

- The most efficient approach is to have a minimum number of measures which are reported annually.
- Measures such as SAIDI, SAIFI, and CAIDI, and the definition of a feeder and the outages to be included needs to be defined in great detail so there is no confusion and data is consistent.
- MAIFI is not currently possible and will require significant investment, resources and time to implement.
- Ergon Energy is currently re-engineering its systems to meet the requirements of the QCA when established, but needs time to establish systems and then collect data.
- The benefits of kWh measures, such as load lost, are not clear.
- Ergon Energy supports the ORG method of determining poor performing feeders.
- Supply quality measures should be based on customer complaints as voltage monitoring, as a measure, is expensive, difficult to manage and interpret. A DNSP would, however, use voltage monitoring as a tool to minimise complaints.
- Customer segmentation and measures should, as much as possible, follow other jurisdictional definitions to enable like to like comparisons and benchmarking.
- The preferred approach to Service Quality Incentive Mechanisms is comparative reporting of service quality.
- Ergon Energy recommends the monitoring of voluntary guaranteed service levels as the most efficient customer service approach.

Ergon Energy would be happy to run a workshop on Network performance to assist QCA staff's understanding of technical issues and drivers of service quality, plus the current position and plans of Ergon Energy.

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2 Introduction

The Queensland Competition Authority (the Authority) has invited submissions from interested parties concerning the need for the Authority to establish service quality measures and to monitor these measures. To assist in this process the Authority published an Issues Paper (the paper) titled "Electricity Distribution: Service Quality" seeking comments by 27 October 2000.

We welcome the opportunity to comment and ask that you accept this submission as Ergon Energy's contribution to this particular aspect of the consultation process.

3 Preliminary Comments

Ergon Energy supports an efficient approach to the measurement and reporting of service quality. A comment in a recent paper by Pacific Economics Group and Benchmark Economics shows that in reducing the number of measures to a select few, the regulators understanding of the performance of the business was not reduced:

"*Though greater responsibility for monitoring service quality has seen the regulators tend towards fewer but more focussed indicators. In one instance the number of indicators for supply reliability and security has been reduced from 15 to 5. The regulator argued that the number of indicators had proved costly to monitor from the perspective of both the regulator and network service provider. Further, multiple indicators had added little to improve understanding by the regulator. One outcome has been a growing convergence of indicators selected, particularly for monitoring service reliability and customer service*."

And further on in the same paper:

"….., there is some evidence that service quality plans are becoming simpler in terms of the number of indicators involved. Sources at the New York Commission state that this has been an objective of recent service quality plans, primarily to diminish the monitoring burdens on Staff. This trend is apparent in the two surveyed plans for Brooklyn Union. The earlier plans had 21 indicators, while the more recent plan has just eight."[1]

The outcomes of this approach, as reflected in this paper, will be to

- Use as few measures as possible that will give a good understanding of the business
- Use measures that are common to other jurisdictions
- Report on these measures only as frequently as required to provide an understanding of Service Quality trends.

This approach, while not reducing the regulators understanding on the distributors performance, will reduce the significant administrative burden that would otherwise be placed on the QCA in endeavouring to interpret the data and Ergon Energy in providing the data.

[1] Kaufmann L., Lowry M., Beardow M., "A Survey of Performance-Based Regulation Plans and Benchmarking" April 2000

The QCA sought specific comments on issues raised throughout the paper. The following is Ergon Energy's comments on these issues.

4 Network Reliability

The Authority seeks comments on:

- **whether these five measures** [SAIDI, SAIFI, CAIDI, MAIFI and energy not supplied] **are appropriate and adequate measures of network reliability and whether there are likely to be any particular difficulties in reporting against these measures; and**

Ergon Energy agrees that SAIDI, SAIFI, CAIDI, MAIFI are standard measures used nationally and internationally for performance from a customer perspective. These measures need to be strictly defined to make the comparison with other distribution companies meaningful, that is:

- What outages are included and what is excluded – Upstream events, cyclones and major storms, load shedding etc
- How the number of customers interrupted is to be determined. This should be calculated from actual customers connected, not estimates based on load or capacity.
- Clear guidelines on capturing restoration sequences are required.
- Definitions of what constitutes a customer – say for embedded customers in shopping centres and office building, also whether a premise that is vacant or not being utilised should be counted as a customer.
- For SAIFI, clear definitions on what is counted as customer interruptions are required. Customers interrupted multiple times within a single fault event should be counted only once. If these customers are then subject to another fault event within the reporting period then these customers should be counted again.

As indicators of the condition of the network and its maintenance these measures are less suitable as they are influenced significantly by the length and exposure of the line. The number of faults per km of line would provide an appropriate comparative measure for network performance that is not influenced by network length. Together with SAIDI, SAIFI and CAIDI, this measure would provide a more complete picture of network performance.

MAIFI is of prime importance to Ergon Energy as momentary interruptions can be irritating for domestic customers or halt processes in industrial customers. As MAIFI is technically more difficult and expensive to record, only one of the previous legacy organisations had commenced deploying equipment and systems to record transient interruptions. To implement MAIFI as an Ergon wide measure the following program is required:

a) Currently feeder MAIFI is measured on the Capricornia system. Extending this functionality to the rest of Ergon Energy's SCADA enabled systems (about 300 feeders) would cost approximately $150,000. This can be ready to be operational by July 2001.
b) Extending feeder MAIFI functionality to the remainder of Ergon Energy (approximately 600 feeders) would require the installation of a supply

detection device at the start of each feeder at a cost of $1000 each. Estimated cost is in the order of $600,000.

c) Extension of MAIFI functionality to feeder sections throughout Ergon Energy would require the installation of approximately 2,400 such devices for a total cost of $2,400,000.

There is also a significant ongoing O&M cost associated with the implementation of the system and management of data. A significant cost (not included above) is also required to implement a system to manage the data on this large scale. These costs are not currently part of our capital works or O&M programs and have not been included in the current revenue review data submissions.

There are several values that have been used as the maximum time that determines a transient operation. ORG has used one minute, while IEEE (US) have defined MAIFI events as those less than five minutes. The choice should be consistent for the Australian Network Businesses.

The fifth measure of energy not supplied requires a program of implementation as well. Any measure that relies on meter demand information requires capital investment to implement. If the purpose of this measure is to indicate the impact of outages on larger customers, then less expensive methods are available that do not rely on metered information. These are based on the transformer kVA capacity. Transformers with low utilisation due to high peak demand will influence the accuracy of the measure to Ergon's detriment, but the measure is low cost to calculate and may be of benefit. Due to many larger customers being supplied from subtransmission lines and substations, it will be important for this measure to consider system averages as well as feeder averages.

- **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.**

The percentage of feeders over a given target on a regional categorisation would provide an appropriate approach to the identification of poor performing areas of the Network. This measure requires that a "feeder" is strictly defined, and the setting of the target requires some analysis. In the rectification of poor performing feeders, some cost benefit guidelines also need to be established as a guide for capital works expenditure. A feeder has an intrinsic design limit to its reliability based on its length and construction type. There will be cases when a feeder's performance is close to its design limit for reliability and further improvement is not possible without changing its design at considerable cost.

The types of assets would be best defined as follows:

- Distribution feeder – All assets that are supplied by the zone substation circuit breaker and supply customers including any SWER, LV or other voltage systems connected to the line. Voltages include 33, 22, 11, 6.6, 5kV, 12.7, 19.1 kV and LV.
- Zone substation - the substation where distribution feeders start. Faults within the fence or boundaries of the zone substation are recorded against this asset.

- Subtransmission feeders - lines of voltage 132, 110, 66 or 33 kV feeding zone substations or large high voltage customers.

All outages experienced by customers on a distribution feeder should be included in the customer minutes lost for the feeder. This includes all planned outages and outages in the subtransmission network which interrupt supply to downstream distribution feeders. Subtransmission outages however should be counted as one outage, not as an outage on each affected distribution feeder.

All feeders in each customer segment should be compared and threshold limits determined for SAIDI, SAIFI and MAIFI that identifies the worst performers. This could be done as with ORG by setting the limit such that 95% of customers are better than the threshold, and the remaining 5% of customers are on the poor performing feeders. The definition of customer segments then becomes important such that feeders of like characteristics are compared with each other to set the limits.

In the Queensland system with only Ergon and Energex with vastly different customer segmentation, Ergon will have all the remote worst performing feeders as Energex will have no feeders in this category. Comparisons of the percentage of worst performing feeders in each service provider in each category may have limited value. Indeed the percentage of worst feeders is not a relevant measure as the limit should be set to identify the current worst performers. As performance of these feeders is improved, then the next worst performing feeders will be identified in a continual improvement cycle.

The value in this approach is in identifying those parts of the network that are performing significantly worse than the average. For these feeders, detailed analysis will be carried out and strategies developed to improve reliability of supply. If necessary, capital funds will be allocated to improve reliability. The length of time a feeder is identified as a worst performer will also be a measure of the effectiveness of the improvement strategies.

Not all feeders identified in this way will necessarily require major works to improve performance. Feeder reliability figures can be influenced by single events for which no major corrective action may be required. Also it may be that to improve the performance of such a feeder may require significant capital investment.

The approach for identifying worst performers, as with other measures, should where possible be consistent with those applied by other jurisdictional regulators such as ORG. This will enable network service providers to be better compared with other similar companies in other jurisdictions.

5 Technical Quality

The Authority seeks comment on:

- **the appropriateness of including technical quality measures in service quality reporting;**

Ergon Energy supports the inclusion of some technical quality measures in service quality reporting.

- **whether monitoring customer feedback alone should be sufficient;**

Ergon Energy believes that the monitoring of customer feedback should be the prime measure of power quality.

Customer perceptions in this area are important, and even if a real voltage quality situation does not exist, a customer perception of poor quality is as much a concern as actual poor supply quality and needs to be managed.

This measure is also a widely used measure and provides the best option for comparative performance once normalised by the number of customers connected to the system.

Due to the difficulties in producing real measures from the technical data related to the monitoring of service quality, customer feedback is the only valid measure for service quality.

- **the appropriate over-voltage events to monitor, if any; and**

  Ergon Energy believes that there is little value in only monitoring the over voltage events as described. Most problems on the network relate to undervoltage steady state conditions. Ergon Energy believes that all voltage related complaints should be reported, not just over-voltage.

  Network Service Providers are able to identify steady state voltage regulation problems either due to system capacity, failure or incorrect setting of voltage regulation equipment or incorrect transformer tap settings. The problem may be either high or low voltage. It is also possible to determine where network failures result in higher voltages being applied to lower voltage and providing customers with a sustained higher voltage.

  Recurring quality of supply problems such as voltage flicker, interference from other disturbing loads, harmonic interference, interference from faulty network equipment are also able to be investigated and confirmed. Where lightning strikes have directly hit either network or customer equipment these can be confirmed due to substantial damage.

  These would be reported as confirmed quality of supply complaints and generally some action carried out to remedy the problem. This may include capital augmentation of the network. Also the number of other customers potentially affected by the same problem could also be estimated.

  Identification of other claimed high voltage events described by customers as “spikes”, “power surges”, “lightning strikes” or “unknown” is not possible as these events are extremely short in nature and are not repeated. Follow up investigation is not practical as the causing event has passed. These would be reported as unconfirmed complaints. Since the source or cause of these events cannot be confirmed the number of other customer affected cannot be estimated.

  It is only effective to monitor steady state voltage not short-term voltage problems. There is simply no effective monitoring equipment that can record short-term variations that can be permanently installed and analysed effectively.

Ergon Energy therefore proposes that the most appropriate set of measures is as follows:

- The number of verified steady state voltage complaints. For verified complaints we could also estimate the number of other customers who may have been affected although this may often be beyond the skills of field staff.
- The number of validated insurance claims resulting from damaged equipment.
- The number of un-validated insurance claims resulting from damaged equipment.

- **the appropriate approach to monitoring system voltage, if included.**

Real time technical monitoring of the system is seen by Ergon Energy as a tool for managing the network and less suitable as a comparative measure. As a tool, the network service provider will itself determine the best steady state and transient voltage and time thresholds for exception reporting to make the data meaningful and manageable. This technical data would then be used to drive down the number of customer complaints.

Monitoring of voltage on feeders at zone sub and extremity of one feeder is of limited value as these may not identify the problem. The zone substation bus is controlled by a voltage regulator and is not at customer voltage. This monitoring would indicate a voltage regulation problem such as a faulty Voltage Regulating Relay (VRR) or tapchanger equipment. However it would be possible to monitor all zone substation voltages by adding the required equipment. At present such equipment is not installed at every zone substation. This would be best done by incorporating this voltage monitoring into SCADA equipment.

Monitoring the extremity of one feeder will not identify problems on other feeders as each feeder has a different length and loading. A voltage monitoring device at the end of a feeder may be some assistance in identifying capacity problems on the feeder but will be subject to customer effects and local LV conditions such as the choice of transformer tap.

Ergon Energy's approach currently is to carry out regular Network analysis audits to identify potential problems. In conjunction with this, devices that monitor steady state voltage would be placed to monitor the identified trouble spots on feeders.

Monitoring of system voltage as proposed also has the following limitations:

- Permanent monitoring is only practical for steady state voltage variations. Devices for effective monitoring of transient voltages are expensive and require detailed analysis to interpret results. These are generally used to investigate specific problems.
- The cost of installation of voltage monitors is high and the location of the monitor is critical to effectively identify problems. Steady state voltage problems can occur due to HV regulation and capacity, LV capacity or the customer installation.
- Voltage monitors are also required to check the operation of line voltage regulators. Voltage monitoring of customers close to voltage regulators is

also required to identify over voltage problems due to incorrect transformer tap settings. For voltage monitoring to be effective, a large number of devices is required.

- Utilising the same devices proposed to monitor transient outages in order to calculate MAIFI will provide some benefit. However this will not identify all voltage problems. Customer feedback and investigation by the network service providers is the most effective method.

6 Customer Service

The Authority seeks comment on:

- **whether customer service should be monitored and if so which activities should be monitored;**

  Ergon Energy recommends that corporation GSL service standards be monitored and reported. The implementation of customer service measures is costly and complex and it is best to limit them to the GSL measures set up by the corporation.

  Current GSLs relate to
  - New Connections
  - Planned Interruption notification
  - Street Lights
  - Hot Water
  - Trees and Overhead Powerlines

  Phase 2 of the GSLs project is expected to institute additional GSLs.

- **the appropriateness of the data fields proposed in Appendix B – item number 5;**

  Comments on the data fields are attached in Appendix 1. Customer Service measures as with complaints cannot be reported on a feeder by feeder basis. These reports will be for the whole of Ergon Energy.

- **any additional activities and data fields which should be reported and monitored; and**

  Activities in the current GSLs not included in the list in Appendix 1 are
  - Planned interruption notification
  - Hot water
  - Trees and Overhead powerlines

- **whether the Authority should monitor the activity level of voluntary guaranteed service levels or impose a set of guaranteed service levels.**

  Ergon Energy recommends that voluntary GSLs should be monitored for the reasons stated above.

7 Segmentation of Service Quality Data

The Authority seeks comment on:

- **the need for segmentation of service quality data;**

Ergon Energy believes segmentation of service quality data is required because

- customers expectations differ geographically
- the capabilities of the urban network also differ to rural and remote systems
- segmentation prevents some masking of poor performance
- it provides the opportunity to compare like with like in networks with different geographic makeup.

- **appropriate categories for segmentation;**

Ergon Energy has adopted segmentation into Urban, Rural and Remote as defined by ERU. For comparative purposes, it may be prudent to give consideration to the segmentation adopted by the Victorian businesses. That is, Urban, Short Rural and Long Rural. A further category may be required for the Queensland situation for extra long feeders.

The advantage of this segmentation is that it splits rural feeders according to their length, which is the main determinant of feeder performance provided all maintenance issues have been addressed. Customer density as per the ERU rural and remote categories attempts to model equipment density, which also has an impact on performance. However, for two feeders with similar customer density the longer feeder will always perform worse.

- **appropriate definitions of segmentation categories.**

Appropriate segmentation would be similar to ORG:

- CBD – Ergon Energy has no networks in the CBD category
- Urban (feeder with load density greater than 0.3 MVA per km)
- Short Rural (feeder that is not Urban and with total length less than 200km)
- Long Rural (feeder that is not Urban and with total length greater than 200km)
- Very Long Rural (Ergon Proposal of an extra category for very long feeders. The threshold length requires further analysis.)

This would provide a means of comparison with other network service providers in Victoria.

Segmentation should be carried out on feeders as defined above. This does have a disadvantage where customer perception does not align with the classification. Examples include small rural towns supplied by long feeders.

8 Possible Data Collection Framework

The Authority seeks comment on:

- **the appropriateness of the proposed data collection framework and associated data fields;**

Comments on the data fields are shown with each data field in Appendix 1.

Data is requested by feeder. However system totals should also be provided as feeder totals cannot be added together since outages to the subtransmission network are not usually associated with a feeder.

Ergon Energy is currently in the process of implementing a number of common systems in the merged business to enable outage data collection and detailed outage reporting and analysis. These systems will be interim systems and will be completed over the coming two years. Also significant capital investment is also required to install equipment on the network to record data to meet the requirement in Appendix 1.

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

Reporting the 50 odd items of information on Ergon Energy's 1000 odd feeders each month will swamp the QCA with data and cause a high administrative burden to both the QCA and Ergon Energy. Although possible, Ergon Energy does not see the value in doing this. Trends in data are not always identified on a month by month basis, but on a year to year basis. Also, many of the indicators should be reported on a twelve-month rolling average basis. Ergon proposes that a better approach would be to report data quarterly, half yearly, or preferably annually. Graphs showing month by month rolling averages over the previous twelve months would be most beneficial.

9 Implementation Issues

The Authority seeks comment on:

- **the feasibility of adopting a service quality regime based on consistent standardised data; and**

Adopting a service quality regime on consistent standardised data is fully supported by Ergon Energy. Ergon Energy, as a result of the merger, is currently re-engineering its systems, and will be able to meet the regulator's requirements for consistent standardised data in the future. However it must be recognised that Ergon Energy does not currently have history on many measures and needs time to develop systems, collect critical data, and install equipment. Ergon Energy will also need consideration in revenue determinations to carry out this work.

The preferred method to have a service quality regime based on consistent data with this data provided by data collection and measurement rather than estimating data with incomplete systems. Where data is not currently available, appropriate systems and processes should be implemented. Reporting on these new systems may take up to one year to have meaningful data available.

Ergon Energy believes there is a need to establish the measures that are comparable with other regulatory regimes such as ORG or IPART and that jurisdictional regulators should work together to ensure consistent measures.

- **where consistent standardised data is not available, what alternative measures based on proprietary data should be adopted to establish baseline measures of service quality?**

Coming from six disparate organisations with different systems, methodologies, and assumptions in the formulation of their measures, Ergon Energy cannot offer an internally consistent measure from the past into the future. What can be offered however is our approximation of SAIDI for the whole organisation for the last four years, and additionally SAIFI and CAIDI for the last 2 years.

10 Service Quality Incentive Mechanisms

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

(i) Ergon Energy sees comparative reporting between service providers as a valid and beneficial approach to incentive regulation. Ergon Energy will be able to make data publicly available once mature systems are in place and time has passed to collect data on an internally consistent basis.

(ii) Ergon Energy opposes statutory penalties for the reasons listed in the issues paper and as they do not benefit customers and customers may not have been impacted as assumed. Also, as stated, the establishment of standards requires sound historical data, which is not available at this stage.

(iii) Price control adjustments also require a history of service quality measures so that smoothing can be applied. Ergon Energy is working towards having this data, but at present this history is not available. Incentives through price also require a good understanding of the value that the customer places on reliability and how much they are prepared to pay for increased supply quality.

(iv) Guaranteed Payments are a future possibility once systems are in place to monitor individual customer performance. The information from these systems would be required for the modelling and setting of the guaranteed payment thresholds. Sometimes there will be a gap in customer expectations and the capability of the system to deliver good service. There will always be customers with poor performance due to long radial nature of many of our supply systems and it may be impossible to eliminate these without huge capital investment.

(v) Legal compensation could engender adversarial relationships between the service provider and its customers resulting in litigation on the real causes of outages and whether the service provider could really control a particular outage. This implies the impacts of a single outage not the average performance of groups of customers. Proving that a series of outages should entitle legal compensation would not be practical.

Ergon Energy recommends that the most appropriate mechanism for service quality incentives should be comparative reporting in the short term and moving to price incentives in future when the targets and data collection becomes more mature and increased focus on service quality improvement is having an impact.

APPENDIX 1

Item No.	Data Field	Definition	Reporting Period	Comments
1	**Administrative Data**			
1.1	DNSP business	ie: Ergon Energy/Energex.	Monthly	Ergon Energy supports a reporting period less frequent than monthly. Annual reporting is the preferred interval.
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	ERGON ENERGY'S COMMENTS
2	**Aggregate Data**			Timeliness for data should be specified. Ergon recommends that monthly data be reported one month behind, quarterly data one quarter behind and annual data one quarter behind. Whether data to be supplied as a monthly total, year to date totals, or rolling twelve months to be specified. A policy is required on corrections to previous period.
2.1	Total distribution customers	• The customer numbers on which minutes off supply and interruption figures are based (for the business, business centres, and feeders). • The sum of domestic and non-domestic customer numbers may not balance with this figure.	Monthly	
2.2	Domestic distribution customers	A distribution customer is defined as a supply point through which electricity is distributed to an end user with a separate account. • Unmetered supplies are included. • 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). • The number of customers at the end of the reporting period to be reported.	Monthly	• We assume that non-active (eg empty premise) as well as active customers are counted. • Unmetered supplies (for example, each street light) cannot be included within customer count with the current Customer Information System.
2.3	Non-Domestic distribution customers	See Item No. 2.2: 'Domestic distribution customers'.	Monthly	• The split between domestic and non-domestic distribution customers does not fit within the scope of a distribution authority. This is generally the domain of the retailer.
2.4	Length of high voltage overhead distribution lines	Route length in kilometres of lines in service (the total length of feeders including all spurs). • Each SWER line, single phase line, and three phase line counts as one line. • A double circuit line counts as two lines.	Annual	• Is a double circuit line two lines of the same voltage?
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	• Not all feeders are metered. Capital investment and a program of implementation is required for this measure.

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD	COMMENTS
3	**Reliability Data**			
3.1	Reliability of supply complaints	The number of complaints of relating to the reliability of supply.	Quarterly	• The number of complaints relating to the reliability of supply cannot be reported on a feeder basis yet. System changes are required for this functionality to be integrated into CIS and complaints system. Training of staff is required.
3.2	Unplanned outages	• Unplanned events causing interruptions to customers on the high voltage and low voltage systems. • Does not include momentary outages and single premise outages.	Monthly	• Does a single premise outage also include customers with a HV transformer? • The outages on each feeder cannot be added together to obtain the system totals there will also be subtransmission outages • Outages should only be counted once.
3.3	Momentary feeder outages.	• A momentary outage is an outage less than 1 minute in duration. • 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. • Each successful auto re-close is counted as one momentary outage. • Re-closes which are followed by lock-out are to be included in the unplanned outage indicator, not the momentary outage indicator	Monthly	• Program of implementation required for this measure. • A feeder is defined as the assets supplied by a circuit breaker at a zone substation. •
3.4	Momentary feeder section outages	• A momentary outage is an outage less than 1 minute in duration. • Includes outages of a feeder section; feeder outages are not included. • Each successful auto re-close is counted as one momentary outage. • Re-closes which are followed by lock-out are to be included in the unplanned outage indicator, not the momentary outage indicator	Annual	• Program of implementation required for this measure. • Feeder sections defined as assets supplied by downstream feeder reclosers with automatic reclosing (three phase or SWER).
3.5	Planned outages	Planned events causing interruptions to customers. • Does not include single premise outages.	Monthly	
3.6	Unplanned minutes off supply	To be reported as gross (or aggregate) unplanned customer minutes off supply per customer. • An interruption begins when supply is lost, not when the interruption is reported. • Where there is no automatic recording of the duration of an interruption, the best estimate is to be recorded. • When reported for a feeder, minutes off supply for the customers on that feeder at the end of the reporting period should be reported. • Includes single premise interruptions. • Does not include momentary interruptions.	Monthly	• It is assumed that SAIDI is required here rather than customer minutes. • What to be included to be defined: To include major events outside DB's control, eg Generation, Load shedding, Cyclones? • Expect to be able to provide single customer outages from July 2001.
3.7	Planned minutes	To be reported as gross (or aggregate) planned customer minutes off supply	Monthly	• It is assumed that SAIDI is required here rather than customer minutes.

Item No.	DATA FIELD	DEFINITION	REPORTING PERIOD	COMMENTS
	off supply	per customer. • Includes single premise interruptions.		
3.8	Unplanned interruptions	Customer interruptions caused by unplanned outages. • Includes single premise interruptions. • Does not include momentary interruptions.	Monthly	• Assumed that SAIFI is required here rather than customer numbers.
3.9	Momentary interruptions (due to feeder outages)	Customer interruptions caused by momentary feeder outages.	Annual	• Assumed that MAIFI is required here rather than customer numbers.
3.10	Planned interruptions	Customer interruptions caused by planned outages. • Includes single premise interruptions.	Monthly	• Assumed that SAIFI is required here rather than customer numbers.
3.11	Energy not supplied – unplanned (MWh)	Estimate of energy not supplied to be based on average customer demand (multiplied by number of customers interrupted and the duration of the interruption). Average customer demand to be determined from (in order of preference): • average consumption of the customers interrupted based on their billing history; • feeder demand at the time of the interruption divided by the number of customers on the feeder; • average consumption of customers on the feeder based on their billing history; and • average feeder demand derived from maximum demand and estimated load factor, divided by the number of customers on the feeder.	Annual	• This measure requires a program of implementation as well. Any measure that relies on meter demand information requires capital investment to implement. If the purpose of this measure is to indicate the impact of outages on larger customers, then less expensive methods are available that do not rely on metered information, but on the kVA connection size. Transformers with low utilisation due to high peak demand will influence the accuracy of the measure to Ergon's detriment, but the measure is still low cost to calculate and still may be of benefit. Due to many larger customers being supplied from subtransmission lines and substations, it will be important for this measure to consider system averages as well as feeder averages. • Estimating average customer demand based on billing history by either method is possible and Ergon Energy is in the process of implementing a system to calculate this. Further development work would be required to integrate this information into an outage reporting system.
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	ERGON ENERGY'S COMMENTS
4	**Quality of Supply Data**			
4.1	Quality of supply complaints	Complaints of quality of supply – over-voltage.	Quarterly	• Most complaints relate to steady state undervoltage. • The number of complaints of relating to the quality of supply cannot be reported on a feeder basis yet. System changes are required for this functionality to be integrated into CIS and complaints system. Training of staff is required.
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	• A rare event but can be recorded.
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	• A rare event but can be recorded.
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	Lightning induced events cannot be identified or even investigated, as they are past and very short-term events.
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	Lightning induced events cannot be identified or even investigated, as they are past and very short-term events.
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	Over voltage events due to voltage regulation such as VRR failures, incorrect tap settings can be recorded etc. Under voltage events should also be counted.
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	Can be estimated.

5	**Customer Service**	**DEFINITION**	**REPORTING PERIOD**	**ERGON ENERGY'S COMMENTS**
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	This measure can be reported once the consolidated call centre is operational. Calls that are not answered cannot be classified as Network or Retail related.
5.11	Calls to network call centre forwarded to an operator	Includes abandoned calls not answered within 30 seconds.	Quarterly	Calls that are not answered cannot be classified as Network or Retail related and would have to be estimated. This measure can be reported once the consolidated call centre is operational.
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	This measure can be reported once the consolidated call centre is operational.
5.2	Customer arranged appointments	Appointments requested by the customer for a meeting with the DNSP's staff, at any location.	Quarterly	This particular activity requires a very sophisticated work management and dispatch system to track properly. This system may not be in place for some years.
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	This particular activity requires a very sophisticated work management and dispatch system to track properly. This system may not be in place for some years.
5.3	Connections made	The number of supply connections made to customers' premises.	Quarterly	Can be reported.
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	Can be reported. Existing GSL.
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	Requires special report to be written but primary data is available.
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	Requires special report to be written but primary data is available.
5.34	Connection & augmentation complaints	Includes complaints about: the quality and timeliness of a new connection; and the cost, timeliness and quality of augmentation works.	Quarterly	Requires changes to FACTS system and operator training to identify these complaints. These complaints need to be defined well.
5.4	Street lights	The number of street lights in the distribution area.	Quarterly	Requires the merging of Street light registers.

5	**Customer Service**	**DEFINITION**	**REPORTING PERIOD**	**ERGON ENERGY'S COMMENTS**
5.41	Street lights out during period	The number of streetlights reported by customers as not working.	Quarterly	Can be provided. Report from CIS required.
5.42	Street lights not repaired by agreed date	The total number of streetlights reported as not working which were not fixed by the date agreed with the customer.	Quarterly	Can be provided – existing GSL.
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	Current GSL system report, however system uses days not business days.
5.5	Number of GSL payments made	The total number of events that attracted a GSL payment	Quarterly	Can be provided.
5.51	Amount paid out in GSL payments	The total amount paid in GSL payments	Quarterly	Can be provided.
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	Can be provided – existing GSL.
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: • fault repair; • vegetation control; • request for information on quality and reliability of supply; and • other service issues.	Quarterly	Existing reports from FACTS system should satisfy this.