
REVIEW OF ELECTRICITY STANDARDS OF SERVICE FOR THE NORTHERN TERRITORY

FINAL REPORT

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GLOSSARY OF TERMS

Term	Definition
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Average outage duration (minutes)	The cumulative summation of the outage duration time for the period, divided by the number of connection point outage events during the period
CAIDI	Customer average interruption duration index, means the average duration of each supply interruption per customer who experienced a supply interruption
CBD	Central Business District
Commission	Utilities Commission of the Northern Territory
DNSP	Distribution network service provider
EAF	Equivalent availability factor
EFOF	Equivalent forced outage factor
ESS	Electricity standards of service
GSL scheme	Guaranteed service level scheme
IEEE	US Institute of Electrical and Electronics Engineers
kV	Kilovolt
MAIFI	Momentary average interruption frequency index, means the average number of customer interruptions of one minute or less per customer per year
MCE	Ministerial Council on Energy
MWh	Megawatt hour
Minutes off supply	Estimate of the MWh unsupplied divided by the highest previously recorded maximum demand delivered
NEM	National Electricity Market, the wholesale market for electricity supply in Queensland, New South

Term	Definition
	Wales, Victoria, South Australia, the Australian Capital Territory and Tasmania.
PWC	Power and Water Corporation
SAIDI	System average interruption duration index, means the average number of minutes that a customer is without supply each year
SAIFI	System average interruption frequency index, means the average number of times a customer's supply is interrupted each year
TNSP	Transmission network service provider
USE	Maximum permissible unserved energy

CHAPTER 1

Overview

Introduction

- 1.1 The Commission has undertaken a review of the electricity standards of service framework in the Northern Territory to report on the adequacy of the current standards of service established by the Electricity Standards of Service (ESS) Code, and to advise on options to ensure electricity generation, network and retail standards of service are appropriate in the Territory.
- 1.2 The review has been conducted according to terms of reference from the Treasurer in November 2009 to review and report on the adequacy and effectiveness of the ESS Code, to advise on the indicators and reasonable benchmarks for standards of service in the Territory and to develop options for setting, monitoring and enforcing standards of service.

Proposed standards of service framework

- 1.3 The Commission considers that a standards of service framework is appropriate in the Territory to:
 - establish minimum and average standards of reliability, quality and customer service in the electricity supply industry;
 - promote improvement in the level of services supplied by electricity generators, network service providers, and retailers operating in the Territory; and
 - establish effective arrangements for monitoring and reporting on performance.

Measures of reliability performance

- 1.4 The Commission considers that the Territory's standards of service framework should require reporting on reliability performance. The proposed measures of reliability performance are set out below.

Generation reliability performance reporting

- 1.5 The Commission recommends that generators operating in the Darwin-Katherine, Alice Springs and Tennant Creek power systems should report:
 - measures indicating the technical performance of generation, including Equivalent Forced Outage Factor and Equivalent Availability Factor; and
 - measures indicating the effect of generation performance on customers. The measures should include system average interruption duration index (SAIDI) and system average interruption frequency index (SAIFI) indicators.

Distribution network reliability performance reporting

- 1.6 The Power and Water Corporation (PWC) Networks business unit, as the operator of the Darwin-Katherine, Alice Springs and Tennant Creek distribution networks, should report:
- measures indicating the aggregate effect of distribution network performance on customers. The measures should include the SAIDI and SAIFI indicators; and
 - the SAIDI performance of individual feeders and each feeder type.

Transmission network reliability performance reporting

- 1.7 The Commission considers that specific reliability measures should be established for the transmission elements of the Territory's electricity networks. The proposed measures of transmission reliability performance are:
- measures indicating the technical performance of transmission, including the availability of each transmission line, circuit and transformer, and the average duration and frequency of outages; and
 - measures indicating the effect of transmission performance on customers, including SAIDI and SAIFI indicators.

Measures of quality of supply performance

- 1.8 The Commission recommends that PWC Networks investigate the potential for emerging technologies (e.g. smart meters) to provide accurate and cost effective options for monitoring power quality.
- 1.9 In the meantime, the Commission considers that PWC should continue monitoring customer complaints relating to quality of supply disturbances, consistent with the existing requirements of the ESS Code.

Measures of customer service performance

- 1.10 The Commission considers that electricity retailers operating in the Darwin-Katherine, Alice Springs and Tennant Creek power systems should report:
- the average time taken to answer telephone calls, the number and percentage of calls not answered within 20 seconds of a customer choosing to speak to a human operator, and the number and percentage of calls abandoned;
 - the number, percentage and type of complaints about retail related customer service complaints; and
 - the time to respond to written enquiries.
- 1.11 The Commission considers that PWC Networks should report:
- the average time taken to answer telephone calls, the number of calls not answered within 20 seconds of a customer choosing to speak to a human operator, and the number and percentage of calls abandoned;
 - the number, percentage and type of network related customer service complaints (excluding quality of supply complaints);
 - the number and percentage of re-connections not provided within 24 hours;

- the number and percentage of new connections (excluding those requiring network extensions and augmentations) in the CBD or urban area not provided within five business days, or otherwise agreed with the customer; and
- the number and percentage of new connections (excluding those requiring network extensions or augmentations) in the rural area not provided within 10 business days, or otherwise agreed with the customer.

1.12 PWC Retail and PWC Networks may report a combined result for telephone call answering times and calls abandoned until such time as system functionality supports separate reporting.

1.13 The Commission considers that retailers and PWC Networks should report on the incidence of customer hardship, using measures that are consistent with those in the Ministerial Council on Energy (MCE) proposals for a National Energy Customer Framework:

- disconnections for failure to pay and reconnections in the same name;
- customer service and customer complaints;
- the use of prepayment meters; and
- social welfare concessions, such as membership of pensioner concession schemes.

Reliability performance targets

1.14 The Commission recommends that reliability performance targets should be determined as follows:

- the targets for generation reliability should identify a maximum level of unserved energy (USE) for the power systems, representing the statistical risk of the electricity supply not meeting customer demand over time;
- the targets for distribution reliability should reflect the future expected average reliability performance of the distribution network, and be informed by historical reliability performance and comparison with the performance of appropriate industry peers;
- the targets for transmission reliability should reflect the future expected average reliability performance of the transmission network, and be informed by historical performance; and
- the targets for distribution network feeder reliability should reflect the minimum average expected performance for each feeder type and be informed by historical performance and comparison with the performance of appropriate industry peers.

1.15 The Commission considers that electricity service providers should use best endeavours to achieve these targets.

1.16 To avoid the risk of potentially lower targets due to a deterioration in performance, the Commission recommends that a floor be set on the targets. The use of a floor would ensure that average performance target levels are never set at a level that is below current levels.

Implementation

- 1.17 The terms of reference require the Commission to recommend a course of action and provide detailed plans for implementation of that recommendation.
- 1.18 The Commission considers that the key implementation considerations are:
- legislation and statutory arrangements to apply the proposed standards of service framework;
 - methodology for determining service performance targets;
 - monitoring and reporting arrangements;
 - assurance about service performance data quality used for reporting and determining service performance targets; and
 - service providers subject to the proposed standards of service framework.

Legislation and statutory requirements

- 1.19 The Commission considers that a specific head of power for establishing a clear standards of service framework would deliver greater regulatory certainty, and support new investment. In particular, the Commission considers that a specific head of power is required to clarify and confirm monitoring and reporting arrangements for a standards of service framework.
- 1.20 At this stage, the Commission considers that a new Regulation under the *Electricity Reform Act* is an appropriate way of establishing the proposed standards of service arrangements.

Timing

- 1.21 The Commission recommends that the introduction of the proposed electricity standards of service arrangements coincide with the regulatory period for the electricity networks price reset, starting 1 July 2014.
- 1.22 A commencement period of 1 July 2014 would allow sufficient time to establish new regulation, should the Treasurer decide that such an option is the most appropriate. This would also enable PWC to develop systems to collect the required information and ensure that it is accurate.
- 1.23 However, the Commission considers that the reporting arrangements required by the proposed standards of service framework should be adopted by the Territory electricity industry as soon as possible, without waiting for July 2014.
- 1.24 The Commission notes that many of the measures that would be reported as part of the proposed standards of service framework are already reported by PWC, whether under existing standards of service arrangements or for the Commission's annual power system review.

Exclusions

- 1.25 The Commission recommends that network related reliability performance data be adjusted to recognise the effect of the following events and supply interruptions that are outside the reasonable control of the network service provider:
- load shedding due to a generation shortfall;

- supply interruptions due to planned outages, where at least two business days notice has been given of the planned outage;
- momentary interruptions of less than one minute; and
- events that are outside the reasonable control of the network service provider, such as traffic accidents and vandalism, and natural events that are identified as statistical outliers using the 2.5 beta method.

- 1.26 The 2.5 beta method should be used to adjust performance data for both reporting performance and setting service targets at the system level. If an event is an excluded event, then the impact of this event should be excluded when determining the performance of each feeder type.
- 1.27 PWC Networks should be required to report adjusted and unadjusted performance for each feeder type, and at an aggregate system level.
- 1.28 PWC Networks should be required to provide detailed comments on those events which are excluded using the 2.5 beta method.

Segmentation of data

- 1.29 The Commission recommends that performance measures be reported as follows:
- distribution network reliability data should be reported by feeder type (CBD, urban, rural short and rural long), by power system (Darwin-Katherine, Alice Springs and Tennant Creek) and region (Darwin, Katherine, Tennant Creek and Alice Springs) and if outages were planned or unplanned;
 - feeder performance should be reported by feeder type for each region;
 - transmission reliability data should be reported for transmission assets, and if outages were planned or unplanned. The Commission will consult with PWC Networks to identify transmission assets. The Commission considers that transmission assets are those connecting generation and major load centres;
 - generation reliability data should be reported by power system and region, and if outages were planned or unplanned;
 - distribution network quality of supply data (complaints about quality of supply) should be segmented by power system and region;
 - PWC Networks should report complaints received relating to network activities by power system and region;
 - retailers should report customer service complaints received relating to retail activities on a Territory wide basis; and
 - telephone answering time (average answer time and number of calls not answered within 20 seconds of a customer choosing to speak to a human operator) and calls abandoned should be reported by on a Territory wide basis.
- 1.30 Appendix A provides a detailed listing of the performance measures that an electricity service provider might report against, and the level of detail required.

Availability and quality of performance data

- 1.31 The Commission considers that the quality of regulation is largely dependent on the quality of the information provided by the service provider. Accurate information is necessary for the regulator to set accurate and relevant quality standard levels, and monitor quality on a meaningful and consistent basis over time.

- 1.32 The Commission intends conducting regular audits of PWC's data collection systems and processes to obtain reasonable assurance that service performance data is accurate. The standards of service framework should establish a requirement for independent auditing of service performance data, and the effectiveness of reporting processes.
- 1.33 The Commission considers that the audit costs should be borne by the service provider.

Scope of arrangements

- 1.34 The Commission considers that the standards of service framework should apply to all licensed firms operating in the Darwin-Katherine, Alice Springs and Tennant Creek systems, and supplying customers connected to the regulated networks. However, the Commission considers that a standards of service framework should have the flexibility to apply to service providers operating in the market systems and to service providers operating in remote and regional centres.

CHAPTER 2

Introduction

Background

- 2.1 The electricity supply industry in the Northern Territory is regulated through the *Electricity Reform Act, Electricity Networks (Third Party Access) Act, Utilities Commission Act* and associated legislation. This statutory framework was introduced on 1 April 2000.
- 2.2 The statutory framework is primarily focused on regulating the activities of electricity industry participants and customers in the Darwin-Katherine, Alice Springs and Tennant Creek power systems – referred to as the market systems. Key elements of the statutory framework are:
- third party access to the Darwin-Katherine, Alice Springs and Tennant Creek electricity networks;
 - staged introduction of retail contestability, with all customers contestable from 1 April 2010; and
 - an independent economic regulator, the Utilities Commission, to regulate monopoly electricity services, licence market participants and enforce regulatory standards for market conduct and service performance.
- 2.3 The Power and Water Corporation (PWC) is the main industry participant in the market systems, generating the majority of electricity, operating the network and supplying retail services to all customers. PWC also provides water supply and sewerage services to customers throughout the Territory.
- 2.4 PWC is a vertically integrated electricity service provider, with generation, network and retail business units operating as separate businesses.¹ The commercial relationship and transactions between each unit are subject to oversight and regulation by the Commission.² PWC is owned by the Territory Government, and is also subject to oversight by a shareholding Minister through the *Government Owned Corporations Act*.
- 2.5 In the three market systems, PWC is currently the sole electricity retailer, supplying electricity to 74 021 customers as at 30 June 2010.³ PWC is also the main electricity generator, with almost 91 per cent of generation capacity. There are three other firms generating electricity in the Darwin-Katherine and Alice Springs systems. However,

¹ This paper refers to the separate business units as PWC Retail, PWC Networks and PWC Generation.

² Regulatory instruments include the licensing framework and the Northern Territory Electricity Ring-fencing Code.

³ Power and Water Corporation, 2009-10 Licence Return.

these businesses generate electricity under contract for PWC rather than selling directly to an electricity retailer, and PWC provides the fuel used for electricity generation.⁴

- 2.6 PWC operates the Darwin-Katherine, Alice Springs and Tennant Creek networks, and is responsible for system control.⁵ The networks are not interconnected, and are separated by long distances. The networks in the market systems comprise 666 kilometres (km) of high voltage transmission lines and 5 156 km of low voltage distribution lines.⁶
- 2.7 Electricity supply in regional and remote centres of the Territory is mainly managed by the Territory Government and a service provider through a contract for service model. These systems include:
- the 72 communities and 82 outstations where essential services are provided through the Territory Government Indigenous Essential Services program;
 - the three mining townships of Nhulunbuy, Alyangula and Jabiru, where electricity is supplied by the associated mining firm; and
 - eight remote townships of Timber Creek, Borroloola, Daly Waters, Elliot, Newcastle Waters, Kings Canyon, Yulara and Ti-Tree.

Electricity standards of service

- 2.8 Electricity standards of service in Australia are regulated by governments or industry regulators to ensure that customers receive reasonable standards of reliability and quality of supply, and customer service levels. Average and minimum service performance targets are defined for electricity transmission and distribution network service providers (TNSP and DNSP), and the electricity generation and retail sectors in most jurisdictions.
- 2.9 The most common approaches for regulating standards of service in Australia are:⁷
- monitoring or information disclosure requirements, with firms required to publish information about service performance against a number of reliability, quality and customer service performance measures or benchmarks;
 - definition of minimum service standards, with minimum standards of performance mandated in legislation;
 - guaranteed service level (GSL) schemes, with payments made to customers when service performance is outside a defined threshold (for example worse than a minimum standard);

⁴ These generators are located at Pine Creek (between Darwin and Katherine), Shoal Bay (at the Darwin City Council dump) and Brewer Estate (in Alice Springs).

⁵ The System Controller is located in the PWC networks business unit, and is responsible for monitoring and controlling the operation of the power system to ensure the system operates reliably, safely and securely in accordance with the System Control Technical Code.

⁶ Power and Water Corporation, 2009-10 Licence Return.

⁷ Energy Networks Association, March 2007, Service Standard Regulatory Policy & National Reliability Reporting Framework, page 8.

- financial incentive schemes, with financial incentives established through a price regulation framework to encourage defined performance outcomes; and
 - contractual service standards, whereby firms agree with a customer through the contract negotiation process to achieve a particular service level.
- 2.10 The key factor in establishing standards of service arrangements is identifying what represents acceptable levels for service performance, which involves understanding customer preferences, and customers' willingness to pay more or less for improved or reduced levels of service.⁸ A further factor in determining acceptable levels of service performance is the local circumstances, such as prevailing weather, number and location of customers, size of the network and other local conditions. The variation in the costs of providing reliable supply in the range of local circumstances means that standards of service differ between jurisdictions, and between regions within jurisdictions.
- 2.11 Standards of service frameworks most commonly apply to DNSPs and TNSPs. As natural monopolies, DNSPs and TNSPs have less incentive to strive to provide improved, or different, levels of service as customers generally cannot move to an alternative provider. Consequently, the standards of service achieved by DNSPs and TNSPs are a key consideration of regulators in undertaking network price regulation, and identifying the optimum balance between price and service levels.
- 2.12 Additionally, the performance of the equipment a firm uses to provide a good or service can influence standards of service. For example, the safe, secure and reliable operation of a power system requires that electricity generators design and operate their equipment so as to meet specified technical and performance parameters. As such, the technical and service performance of generators is regulated and managed to avoid the adverse reliability (for example outages) or quality (for example power surges) outcomes for customers that could result from operating outside these parameters.⁹
- 2.13 Finally, electricity retailers have been required to report on aspects of service performance in most Australian jurisdictions, with the main objective of providing information to household customers on access to electricity services, and customer satisfaction with the quality of service. A focus of examining retailers' standards of service, and the monitoring of retail service performance, is to bring transparency and accountability to how retailers are treating their customers, and particularly vulnerable customers.¹⁰

⁸ Ibid, pages 7-8.

⁹ The operating parameters for the Territory power systems are managed by PWC Networks (as network operator) and System Control, and documented in the Network Connection Technical Code and System Control Technical Code.

¹⁰ For example, refer Essential Services Commission of Victoria, December 2009, Energy Retailers Comparative Performance Report – Customer Service 2008-09.

Measures of service performance

2.14 Measures of service performance used in Australia typically include:¹¹

- reliability of supply, which identifies the ability of a service provider to maintain the availability of the service in question, typically being measured by how often and for how long customers go without the service during a given period;
- quality of supply, which identifies the specification of supply, and involves measures such as voltage levels, frequency and harmonic content; and
- customer service, which identifies how the service provider interacts with individual customers and involves measures of customer complaints, and service provision (for example attending appointments, billing).

Reliability of supply

2.15 Reliability measures are system wide measures derived from the duration and number of power outages experienced, and the number of customers affected. Measures of reliability used in the Territory and Australia include:¹²

- system average interruption duration index (SAIDI) – is the average number of minutes that a customer is without supply each year. SAIDI is calculated as the sum of the duration of each sustained customer interruption (in minutes), divided by the total number of customers. SAIDI excludes momentary interruptions (one minute or less);
- system average interruption frequency index (SAIFI) – is the average number of times a customer's supply is interrupted each year. SAIFI is calculated as the sum of each sustained customer interruption, divided by the total number of customers. SAIFI excludes momentary interruptions;
- customer average interruption duration index (CAIDI) – is the average duration of each supply interruption per customer. CAIDI is calculated as the sum of the duration of each sustained customer interruption (in minutes) divided by the total number of sustained customer interruptions (SAIDI divided by SAIFI). CAIDI excludes momentary interruptions; and
- momentary average interruption frequency index (MAIFI) – the average number of momentary interruptions per customer per year. MAIFI is calculated as the total number of customer interruptions of one minute or less, divided by the total number of customers.

2.16 Supply interruptions can be planned or unplanned. For example, a planned power outage would occur when a DNSP de-energises a substation or feeder to undertake routine maintenance, and an unplanned outage would occur when there is an equipment failure, resulting in loss of supply to customers.

2.17 Jurisdictions can adopt different approaches to treating planned and unplanned outages when measuring and reporting on reliability performance, for example by

¹¹ See discussion in Utilities Commission, August 2004, *Developing a Standards-of-Service Framework*, page 1.

¹² Refer Utilities Regulators Forum, March 2002, National Regulatory Reporting for Electricity Distribution and Retailing Businesses Discussion Paper, page 6, table 1.

excluding planned interruptions or excluding extreme unplanned interruptions caused by infrequent and catastrophic natural events like cyclones.

Quality of supply

- 2.18 Quality of supply refers to the electrical specification of supply, and is measured by such indicators as voltage levels, frequency and harmonic content. Poor quality of supply shows up as dimming, flickering or overly bright lights, and damage to electrical appliances. Quality of supply is a concern where customers use voltage sensitive electrical appliances and equipment (for example computers and electronically controlled systems).
- 2.19 Quality of supply has been difficult to measure at customer premises. Although the quality of supply is the subject of fairly detailed regulation specified in various Australian Standards, there are no commonly used measures for monitoring and reporting the response to, and prevention of quality problems. A common approach to monitoring quality is to rely on customer feedback, or complaints, about voltage problems.
- 2.20 In the longer term, policies being implemented or considered by governments across Australia to mandate the installation of 'smart' meters for households are expected to facilitate improved measurement of quality of supply outcomes.

Customer service

- 2.21 Retailers and DNSPs provide services directly to customers, whether through billing for energy consumed or through responsibility for connections or distribution reliability. Most jurisdictions monitor standards of customer service to bring transparency and accountability to the level of service performance. A particular focus of monitoring of customer service is the treatment of vulnerable customers.
- 2.22 Measures of customer service by retailers and DNSPs commonly monitored in Australia include:
- the number of connections, disconnections and reconnections, focusing on customers disconnected due to non-payment of bills, and reconnections in the same name;
 - call centre responsiveness, with reporting of the time taken for customer telephone calls to be answered, the length of time the callers have to wait, and use of automated interactive services;
 - whether a DNSP keeps appointments made with customers;
 - the time taken by a DNSP to repair a faulty street light once notified;
 - advice of planned interruptions – adequate planning, assessment of impact of planned interruptions on customers, and communication to customers; and
 - the number and type of customer complaints.

Northern Territory experience

- 2.23 Service performance in the Territory has been monitored by the Commission since January 2006, with the introduction of the Electricity Standards of Service Code (ESS Code). The ESS Code establishes a performance reporting framework, and

minimum standards for specified outcomes or services provided by PWC Generation, PWC Networks and PWC Retail.

- 2.24 The service performance of PWC has come under greater community scrutiny in recent years due to a series of major outages affecting a large number of customers. The outages in September and October 2008 in the Casuarina zone substation service area caused extensive community disruption, with the most significant event causing more than 11 000 customers to lose power for up to 14 hours.
- 2.25 More recently, the Darwin-Katherine system black incident on 30 January 2010 caused all customers served by the Darwin-Katherine system to lose power for up to 10 hours (affecting more than 58 000 customers, or 78 per cent of all customers in the market systems).
- 2.26 The Casuarina related outages raised significant concerns about the reliability of the Territory's electricity networks, and power systems. A comprehensive review of the incident and substation maintenance by Mervyn Davies (the Davies Enquiry), a former senior executive of Energy Australia and a member of the Board of Western Power, exposed deficiencies in network maintenance practices and asset management by PWC.¹³
- 2.27 Although the Davies Enquiry focused on the adequacy and reliability of substations, the findings indicated that the problems of inadequate maintenance effort, record keeping and asset management systems could be systemic throughout PWC. This raised broader questions about the condition of electricity assets, expectations for the potential future levels of service performance, and the capital and maintenance investment required to achieve desired levels of service performance.
- 2.28 The prospects for future electricity service performance in the Territory are recognised in the PWC 2010-11 Statement of Corporate Intent, where PWC states that:¹⁴

The electricity...systems are under significant and increasing pressure. Essential work will require greater funding than had been previously planned and approved... to mitigate the risk of major equipment failure through an increase in spending on asset refurbishment and renewal.

This increased infrastructure investment is a consequence of past under-investment. Additionally, ongoing investigations have found that the previous estimates of the residual life of many assets may have been optimistic and that additional urgent refurbishment or replacement of key assets is needed.

The development of generation capacity is planned to meet projected demand with timing for new plant primarily based on the n-2 criterion, and focuses in particular on power system reliability, fuel supply reliability, plant efficiency and incremental capacity increases. Because of increasing reliability issues with generation assets, a revised Generation capital investment strategy was developed and approved in February 2010.

¹³ Mervyn Davies, February 2009, Independent Enquiry into Casuarina Zone Substation Events and Substation Maintenance Across Darwin Final Report.

¹⁴ Power and Water Corporation, 2010-11 Statement of Corporate Intent, page 24.

2.29 PWC has an extensive capital and maintenance investment program intended to avoid further deterioration in current levels of generation and network service performance, and meet future growth.

Summary of terms of reference

2.30 The terms of reference ask the Commission to report on the adequacy and effectiveness of the ESS Code, to advise on the indicators and reasonable benchmarks for standards of service in the Territory, and to develop options for setting, monitoring and enforcing standards of service.

2.31 In undertaking the review, the Commission is to take into account:

- the objectives of the ESS Code;
- standards of service and standards of service arrangements in other jurisdictions;
- environmental and market characteristics of the Territory that may have a bearing on standards of service; and
- all relevant economic and policy developments, including economic conditions, customer preferences, willingness and capacity to pay for a certain standard of service, environmental standards, current service performance and the cost of meeting higher service performance.

2.32 The Commission considers that the minimum and average standards of service that might apply to service providers should be addressed through standards of service arrangements.

Conduct of the Review

Issues Paper

2.33 The Commission initiated this review in May 2010 with the release of an Issues Paper which sought comment from interested parties on the options and considerations for a future electricity standards of service framework.

2.34 The Issues Paper examined the current electricity standards of service arrangements and considered options in light of the experience adopted in the national electricity market (NEM) and other Australian jurisdictions. The key points the Commission sought comments on were:

- whether standards of service arrangements should apply to electricity generation, networks and retailers in the Territory;
- how service performance should be measured and reported;
- how performance targets should be set, including whether the Commission should consider customers' preferences and willingness to pay when setting standard of service targets;
- whether, and how, events beyond the reasonable control of service providers should be excluded for the purposes of setting service targets and reporting performance; and
- the availability and quality of service performance data provided by PWC.

-
- 2.35 The Commission received submissions to the Issues Paper from PWC and Northern Territory Treasury (Treasury).
- 2.36 PWC supported a standards of service framework for electricity generation, network and retail service providers that recognises current service levels received by customers, and sets appropriate and achievable service targets for PWC to improve performance over time, in line with customer expectations.
- 2.37 PWC was of the view that the development of a standards of service framework in the Territory should take into account the costs and benefits of obtaining reliable information, and the particular operational and environmental characteristics under which PWC operates. The framework should only relate to performance which is within the control of the service provider. PWC was committed to continuous improvement and had started to adopt standards similar to those in the NEM as part of efforts to deliver better outcomes to customers.
- 2.38 Treasury supported a review of the ESS Code to identify ways for measuring and reporting on service performance to better anticipate and prevent system failures. Treasury supported the introduction of a framework that incorporates disclosure requirements, legislated minimum service level standards, and financial incentives, such as a GSL scheme. Treasury considered that a more comprehensive and effective framework was necessary to improve transparency and accountability in service performance.
- 2.39 Treasury considered that the economic assessment of customers' preferences would be useful to better understand the level of service that customers wanted and were willing to pay for.

Draft Report

- 2.40 The Commission released a Draft Report in August 2010 with proposals for the implementation of electricity standards of service arrangements in the Territory.
- 2.41 In summary, the Commission's proposed standards of service framework included:
- performance targets and reporting on generation reliability;
 - separate service performance targets and reporting on distribution and transmission networks;
 - extreme events excluded using the US Institute of Electrical and Electronics Engineers (IEEE) 2.5 beta method;
 - generation and networks reliability performance reporting being segmented by power system and region, and for planned and unplanned outages; and
 - customer service performance reporting on customer hardship.
- 2.42 The Commission received submissions to the Draft Report from PWC and Treasury.
- 2.43 PWC and Treasury were supportive of the Commission's proposed electricity standards of service arrangements. PWC noted the increase in the number of measures and asked the Commission to be mindful of the time and resources the proposed electricity standards of service arrangements would require. PWC was of the view that performance monitoring should not be reduced to a general data gathering exercise.

CHAPTER 3

Service performance in the Territory

Service performance from 1999-00 to 2008-09

- 3.1 The standard of electricity services in the Territory is affected by a number of factors, such as the radial design of the network, the location and capacity of generation, density of customers, the condition of electricity assets, weather and the high incidence of storm activity, including lightning, rapid vegetation growth in the Top End, and fruit bats roosting on power lines.
- 3.2 To inform consideration of options for measuring and defining electricity generation, networks and retail standards of service in the Territory, the Commission has compared generation and network reliability outcomes experienced by customers in the Darwin-Katherine, Alice Springs and Tennant Creek systems from 1999-00 to 2008-09.
- 3.3 To provide a benchmark of reliability outcomes in the Territory relative to elsewhere in Australia, the Commission has also compared the reliability outcomes experienced by urban customers of Ergon Energy from 2002-03 to 2008-09.
- 3.4 The Commission considers that Ergon provides a reasonable point of comparison for service performance outcomes in the Territory relative to elsewhere in Australia. The Ergon network supplies all customers in Queensland apart from those in the densely populated south-eastern corner, including Brisbane and the Gold Coast. The Commission considers that Ergon and PWC face similar challenges in providing electricity services, including similar weather and seasonal patterns, and a widely dispersed customer base.
- 3.5 The Commission notes the following features of the PWC and Ergon networks:
- both networks have high proportion of radial feeders. More than two thirds of zone substations in the Ergon network connect to radial feeders;¹⁵
 - the PWC networks have a customer density of 9.2 customers/line km, reflecting a higher proportion of customers on urban and short rural feeders.¹⁶ The Ergon network has a customer density of 5.2 customers/line km, reflecting a higher proportion of customers on short and long rural feeders;¹⁷ and

¹⁵ Ergon Energy, Annual Stakeholder Report 2007/08, page 32.

¹⁶ An urban feeder has maximum demand per total feeder route length of greater than 0.3 MVA/km. A short rural feeder has a total route length of less than 200 km. A long rural feeder has a total route length of over 200 km.

¹⁷ Australian Energy Regulator, State of the Energy Market 2009, page 165; Ergon Energy, Electricity Distribution Quarterly Service Quality Report, April – June 2009; and Utilities Commission, 2008-09 Power System Review.

- although the two businesses differ in scale, the equipment, practices and activities associated with supplying electricity are fundamentally similar.

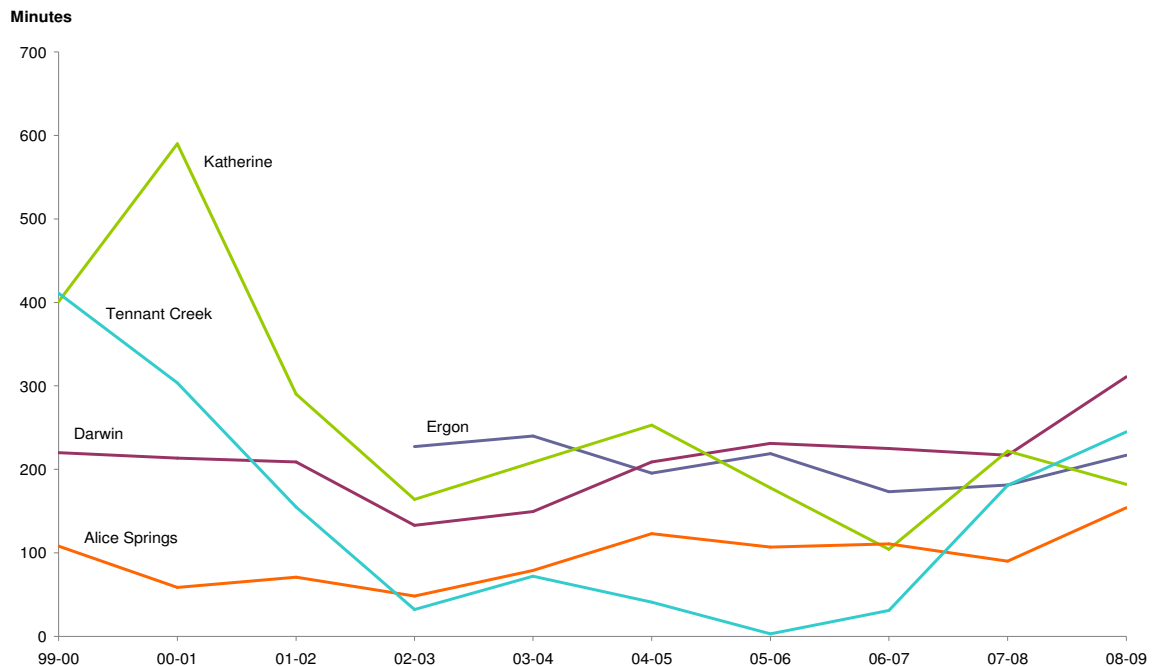
3.6 Given the characteristics of the PWC and Ergon systems, and based on the available data, the Commission considers that the most reasonable benchmark of PWC network reliability in the Darwin-Katherine and Alice Springs systems (i.e. experienced by the majority of customers in the Territory) is the network reliability experienced by Ergon customers supplied by urban feeders.

Network reliability performance

3.7 The average duration (SAIDI) and average frequency (SAIFI) of electricity network related outages are commonly used indicators of network reliability performance in Australia. The network SAIDI and SAIFI data presented in charts 3.1 and 3.2 below is based on adjusted data to identify the underlying reliability performance over time.¹⁸

3.8 Network SAIDI (average duration of outages) for Darwin, Katherine, Alice Springs, Tennant Creek and Ergon (urban) customers is shown compared in Chart 3.1.

Chart 3.1: Electricity networks SAIDI (adjusted) 1999-00 to 2008-09¹⁹



3.9 Network SAIDI performance in the Territory is mixed, with the average duration of outages since 1999-00 declining in Katherine and Tennant Creek, but significantly

¹⁸ Reliability data is adjusted to exclude the effect of severe weather events and similar unusual and unanticipated events that adversely affect reliability. The ESS Code adopts the 2.5 beta method for adjusting data, an objective statistics based method for identifying outlier performance. For a description of the 2.5 beta method, refer to the Institute of Electrical and Electronic Engineers, Working Group on System Design, January 2003, Classification of Major Event Days.

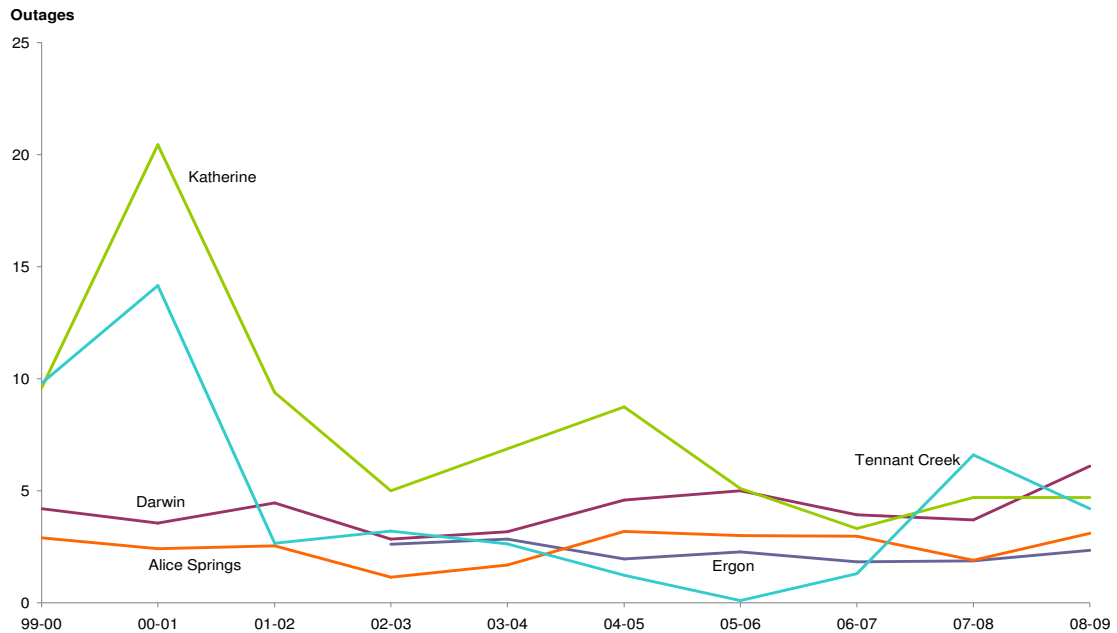
¹⁹ Utilities Commission, Annual Service Performance reports and 2008-09 Power System Review, and Queensland Competition Authority, distributors' quarterly service performance reports, refer www.qca.org.au.

increasing in Darwin (a 29 per cent increase) and Alice Springs (a 30 per cent increase).

3.10 Ergon SAIDI performance is generally similar to that experienced in Darwin, but is more stable over time compared to the performance in the Territory, with Territory customers experiencing greater variation across years in the average duration of outages. The Commission notes that Ergon's historical network reliability performance has been worse than the relevant reliability targets and standards, but that Ergon is actively pursuing improvements in reliability.²⁰

3.11 The trend in network SAIFI performance in the Territory is similar to SAIDI performance, with the average frequency of outages since 1999-00 declining in Katherine and Tennant Creek, but increasing in Alice Springs and Darwin. Ergon SAIFI performance is similar to that experienced in Alice Springs, and is again more stable over time compared to the performance in the Territory.

Chart 3.2: Electricity networks SAIFI (adjusted) 1999-00 to 2008-09²¹



Generation reliability performance

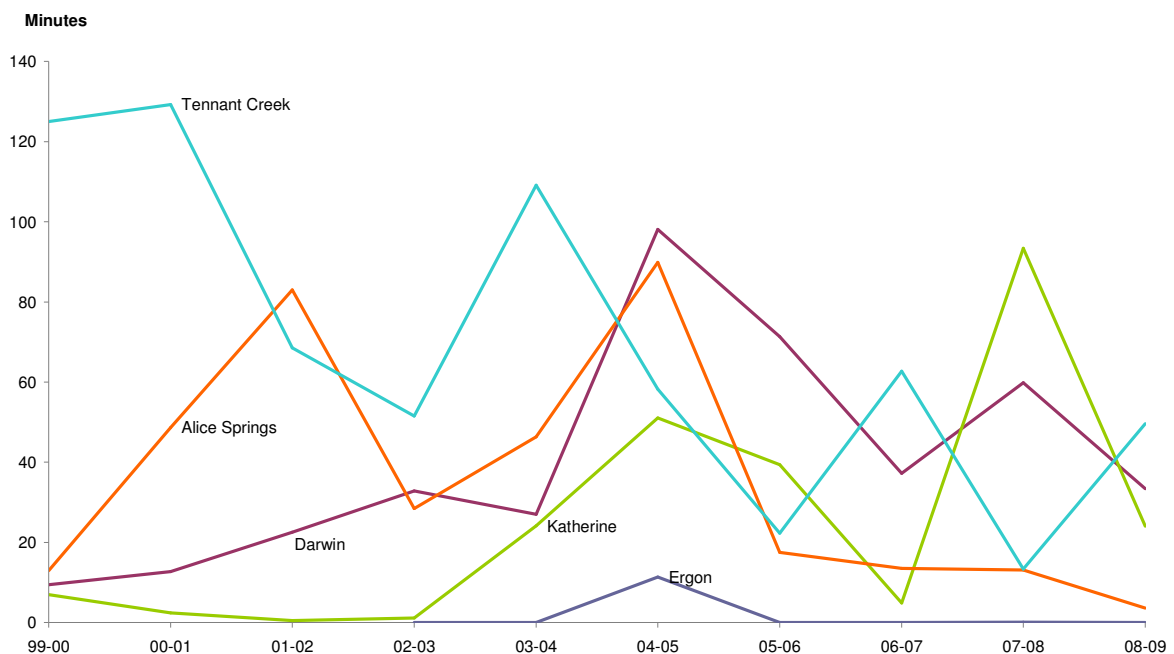
3.12 Generation reliability in the Territory is currently measured using SAIDI and SAIFI. Service performance reporting arrangements for Queensland DNSPs include reporting of generation related SAIDI and SAIFI data.

²⁰ Ergon Energy, Network Management Plan Part A: Electricity Supply for Regional Queensland 2010-11 to 2014-15, page 64.

²¹ Utilities Commission, Annual Service Performance reports and 2008-09 Power System Review, and Queensland Competition Authority, distributors' quarterly service performance reports, refer www.qca.org.au.

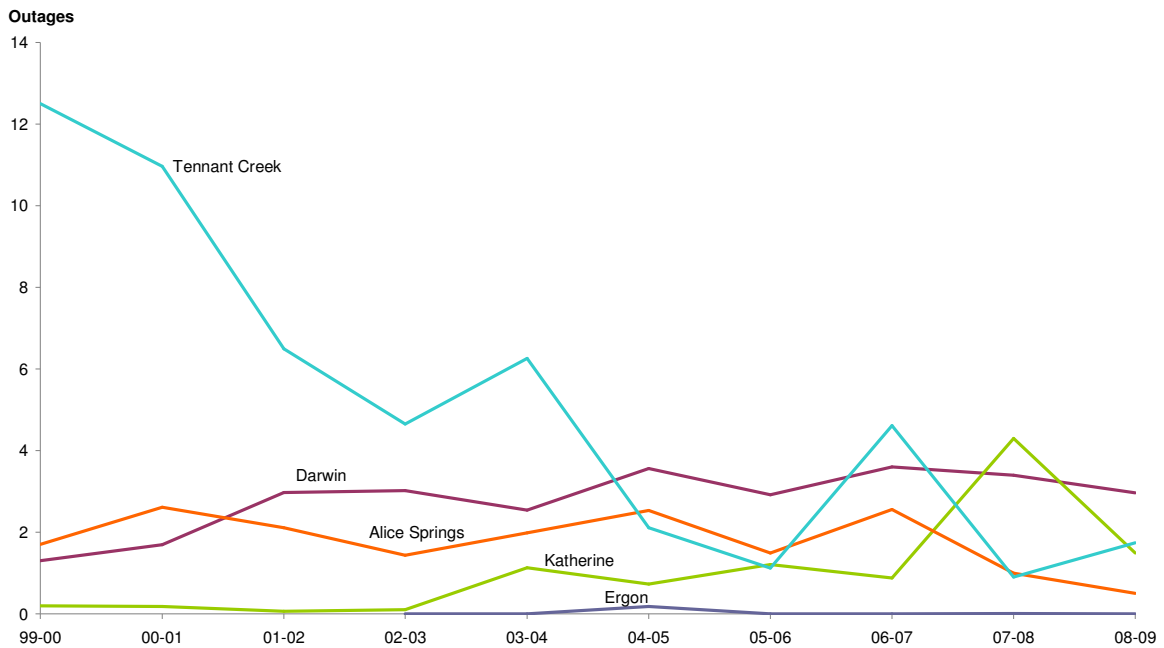
- 3.13 Since 1999-00 there has been significant variation in the annual average duration of generation outages across the four regions in the Territory, with the average duration of outages declining in Tennant Creek and Alice Springs, but tending to increase in Darwin and Katherine.
- 3.14 Average generation SAIDI in Darwin between 2006-07 and 2008-09 is 43.5 minutes off supply per customer, which accounted for about 15 per cent of the average minutes off supply experienced annually by each customer, based on the sum of generation SAIDI and adjusted network SAIDI.
- 3.15 In contrast, Ergon customers experienced generation related outages once between 2002-03 and 2008-09, with an average of 11.4 minutes off supply per customer in 2004-05 only. This reflects that Ergon customers are largely supplied through connection with the Powerlink transmission network, part of the national (southern and eastern Australia) electricity system.

Chart 3.3: Electricity generation SAIDI (adjusted) 1999-00 to 2008-09²²



- 3.16 The trend in generation SAIFI is the same as for generation SAIDI, with the average frequency of outages experienced by each customer declining in Alice Springs and Tennant Creek, but increasing in Darwin (by 56 per cent) and Katherine (by 86 per cent) between 1999-00 and 2008-09.
- 3.17 Average generation SAIFI performance in Darwin between 2006-07 and 2008-09 was 3.3 outages per customer each year. Ergon customers experienced generation related outages in 2004-05 only, with generation SAIFI performance of 0.2 outages for each customer.

²² Ibid.

Chart 3.4: Electricity generation SAIFI 1999-00 to 2008-09²³

Comments on reliability performance

- 3.18 The reliability data available to the Commission suggests that, on average, customers in Tennant Creek, Katherine and Alice Springs have generally experienced improved reliability of supply since 1999-00. In particular, network and generation reliability in Tennant Creek has noticeably improved since 1999-00, and now appears to be on a par with the other systems in the Territory. However, customers in Darwin appear to have experienced declining network and generation reliability during this period.
- 3.19 A possible explanation of this worsening trend in reliability outcomes since 1999-00 in Darwin is that the serious deficiencies identified by the Davies Enquiry in PWC Network's monitoring and reporting on the condition of network assets, and in maintenance practices, were common to other PWC business units. It would appear that the deteriorating asset condition is causing worsening reliability outcomes. This conclusion is supported by the increased priority given by PWC over the period 2009-10 to 2014-15 to network and generation infrastructure investment to mitigate the risk of major equipment failure.²⁴
- 3.20 Notwithstanding the apparent decline in reliability since 1999-00 experienced by Darwin customers, average reliability performance is better than the minimum standards defined by the existing ESS Code. Further, network performance in the Territory appears generally comparable to that received by Ergon customers. The better generation reliability outcomes experienced by Ergon customers can probably

²³ Ibid.

²⁴ Power and Water Corporation, April 2010, 2010-11 Statement of Corporate Intent, page 25.

be attributed to the larger scale of the system and interconnection with other supply regions of the NEM providing more generation capacity and reserve capacity.

- 3.21 The PWC response to the Davies Enquiry is a comprehensive program of remedial works and replacement of network assets through the remedial asset management program (RAMP). RAMP has been underway since early 2009, and has involved a significant and ongoing investment in maintenance and remediation of network assets to meet acceptable standards of reliability and safety.
- 3.22 Further, the 2010-11 SCI advises that a generation capital investment program was approved by the PWC Board in February 2010 to allow the urgent refurbishment or replacement of key assets. This program appears to have a similar objective as RAMP, but addresses expected generation related reliability problems.
- 3.23 PWC is putting significant effort into improving capital planning and asset management practices, and is undertaking an extensive capital and maintenance program to maintain and improve generation and network service performance. However, there is no clear link between the amount of investment required to avoid worsening service performance, the target level for service performance or the timeframe for reaching that target.

Reporting of service performance

- 3.24 Service performance in the Territory has been monitored by the Commission since January 2006. PWC reports annually on reliability, quality and customer service performance for electricity generation, networks and retail activities in the Darwin-Katherine, Alice Springs and Tennant Creek systems.
- 3.25 The Commission uses the annual performance data reported by PWC to prepare a public report on overall performance, and performance against the minimum standards of service.²⁵ Performance data is available for 1999-00 to 2008-09.

Electricity standards of service code

- 3.26 Electricity standards of service are regulated through the ESS Code, which was introduced in December 2005.
- 3.27 The ESS Code establishes 46 indicators of performance, and defines a minimum standard for 45 of these indicators. The indicators focus on:
- network and generation reliability, with data on the frequency and duration of outages experienced on average by customers in a year;
 - feeder performance, with data on poorly performing urban and rural feeders;
 - quality of supply complaints;
 - the time taken to connect properties to the network;
 - the response to telephone calls; and

²⁵ Refer Utilities Commission, December 2008, Power and Water's Electricity Service Performance 2007-08, and Power and Water Corporation, October 2008, Standards of Service 2007-08 Key Service Performance Indicators. For 2008-09, the Commission included the report on service performance in the 2008-09 Power System Review.

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- customer service complaints, with categories including billing and service levels.
- 3.28 The minimum standards of service set through the ESS Code are based on the service performance achieved in 1999-00 (or an alternative standard where accurate data was not available for that year). This approach to setting the standards is prescribed in legislation.²⁶
- 3.29 The levels of the minimum standards were to be reviewed prior to 1 July 2009. However, the Commission decided in June 2009 to continue with the existing minimum standards until 30 June 2011 to permit a comprehensive review of the level of the standards, and the effectiveness of monitoring and reporting arrangements (that is, this review).²⁷

²⁶ *Electricity Reform Act*, s.92.

²⁷ Utilities Commission, June 2009, Approval of Minimum Standards of Service Extension to 30 June 2011.

CHAPTER 4

Proposed standards of service arrangements

Objectives of a standards of service framework

- 4.1 The Commission is required to consider the adequacy and effectiveness of the ESS Code, taking into account the objectives of the ESS Code.
- 4.2 The objectives of the ESS Code are to:²⁸
- (a) *establish minimum standards of reliability, quality and customer service in the Electricity Supply Industry;*
 - (b) *develop, monitor and enforce compliance with and promote improvement in standards and conditions of service and supply by Regulated Electricity Entities in the Electricity Supply Industry; and*
 - (c) *require that Regulated Electricity Entities have in place arrangements which regularly report actual service performance against the key service performance indicators in terms of reliability, quality and customer service.*
- 4.3 The Commission considers the purpose of the ESS Code is to provide a process for defining minimum standards of service, establish a process for monitoring of performance outcomes, and to promote improvement in service performance.
- 4.4 The Commission considers that the objectives of the ESS Code are generally appropriate, except that the focus on minimum standards creates uncertainty about the treatment of average service performance.

Average and minimum standards of service

- 4.5 The standards of service established in the ESS Code are referred to as minimum standards. However, the Commission is of the view that any future standards of service arrangements in the Territory should deal with both average and minimum service performance.
- 4.6 Minimum standards are generally defined for the purposes of GSL schemes. Service performance to date has generally been significantly better than the minimum standards.
- 4.7 The Commission has considered minimum standards of service for individual customers as part of a separate Review of Options for Implementation of a Customer Service Incentive Scheme for Electricity Customers. That review considered minimum standards and thresholds (set as absolute values) which trigger payments to

²⁸ Utilities Commission, December 2005, Electricity Standards of Service Code, clause 3.

customers experiencing significantly poor service performance. The thresholds for minimum or poor performance proposed in the Review of Options for Implementation of a Customer Service Incentive Scheme for Electricity Customers were determined based on advice from PWC in their submission. The intention was to define minimum performance targets (below which, service performance is considered poor) to enable the prompt introduction of a GSL scheme, but to re-examine the methodology for setting minimum targets as part of this review.

- 4.8 The average standards of service (generally for reliability outcomes) achieved by DNSPs and TNSPs are considered by regulators when determining regulated network charges.

Views in submissions

- 4.9 PWC supported the Commission's proposal that the ESS Code be expanded to recognise the relationship between minimum and average standards of service performance and targets. PWC, however, sought clarification on:

- the role of minimum and average standards with respect to network tariffs; and
- the mechanism for setting minimum standards of service in relation to the average.

Response to views in submissions and further analysis

- 4.10 Minimum and average standards of service could be used as part of a service incentive scheme which would encourage PWC Networks to improve service performance. The arrangements could include:
- a financial incentive scheme (also referred to as an s-factor scheme), by which PWC Networks would be rewarded or penalised for above or below average network service performance. Such a scheme would be based on average standards of service targets; and/or
 - a GSL scheme, by which individual customers would receive payments if PWC did not meet minimum acceptable network service performance targets for individual customers.
- 4.11 Proposals for a financial incentive scheme and GSL scheme are outlined in the Review of Options for Implementation of a Customer Service Incentive Scheme for Electricity Customers. The focus of this review is on the approach to defining future average and minimum performance targets. The Commission notes that a comprehensive and consistent dataset is required to identify the thresholds for performance targets. This dataset is not yet available.
- 4.12 The main objectives of a GSL scheme are to encourage targeted improvements through capital investments and maintenance in areas of poor performance, while a financial incentive scheme based on average reliability targets is meant to encourage overall service performance improvements. Even though they provide a different focus, the Commission considers that the objectives for both schemes (and necessarily the electricity standards and thresholds used in these schemes) are related.
- 4.13 Further, the Commission considers that establishing a relationship between minimum and average standards of service provides for the dynamic nature of poor and average performance over time. Establishing a relationship between minimum and average standards would recognise that poor service performance is not fixed in time, and that

the perception of poor service is a function of what is perceived to be an acceptable level of service at various points in time.

- 4.14 As such, the Commission considers that a standards of service framework should deal with both minimum and average service performance and associated targets.
- 4.15 The Commission notes that the approach of establishing a relationship between minimum and average standards is used elsewhere in Australia, with the South Australian regulator having set minimum feeder performance targets (thereby defining poor feeder performance) by comparing the SAIDI performance of individual feeders against the (average) SAIDI target for the region. This approach establishes a relationship between minimum and average reliability performance.²⁹
- 4.16 The increasing disparity between the minimum SAIDI and SAIFI standards established by the ESS Code relative to actual average annual reliability performance highlights the problem associated with not assessing minimum and average performance outcomes as part of the same process.

Final recommendation

- 4.17 The Commission recommends that the objectives of the Territory's standards of service framework should be to:
- establish minimum and average standards of reliability, quality and customer service in the electricity supply industry;
 - promote improvement in the level of services supplied by electricity generators, network service providers, and retailers operating in the Territory; and
 - establish effective arrangements for monitoring and reporting on performance.
- 4.18 The Commission considers that the electricity standards of service framework in the Territory should establish a relationship between minimum and average service performance and targets.

Key design features

- 4.19 The Commission has considered the following key features for the design of an electricity standards of service framework in the Territory:
- the measures of generation, networks and customer service performance;
 - the method for setting performance targets; and
 - monitoring and reporting arrangements.

Measures of generation performance

- 4.20 Under the existing ESS Code framework, generation reliability in the Territory is measured using SAIDI, SAIFI and CAIDI indicators.

²⁹ Utilities Commission, May 2010, Review of Electricity Standards of Service for the Northern Territory – Issues Paper, page 36.

- 4.21 In contrast, the reliability standard applied to generators in the NEM establishes the minimum acceptable level of bulk electricity supply to be delivered to customers in a region measured against the total demand of consumers in that region. The standard is expressed as the maximum permissible unserved energy (USE) and measures the expected amount of energy at risk of not being delivered to customers due to a lack of available capacity. The USE is measured in gigawatt hours and expressed as a percentage of the annual energy consumption for the associated region. The level of USE was set at 0.002 per cent unserved energy in 1998, and has remained at this level.³⁰
- 4.22 The NEM Reliability Standard of 0.002 per cent USE represents the statistical risk of the electricity supply not meeting customer demand over time, and the minimum acceptable level of bulk electricity supply delivered to consumers in a region measured against the total demand of consumers in that region.³¹
- 4.23 The Australian Energy Market Operator (AEMO) uses the Reliability Standard to calculate the minimum reserve level for each region, taking into account plant performance characteristics (for example forced outage rates), demand characteristics (for example weather) and the capability of the network. AEMO then compares forecast and actual reserve levels with the minimum reserve level to manage the risk that the Reliability Standard will not be met at the time of dispatch. Historically, the NEM has performed well against the Reliability Standard.³²
- 4.24 The expectation is that firms will supply generation capacity (by building new capacity, or offering demand side management response) necessary to meet the minimum reserve level of capacity. Incentives for supplying this capacity are the Reliability Settings (the market price cap, the cumulative price threshold and the market price floor) of the NEM wholesale market mechanism. AEMO has the responsibility of intervening to supply capacity if there is a risk that there will be insufficient capacity to meet the minimum reserve levels, and a failure to meet the USE target.
- 4.25 Performance against the Reliability Standard is measured over the long-term using a moving average of the actual observed levels of annual USE for the most recent ten financial years. Operationally, it should be planned to achieve an expected USE that is within the Reliability Standard in each financial year, for each region and for the NEM as a whole.³³
- 4.26 The level of the Reliability Standard is set at 0.002 per cent USE per year, which is equivalent to:³⁴
- a system wide outage of 10.5 minutes at an average level of system demand;

³⁰ Australian Energy Market Commission Reliability Panel, April 2010, Reliability Standard and Reliability Settings Review Final Report, pages 5 and 9.

³¹ Australian Energy Market Commission Reliability Panel, Annual Market Performance Review 2008-09, page 17.

³² Australian Energy Market Commission Reliability Panel, April 2010, Reliability Standard and Reliability Settings Review: Final Report, page 9.

³³ Ibid, page 11.

³⁴ Ibid, pages 17-18.

- an outage of approximately 18 per cent of the demand for 1 hour at an average level of system demand;
 - a system wide outage of approximately 7 minutes at peak demand; or
 - approximately 12 per cent of the demand for 1 hour at peak demand.
- 4.27 The Commission notes that the generation reliability criteria adopted by PWC for system planning and generation investment purposes is N-2 (i.e. reserve capacity should be sufficient to meet demand with the loss of the largest two units of capacity), and that this criteria is set by agreement between PWC and the shareholding Minister. There is no explicit link between this reliability criteria and reliability outcomes, and no statutory obligation or process for determining a NEM equivalent generation reliability standard. The Commission is not aware of any explicit or public economic assessment or community consultation on the appropriate level for generation reliability.
- 4.28 The generation reliability outcomes achieved in the Territory's market systems are worse than in the NEM. This is probably, at least in part, due to the small scale of the systems, and the number and location of generation facilities means there is less reserve or redundant capacity than in the NEM. However, reliability outcomes could also be influenced by the lack of competition in the generation sector, with PWC Generation operating in a monopoly environment, and facing fewer incentives to provide improved service performance than exist in the NEM or a similar commercial environment.
- 4.29 Generation performance is also measured using a range of indicators, such as:
- equivalent forced outage factor (EFOF), which measures outages that required the removal of a unit or component from service and which cannot be deferred to a period of lower demand. Forced outages are an indication of the amount and quality of maintenance performed, and the lower the outages the better; and
 - equivalent availability factor (EAF), which measures overall availability by report of the loss of generation capacity due to all plant causes.
- 4.30 PWC generation performance is reported using the EFOF and EAF measures in the annual Energy Supply Association of Australia (an industry association) publication, Electricity Gas Australia. Reporting of the planned and forced outage rate of generation, and similar measures of generation availability, is common in the NEM.

Draft recommendation

- 4.31 The Commission's draft recommendation was for the Territory's standards of service arrangements to include the following generation performance measures:
- EFOF and EAF (and equivalent) measures should be used to report on generation reliability performance, as they should inform expectations of future reliability and would facilitate comparison of generation reliability in the Territory and elsewhere in Australia;
 - SAIDI and SAIFI measures should be used to report on generation reliability performance, as they are useful measures for communicating the impact of generation outages to customers;
 - the Commission does not consider that CAIDI is currently a useful indicator of generation reliability and sees no benefit in continuing to report this measure; and
 - the USE measure should be used to establish the maximum permissible USE estimated for each of the power systems in the Territory (a reliability standard).

Defining a target for USE is consistent with NEM practices, and should assist future assessment of generation adequacy.

Views in submissions

- 4.32 PWC supported the Commission's draft recommendation that EFOF, EAF, SAIFI and SAIDI should be used to report on generation reliability performance. PWC argued that SAIFI and SAIDI should not be used to set generation performance targets as they are not considered to be an effective measure of generation reliability.
- 4.33 PWC also requested that greater clarification be provided on the Commission's proposal to define a target for USE.

Response to views in submissions and further analysis

- 4.34 As discussed in the Draft Report, the Commission proposed that SAIDI and SAIFI measures be used to report the impact of generation outages on customers. The Commission does not propose that generation reliability performance targets be set using these measures.
- 4.35 The Commission notes that, in the NEM, generation reliability performance is defined by a level of USE, which is set independently by the Australian Energy Market Commission (AEMC) Reliability Panel according to a process defined in the National Electricity Rules (and is known as the Reliability Standard). AEMO uses this data to identify if there is sufficient generation and transmission capacity in each NEM region, or available via transmission interconnection from another region, to meet the Reliability Standard.³⁵
- 4.36 The long-term averages of USE for various states for the period 1998 to 2009 are provided in table 4.1.³⁶

Table 4.1: Unserved energy – long term averages, December 1998 to June 2009

Region	Unserved energy (%)
Queensland	0.00000
New South Wales	0.00010
Victoria	0.00044
South Australia	0.00051

- 4.37 The Commission notes that PWC System Control reported in its December 2009 Darwin-Katherine Power System Bi-annual Report to the Commission that the USE for the Darwin-Katherine system was 0.0029 per cent.³⁷

³⁵ Australian Energy Regulator, 2009, State of the Energy Market, page 65.

³⁶ Australian Energy Market Operator, June 2009, Reliability Standard and Settings Review Issues Paper.

³⁷ Power and Water Corporation, Darwin-Katherine Power System Bi-annual Report July to December 2009, page 8.

- 4.38 When calculating the level of USE for each of the power systems, the Commission considers that the methodology should be consistent with that used by the Reliability Panel. Based on the 2010 review of the reliability standard and settings, the calculation of USE levels for the NEM takes into account system reliability performance, excluding events associated with:³⁸
- multiple or non-credible contingencies;
 - outages of transmission or distribution network elements that do not significantly impact the ability to transfer power into the region where the USE occurred; or
 - industrial action or 'acts of God' at existing generating or inter-regional transmission facilities.
- 4.39 In the NEM, exceeding the reliability standard in a given year does not necessarily imply that reliability is compromised. Rather it might be related to outliers such as extreme temperatures or large generating unit forced outages at peak times. Compliance with the reliability standard for generation should be measured over the long-term using a moving average of the past ten financial years. This approach would tend to smooth out year to year statistical variations.
- 4.40 However, given that the objective is to promote continuous improvements of the processes for meeting the reliability standard, the Reliability Panel considers a ten year delay in measuring compliance is not satisfactory. The Panel considers that a more appropriate approach is to review the reliability of the NEM each year.³⁹
- 4.41 The Commission is of the view that the methodology adopted by the Reliability Panel represents good industry practice, is well understood by the electricity industry and provides a reasonable approach for calculating USE for Territory power systems.

Final recommendation

- 4.42 The Commission recommends that the Territory's standards of service arrangements include the following generation performance measures:
- EFOF and EAF (and equivalent) measures should be used to report on generation reliability performance, as they should inform expectations of future reliability and would facilitate comparison of generation reliability in the Territory and elsewhere in Australia;
 - SAIDI and SAIFI measures should be used to report on generation reliability performance, as they are useful measures for communicating the impact of generation outages to customers;
 - the Commission does not consider that CAIDI is currently a useful indicator of generation reliability and sees no benefit in continuing to report this measure; and
 - the USE measure should be used to establish the maximum permissible unserved energy estimated for each of the power systems in the Territory (a reliability standard). Defining a target for USE is consistent with NEM practices, and should assist future assessment of generation adequacy.

³⁸ Reliability Panel AEMC, April 2010, Reliability Standard and Settings Review – Final Report, page 52.

³⁹ Ibid, pages 23-24.

- 4.43 The Commission recommends that the target for USE should be calculated using a similar methodology as that used by the Reliability Panel.

Measures of network performance

- 4.44 Under the existing ESS Code framework, average network reliability in the Territory is measured using SAIDI, SAIFI and CAIDI. The ESS Code also requires PWC Networks to report on the reliability of feeders. There is no distinction between the distribution and transmission elements of the networks.

Distribution network reliability measures

- 4.45 All Australian jurisdictions require DNSPs to report their reliability performance using average reliability indicators such as SAIDI and SAIFI. The service target performance incentive scheme developed by the Australian Energy Regulator (AER) requires DNSPs to report SAIDI, SAIFI, and MAIFI where available.
- 4.46 CAIDI and MAIFI are less commonly used measures of DNSP reliability. PWC has previously noted to the Commission that CAIDI is a flawed indicator of reliability because there is the potential for a higher frequency of outages to improve the CAIDI result, without there being an actual improvement in either the average duration or frequency of outages.⁴⁰ A similar point about the potentially limited use of CAIDI in measuring reliability has been made by the Queensland regulator.⁴¹ Reporting of MAIFI requires sophisticated systems capable of capturing short outages at the feeder or customer level.
- 4.47 Under the existing ESS Code framework, PWC reports on the number of poorly performing feeders within the interconnected and radial networks. Feeder performance on the interconnected network is limited to the Darwin (urban) and Alice Springs systems while performance on the radial networks relates to the Darwin (rural), Katherine and Tennant Creek systems.
- 4.48 In the Issues Paper, the Commission considered that SAIDI and SAIFI are reasonable indicators of DNSP reliability, as they are used and understood by the electricity industry. The Commission also considered that reporting on feeder performance is a reasonable indicator of DNSP reliability, in particular to identify areas of poor performance within a network. In its response, PWC proposed setting annual SAIDI and SAIFI targets by feeder type (CBD, urban, rural short and rural long) to identify worst-performing feeders.⁴²
- 4.49 The Commission saw merit in the PWC proposal to establish SAIDI and SAIFI targets by feeder type as this would recognise the level of reliability for different part of the power system. However, the Commission did not agree with PWC that this approach would identify worst-performing feeder types as reliability targets by feeder type would

⁴⁰ Power and Water, October 2009, Standards of Service 2008-09, Key Service Performance Indicators, page 9.

⁴¹ Queensland Competition Authority, April 2009, *Review of Electricity Distribution Network Minimum Service Standards and Guaranteed Service Levels to apply in Queensland from 1 July 2010*, page 10.

⁴² Power and Water Corporation, June 2010, Review of Electricity Standards of Service for the Northern Territory – Power and Water’s Response to Issues Paper, page 9.

be based on average performance and would not provide specific information on poorly performing feeders.

Draft recommendation

4.50 The Commission's draft recommendation was for the Territory's standards of service arrangements to include the following distribution reliability performance measures:

- SAIDI and SAIFI measures should be used to report distribution network reliability performance, as they are commonly used measures of network reliability;
- SAIDI and SAIFI measures should be used to establish targets for average distribution network reliability performance;
- SAIDI and SAIFI measures should be used to establish targets for feeder reliability performance for each feeder type – CBD, urban, rural short and rural long feeders; and
- poorly performing feeders should be measured by feeder type – CBD, urban, rural short and rural long rather than interconnected and radial networks.

4.51 The Commission did not consider that CAIDI was a useful indicator of distribution network reliability and saw no benefit in continuing to report this measure.

Views in submissions

4.52 PWC supported the Commission's approach, but indicated that not all the information proposed to be reported is currently available.

Final recommendation

4.53 The Commission recommends that the Territory's standards of service arrangements include the following distribution reliability performance measures:

- SAIDI and SAIFI measures should be used to report distribution network reliability performance, as they are commonly used measures of network reliability;
- SAIDI and SAIFI measures should be used to establish targets for average distribution network reliability performance;
- feeder performance should be measured by feeder type – CBD, urban, rural short and rural long rather than interconnected and radial networks;
- SAIDI and SAIFI measures should be used to establish minimum performance targets (representing poor performance) for feeder reliability for CBD, urban, rural short and rural long feeders; and
- the Commission does not consider that CAIDI is currently a useful indicator of distribution network reliability and sees no benefit in continuing to report this measure.

Transmission network reliability measures

4.54 There is no specific or statutory distinction between transmission and distribution in the Territory. Nonetheless, a transmission network overlay exists to connect generation to major load centres. In the Darwin-Katherine system, the Channel Island, Weddell and Berrimah power stations' connection to primary load centres is via two 132 kV transmission lines and seven 66 kV zone substations. This network is also connected

with power stations and loads at Katherine and Pine Creek via a single 132 kV line from Channel Island power station. The transmission elements of the Territory system comprise 666 km of high voltage transmission lines or about 10 per cent of total line length.⁴³

- 4.55 Elsewhere in Australia, there is a clear distinction in the operation and ownership of the transmission and distribution elements of an electricity system. Transmission networks carry electricity at high voltage from the generator to the distribution network, where the electricity is converted to a lower voltage and transported to customers.
- 4.56 Currently, performance reporting requirements in the Territory do not require PWC Networks to separately report on transmission and distribution reliability. The reliability of the transmission element of the system is measured as a component of the network SAIDI, SAIFI and CAIDI indicators.
- 4.57 Although transmission is a relatively small component of the electricity system in the Territory, it is a crucially important in transporting electricity from generation plants to the distribution networks. As a result, the transmission elements require particular attention.

Draft recommendation

- 4.58 The Commission's draft recommendation was that specific reliability indicators should be established for the transmission elements of the Territory's electricity networks. The proposed transmission measures would be consistent with those established by the AER, insofar as they were relevant to the Territory:
- transmission line, circuit and transformer availability;
 - average outage duration; and
 - frequency of outages.

Views in submissions

- 4.59 PWC supported the Commission's approach, but indicated that not all the information proposed to be reported is currently available.

Final recommendation

- 4.60 The Commission recommends that specific reliability indicators for transmission performance be established for each power system.
- 4.61 The proposed transmission reliability measures should be consistent with those developed by the AER under the National Electricity Rules, including:
- transmission line and transformer availability;
 - average outage duration; and
 - frequency of outages.

⁴³ Power and Water Corporation, 2009-10 Licence Return.

4.62 The Commission also considers that SAIDI and SAIFI measures should be used to report on the impact of transmission outages on customers.

Quality of supply measures

- 4.63 Quality of supply refers to the electrical specification of supply, and is measured by such indicators as voltage levels, frequency and harmonic content. Poor quality of supply shows up as dimming, flickering or overly bright lights, and damage to electrical appliances. Quality of supply is increasingly of concern to industrial and commercial customers as voltage sensitive appliances and equipment become more prevalent.
- 4.64 Generators, TNSPs and DNSPs are generally obliged to operate their equipment within defined technical parameters so as to keep the power system in a secure and reliable operating state.
- 4.65 The ESS Code currently requires PWC Networks to report the number and nature of complaints by customers about voltage events such as voltage dips, swells and spikes.
- 4.66 However, quality of supply has been difficult to measure, and there are no commonly used indicators for monitoring and reporting the response to, and prevention of, quality of supply problems.
- 4.67 The Queensland regulator considered the possibility of introducing a new voltage supply measure as part of a recent investigation of DNSP service standards. However, the conclusion was that further investigation was required before any quality of supply scheme was introduced.⁴⁴
- 4.68 The Western Australian DNSP, Western Power, monitors quality of supply using specially designed meters deployed in various parts of the low voltage distribution network. The placement of the meters allows collection of unbiased data for regulatory compliance purposes. The number of meters has been increased from 28 to 56, but the deployment will not be further expanded due to the option of smart meters being considered.⁴⁵
- 4.69 The Commission notes that governments across Australia are considering mandating the installation of smart meters for all customers, which should facilitate improved measurement of quality of supply outcomes.

Draft recommendation

- 4.70 The Commission considered that introducing quality of supply measures at this stage may not be feasible given the apparent need for new equipment and reporting systems (i.e. smart meters).
- 4.71 The Commission proposed that PWC Networks investigate the costs and benefits of the limited use of smart meters to collect quality of supply information. The Commission noted that smart meters had been installed as part of the Alice Springs

⁴⁴ Queensland Competition Authority, April 2009, Review of Electricity Distribution Network Minimum Service Standards and Guaranteed Service Levels to apply in Queensland from 1 July 2010, page 12.

⁴⁵ Western Power, September 2009, Annual Reliability & Power Quality Report - Financial Year Ending June 2009, page 5.

Solar Cities program, and that this could present an opportunity to test the collection of quality of supply data in that area.

- 4.72 In the interim, the Commission considered that monitoring customer complaints relating to quality of supply was the best available approach for measuring quality of supply outcomes.

Views in submissions

- 4.73 PWC did not support the idea of investigating the cost and benefits of using smart meters to collect quality of supply information. PWC referred to the analysis undertaken by NERA Economic Consulting on behalf of the Ministerial Council on Energy (MCE)'s Smart Meter Working Group in which a roll-out of smart meters in the Territory was not found to be cost effective.⁴⁶

Response to views in submissions and further analysis

- 4.74 The Commission does not propose that smart meters be rolled-out in the Territory. Rather, the Commission encourages PWC to take advantage of the opportunity presented by the development of new technologies (e.g. smart meters and Electronic Design and Manufacturing International meters) and experience with using those technologies elsewhere in Australia (and in the Territory as part of the Alice Springs Solar Cities program) to assess the merits of more accurate monitoring of quality of supply
- 4.75 The Commission considers that monitoring of power quality is an area that can now be investigated further. The Commission concurs with Treasury's views that the current requirement to report on customer complaints about quality of supply is of limited relevance as it can be expected that many voltage events are not captured through formal complaints.⁴⁷ The Commission views customer complaints about quality of supply as an interim measure allowing PWC time to consider options for technology to provide more accurate data on quality of supply.
- 4.76 The Commission notes that Western Power, cognisant of the economic impact of power disturbances on industrial processes, considers quality events (dips lasting less than 100 milliseconds) to have the same effect as an outage lasting minutes. Western Power is of the view that a smart grid technology will significantly reduce the impact of power disturbances by providing better communications and control technologies.⁴⁸
- 4.77 The Commission considers that attention to power quality will increasingly become an area of significant importance.

⁴⁶ NERA Economic Consulting, May 2008, Cost Benefit Analysis of Smart Metering and Direct Load Control.

⁴⁷ Northern Territory Treasury, June 2010, Submission to the Utilities Commission on the Issues Paper for the review of Electricity Service Standards for the Northern Territory.

⁴⁸ Western Power, Building a Network with Options for West Australians, page 8.

Final recommendation

- 4.78 The Commission recommends that PWC investigate the potential for emerging technologies to provide accurate and cost effective options for monitoring power quality.
- 4.79 In the meantime, the Commission considers that PWC should continue monitoring customer complaints relating to quality of supply disturbances, consistent with the existing requirements of the ESS Code.

Customer service measures

- 4.80 Customer service refers to the interaction between a DNSP or retailer and customers, and is generally monitored by measuring responsiveness and dependability in service provision, and the level of complaints. All Australian jurisdictions impose some requirement for DNSPs and retailers to report customer service performance, with specific indicators for each sector.
- 4.81 In the Territory, the ESS Code establishes customer service measures for the following activities:
- the number of connections to the network not provided within a specified time frame;
 - the number of telephone calls responded to within 20 seconds from when the customer chooses to speak to a human operator; and
 - the number of complaints about DNSP and retail activities.
- 4.82 The customer service reporting arrangements in the Territory do not distinguish between DNSP and retailer customer service. PWC has advised the Commission that, due to PWC Networks and PWC Retail sharing a single billing system and call centre, it is unable to separately report on a number of customer service measures.⁴⁹
- 4.83 In the Issues Paper, the Commission raised the option of establishing customer service measures relating to customer hardship consistent with other Australian jurisdictions and the AER's proposed framework as part of the National Energy Customer Framework.⁵⁰

Draft recommendation

- 4.84 The Commission's draft recommendation was that:
- retailers and PWC Networks should report on the average time taken to answer telephone calls, the number of calls not answered within 20 seconds of a customer choosing to speak to a human operator, and the number of calls abandoned. PWC Retail and PWC Networks may report a combined result for this measure until such time as system functionality supports separate reporting;
 - PWC Networks should report the number and type of complaints about network services (excluding voltage events);

⁴⁹ Power and Water Corporation, June 2010, Review of Electricity Standards of Service for the Northern Territory – Power and Water's Response to Issues Paper, page 11.

⁵⁰ Australian Energy Regulator, April 2010, Developing National Hardship Indicators.

- PWC Networks should report the number of new connections not provided within 24 hours for reconnection, five business days for a new connection (CBD or urban area) and 10 business days for a new connection (rural area); and
- retailers should report the number and type of complaints about retail services, and the time to respond to written enquiries.

4.85 The Commission considered that measures of customer hardship should be monitored. The proposed measures should be consistent with those in the MCE National Energy Customer Framework, including:

- disconnections for failure to pay and reconnections in the same name;
- customer service and customer complaints;
- the use of prepayment meters;
- concessions; and
- security deposits.

Views in submissions

- 4.86 PWC welcomed the Commission's proposal to combine the call centre customer service measures for PWC Retail and PWC Networks. PWC brought to the Commission's attention that these measures would also include calls relating to water, sewerage, generation and IES activities.
- 4.87 PWC suggested that the reporting of customer service measures would be more useful if percentages were used (for example, percentage of calls not answered with 20 seconds of a customer choosing to speak to a human operator) rather than absolute values (for example, number of calls not answered within 20 seconds of a customer choosing to speak to a human operator).
- 4.88 PWC questioned the value of reporting the average time taken to answer telephone calls. PWC contended that, due to staffing levels and the wide range of issues which are addressed, the average call duration might be longer than other comparable call centres.
- 4.89 Further, PWC suggested that new connections requiring network extension or augmentation should be excluded from the connection service measure as they require longer timeframes for the provision of the services. PWC also contended that there should be an option to negotiate the timeframe for the provision of services outside the set time threshold.
- 4.90 PWC requested clarification about some aspects of the proposed customer service measures, including:
- a definition of 'retailing activities' and 'complaint types' for the measure relating to the number and type of complaints about retail services;
 - a definition of 'written enquiries' for the measure relating to the time taken to respond to written enquiries.
- 4.91 Finally PWC communicated its support of the Commission's customer hardship measures. However, PWC brought to the Commission's attention that they do not currently request deposits from customers and therefore this measure should be excluded from the customer hardship indicators. PWC also indicated that collecting customer hardship data may take some time.

Response to views in submissions and further analysis

- 4.92 The Commission accepts that a number of calls relating to water, sewerage, generation and IES activities might be included in the call centre customer service measures for PWC Retail and PWC Networks. However, the Commission notes that the provision for PWC to collectively report call centre customer service measures is only until such time as system functionality supports separate reporting.
- 4.93 The Commission sees merit in PWC's suggestion to use percentages for a range of customer service measures (i.e. customer calls and new connections). The Commission considers that monitoring PWC's responsiveness in service provision relative to the total volume of customer calls or requests would complement the customer service measures which are currently provided.
- 4.94 Finally, the Commission accepts PWC's views that the new connections should exclude those requiring network extensions and augmentations. There should be flexibility to allow PWC Networks and customers to negotiate a timeframe for connection. This is consistent with the treatment of new connections in the Commission's proposals for a GSL scheme outlined in the Review of Options for Implementation of a Customer Service Incentive Scheme for Northern Territory Electricity Customers.⁵¹
- 4.95 In response to PWC's request to provide a definition of 'complaint types' and 'retail activities', the Commission proposes to adopt the definition developed by the New South Wales regulator, the Independent Pricing and Regulatory Tribunal as to what constitutes a complaint:⁵²

Written or verbal expression of dissatisfaction about an action, a proposed action, or a failure to act by a Licence Holder, its employees, agents or contractors. This includes failure by a Licence Holder to observe its published or agreed practices or procedures.

- 4.96 The Commission proposes that customer complaints about retailers' activities can be defined as any written or verbal expression of dissatisfaction from customers about the actions or failure to act by an electricity retailer, including:
- billing;
 - meter reading;
 - marketing; and
 - other matters.

⁵¹ Utilities Commission, July 2010, Review of Options for Implementation of a Customer Service Incentive Scheme for Electricity Customers, page 20.

⁵² Independent Pricing and Regulatory Tribunal, December 2009, Electricity retail businesses' performance against customer service indicators in NSW for the period 1 July 2004 to 30 June 2009 – Information paper, page 33.

4.97 PWC also requested that the Commission provide clarification as to what constitutes a 'written enquiry'. The Commission considers that the definition in the South Australia Electricity Distribution Code is appropriate:⁵³

A written enquiry is any enquiry by e-mail, fax or letter from a customer to a distributor, via nominated channels, requesting information from the distributor or making a complaint about an action of the distributor.

A response to such an enquiry includes direct or telephone contact or written response in which the distributor either answers the enquiry or acknowledges receipt of the enquiry and indicates the process and timetable to be followed in dealing with the enquiry.

4.98 Finally, the Commission acknowledges that PWC does not currently request security deposits from customers. However, PWC or a new entrant retailer could in future request such a guarantee. The Commission has therefore decided to retain security deposits as part of the customer hardship measures even though it is not currently applicable.

Final recommendation

4.99 The Commission recommends that retailers and PWC Networks should report on:

- the average time taken to answer telephone calls;
- the number and percentage of calls not answered within 20 seconds of a customer choosing to speak to a human operator; and
- the number and percentage of calls abandoned.

4.100 PWC Retail and PWC Networks may report a combined result for these measures until such time as system functionality supports separate reporting.

4.101 PWC Networks should report:

- the number, percentage and type of complaints about network services (excluding voltage events);
- the number and percentage of connections not provided within:
 - 24 hours for reconnections;
 - five business days for a new connection to a CBD or urban area (as defined in the PWC Customer Contract) not requiring network extension or augmentation, or as agreed with the customer; and
 - 10 business days for a new connection to a rural area (as defined in the PWC Customer Contract) not requiring network extension or augmentation, or as agreed with customer.

4.102 Retailers should report the number, percentage and type of complaints about retail services, and the time to respond to written enquiries.

4.103 The Commission considers that measures of customer hardship should be monitored using the following indicators:

- disconnections for failure to pay and reconnections in the same name;

⁵³ Essential Services Commission of South Australia, Electricity Distribution Code EDC/07, 1 January 2003 (as last varied in December 2009), Part A, page 5.

- customer service and customer complaints;
- the use of prepayment meters;
- collection of security deposits; and
- social welfare concessions, such as membership of pensioner concession schemes.

Setting standard of service targets

Best endeavours approach

4.104 Standards of service for reliability are generally held to be average rather than absolute targets as there are instances where a service provider will not be able to meet a performance threshold. Service performance could be worse in some parts of the system or on certain days due to a particular event (for example a cyclone).

4.105 However, over the course of the year, the service provider would be expected to achieve a consistent average (rather than absolute) level of service performance. This is known as a best endeavours approach.

4.106 The best endeavours approach is based on the premise that the service provider will not always be able to meet its performance target. Rather, performance targets are based on annual average target levels the business is expected to achieve over the course of the year.

4.107 In addition, setting performance targets on this basis would not have a disproportionate financial impact on customers.

Draft recommendation

4.108 The Commission's draft recommendation was to adopt the best endeavours approach when setting average standards of service for reliability and customer service.

Views in submissions

4.109 PWC supported the Commission's proposal for adopting the best endeavours approach when setting standards of service.

Final recommendation

4.110 The Commission recommends that the best endeavours approach be adopted when setting standards of service.

Setting service performance targets

4.111 The service performance targets set through the ESS Code are based on service performance in 1999-00, except for some services where accurate data on performance was not available, and the target was based on performance in an alternative later year.

4.112 At the time the ESS Code was developed, the Commission considered that the advantages of using past performance information to determine targets was that it implicitly takes into account the operating characteristics of the service provider in

question and provides information continuity. The Commission also noted that past performance does not always provide an accurate guide to future performance, particularly if technology changes, or if the service providers face lower incentive to improve service quality.⁵⁴

4.113 In its submission to the Issues Paper, PWC supported the use of either a three year or a five year average of historical data that has been normalised to consider seasonal events and outages caused by external factors outside the service provider's control. In addition, PWC was of the view that using benchmarking data to inform performance targets should be limited to being 'directional' (rather than 'deterministic').

Draft recommendation

4.114 The Commission's draft recommendation was that service performance targets be determined as follows:

- for distribution and transmission networks performance targets, based on a five year average of historical adjusted (using the 2.5 beta method) performance data; and
- for generation performance targets, using good industry practice for assessing appropriate USE levels for a region or system.

4.115 To avoid the risk of potentially lower targets due to a deterioration in performance, the Commission proposed that a floor be set on the target so that the average level of reliability performance to be achieved by the service provider over time does not deteriorate. Effectively, the service provider would be encouraged to maintain or improve service performance.

4.116 The Commission also proposed that benchmarking of PWC's performance against that of relevant utilities elsewhere in Australia be used when considering service performance targets.

Views in submissions

4.117 PWC contended that further consultation was warranted if the Commission's intention was to introduce continuous improvements when setting targets.

4.118 PWC brought to the Commission's attention that they had a limited dataset for SAIDI and SAIFI by feeder type. Collection of such information would improve with the implementation of the Asset Management Capability project. The same issue applied to transmission data. PWC suggested that transitional arrangements would need to be developed.

4.119 PWC queried whether the idea of setting a floor to the target levels was compatible with the best endeavours approach. PWC also requested clarification on the methodology the Commission intended to adopt when setting a floor.

4.120 Finally, PWC requested that further clarification be provided on the approach the Commission intends adopting to determine generation performance targets. Moreover,

⁵⁴ Utilities Commission, August 2004, Developing a Standards-of-Service Framework - Issues Paper, page 19.

PWC indicated that generation targets should only be based once sufficient data is collected.

Response to views in submissions and further analysis

- 4.121 When setting generation reliability targets, the Commission intends adopting the same approach as that used by the Reliability Panel, an approach that is well documented and understood by the electricity industry. The Commission would expect that System Control would be able to provide the necessary data since monitoring of system reliability is part of its core functions.
- 4.122 Consistent with practice elsewhere in Australia and overseas, the Commission considers that determining future network service performance targets by referring to the recent performance of that service provider is a reasonable approach. The Commission acknowledges that, in developing the ESS Code in 2004, the use of a single year created the potential risk of determining targets based on an atypical year. However, this approach was required by legislation.
- 4.123 The Commission is of the view that using historical performance data should ensure that PWC's average performance is at least maintained to average historic performance levels, without any material deterioration. A further consideration in setting a target based on an average is that a year of poor performance (or a series of years) could make the target less onerous, leading to a reduction in network performance.
- 4.124 The Commission's view is that the risk of potentially lower targets due to a deterioration in performance could be avoided by putting a floor on the service performance targets. When considering service performance targets for the forthcoming regulatory period, the Commission recommends that the service performance be maintained at the current target levels if the average historic performance levels are lower than the current target levels.
- 4.125 PWC's submission queried the compatibility of setting a floor with the best endeavours approach. The Commission's proposal to have a floor would apply to the setting of the performance targets, not PWC's quotidian performance. The Commission acknowledges that, during the year, PWC's service performance targets will not be achievable at all times. However the Commission would expect PWC to achieve over time a consistent average level of performance.
- 4.126 The Commission is of the view that, for a given price, consumers should expect to receive a reasonable level of service. Should the expected service levels not be achieved, the Commission would support setting target levels above that of the historical trend or current levels. As a result, the Commission would expect improvements to be achieved over time through greater efficiencies and improved practices.

- 4.127 The Commission notes that PWC supports the idea of incorporating improvements in service performance over time as long as the improvements were achievable and took into account customers' willingness to pay.⁵⁵
- 4.128 The Commission is of the view that benchmarking against peer service providers in other Australian jurisdictions could inform the Commission about what represents acceptable levels for service performance.
- 4.129 When considering benchmarking PWC's performance data, the Commission is not convinced that PWC faces unique challenges relative to other utilities in other Australian jurisdictions. Although there are many challenges in operating a power system in the Territory, the Commission notes that cyclonic and severe storm conditions, termite and bat infestations, and vegetation growth are conditions which are faced by Ergon in Northern Queensland, and Horizon Energy in Western Australia.
- 4.130 The Commission acknowledges that neither Ergon nor Horizon Energy is a perfect match. Nonetheless, the Commission considers that benchmarking PWC's reliability performance with interstate peers is a worthwhile exercise.
- 4.131 The Commission notes that Treasury sees merit in drawing from multiple approaches (five year average of historical data and benchmarking against peer service providers) in setting standards of service targets that support improvements in performance. Treasury suggested that such improvements might need to be supported by financial incentives through the network price determination.⁵⁶
- 4.132 The Commission also notes that improvements in service performance should also be expected as the result of introducing a financial incentive scheme in the Territory as part of the upcoming network price determination.
- 4.133 The Commission agrees with PWC that transitional arrangements need to be developed prior to the full implementation of the Commission's proposal for setting service performance targets. By the time the initial target levels are set, PWC might not have five years of historical data for transmission, and distribution's SAIDI and SAIFI by feeder type. The Commission considers this is a factor in assessing the timing for introducing the proposed standards of service arrangements.
- 4.134 The ESS Code required PWC's Initial Minimum Standards for the following indicators of poorly performing feeders to be set by reference to actual performance in 1999-2000.⁵⁷
- (a) *the number of feeders that experience more than x interruptions per year;*
 - (b) *the percentage of consumers supplied by feeders that experience more than x interruptions per year;*
 - (c) *the number of feeders that experience more than y minutes of interruptions per year.*

⁵⁵ Power and Water Corporation, June 2010, Review of Electricity Standards of Service for the Northern Territory – Power and Water's Response to Issues Paper, page 14.

⁵⁶ Northern Territory Treasury, June 2010, Submission to the Utilities Commission on the Issues Paper for the review of Electricity Service Standards for the Northern Territory.

⁵⁷ Northern Territory Electricity Standards of Service, December 2005, Schedule 1 [s1.7] and Schedule 2 [s1.2].

- 4.135 Rather, due to inaccurate data for 1999-2000, PWC proposed that the initial minimum standards of service for poorly performing feeders be based on the unplanned interruption frequency and duration values used for the Ergon Energy GSL scheme.⁵⁸
- 4.136 The Commission notes that the initial view of the South Australian regulator (ESCOSA), in its review of regulatory instruments for 2010-2015 regulatory period, was to rank individual feeder performance (using SAIDI and/or SAIFI), within each region, and to identify a percentage (e.g. five percent) of the worst performing feeders.⁵⁹ However, in its final decision, ESCOSA adopted the approach suggested by ETSA Utilities whereby poorly performing feeders should be determined on the basis of the following criteria:⁶⁰
- the feeder must exceed a pre-determined SAIDI threshold for a region in two consecutive financial years, providing a mechanism to reduce the impact of one-off events in any one year (such as exceptional storm or incident); and
 - the SAIDI threshold be determined by using a fixed multiplier of each region's SAIDI service standard targets.
- 4.137 The Commission sees merit in the approach adopted by ESCOSA as it establishes a relationship between the worst performing feeders and the region's average SAIDI performance. The Commission also acknowledges that other statistical methods are available. The various approaches will be considered once comprehensive performance data is available.
- 4.138 The Commission would also support aligning the approach used to determine the minimum standards of service for the GSL scheme with the approach for defining poorly performing feeders.
- 4.139 The Commission will specify the appropriate approach to defining the standards for feeder performance, and determining poor performance, once it is provided with PWC's historic performance data. The Commission notes that PWC Networks has been requested to provide feeder performance data as part of the 2009-10 Power System Review.

Final recommendation

- 4.140 The Commission recommends that service performance targets be determined as follows:
- for distribution networks service performance targets, informed by the average of the previous five years adjusted (using the 2.5 beta method) performance data and comparison with the performance of appropriate industry peers;
 - for minimum feeder performance targets, based on good industry practice for assessing poor feeder performance relative to average performance, once PWC's historic performance data is provided to the Commission; and

⁵⁸ Power and Water Corporation, Standards of Service Code – Initial Minimum Standards for Reliability Standards Indicators, page 4.

⁵⁹ Essential Services Commission of South Australia, November 2009, South Australian Electricity Distribution Service Standards 2010-2015 Review of Regulatory Instruments – Issues Paper, page 14.

⁶⁰ Essential Services Commission of South Australia, June 2010, South Australian Electricity Distribution Service Standards 2010-2015 Review of Regulatory Instruments – Final Decision, page 15.

- for generation performance targets, using good industry practice for assessing appropriate USE levels for a region or system.

4.141 To avoid the risk of potentially lower targets due to a deterioration in performance, the Commission recommends that a floor be set on the targets for average service performance.

4.142 The Commission also recommends that benchmarking of networks and generation performance against that of relevant utilities elsewhere in Australia be used when considering service performance targets.

Customers' preference and willingness to pay

4.143 The level of reliability and quality of electricity supply is determined by system planning and design and operating practices, which in turn influence capital and maintenance expenditure decisions, and the price of electricity for customers. A key consideration of regulators in undertaking network regulation is to define a standard of service which requires a trade off between desired service performance and the cost borne by customers.

4.144 Methods of identifying the appropriate balance between an acceptable level of service performance over time and cost include an economic assessment of the value of customer reliability, undertaking customer preference surveys or customer consultation.

4.145 The Commission notes that evidence of the use of customer surveys in South Australia, Victoria and Queensland does not provide a clear case for their effectiveness, and the results were difficult for the regulators to translate customer preferences into service targets. The Commission is not convinced that, given the possible cost of undertaking customer surveys, meaningful information on consumer preferences can be extracted at this stage.

Draft recommendation

4.146 The Commission is of the view that methods for accurately assessing customer preferences and their willingness to pay should be reconsidered at a later stage.

Views in submissions

4.147 PWC did not support the use of customer surveys to determine service targets.

4.148 Treasury acknowledged that developing a reliable framework to measure customers' willingness to pay may be difficult.

Final recommendation

4.149 The Commission is of the view that methods for accurately assessing customer preferences and their willingness to pay should be reconsidered at a later stage.

Exclusion of events

4.150 Service performance (whether generation, networks or retail) can be affected by events that are outside the reasonable control of the service provider, such as extreme acts of nature (for example fire, flood or tempest), industrial action or terrorism. These are

events that a service provider cannot reasonably be expected to prevent or avoid, at least without substantial capital investment.

4.151 Standards of service arrangements commonly define excluded events for the purposes of determining service targets, and reporting on service performance. The common reasons for adjusting service performance targets are whether an outage is defined as a major event or whether an outage is planned.

4.152 The ESS Code allows PWC to adjust its service performance by excluding the effects of severe interruptions to supply using the 2.5 beta method. However, the ESS Code requires both the adjusted and unadjusted reliability data to be reported.

4.153 In the Issues Paper, the Commission was of the view that, for the sake of simplicity, the 2.5 beta method should be used for reporting and for setting service targets.

4.154 However, the Commission did not see any merit in having a subjective list of specific excludable events for setting or reporting service performance. When using the 2.5 beta method, major events, such as extreme weather events should automatically be excluded through application of the method.

Draft recommendations

4.155 The Commission's draft recommendation was:

- the 2.5 beta method should be used to adjust network performance data for both reporting performance and setting service targets;
- PWC Networks should be required to report adjusted and unadjusted performance; and
- PWC Networks should be required to provide detailed comments on those events which are excluded using the 2.5 beta method.

Views in submissions

4.156 PWC expressed its support for the adoption of the 2.5 beta method to adjust network reliability data for both reporting and setting service targets. However, PWC commented that the 2.5 beta method was less reliable when applied to subsets of data. PWC suggested that SAIDI and SAIFI data for each feeder type could be normalised using alternative methods.

Response to views in submissions and further analysis

4.157 The Commission considers that the approach to exclude events should be consistent with that proposed in the Review of Options for Implementation of a Customer Service Incentive Scheme for Electricity Customers, with network related reliability performance data adjusted to recognise the effect of the following events and supply interruptions that are outside the reasonable control of the service provider:

- load shedding due to a generation shortfall;
- supply interruptions due to planned outages, where at least two business days notice has been given of the planned outage;
- momentary interruptions of less than one minute; and
- events that are outside the reasonable control of the service provider, such as traffic accidents and vandalism, and natural events that are identified as statistical outliers using the 2.5 beta method.

4.158 The Commission considers that the 2.5 beta method is, in most cases, an appropriate statistical methodology for identifying outliers in a dataset. The Commission notes that the AER service target performance incentive scheme for DNSPs also uses the 2.5 beta method to identify major event days.⁶¹

4.159 The Commission recognises that the 2.5 beta method may not be reliable when applied to data subsets, such as the performance of feeder categories. The Commission considers that this issue can be dealt with as follows:⁶²

- excluded events should be identified by applying the 2.5 beta method to daily total system SAIDI and SAIFI data (i.e. not on a feeder type basis); and
- if an event is an excluded event, then the impact of this event should be excluded when determining the performance of each feeder type.

4.160 The Commission's approach to the exclusion of events has been guided by the approach adopted in the Queensland Electricity Industry Code.

Final recommendation

4.161 The Commission recommends that network related reliability performance data be adjusted to recognise the effect of the following events and supply interruptions that are outside the reasonable control of the service provider:

- load shedding due to a generation shortfall;
- supply interruptions due to planned outages, where at least two business days notice has been given of the planned outage;
- momentary interruptions of less than one minute; and
- events that are outside the reasonable control of the service provider, such as traffic accidents and vandalism, and natural events that are identified as statistical outliers using the 2.5 beta method.

4.162 The 2.5 beta method should be used to adjust performance data for both reporting performance and setting service targets at the system level. If an event is an excluded event, then the impact of this event should be excluded when determining the performance of each feeder type.

4.163 PWC Networks should be required to report adjusted and unadjusted performance for each feeder type, and at an aggregate system level.

4.164 PWC Networks should be required to provide detailed comments on those events which are excluded using the 2.5 beta method.

Planned and unplanned outages

4.165 Interruptions to supply can be planned or unplanned. The ESS Code does not require PWC to distinguish between planned and unplanned outages.

⁶¹ The Australian Energy Regulator, November 2009, Electricity Distribution Network Service Providers – Service Target Performance Incentive Scheme, Appendix D, page 35.

⁶² Queensland Electricity Industry Code, Chapter 3, s.3.

4.166 The Commission considers that separately reporting the contribution of planned and unplanned outages to overall system reliability performance could provide useful information on the condition of electricity assets, particularly if the cause of the unplanned outages was also identified.

Draft Recommendation

4.167 The Commission's draft recommendation was that:

- generators should report on planned and unplanned generation outages; and
- PWC Networks (transmission and distribution) should report planned and unplanned network outages.

Views in submissions

4.168 PWC supported the reporting of planned and unplanned outages for networks and generation. However PWC suggested planned and unplanned outages for transmission and distribution be reported together as, currently, PWC does not collect disaggregated data for transmission and distribution networks.

Response to views in submissions and further analysis

4.169 The Commission notes that PWC Networks has been requested to report distribution and transmission related planned and unplanned outages as an input to the 2009-10 Power System Review. Although the Commission does not expect PWC to immediately be able to produce data that is not currently collected or reported, the Commission expects PWC to develop the capability to report on planned and unplanned transmission and distribution outages in the near term.

Final recommendation

4.170 The Commission recommends that:

- generators should report on planned and unplanned generation outages; and
- PWC Networks should report planned and unplanned outages for both the transmission and distribution elements of the network.

Data segmentation

4.171 The ESS Code requires that performance data be segmented into the following categories:

- regional categories – Darwin, Katherine, Tennant Creek, Alice Springs and other;
- feeder categories – urban (interconnected) and rural (radial); and
- customer categories – residential customers and commercial/industrial customers.

Draft recommendation

4.172 The Commission's draft recommendation was that performance data be segmented in the following categories:

- distribution network reliability data should be reported by feeder type (CBD, urban, rural short and rural long), by power system (Darwin-Katherine, Alice

Springs and Tennant Creek) and region (Darwin, Katherine, Tennant Creek and Alice Springs) and if outages were planned or unplanned;

- generation reliability data should be reported by power system and region;
- transmission reliability data, planned and unplanned, should be reported for network assets connecting major generation and load centres;
- distribution network quality of supply data (complaints about quality of supply) should be segmented by power system and region;
- PWC Networks should reports complaints received relating to network activities by power system and region;
- PWC Networks should report customer connection data by location - urban, rural or remote;
- retailers should report customer service complaints received relating to retail activities by power system and region; and
- telephone answering time (average answer time and number of calls not answered within 20 seconds of a customer choosing to speak to a human operator) and calls abandoned should be reported on a Territory wide basis.

Views in submissions

4.173 PWC suggested that the Commission's proposal that customer connection data be segmented by location was unnecessary since separate measures for urban and rural areas had been proposed.

4.174 PWC did not support the Commission's recommendation that retailers should report customer service complaints received relating to retail activities by power system and region. The power system distinction was not relevant to retail activities. Rather, PWC suggested that customer service complaints relating to retail activities be reported by region.

Response to views in submissions and further analysis

4.175 The Commission agrees with the suggestions made in PWC's submission to the Draft Report.

Final recommendation

4.176 The Commission recommends that performance data be segmented in the following categories:

- distribution network reliability data should be reported by feeder type (CBD, urban, rural short and rural long), by power system (Darwin-Katherine, Alice Springs and Tennant Creek) and region (Darwin, Katherine, Tennant Creek and Alice Springs) and if outages were planned or unplanned;
- feeder performance should be reported by feeder type (CBD, urban, rural short and rural long) for each region (Darwin, Katherine, Tennant Creek and Alice Springs);
- transmission reliability data, planned and unplanned, should be reported for transmission assets. The Commission will consult with PWC Networks to identify transmission assets. The Commission considers that transmission assets are those connecting generation and major load centres;
- generation reliability data should be reported by power system and region;

- distribution network quality of supply data (complaints about quality of supply) should be segmented by power system and region;
- PWC Networks should reports complaints received relating to network activities by power system and region;
- retailers should report customer service complaints received relating to retail activities by region; and
- telephone answering time (average answer time and number of calls not answered within 20 seconds of a customer choosing to speak to a human operator) and calls abandoned should be reported on a Territory wide basis.

CHAPTER 5

Implementation in the Northern Territory

Matters relevant to the implementation of the proposed standards of service arrangements

- 5.1 The terms of reference require the Commission to provide detailed plans for implementation of any proposals.
- 5.2 The Commission considers that the key implementation considerations are:
- legislation and statutory arrangements to apply the proposed standards of service framework;
 - methodology for determining service performance targets;
 - monitoring and reporting arrangements;
 - assurance about service performance data quality used for reporting and determining service performance targets; and
 - service providers subject to the proposed standards of service framework.

Legislation and statutory requirements

- 5.1 The Commission established the existing ESS Code under statutory authority provided in the *Utilities Commission Act* [ss6 and 24], *Electricity Reform Act* [s92], the *Electricity Networks (Third Party Access) Act* [s10] and the Electricity Networks (Third Party Access) Code [cl.9A].
- 5.2 However, the introduction of full retail contestability from 1 April 2010 caused the authority granted through the *Electricity Reform Act* [s92] to determine generation and retail standards of service for customers to fall away. This means that the aspects of the ESS Code dealing with setting generation and retail standards of service are not currently effective, and that the Commission does not currently have the authority to set generation or retail standards of service. The Commission may still require electricity industry participants to report service performance outcomes.
- 5.3 The options identified by the Commission to support a comprehensive standards of service framework are:
- to establish the proposed standards of service arrangements through alternative statutory instruments, including the *Electricity Reform Act* [s45] and the System Control Technical Code;
 - for the Minister to make a new Regulation under the *Electricity Reform Act* giving the Commission the authority to make a Code establishing the proposed standards of service arrangements; or

- for an amendment to the *Electricity Reform Act* to include a provision(s) establishing the proposed standards of service arrangements.
- 5.1 The Commission could possibly define a USE target for the market systems through the System Control Technical Code. Also, the Commission could apply the network related aspects of the proposed standards of service arrangements through the *Electricity Networks (Third Party Access) Act* and Code, as part of the network regulation process. The Commission could also perhaps rely on the provision of the *Electricity Reform Act* [s45] that requires the preparation of the annual power system review to require reporting of service performance, but not to set standards.
 - 5.2 Alternatively, the Commission could include new obligations in the licenses held by service providers. However, using the licensing framework to establish the standards of service framework has the potential to create regulatory uncertainty, as the obligations would be specific to each firm, rather than to the industry sector, thereby creating the possibility of differing service performance arrangements for individual firms.
 - 5.3 The Commission's view is that the proposed standards of service arrangements for the Territory are more appropriately established through an explicit statutory provision or regulatory instrument that establishes a clear head of power for the arrangements. In particular, the Commission notes that the existing legislative framework does not clearly provide the Commission with an authority to apply service performance arrangements to all retailers, or allow for the development of comprehensive performance monitoring and reporting arrangements.
 - 5.4 At this stage, the Commission considers that a new regulation under the *Electricity Reform Act* is the most appropriate way of establishing the proposed standards of service arrangements.
 - 5.1 In addition, the Commission notes that this head of power could incorporate any customer service incentive scheme.
 - 5.5 The Commission considers that a specific head of power for establishing a clear standards of service framework would deliver greater regulatory certainty, and support new investment. In particular, the Commission considers that legislation is required to clarify performance reporting and compliance monitoring (data quality) arrangements, and financial incentive arrangements (for example for a GSL scheme).

Timing

- 5.6 The Commission considers that the introduction of the proposed standards of service arrangements could coincide with the regulatory period for the electricity networks price reset, starting 1 July 2014. The average reliability performance targets could be used for the financial incentive scheme (s-factor), should such a scheme be introduced in the Territory.
- 5.7 A start date of 1 July 2014 would enable PWC to develop systems to collect the required information and ensure that it is accurate. This timeframe would also allow time for the introduction of new legislation, should the Treasurer decide that such an option is the most appropriate.

- 5.8 However, the Commission considers that the reporting arrangements required by the proposed standards of service framework should be adopted by the Territory electricity industry as soon as possible, without waiting for July 2014.
- 5.9 The Commission notes that many of the measures that would be reported as part of the proposed standards of service framework are already reported by PWC, whether under existing standards of service arrangements or for the Commission's annual power system review.

Determining service performance targets

Generation performance targets

- 5.10 The Commission is proposing establishing a generation service performance target by defining a minimum level of unserved energy (USE) for each market system.
- 5.11 A USE target is calculated by assessing the change to average capacity (over time) required to meet a particular level of customer demand. For example, if customer energy demand was 100 000 MWh over the long term, a USE target of 0.002 per cent would require the supply of no less than 99 998 MWh, which can be translated into installed generation capacity with assumptions about generator availability and reliability. This involves analysis of the investment requirements to achieve a particular reliability outcome – the AEMC Reliability Panel undertook this analysis for the NEM as part of the Reliability Standard and Reliability Settings Review completed in April 2010.
- 5.12 The Commission considers that a USE target should be determined for the market systems, taking into account the approach adopted by the AEMC Reliability Panel, including consideration of reliability and security of supply in the Territory, and the financial consequences of a particular USE target. The process would involve input from PWC, and broader public consultation once the range of options is identified to obtain input to the reliability/security and investment outcomes.

Network performance targets

- 5.13 The Commission is proposing that distribution network service performance targets be defined for each market system, and for each feeder type. Additionally, the Commission is proposing that transmission network service performance targets be defined for transmission assets. In both cases, the targets are to be informed by historical reliability outcomes.
- 5.14 The Commission will take these network performance targets into consideration as part of the assessment of network capital and operating costs for the next regulatory period from July 2014.

Customer service performance targets

- 5.15 The Commission is not proposing any specific customer service performance targets. However, the Commission has proposed that certain network related customer services could be covered by a GSL scheme.
- 5.16 Further, the level of network related customer service performance will be considered as part of the assessment of network capital and operating costs for the next regulatory

period. There is no intention at this stage to establish average customer service performance outcomes.

Monitoring and reporting

5.17 The monitoring and reporting aspects of a standards of service framework deal with the arrangements for:

- what measures are reported and when data is reported;
- how data is treated, including excluded events and segmentation of data;
- who receives data, including public reporting; and
- compliance measures, such as auditing to ensure data is accurate and a service provider is complying with the requirements of the framework.

5.18 The ESS Code requires PWC to provide the Commission with an annual report (by 30 October) on the service performance achieved for each performance measure in the most recent financial year.⁶³ The Commission has set out the procedures and requirements for annual reporting in a Guideline.⁶⁴

5.19 The Commission may appoint an independent auditor to audit PWC's compliance with the ESS Code, such as data collection and reporting systems, and accuracy of data.⁶⁵

5.20 The Commission considers that the statutory instruments (legislation, codes or guidelines) establishing the proposed standards of service framework would define the measures to be reported, treatment of data (for example excluded events), reporting of data, and compliance processes.

Availability and quality of performance data

5.21 The Commission considers that quality of regulation is dependent on the quality of the information provided by the service provider. Accurate information is necessary for the regulator to set accurate and relevant quality standard levels, and monitor quality on a meaningful and consistent basis over time.

5.22 When developing the ESS Code, the Commission noted that there was some uncertainty about the quality of performance data, and that this could mean the service targets may not have been appropriate. The Commission has previously indicated an expectation that the quality of performance data would improve as data collection protocols improved and more robust service performance data accumulates.⁶⁶

5.23 Common practice for obtaining certainty about data quality is to undertake an audit of the process and practice involved in collecting and reporting the data. Audit requirements are a feature of most standards of service arrangements.⁶⁷ Depending on

⁶³ Utilities Commission, December 2005, Electricity Standards of Service Code, cl.8.1.

⁶⁴ Utilities Commission, March 2006, Electricity Standards of Service Code Procedural Guideline.

⁶⁵ Utilities Commission, December 2005, Electricity Standards of Service Code, cl.8.2.

⁶⁶ Utilities Commission, December 2005, Electricity Standards of Service 2005-06, page 11.

⁶⁷ For example, see Office of the Tasmanian Economic Regulator, May 2009, Electricity Supply Industry Performance and Information Reporting Guideline. section 4.2.4.

the jurisdiction, audit procedures may range from random checks to various degrees of intrusiveness dependent on the accuracy of the information.

- 5.24 PWC supports the audit of its performance data collection and reporting systems. By and large, it considered data to be of an acceptable level of accuracy. PWC conceded that, for some of the measures reported, the data retrieval was not automated and was subject to potential inaccuracies. PWC also commented on the limitations of its current systems (for example PWC's single call centre and billing system). These issues were expected to be resolved with the implementation of the Asset Management Capability project and the upgrade of its systems and processes.
- 5.25 The Commission notes that the Western Australia Network Quality and Reliability of Supply Code requires that, in respect of their annual performance reporting, TNSPs and DNSPs arrange for an independent expert to audit the operation of the systems that these entities have in place for monitoring their compliance. The audit is to be carried each year.⁶⁸
- 5.26 The AER's Service Standards Guideline states that it will audit the performance standards report provided by the TNSPs to ensure that they have complied with the parameters of their respective revenue caps. The AER also states that it is likely it will engage an expert consultant to check the accuracy of the information.⁶⁹
- 5.27 The Commission intends initiating regular audits of PWC's data collection systems and processes to obtain reasonable assurance that service performance data is accurate. The Commission considers that the costs associated with these audits should be borne by PWC.

Firms subject to standards of service arrangements

- 5.28 PWC is effectively the only firm currently actively operating in the market systems. Although network services are likely to continue to be provided through a monopoly provider, other generators and retailers could enter the Territory electricity market in the future. PWC did face generation and retail competition in the Darwin-Katherine system in the early years of the current decade.
- 5.29 PWC considers that all licensees should comply with the standards of service framework as it would ensure consistent levels of service regardless of the service provider. However, PWC suggested that service providers supplying remote communities should be excluded as the provision of services (including service standards) is negotiated through an agreement with the Territory Government. Service performance in such situations may best be dealt with through contractual arrangements between the service purchaser and the service provider.⁷⁰

⁶⁸ State of Western Australia, Electricity Industry (Network Quality and Reliability of Supply) Code 2005, cl. 26.

⁶⁹ The Australian Energy Regulator, November 2003, *Service Standards Guidelines*, paragraph 4.7, page 12.

⁷⁰ Power and Water Corporation, June 2010, Review of Electricity Standards of Service for the Northern Territory – Power and Water's Response to Issues Paper, page 16.

- 5.30 PWC suggests that standards of service arrangements should apply to both regulated and non-regulated networks, with lower target levels set for the latter to acknowledge the difference in operating environment.⁷¹
- 5.31 Treasury shared the view that the development of standards of service framework should be flexible so that it could apply consistently to all service providers, and supports that a uniform standards of service framework be applied across non-regulated systems.
- 5.32 The Commission considers that the standards of service framework should apply to all licensed firms operating in the market systems, and supplying customers connected to the regulated networks. Further, the Commission considers that a standards of service framework should have the flexibility to apply to service providers operating in the market systems and to service providers operating in remote and regional centres.

⁷¹ Ibid, page 17.

APPENDIX A

SUMMARY OF PROPOSALS

Business Unit	Measure	Data Segmentation		Report	Targets		
Generation	EFOF	Darwin-Katherine		√			
		Darwin		√			
		Katherine		√			
		Tennant Creek		√			
		Alice Springs		√			
	EAF	Darwin-Katherine		√			
		Darwin		√			
		Katherine		√			
		Tennant Creek		√			
		Alice Springs		√			
	SAIDI	Darwin-Katherine	Planned		√		
			Unplanned		√		
		Darwin	Planned		√		
			Unplanned		√		
		Katherine	Planned		√		
			Unplanned		√		
		Tennant Creek	Planned		√		
			Unplanned		√		
		Alice Springs	Planned		√		
			Unplanned		√		
		SAIFI	Darwin-Katherine	Planned		√	
				Unplanned		√	
	Darwin		Planned		√		
Unplanned				√			

Business Unit	Measure	Data Segmentation			Report	Targets		
		Katherine	Planned		√			
			Unplanned		√			
		Tennant Creek	Planned		√			
			Unplanned		√			
		Alice Springs	Planned		√			
			Unplanned		√			
		USE	Darwin-Katherine			√	√	
			Tennant Creek			√	√	
			Alice Springs			√	√	
		Networks - Distribution	SAIDI (unadjusted)	Darwin-Katherine	Planned	CBD	√	
						Urban	√	
						Rural short	√	
Rural long	√							
Unplanned	CBD				√			
	Urban				√			
	Rural short				√			
	Rural long				√			
Darwin	Planned			CBD	√			
				Urban	√			
				Rural short	√			
				Rural long	√			
	Unplanned			CBD	√			
				Urban	√			
				Rural short	√			
				Rural long	√			
Katherine	Planned			CBD	√			
				Urban	√			
				Rural short	√			

Business Unit	Measure	Data Segmentation			Report	Targets	
			Unplanned	Rural long	√		
				CBD	√		
				Urban	√		
				Rural short	√		
				Rural long	√		
		Tennant Creek	Planned	CBD	√		
				Urban	√		
				Rural short	√		
				Rural long	√		
			Unplanned	CBD	√		
				Urban	√		
				Rural short	√		
				Rural long	√		
		Alice Springs	Planned	CBD	√		
				Urban	√		
				Rural short	√		
				Rural long	√		
			Unplanned	CBD	√		
				Urban	√		
				Rural short	√		
				Rural long	√		
		SAIDI (adjusted)	Darwin-Katherine	Planned	CBD	√	√
					Urban	√	√
					Rural short	√	√
					Rural long	√	√
				Unplanned	CBD	√	√
					Urban	√	√
					Rural short	√	√

Business Unit	Measure	Data Segmentation			Report	Targets			
		Darwin	Planned	Rural long	√	√			
				CBD	√	√			
					Urban	√	√		
						Rural short	√	√	
			Rural long				√	√	
				Unplanned			CBD	√	√
					Urban			√	√
						Rural short		√	√
			Rural long					√	√
				Katherine			Planned	CBD	√
					Urban				√
						Rural short			√
		Rural long	√						√
			Unplanned				CBD	√	√
					Urban			√	√
						Rural short		√	√
		Rural long						√	√
			Tennant Creek	Planned			CBD	√	√
					Urban			√	√
						Rural short		√	√
		Rural long						√	√
				Unplanned			CBD	√	√
					Urban			√	√
						Rural short		√	√
		Rural long						√	√
				Alice Springs			Planned	CBD	√
					Urban				√
						Rural short			√

Business Unit	Measure	Data Segmentation			Report	Targets
			Unplanned	Rural long	√	√
				CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
	SAIFI (unadjusted)	Darwin-Katherine	Planned	CBD	√	
				Urban	√	
				Rural short	√	
				Rural long	√	
			Unplanned	CBD	√	
				Urban	√	
				Rural short	√	
				Rural long	√	
		Darwin	Planned	CBD	√	
				Urban	√	
				Rural short	√	
				Rural long	√	
	Unplanned		CBD	√		
			Urban	√		
			Rural short	√		
			Rural long	√		
	Katherine	Planned	CBD	√		
			Urban	√		
			Rural short	√		
Rural long			√			
Unplanned		CBD	√			
		Urban	√			
		Rural short	√			
		Rural long	√			

Business Unit	Measure	Data Segmentation			Report	Targets		
			Planned	Rural long	√			
				Tennant Creek	Planned	CBD	√	
						Urban	√	
						Rural short	√	
		Rural long	√					
		Unplanned	CBD		√			
			Urban		√			
			Rural short		√			
			Rural long		√			
		Alice Springs	Planned	CBD	√			
				Urban	√			
				Rural short	√			
				Rural long	√			
			Unplanned	CBD	√			
				Urban	√			
				Rural short	√			
				Rural long	√			
		SAIFI (adjusted)	Darwin-Katherine	Planned	CBD	√	√	
					Urban	√	√	
					Rural short	√	√	
	Rural long				√	√		
	Unplanned			CBD	√	√		
				Urban	√	√		
				Rural short	√	√		
				Rural long	√	√		
	Darwin			Planned	CBD	√	√	
					Urban	√	√	
					Rural short	√	√	

Business Unit	Measure	Data Segmentation			Report	Targets
			Unplanned	Rural long	√	√
				CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
		Katherine	Planned	CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
			Unplanned	CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
		Tennant Creek	Planned	CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
			Unplanned	CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
		Alice Springs	Planned	CBD	√	√
				Urban	√	√
				Rural short	√	√
				Rural long	√	√
			Unplanned	CBD	√	√
				Urban	√	√
				Rural short	√	√

Business Unit	Measure	Data Segmentation			Report	Targets
				Rural long	√	√
	Feeder performance	Darwin	CBD		√	√
			Urban		√	√
			Rural Long		√	√
			Rural Short		√	√
		Katherine	CBD		√	√
			Urban		√	√
			Rural Long		√	√
			Rural Short		√	√
		Alice Springs	CBD		√	√
			Urban		√	√
			Rural Long		√	√
			Rural Short		√	√
		Tennant Creek	CBD		√	√
			Urban		√	√
			Rural Long		√	√
			Rural Short		√	√
Networks - Transmission	Average outage duration (unadjusted)	Darwin-Katherine	Planned		√	
			Unplanned		√	
		Tennant Creek	Planned		√	
			Unplanned		√	
		Alice Springs	Planned		√	
			Unplanned		√	
	Average outage duration (adjusted)	Darwin-Katherine	Planned		√	√
			Unplanned		√	√
Tennant Creek		Planned		√	√	

Business Unit	Measure	Data Segmentation		Report	Targets
			Unplanned	√	√
		Alice Springs	Planned	√	√
			Unplanned	√	√
	Frequency of outages (unadjusted)	Darwin-Katherine	Planned	√	
			Unplanned	√	
		Tennant Creek	Planned	√	
			Unplanned	√	
		Alice Springs	Planned	√	
			Unplanned	√	
	Frequency of outages (adjusted)	Darwin-Katherine	Planned	√	√
			Unplanned	√	√
		Tennant Creek	Planned	√	√
			Unplanned	√	√
		Alice Springs	Planned	√	√
			Unplanned	√	√
	SAIDI (unadjusted)	Darwin-Katherine	Planned	√	
			Unplanned	√	
		Tennant Creek	Planned	√	
			Unplanned	√	
		Alice Springs	Planned	√	
			Unplanned	√	
	SAIDI (adjusted)	Darwin-Katherine	Planned	√	
			Unplanned	√	
		Tennant Creek	Planned	√	
			Unplanned	√	
		Alice Springs	Planned	√	
			Unplanned	√	
	SAIFI	Darwin-Katherine	Planned	√	

Business Unit	Measure	Data Segmentation	Report	Targets		
	(unadjusted)		Unplanned	√		
		Tennant Creek	Planned	√		
			Unplanned	√		
		Alice Springs	Planned	√		
			Unplanned	√		
		SAIFI (adjusted)	Darwin-Katherine	Planned	√	
	Unplanned			√		
	Tennant Creek		Planned	√		
			Unplanned	√		
	Alice Springs		Planned	√		
			Unplanned	√		
	Transmission line availability	Darwin-Katherine		√	√	
		Alice Springs		√	√	
		Tennant Creek		√	√	
	Transformer availability	Darwin-Katherine		√	√	
		Alice Springs		√	√	
		Tennant Creek		√	√	
	Networks - Quality	Voltage complaints	Darwin-Katherine		√	
			Darwin		√	
			Katherine		√	
			Alice Springs		√	
Tennant Creek			√			
Networks – Customer Service	Complaints (excl. voltage) and complaint type	Darwin-Katherine		√		
		Darwin		√		
		Katherine		√		
		Alice Springs		√		
		Tennant Creek		√		
	Connections	Number and percentage of connections to existing		√		

Business Unit	Measure	Data Segmentation	Report	Targets
		supply not provided within 24 hours		
		Number and percentage of connections to CBD or urban areas (excl network extensions and augmentations) not provided within 5 business days	√	
		Number and percentage of connections to rural areas (excl network extensions and augmentations) not provided within 10 business days	√	
Retail - Customer Service	Complaints and complaint type	Darwin-Katherine	√	
		Darwin	√	
		Katherine	√	
		Tennant Creek	√	
		Alice Springs	√	
	Time to respond to written enquiries	√		
Combined Customer Service	Telephone calls	Number and percentage of telephone calls not answered within 20 seconds from when a customer elects to speak to a human operator	√	
		Number and percentage of calls abandoned	√	
		Average time to answer calls	√	