VICTORIAN ELECTRICITY DISTRIBUTION NETWORK SERVICE PROVIDERS

ANNUAL PERFORMANCE REPORT 2010

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AUSTRALIAN ENERGY REGULATOR

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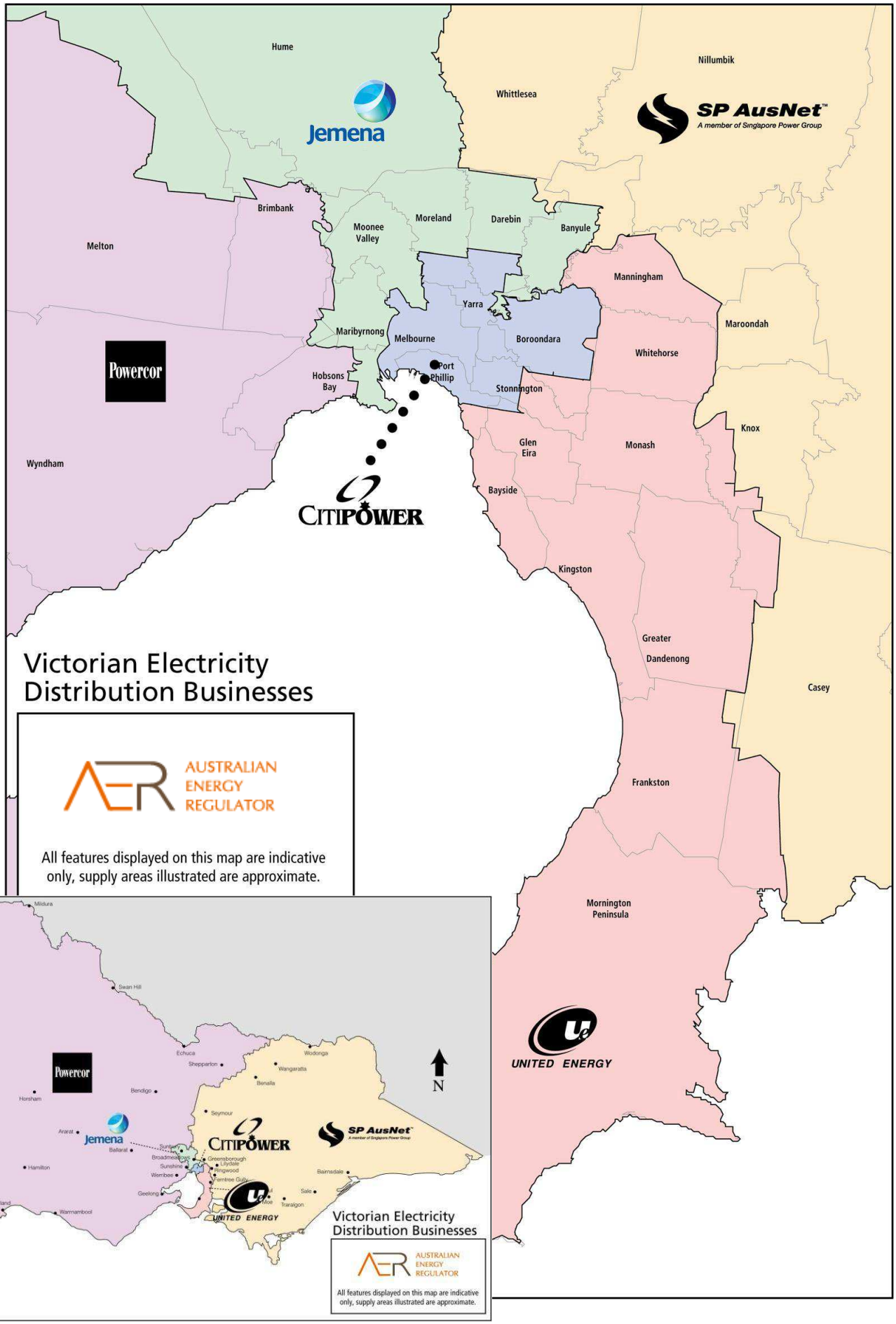
Supply Areas of Victorian Electricity Distribution Businesses



Contents

Preface

This report provides an overview of the performance of the Victorian electricity distribution network service providers (DNSPs) during the 2010 calendar year. This is the final performance report which the AER will publish under the ESCV's Electricity Distribution Price Review 2006–10 Final Decision (EDPR). The next performance report for Victorian DNSPs will be under the national electricity regime.

Although Melbourne's highest maximum temperature for 2010 was 43.6 ^{o}C (on 11 January) and the highest overnight minimum (measured between 3pm and 9am) was 30.6 ^{o}C on 12 January, overall, 2010 was a much milder year than in 2009. [1]

In 2009, the heatwaves contributed to a significant deterioration in performance against supply reliability measures. In 2010 temperatures in general were more moderate, which led to an improvement in service levels. Overall, with the inclusion of the heatwave and related events, DNSPs in 2010 reported that:

- the total minutes-off-supply the average customer experienced was 170, or 33 per cent less than in 2009
- the total number of sustained interruption experienced by the average customer was 1.67, or 34 per cent fewer interruptions than in 2009
- 5.4 per cent of customers experienced greater than 10 hours without supply, which was less than the 7.6 per cent in 2009
- the number of customer appointments not met on time and streetlights not repaired within the agreed time increased from 2009, whereas connections not made on the agreed date decreased from the previous year
- the amount of payments made by DNSPs to customers for low supply reliability decreased from approximately $11.28 million in 2009 to $6.92 million
- the number of customer complaints increased from 1.1 per 1000 customers to 2.3. This is affected by the introduction of AMI (smart meters) which began to be rolled out in significant numbers in 2010.

However, even after these extreme events are removed from performance measures, the results indicate a continuing deteriorating trend in the overall level of supply reliability over the 2005-2010 period. The AER has introduced a stronger service incentive to promote better reliability of supply from 2011, and will continue to monitor and report on DNSPs performance under the new requirements.

[1] Annual Climate Summary 2010 by the Bureau of Meteorology. Available at www.bom.gov.au/climate/annual_sum/annsum.shtml

The role of the Australian Energy Regulator

As part of the transition to national regulation of electricity distribution and retailing, the Australian Energy Regulator (AER) is now responsible for exercising certain powers and functions previously undertaken by the Essential Services Commission of Victoria (ESCV) for the Victorian jurisdiction. The new responsibilities are conferred on the AER by the operation of the National Electricity (Victoria) Act 2005 (NEVA) in accordance with the Trade Practices Act 1974 and the Australian Energy Market Agreement.

The relevant Victorian distribution network revenue and service level targets were set by the ESCV for the regulatory period (2006–10). The NEVA delegates power to the AER to administer the ESCV's Electricity Distribution Price Review 2006–10 Final Decision (EDPR) under the Victorian regulatory framework. This expired on 31 December 2010.

The AER has set the revenue and service levels for the 2011–15 regulatory control period under the National Electricity Rules. Information about the AER's 2011–15 distribution determination is available from the AER's website.[2]

In addition to the administration of the EDPR, the NEVA confers economic regulatory functions, powers and duties on the AER regarding compliance monitoring and enforcement of the Electricity Distribution Licence conditions of the Victorian electricity distribution network service providers (DNSPs). This includes the monitoring of the service performance levels provided by the DNSPs. Public reporting of performance of these monopoly businesses is one of the key elements that underpins the economic regulatory frameworks under both the Victorian system as well as under the national framework. Therefore, the AER decided to continue the performance reporting system of the ESCV until the end of the 2006–10 regulatory period.

This report is the third prepared by the AER under the Victorian regulatory framework as a continuation of the series of performance reports previously published by the ESCV. The format of the report is similar to previous reports and to those previously produced by the ESCV. The AER is developing a new reporting framework for DNSPs under the National Electricity Law and National Electricity Rules which will apply for the 2011–15 regulatory control period.

Previous reports published by the AER and the ESCV are available from:

- http://www.aer.gov.au/content/index.phtml/itemId/731983
- www.esc.vic.gov.au/public/Energy/Regulation+and+Compliance/Performance+Reports/.

[2] At www.aer.gov.au/content/index.phtml/itemId/718202.

Purpose of this report

This report covers the supply reliability and quality, customer service and profitability for the 2010 regulatory year of the five Victorian DNSPs: Jemena Electricity Networks[3], CitiPower, Powercor, SP AusNet[4] and United Energy. It provides an overview of the operating environment of these DNSPs and summarises their performance against the financial assumptions and service standards underlying their respective revenue determinations for this period.

Annual DNSP performance reports provide customers with comprehensive information about the services they receive, and promote better service by comparing and encouraging each DNSP to improve its performance relative to other DNSPs.

Controls on DNSPs prices were fixed for the 2006–10 regulatory period under the 2006–10 EDPR. If a DNSP outperforms the financial assumptions underpinning these price controls, it may retain the resulting increase in profits for a period. The AER took into consideration the cost reductions and other efficiency gains made by the DNSPs in the 2006–10 regulatory period when making its determination for the 2011–15 regulatory control period, which was released in October 2010. Encouraging DNSPs to improve their efficiency, benefits both the businesses (through the retention of increased earnings) and consumers (through lower prices charged in subsequent regulatory control periods).

The 2006–10 EDPR has a financial incentive scheme to promote and encourage the DNSPs to meet and exceed the target levels of reliability. The scheme contains:

1. A service term (S factor) in the price control formula, in the form of (1+CPI)(1−X)(1+S factor). If a DNSP provides an average level of reliability better than the target levels, then its distribution revenue will rise in subsequent years. If reliability is worse than the target levels, the revenue will fall. The S factor is based on DNSPs average performance in the preceding years.
2. Guaranteed Service Level (GSL) payments to customers for low reliability. Customers are entitled to receive a payment if they experience more than the specified number of supply interruptions, or more than the specified hours of supply interruptions, in a calendar year.

The GSL scheme is designed to direct DNSPs attention to the worst served customers.

Comparisons of the financial or operational performance levels achieved by the Victorian DNSPs must allow for basic differences across the networks. The ESCV accounted for these differences, including the diverse geographic and other environmental factors, when setting the reliability targets in the EDPR.

The structure of this report is arranged as follows:

[3] Prior to August 2008 Jemena was known as Alinta AE. It was known as AGL Electricity Ltd before 2006.
[4] SP AusNet is the trading name of SPI Electricity Pty Ltd.

- Chapter 1 provides a summary of the DNSPs financial and service level performance during 2010, as contained in this report.

- Chapter 2 outlines DNSPs reported financial performance for 2010 against the original 2004 forecasts, modified for the advanced metering infrastructure (AMI) rollout.

- Chapter 3 details the levels of reliability and quality of supply, and DNSPs performance against targets set in the price review.

- Chapter 4 describes the standard of service delivered to customers, including the DNSPs call centres' performance during the five busiest days of 2010.

- Chapter 5 presents the health card report of the DNSPs.

- Appendixes contain more detailed financial and operational performance information.

1 Summary

This report presents the 2010 financial and service quality performance of Victoria's five electricity distribution network service providers (DNSPs): Jemena Electricity Networks, CitiPower, Powercor, SP AusNet[5], and United Energy Distribution. The report also provides details of the DNSPs progressive performance trends over the regulatory period of the Electricity Distribution Price Review 2006–10 (EDPR) and, where relevant, the previous 1996–00 and 2001–05 regulatory periods.

This section provides an overview of the DNSPs profitability, and their services delivered to customers in 2010, in terms of the levels of supply reliability, quality of electricity supply, Guaranteed Service Level (GSL) payments made to customers, level of customer complaints and call centre performance.

1.1 Profitability

Largely continuing the trend that prevailed throughout the 2001–05 regulatory period and in the 2006–10 regulatory period, all DNSPs reported higher actual returns on their regulated assets than forecast in their regulatory determinations for 2010. The forecasted amounts are outlined in the 2006–10 EDPR and adjusted to account for the roll out of advanced metering infrastructure.

- Jemena earned a return of 10.0 per cent compared to a forecast of 6.8 per cent.
- CitiPower earned a return of 8.8 per cent compared to a forecast of 6.7 per cent.
- Powercor earned a return of 9.9 per cent compared to a forecast of 6.4 per cent.
- SP AusNet earned a return of 6.9 per cent compared to a forecast of 5.6 per cent.
- United Energy earned a return of 8.5 per cent compared to a forecast of 7.2 per cent.

The following are the key reasons for the difference between actual and forecast returns:

- All DNSPs reported higher than forecast revenue in 2010 – Jemena by 13.0 per cent, CitiPower by 6.9 per cent, Powercor by 11.6 per cent, SP AusNet by 10.6 per cent and United Energy by 2.7 per cent.
- All DNSPs except for SP AusNet spent less on operating and maintenance in 2010 than forecast, Jemena by 8.1 per cent, CitiPower by 8.4 per cent, Powercor by 16.7 per cent and United Energy by 1.4 per cent. SP AusNet spent 4.3 per cent more than forecast.

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[5] SP AusNet is the trading name of SPI Electricity Pty Ltd. This report only covers SP AusNet's service levels as a DNSP. It should be noted that SP AusNet also owns and operates the electricity transmission network in Victoria. The AER reports separately on transmission network service providers' performance—see http://www.aer.gov.au/content/index.phtml?itemId=661380

- All DNSPs except for Powercor reported higher capital expenditure than forecast in 2010. Jemena by 43.0 per cent, CitiPower by 0.7 per cent, SP AusNet by 53.7 per cent and United Energy by 10.3 per cent. Powercor spent 0.5 per cent less capital expenditure than forecast.

- Over the five year regulatory period, only SP AusNet and Jemena spent more on capital expenditure than their regulated allowances.

- All Victorian DNSPs in 2010, reported customer contributions for customer initiated augmentation works substantially higher than forecast for the ninth consecutive year. All of the DNSPs exceeded the forecasts by a significant margin: Jemena by 131.5 per cent, CitiPower by 196.2 per cent, Powercor by 94.4 per cent, SP AusNet by 95.0 per cent and United Energy by 108.2 per cent.

The following table and charts show the DNSPs average pre-tax return on assets for the regulatory period, revenue, operating and maintenance expenditures, and capital expenditures compared with the original forecast.

Table 1.1 Real pre-tax return on DNSPs assets (percentage)

		2006	2007	2008	2009	2010
Jemena						
	Actual	10.0	10.9	10.8	8.6	10.0
	Forecast	8.0	7.2	6.5	5.2	6.8
CitiPower						
	Actual	9.8	9.4	8.5	8.9	8.8
	Forecast	7.6	7.0	6.6	5.9	6.7
Powercor						
	Actual	9.6	9.4	9.0	9.2	9.9
	Forecast	7.5	6.9	6.2	5.3	6.4
SP AusNet						
	Actual	10.0	8.9	8.0	5.0	6.9
	Forecast	8.5	7.6	6.7	5.5	5.6
United Energy						
	Actual	8.8	9.1	8.4	7.3	8.5
	Forecast	7.3	6.8	6.0	6.2	7.2

Figure 1.1 Electricity DNSPs revenue (difference from forecast)

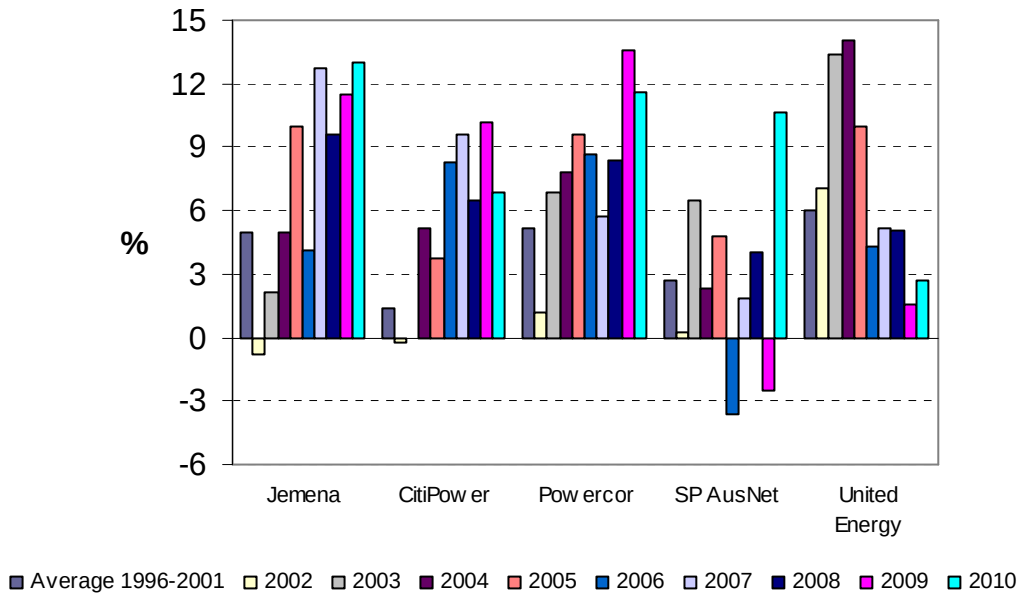


Figure 1.1 shows that all DNSP except for SP AusNet received revenue consistently higher than forecast for every year in the regulatory period.

Figure 1.2 Operating and maintenance expenditure by electricity DNSPs (difference from forecast)

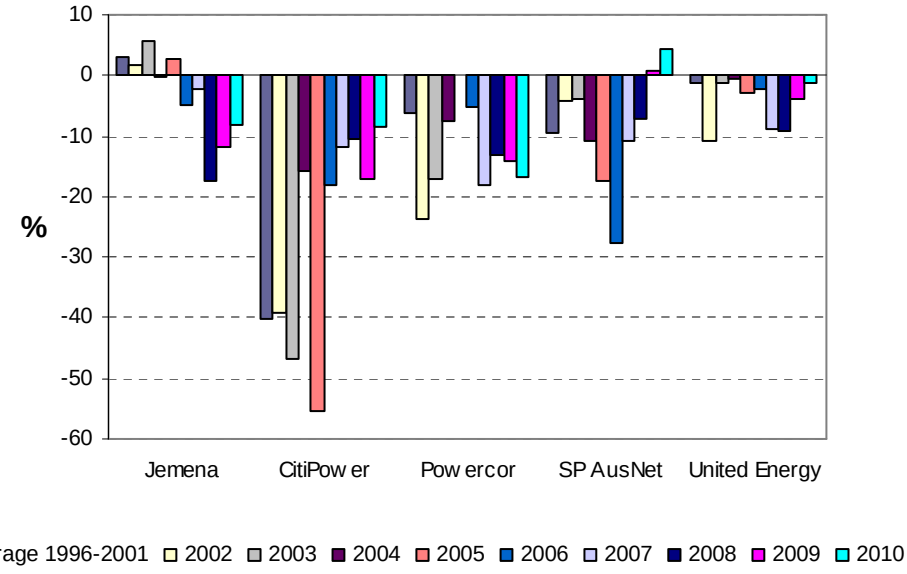


Figure 1.2 shows that all DNSP except for SP AusNet spent less on operating and maintenance than forecast for every year in the regulatory period. SP AusNet spent more than forecast in 2009 and in 2010, and significantly less in 2006.

Figure 1.3 Net capital expenditure by electricity DNSPs (difference from forecast)

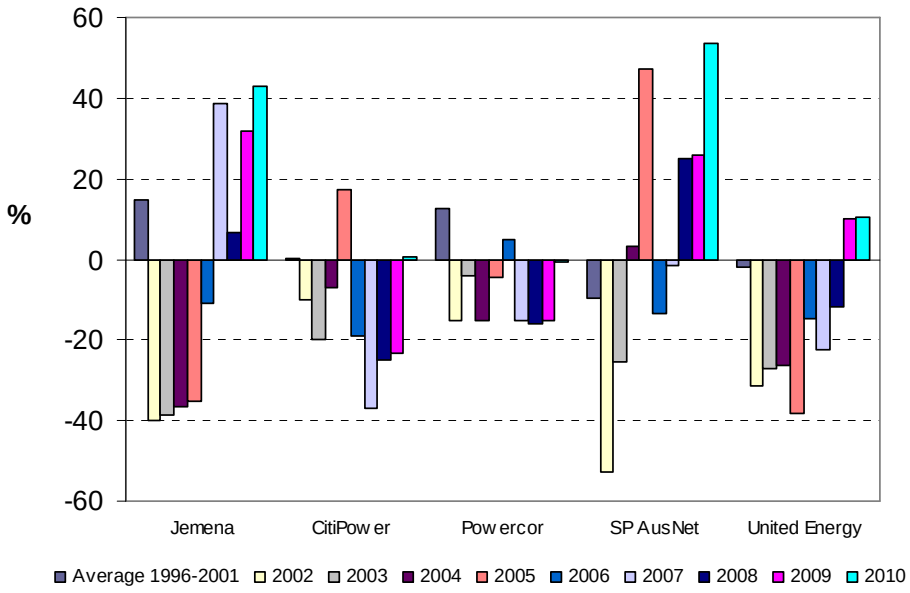


Figure 1.3 highlights the inconsistent level of net capital expenditure compared to forecast. SP AusNet and Jemena spent higher capex than forecast, over the regulatory period. CitiPower, Powercor and United Energy spent lower capex than forecast over the regulatory period.

1.2 Reliability and quality of supply

1.2.1 State-wide

Temperatures in Victoria during 2010 have been significantly milder than in 2009. Melbourne's highest maximum temperature for the year was 43.6 ^{o}C on 11 January and the highest overnight minimum (measured between 3pm and 9am) of 30.6 ^{o}C on 12 January. The lowest Melbourne temperature of 3.2 ^{o}C was recorded on 20 July. The highest maximum temperature recorded for Victoria was 45.7 ^{o}C at Avalon Airport on 11 January and the lowest daily maximum was minus 8 ^{o}C at Dinner Plain on 20 July.

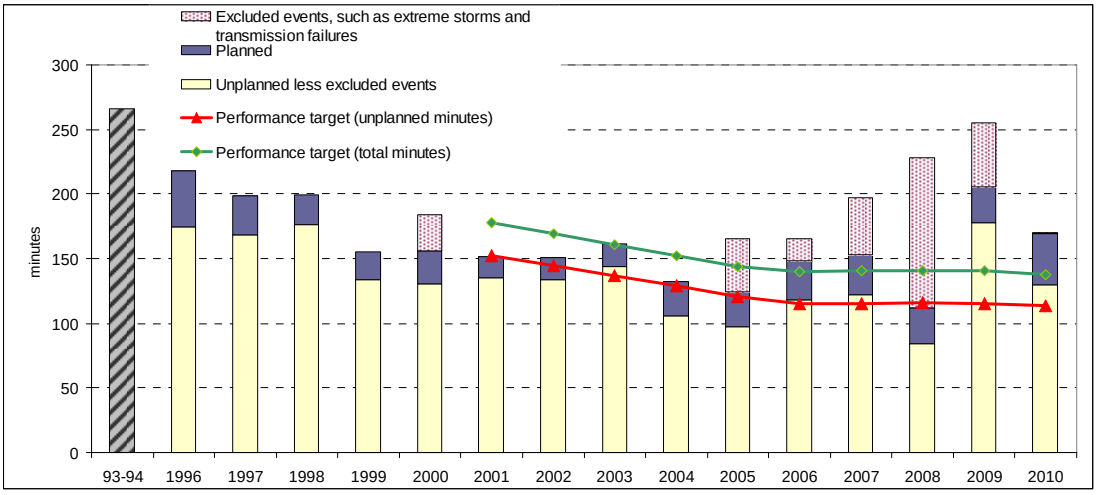
As a result of the 2009 heatwave, load shedding was necessary to keep the electricity system running.[6] In contrast, there were no load shedding events in 2010.

[6] Detailed information on the issues with the power system during this heatwave event is available from AEMO's website at: http://www.aemo.com.au/reports/232-0128.html

The Victorian DNSPs had a long standing trend of improving performance in terms of the number of minutes-off-supply since accurate reporting began in 1996. However, from 2005 to 2009—in part due to extreme storms in 2008, the January heatwave in 2009 and other unusual events—the total minutes-off-supply has had an increasing trend.

However, in 2010, the overall reliability of electricity supply improved in terms of the average total minutes-off-supply experienced by a Victorian customer. The average total minutes-off-supply in 2010 was 33 per cent less than in 2009. All Victorian DNSPs reported a reduction in the number of minutes-off-supply in 2010 compared to 2009. Jemena reported the greatest reduction in the average total minutes-off-supply in 2010 compared to 2009 of 43 per cent. The reliability of electricity supply appears to be returning to pre-2009 average levels, which suggests that 2009 was an abnormal year.

Figure 1.4 Average total minutes-off-supply per Victorian customer



Note: Excluded events include load shedding due to lack of generation capacity, transmission network failures and exceptionally large storms.

Prior to 2000, the minimum standard for supply reliability was an average of 350 minutes-off-supply in total (250 minutes for urban customers and 500 minutes for rural customers). Prior to 2001, DNSPs performance targets were not separated into planned and unplanned outages.

The unplanned minutes-off supply in 2010 is significantly lower than the previous year. From 1996 until 2008, there was a long term trend of at least stable performance when extreme events are excluded from the performance measures. However, in 2009, the Victorian DNSPs reported worsening reliability in terms of the number of unplanned minutes-off-supply, even after excluded events are removed. The shorter term trend now appears to be for an increasing minutes-off-supply since 2005.

Removing the effects of excluded events, the Victorian DNSPs reported:

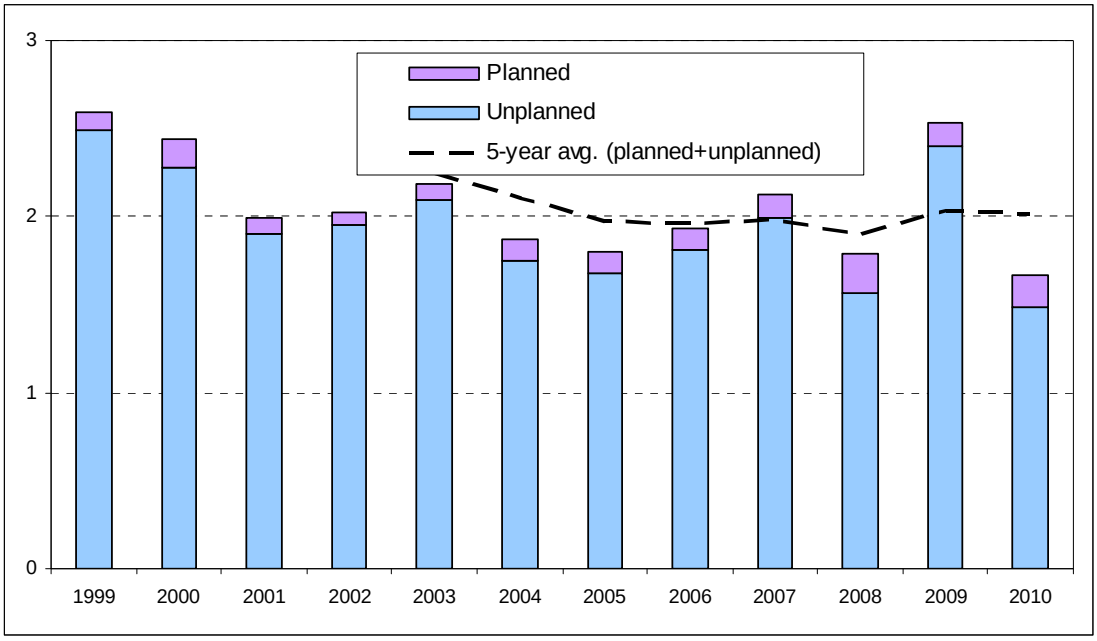
- 130 average unplanned minutes-off-supply (SAIDI) in 2010, compared to 178 minutes in 2009, representing a 27 per cent decrease.

- about 16 per cent decrease in number of unplanned interruptions to 1.46 sustained interruptions per customer on average, although this is higher than the number in 2008.

Section 3.1.1 provides more detail on the DNSPs aggregate performance, and section 3.2 provides information of the DNSPs performance against S factor targets. Section 4.2 details the GSL thresholds and payments for reliability.

Figure 1.5 shows the trend in reliability in terms of the average number of sustained supply interruptions per customer (including the effects of abnormal events).

Figure 1.5 Average number of sustained supply interruptions per customer



Before 2009, there had generally been a downward trend on the number of sustained interruptions per customer. In 2010, there was an average of 1.67 sustained interruptions per customer which was approximately 34 per cent less than in 2009—which had been the highest level since 1999. This means in 2010, there appeared to be a return to the generally declining trend of recent years.

With excluded events removed, on average customers experienced 1.64 interruptions, 0.23 less sustained interruptions than in 2009. In 2010, the DNSPs had around 41 per cent more planned sustained interruption in aggregate than in 2009, although in 2010 the average duration of the planned interruptions was 2 per cent longer. The general trend for planned and unplanned interruptions has been fairly stable in recent years.

1.2.2 Individual DNSPs—overall reliability

In 2010, the DNSPs were less affected by excluded events than in 2009, which resulted in a substantial impact on reliability in 2009. However, in order to provide a better indication of the actual experiences of customers on average, below is a summary of the DNSP' performance including the effect of excluded events.

- **SP AusNet** reported 179 unplanned average minutes-off-supply (around 51 per cent better than in 2009). In total (unplanned and planned average minutes-off-supply), SP AusNet's customers experienced 246 minutes-off-supply on average compared with 419 minutes in 2009.

- **United Energy** reported 80 unplanned average minutes-off-supply (39 per cent better than in 2009). In total, United Energy's customers experienced 128 minutes-off-supply on average compared with 156 minutes in 2009.

- **Powercor** reported 198 unplanned average minutes-off-supply (36 per cent better than in 2009). In total, Powercor's customers experienced 231 minutes-off-supply on average compared with 335 minutes in 2009.

- **Jemena** reported 62 unplanned average minutes-off-supply (52 per cent better than in 2009). In total, Jemena's customers experienced 80 minutes-off-supply on average compared with 139 minutes in 2009.

- **CitiPower** reported 44 unplanned average minutes-off-supply (29 per cent better than in 2009). In total, CitiPower's customers experienced 50 minutes-off-supply on average compared with 67 minutes in 2009.

1.2.3 Individual DNSPs—reliability excluding abnormal events

The DNSPs networks can be affected to varying degrees by extreme events such as the heatwaves and load shedding due to a shortfall in generation capacity. In addition, transmission assets can fail, which may result in customers experiencing outages that are not caused by the DNSPs. When removing the effects of excluded events:

- **CitiPower** reported 46 total average minutes-off-supply, which was 13 per cent worse than its target.

- **Jemena** reported 80 total average minutes-off-supply, which was 2 per cent better than its target. Jemena was the only DNSP to outperform its target of total minutes-off-supply.

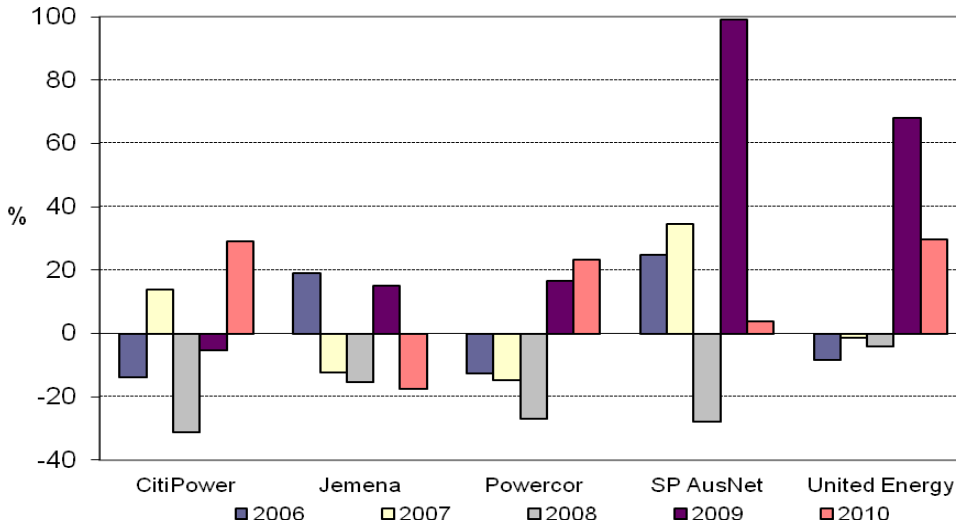
- **Powercor** reported 231 total average minutes-off-supply, which was 17 per cent worse than its target.

- **SP AusNet** reported 246 total average minutes-off-supply, which was 20 per cent worse than its target.

- **United Energy** reported 128 total average minutes-off-supply, which was 62 per cent worse than its target.

Figure 1.6 shows the unplanned minutes-off-supply for each DNSP over the 2006-10 regulatory period relative to target performance. This indicates that there has been no consistent trend in terms of performance relative to target performance as DNSPs have improved in some years and shown a lower level of performance relative to target in other years.

Figure 1.6 Unplanned minutes-off-supply relative to targets, excluding abnormal events



More information on this can be found in section 3.2 and 3.4.

1.2.4 Quality of supply

The performance indicators show that the number of voltage variation events in 2010 was similar to that in 2009, with a few exceptions:

- Jemena reported 4 voltage surge events, affecting 26 customers, down from the 18 surge related events which affected 246 customers in 2009.
- SP AusNet reported 11 voltage surge events, affecting 42 customers, down from the 31 surge related events which affected 86 customers in 2009.
- United Energy reported 33 voltage surge events, affecting 438 customers, down from the 46 surge related events which affected 730 customers in 2009.
- Jemena also reported 46 over-voltage events due to poor voltage regulation which affected 3271 customers, an increase from the 2684 customers affected by the 29 events in 2009.

The quality of supply has been broadly consistent over the regulatory period. Further information is provided in section 3.5.

1.2.5 Guaranteed service level payments

When DNSPs do not achieve a minimum standard of customer service, they are required to make GSL payments to affected customers. In aggregate:

- the DNSPs have increased the percentage of total late appointments by five times since 2009. Total late appointments in 2010 include customer arranged AMI appointments. In 2010, 586 of the appointments made by DNSPs did not commence within 15 minutes of the arranged time.

- 12.7 in every 10 000 connections were not made on the agreed date, which is less than the 18.4 in every 10 000 connection reported in 2009.

- there was an increase in the percentage of streetlights not fixed by the required time from around 5.9 per cent in 2009 to 6.1 per cent.

There is an increasing trend in the GSL payments over the regulatory period, despite the decrease in 2010 from the significant GSL payments in 2009. Chapter 4 provides more information on these performance measures.

1.2.6 Customer complaints

Overall, the DNSPs recorded an increase in the number of complaints received from 1.1 to 2.3 complaints for every 1000 customers. This has been affected by the rollout of AMI meters and the greater numbers of complaints associated with this roll-out.

Jemena experienced the most number of customer complaints per 1000 customers in 2010, with a reported 5.5 complaints per 1000 customers. CitiPower and Powercor recorded the lowest complaints per 1000 customers of 0.18 and 0.31 respectively.

Section 4.3 provides more information on the number of complaints received.

1.2.7 Long term health assessment

The health card consists of measures to indicate whether a DNSP has implemented appropriate long term strategy and plans to ensure adequate ongoing performance. The health card indicators are defined in Table A.1 of appendix A. A ‘green’ light (highest rating) generally indicates an improving or stable trend, depending on the measure. An ‘orange’ or ‘red’ (lowest rating) generally indicates a deteriorating trend or unacceptable level, depending on the measure.

- SP AusNet and United Energy have ‘red’ rating and CitiPower and Powercor have ‘orange’ rating for reliability of supply.

- CitiPower received an ‘orange’ light for bushfire mitigation because it had 12 priority-2 category maintenance items outstanding at the beginning of the fire season on 5 December 2010. However, all these priority-2 items were located in a low bushfire risk area and were completed by 13 December 2010.

- Regarding correct application of excluded service charges[7], CitiPower received a 'red' rating and Powercor received an 'orange' rating.

- The quality of supply measures for CitiPower was highlighted 'red' rating because its reported number of voltage variation events was significantly higher than that of the previous year.

Chapter 5 provides more information on this performance measure.

1.2.8 Call centre performance during wide-scale events

This section focuses on the reported performance of the Victorian DNSPs call centres on the five busiest days as measured by the total number of calls entering the fault line. These days usually occur when there are wide-scale outage events affecting a DNSPs network:

- For each DNSPs on the five busiest days, the average wait times were well above the annual average. However, CitiPower did not supply data for their busiest day.

- There was a spread of busiest days across the DNSPs, the most frequent being 11 January, 11 February, 6 March and 5 September. Unlike in 2009 where the January heatwave was the three busiest days for all the DNSPs, in aggregate in 2010, the busiest days were spread across 8 months.

- The average of all DNSPs waiting time was significantly higher for the five busiest days compared to the daily average. The longest daily average waiting time was 28.2 minutes for Jemena's call centre on 6 March 2010.

There is not a perfect relationship between the average total minute-off-supply and the number of calls to call centre fault lines. This is likely to be related to the timing and type of event. For instance, a short outage affecting a large number of customers may result in a different volume of calls than a prolonged outage affecting a smaller number of customers.

The ESCV undertook a review of DNSPs' call centre performance during wide-scale emergencies in 2006 and found that the management of wide-scale emergency situations needed to be improved. The call centre performance indicators were first reported in 2009 and as such, trend analysis over the 2006-10 regulatory period is not possible.

Section 4.4 provides more information on these performance measures.

[7] This measure is the number of occasions when excluded service charges (upstream augmentation charges) were revised following contact by the customer with the AER.

2 Profitability

2.1 Purpose and scope

The Essential Services Commission's (ESCV) 2006–10 price review published in October 2005, controls the prices that Victorian DNSPs may charge for the distribution of electricity in the 2006–10 regulatory period, from 1 January 2006 to 31 December 2010.[8] The price review is based on financial assumptions, including:

- the level of operating and capital expenditure required to deliver the regulated services
- the revenue expected from distribution services to customers
- the returns needed to continue to attract investment capital to the regulated activities.

This section reports on the DNSPs recent performance against these financial assumptions (modified as necessary for the advanced metering roll-out), compared with their performance for the 2001–05 regulatory period. The DNSPs performance for the previous period is of historical interest and may indicate trends in the DNSPs expenditure.

In 2006, the Victorian Government decided that there should be a rollout of advanced interval meters to all Victorian electricity customers. The regulatory framework that applied provided for a pass through arrangement (or expenditure oriented approach) for metering costs incurred by DNSPs, whereby metering charges were set with reference to a combination of actual costs and forecasts of expenditure budgets. These amounts have been either competitively tendered or determined by the AER as prudent, using a building block approach. The regulatory framework was modified by the Victorian Government in 2012 with the introduction of an efficiency test for allowed expenditure.

Since the 2009 comparative performance report, the AER has used, for metering services, the forecasts of revenue, capital and operating expenditure from the *Final determination—Victorian advanced metering infrastructure review, 2009–11 AMI budget and charges applications*. This is a departure from previous performance reports where the forecasts for metering services reflected those contained within the ESCV's 2006–10 price review. The AER considers this adjustment is necessary to properly compare DNSPs revenue against their forecast costs and revenue.

This report is prepared on the basis of the ESCV's reporting arrangements for the 2006–10 regulatory period and has been prepared to be, as far as practicable, consistent with the conventions used by the ESCV in preparing past performance reports. For this reason, the data presented in this report may not be entirely consistent

[8] DNSPs transport electricity along high and low voltage powerlines. The cost of distribution to customers represents approximately 40 per cent of an average residential customer's electricity bill.

with the data presented in the AER's Victorian electricity distribution determination 2011–15.

DNSPs prices for the 2006–10 regulatory period are set by the ESCV's EDPR.[9] However, if a DNSP outperforms the financial assumptions underpinning the price controls,[10] it may retain some of the resulting profits. The setting of price controls by the AER for the 2011–15 regulatory control period takes into account any cost reductions and other efficiency gains made by the DNSPs during 2006–10. This encourages the DNSPs to improve their efficiency which benefits the businesses (through the retention of increased earnings) and consumers (through lower prices charged in subsequent regulatory control periods).

A principal indicator of financial performance is the comparison of each DNSPs measured return on assets (derived from providing regulated distribution services) against the forecast return for the same regulatory period. The following sections provide specific information on DNSPs financial performance regarding:

- returns on assets
- revenue
- capital expenditure
- operating and maintenance expenditure.

2.2 Return on assets

Return on assets is a measure of each DNSPs overall financial performance in providing distribution services. An increase in revenue or a reduction in operating expenses increases the return on assets. A reduction in the level of capital expenditure reduces the regulatory value of the DNSPs assets, resulting in an increase in the return on assets during the regulatory control period. The following formula is used to derive the return on assets:

Return on assets (per cent) =

- (Revenue – Operating and maintenance expenditure – Regulatory depreciation)

Divided by

- Average regulatory asset value

[9] The average price that each DNSP may charge for distribution services is affected by inflation, the DNSP's service performance over the period, and the introduction of a change in certain taxes. In all other respects, it is fixed. Notwithstanding, a reduction in demand or a fall in operating costs will result in changes to profits/returns.

[10] Under incentive regulation, regulated entities are permitted to continue to receive part of the benefit associated with efficiency gains from one regulatory period into the next regulatory period. This incentive is designed to ensure the businesses continue to strive for efficiency gains.

The actual return on assets has been calculated using a method consistent with that used to calculate the forecast returns in the Electricity Distribution Price Review 2006–10.

The ESCV calculates the regulatory value of each DNSPs assets by accounting for the actual capital expenditure and proceeds from the disposal of assets, adjusted for inflation and regulatory depreciation. It used this approach to establish regulatory asset values at the start of 2006 and to project them over the 2006–10 period. For the purposes of this report the AER has adjusted the regulatory asset base to account for the roll out of advanced metering infrastructure.

The ESCV adopted a real after-tax return on assets of 5.9 per cent for the 2006–10 regulatory period, reflecting its estimate of the returns required to attract equity and debt finance into the industry. To obtain an accurate basis for comparison with the DNSPs calculated returns, three points must be considered:

- The returns on assets presented in this report are expressed in pre-tax terms. To derive the implied post-tax return, the allowance made for taxation in the forecast returns must be added.

- The assumptions in the price controls include a share of the benefits associated with cost reductions achieved by the DNSPs for 2001–05 (efficiency carryover). The after-tax return on assets must reflect these assumptions.

- The process of setting the price controls includes a smoothing of the DNSPs revenue over the regulatory period. Expected returns may, therefore, be higher than the average in some years and lower in others.

Table 2.1 shows the average real pre-tax returns expected for 2006–10 at the time of the price review, reflecting the first and second considerations.[11]

[11] The returns described are the real returns the distributors are expected to receive, that is, the return which is in addition to compensation for inflation. For example, a return of 7 per cent on top of inflation at 2.5 per cent would give a total (nominal) return of about 9.7 per cent.

Table 2.1 Regulated expected real pre-tax return on assets, 2006–10 (per cent)

	After-tax return	Tax allowance	Efficiency carryover	Total
Jemena	5.9	0.5	0.3	6.7
CitiPower	5.9	0.5	0.3	6.7
Powercor	5.9	0.4	0.0	6.3
SP AusNet	5.9	0.5	0.4	6.8
United Energy	5.9	0.4	0.5	6.7

Table 2.2 compares the forecast with actual pre-tax returns, as calculated for 2010. It shows that all DNSPs earned returns above forecast in 2010:

- Jemena earned a return of 10.0 per cent compared to a forecast of 6.8 per cent.
- CitiPower earned a return of 8.8 per cent compared to a forecast of 6.7 per cent.
- Powercor earned a return of 9.9 per cent compared to a forecast of 6.4 per cent.
- SP AusNet earned a return of 6.9 per cent compared to a forecast of 5.6 per cent.
- United Energy earned a return of 8.5 per cent compared to a forecast of 7.2 per cent.

The following are the key reasons for the difference between actual and forecast returns:

- All DNSPs reported higher than forecast revenue in 2010 – Jemena by 13.0 per cent, CitiPower by 6.9 per cent, Powercor by 11.6 per cent, SP AusNet by 10.6 per cent and United Energy by 2.7 per cent.
- All DNSPs except for SP AusNet spent less on operating and maintenance in 2010 than forecast, Jemena by 8.1 per cent, CitiPower by 8.4 per cent, Powercor by 16.7 per cent and United Energy by 1.4 per cent. SP AusNet spent 4.3 per cent more than forecast.
- All DNSPs except for Powercor reported higher capital expenditure than forecast in 2010. Jemena by 43.0 per cent, CitiPower by 0.7 per cent, SP AusNet by 53.7 per cent and United Energy by 10.3 per cent. Powercor spent 0.5 per cent less capital expenditure than forecast.
- All Victorian DNSPs in 2010, reported customer contributions for customer initiated augmentation works substantially higher than forecast for the ninth consecutive year. All of the DNSPs exceeded the forecasts by a significant margin: Jemena by 131.5 per cent, CitiPower by 196.2 per cent, Powercor by 94.4 per cent, SP AusNet by 95.0 per cent and United Energy by 180.2 per cent.

Under-forecasting of customer contributions in the regulatory period have been taken into account by the AER in setting such targets for the next regulatory period.

Table 2.2 Pre-tax return on distribution assets, 2010 (per cent). Percentage, based on 2010 reported asset values

	Forecast	Actual
Jemena	6.8	10.0
CitiPower	6.7	8.8
Powercor	6.4	9.9
SP AusNet	5.6	6.9
United Energy	7.2	8.5

Figures 2.1–2.5 show each DNSP's actual returns compared with the forecast pre-tax returns over the period from 1997–2010. The figures show that the actual returns on assets of all DNSPs exceeded their forecast for 2010.

Figure 2.1 Jemena pre-tax return on distribution assets

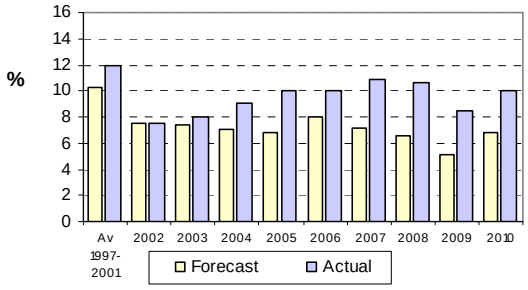


Figure 2.2 CitiPower pre-tax return on distribution assets

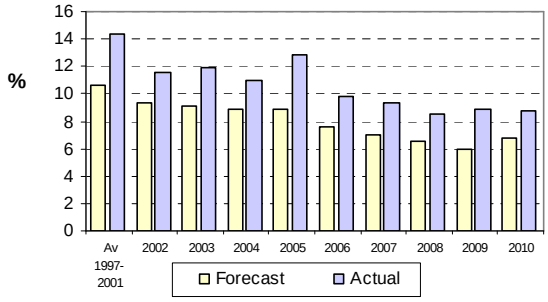


Figure 2.3 Powercor pre-tax return on distribution assets

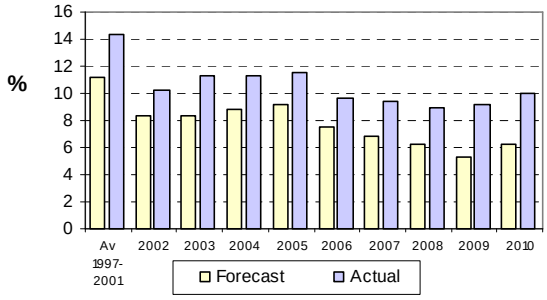


Figure 2.4 SP AusNet pre-tax return on distribution assets

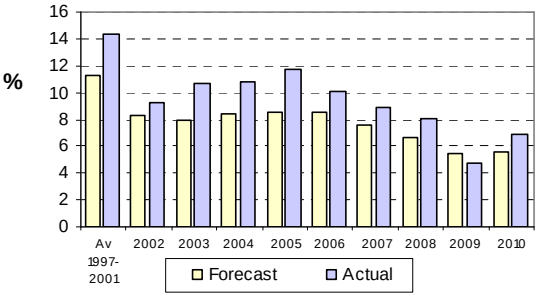
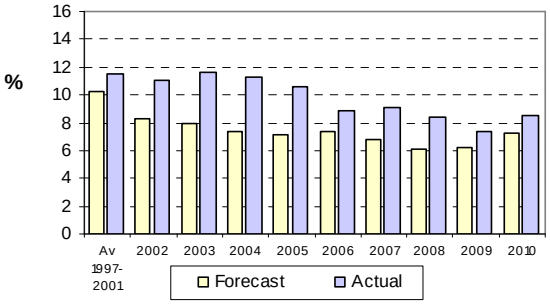


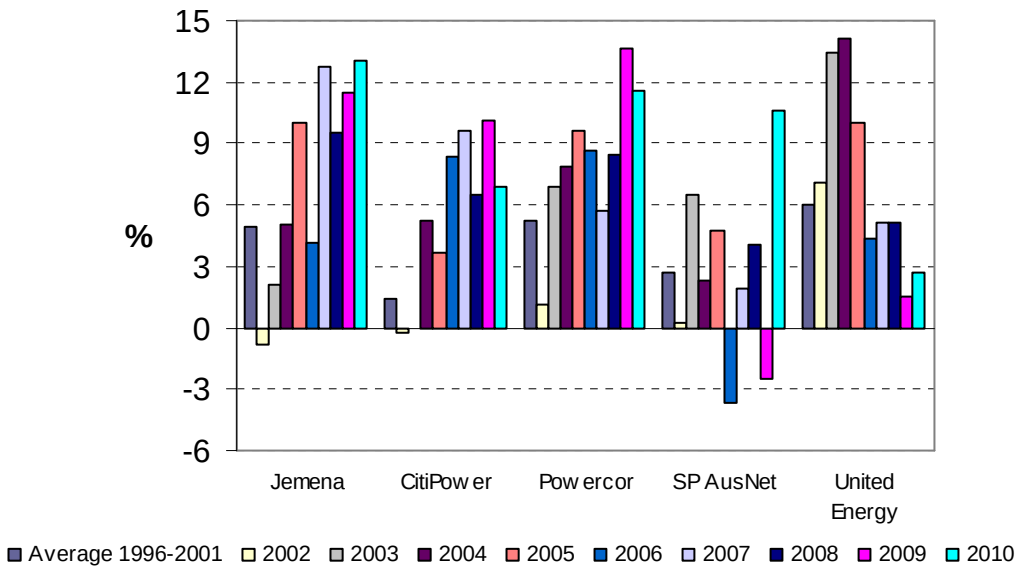
Figure 2.5 United Energy pre-tax return on distribution assets



2.3 DNSP revenue

The energy distributed by the electricity DNSPs substantially governs the revenue they receive. Figure 2.6 and figure 2.7 show the distribution revenue earned and energy distributed, in terms of the variance between the forecast and actual amounts each year.[12] Figure 2.6 shows that all DNSPs reported higher than forecast revenue in 2010 – Jemena by 13.0 per cent, CitiPower by 6.9 per cent, Powercor by 11.6 per cent, SP AusNet by 10.6 per cent and United Energy by 2.7 per cent.

Figure 2.6 DNSPs revenue (difference from forecast)[a]

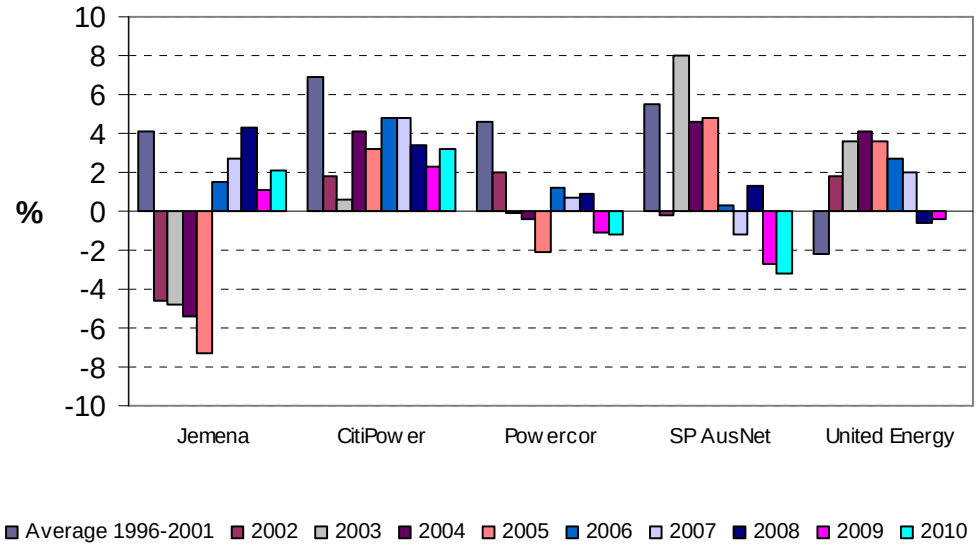


[a] DNSPs forecast revenues does not include the impact of the S factor adjustment; whereas the actual revenue reported in the regulatory accounts includes the S factor impact.

Figure 2.7 shows that two DNSPs distributed more energy in 2010 than forecast. Jemena by 2.1 per cent, CitiPower by 3.3 per cent. Two DNSPs distributed less electricity than forecast, Powercor distributed 1.2 per cent less than forecast, SP AusNet distributed 3.2 per cent less than forecast. United Energy distributed the same amount as forecast.

[12] Some variance between forecast and actual distribution revenue may result from adjustments for over recovery or under recovery of transmission costs for previous years. These adjustments affect the DNSPs' year-on-year returns, but their net effect will be zero in the longer term.

Figure 2.7 Energy distributed by DNSPs (difference from forecast)

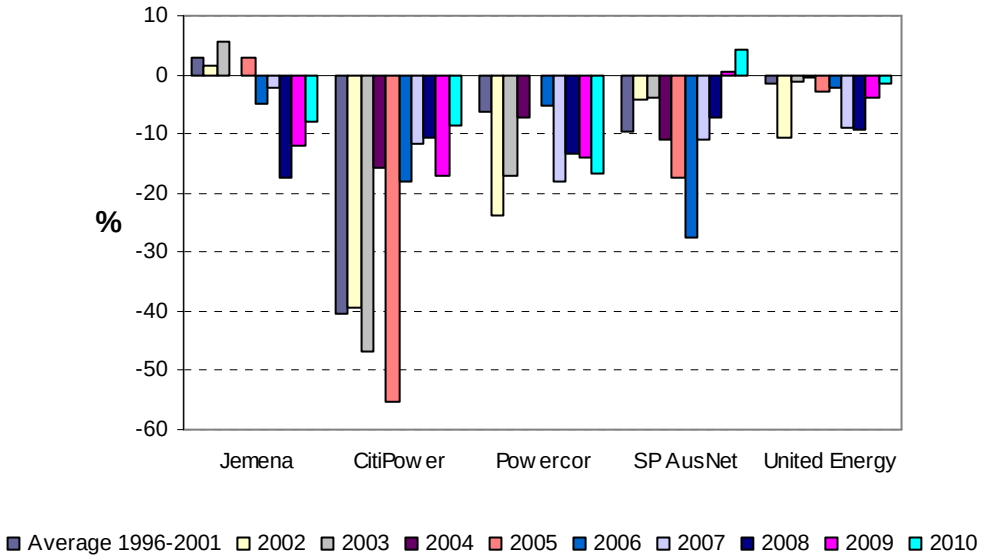


2.4 DNSP expenditures

2.4.1 Operating expenditure

Figure 2.8 compares actual and forecast operating expenditure under the price review. It details the differences between the DNSPs actual and forecast operating and maintenance expenditures over the whole regulatory period. The figure shows that all of the DNSPs, except SP AusNet, spent less on operating and maintenance in 2010 than forecast. Jemena spent 8.1 per cent less than forecast, CitiPower spent 8.4 per cent less than forecast, Powercor spent 16.7 per cent less than forecast and United Energy spent 1.4 per cent less than forecast. SP AusNet spent 4.3 per cent more than forecast on operating and maintenance expenses. The underspending compared to the regulatory allowance was evident in each year of the 2005-10 regulatory period.

Figure 2.8 Operating and maintenance expenditure by DNSPs (difference from forecast



2.4.2 Capital expenditure

Figure 2.9 shows the difference between DNSPs actual and forecast capital expenditure over the full regulatory period. The capital expenditure reported is the portion that the DNSPs finance; it excludes the value of any assets paid for by customers. All DNSPs except for Powercor spent more than forecast on capital expenses. Jemena spent 43.0 per cent more than forecast, CitiPower spent 0.7 per cent more than forecast, SP AusNet spent 53.7 per cent more than forecast and United Energy spent 10.3 per cent more than forecast. Powercor spent 0.5 per cent less than forecast.

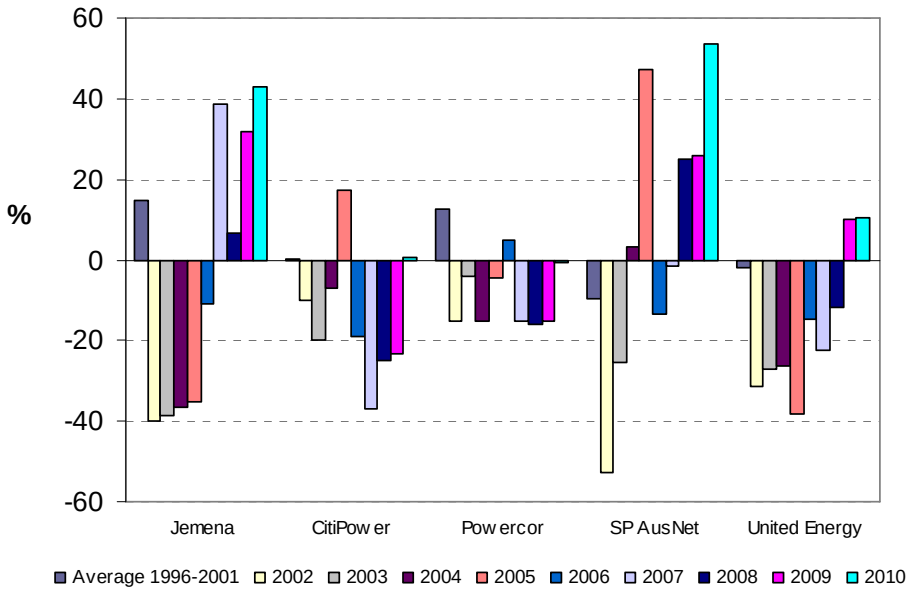
Unlike operating expenditure, the pattern here is less predictable. While there is a general tendency for DNSPs to spend close to or above their allowances towards the end of the regulatory period, since the penalty in the form of foregone capital returns and depreciation is lower, businesses appear to be responding to their own individual network circumstances.

Overall, however, three of the businesses have spent within their total capex allowance for the full period which suggests the power of the incentive regime for these DNSPs is appropriate. SP AusNet and Jemena are the exception, with significant swings in capex, showing large under-spends in the 2001-05 period and large overspends in more recent years. Table 2.3 shows the comparison of actual to forecast net capital expenditure for the 2006-10 regulatory period. A positive number shows there was higher actual capex than forecast and a negative number shows there was less actual capex than forecast.

Table 2.3 Net capital expenditure for the regulatory period 2006-10 (difference from forecast), percentage

	%
Jemena	24
CitiPower	(20)
Powercor	(9)
SP AusNet	20
United Energy	(3)

Figure 2.9 Net capital expenditure by DNSP (difference from forecast)



SP AusNet advised that the capital expenditure overspend in 2010 related to higher than forecast unit costs, higher customer connections and higher IT costs.

DNSPs can obtain a contribution directly from customers towards the costs of capital works under the ESCV's Electricity industry guideline No. 14: Provision of services by electricity DNSPs.[13] This is mainly associated with network connections. This applies when the works are required to enable an increase in the customer's use of the

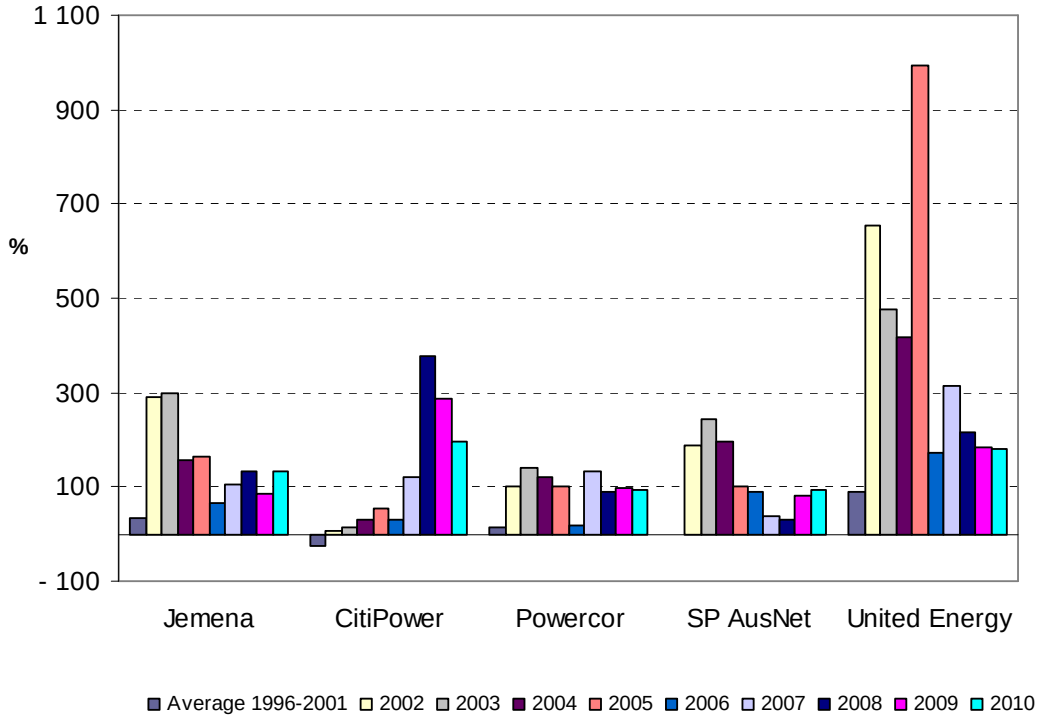
[13] Under the ESCV's guideline no. 14, customers are required to pay only the difference (if any) between the incremental cost of the capital works and the incremental distribution network tariff revenue arising from those works.

network (for example, an industrial customer expanding operations), or to connect a new subdivision to the grid. An increase in the level of customer contributions compared to forecast customer contributions may arise due to:

- an increase in customer connection capital expenditure above forecast; and/or
- an increase in the unit cost of customer connections capital expenditure compared to forecast.

Figure 2.10 shows the difference between forecast and actual customer contributions for customer initiated augmentation works. This figure shows that all five DNSPs reported customer contributions in 2010 substantially higher than forecast for the ninth consecutive year. All of the DNSPs exceeded the forecasts by a significant margin: Jemena by 131.5 per cent, CitiPower by 196.2 per cent, Powercor by 94.4 per cent, SP AusNet by 95.0 per cent and United Energy by 180.2 per cent. Historical over-recovery of customer contributions have been taken into account by the AER in forecasting such targets for the next regulatory period.

Figure 2.10 Customer contributions to the cost of capital works (difference from forecast)



3 Reliability and quality of supply

This part of the report addresses:

- the reliability of supply and the customers' experience of supply interruptions, across the state as a whole and in the five DNSPs supply areas
- DNSPs performance levels compared to the reliability targets set under the price review
- the quality of supply experienced by customers.

3.1 Reliability of supply

Some interruptions—or outages—are inevitable and customers cannot be guaranteed continuous supply. Planned outages occur when a DNSP needs to disconnect supply to undertake maintenance or construction works. The Electricity Distribution Code requires that DNSPs give customers a minimum of four business days written notice of a planned outage. Year-on-year variance in planned minutes-off-supply is directly related to the maintenance and capital works activities undertaken by a DNSP.

When the supply is disconnected unexpectedly it is known as an unplanned outage. These outages are caused by external factors such as lightning, storms and other weather events, trees, birds, possums, vehicle impacts and vandalism, or by equipment failure due to overload and general deterioration. Unplanned outages typically have a greater effect on customers than planned outages, because customers have no warning to take the necessary action to manage the impact of the supply interruption.

The key measures for supply reliability are:

- minutes-off-supply, or the total minutes that a customer could expect to be without electricity over the reporting period
- interruption frequency, or the number of times that a customer could expect to experience supply interruptions in a year
- interruption duration, or the average time taken to restore supply to a customer when an interruption occurs
- momentary interruption frequency, or the number of interruptions of less than one minute that a customer could expect in a year.

A DNSPs reliability of supply is influenced through a financial incentive scheme, which encourages the DNSPs to meet and exceed the target levels of reliability. The scheme contains two key elements:

1. A service term (S factor) in the price control formula, in the form of (1+CPI)(1−X)(1+S factor)

   If a DNSP provides an average level of reliability better than the target levels, then its distribution revenue will rise in subsequent years. If reliability is worse than the target levels, then the revenue will fall. The S factor is based on DNSPs average performance.

2. Guaranteed Service Level (GSL) payments to customers for low reliability

   Customers are entitled to receive a payment if they experience more than the specified number of supply interruptions, or more than the specified hours of supply interruptions, in a calendar year. The GSL scheme is designed to direct DNSPs attention to the worst served customers.

For the 2006–10 regulatory period, S factor elements and GSL rates were substantially increased to provide greater incentives to reliability. The previous rates were between $4000 and $11 000 per megawatt hour (MWh) of unserved energy, to reflect the DNSPs marginal costs of network improvements. The rate for 2006–10 is based on the 2002 Victorian Energy Network Corporation (VENCorp) study of customers' valuation of supply reliability and is set at $30 000 per MWh for all customers outside the central business district (CBD) and $60 000 per MWh within the CBD.[14] The GSL payment rates have been increased around fourfold.

Based on information from the DNSPs, the rest of this section covers supply reliability in the following contexts:

- state-wide (section 3.1.1)—the general trend of reliability of supply in Victoria
- each DNSP (section 3.2)—a comparison of the average performance of each DNSP with its peers, across all of its network types
- supply areas (section 3.3)—the general level of supply reliability of all bulk supply points (zone substations) of each DNSP
- distribution feeders (section 3.3.2)—the levels of supply reliability of each category of the distribution feeders (CBD, urban and rural) of the DNSPs. It provides an overall picture of the relative reliability across CBD, urban and rural supply areas of the DNSPs.

3.1.1 State-wide

The Victorian DNSPs had a long standing trend of improving performance in terms of the number of minutes-off-supply since accurate reporting began in 1996. However, from 2005 to 2009—in part due to extreme storms in 2008, the January heatwave in

[14] The value of customer reliability for the 2011–15 regulatory control period has again been significantly increased. This will increase the strength of the incentives placed on DNSPs to improve supply reliability. Further information can be found in the AER's Service Target Performance Incentive Scheme, available at http://www.aer.gov.au/content/index.phtml/itemId/718820

2009 and other unusual events—the total minutes-off-supply has had an increasing trend.

However, in 2010, the overall reliability of electricity supply improved in terms of the average total minutes-off-supply experienced by a Victorian customer. The average total minutes-off-supply in 2010 was 33 per cent less than in 2009. All Victorian DNSPs reported a reduction in the number of minutes-off-supply in 2010 compared to 2009. Jemena reported the greatest reduction in the average total minutes-off-supply in 2010 compared to 2009 of 43 per cent.

3.1.1.1 Removing excluded events

When extreme events are excluded from the DNSPs performance, until 2008 there was a general trend of improving performance. In 2009 the Victorian DNSPs reported worsening reliability in terms of the number of minutes-off-supply, even when excluded events were removed. In 2010 the DNSPs reported improved performance compared to 2009, but the overall trend has not improved compared to the target.

Figure 3.1 shows the pattern in supply reliability over the past 16 years in relation to the ESCV's targets for annual improvements in unplanned and total minutes-off-supply. These targets are set in terms of average duration of interruptions experienced by customers across Victoria on average.

In terms of total average minutes-off-supply, Victorian DNSPs were approximately 24 per cent above their targets in aggregate. This is a significant improvement compared to 2009 when DNSPs were 82 per cent above their targets and compared to 2008 when DNSPs were 62 per cent above their targets.

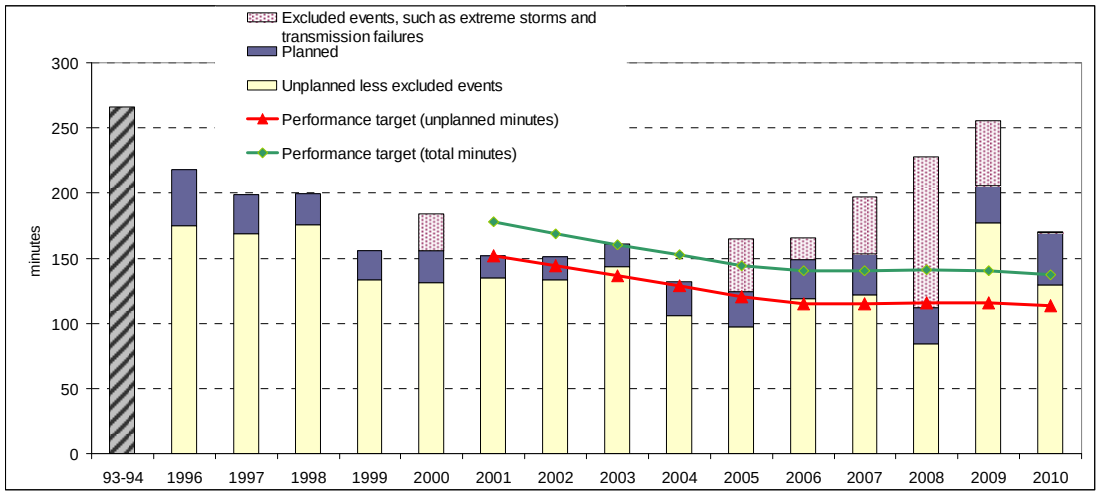
The Victorian DNSPs all reported a 27 per cent decrease in the total average unplanned minutes-off-supply in 2010 compared to 2009. Although each of the DNSPs reported a decrease in the total average unplanned minutes-off-supply on their respective networks compared to 2009, the total average unplanned minutes-off-supply for all DNSPS was still higher than the target.

In 2010, DNSPs reported a total 130 average unplanned minutes-off-supply per customer which was 15 per cent worse than the overall target of 113 minutes. This is an improvement from 2009 when the DNSPs recorded their worst performance with a total 178 average unplanned minutes-off-supply per customer – 54 per cent higher than the overall target. However this is still in contrast with the results recorded in 2008, when the DNSPs reported their best results since accurate reporting in began, recording 84 average unplanned minutes-off-supply – 27 per cent better than the overall target.

SP AusNet had the greatest percentage decrease in total minutes-off-supply when removing excluded events of 40 per cent in 2010 compared to 2009, however this was 20 per cent worse than the 2010 target. CitiPower recorded the lowest number of total minutes-off-supply without excluded events of 46 minutes, 13 per cent worse than the target. However, Jemena was the only DNSP to beat its individual unplanned minutes-off-supply performance target. Jemena recorded about 17 per cent less unplanned minutes-off-supply than target, and 2 per cent less than target for total

minutes-off-supply. United Energy performed the worst in terms of its percentage of total unplanned minutes-off-supply above its target performing around 30 per cent above its target.

Figure 3.1 Average total minutes-off-supply per Victorian customer



Note: Excluded events include load shedding due to lack of generation capacity, transmission network failures and exceptionally large storms.

Prior to 2000, the minimum standard for supply reliability was an average of 350 minutes-off-supply in total (250 minutes for urban customers and 500 minutes for rural customers). Prior to 2001, DNSPs performance targets were not separated into planned and unplanned outages.

Figure 3.2 Average number of sustained supply interruptions per customer

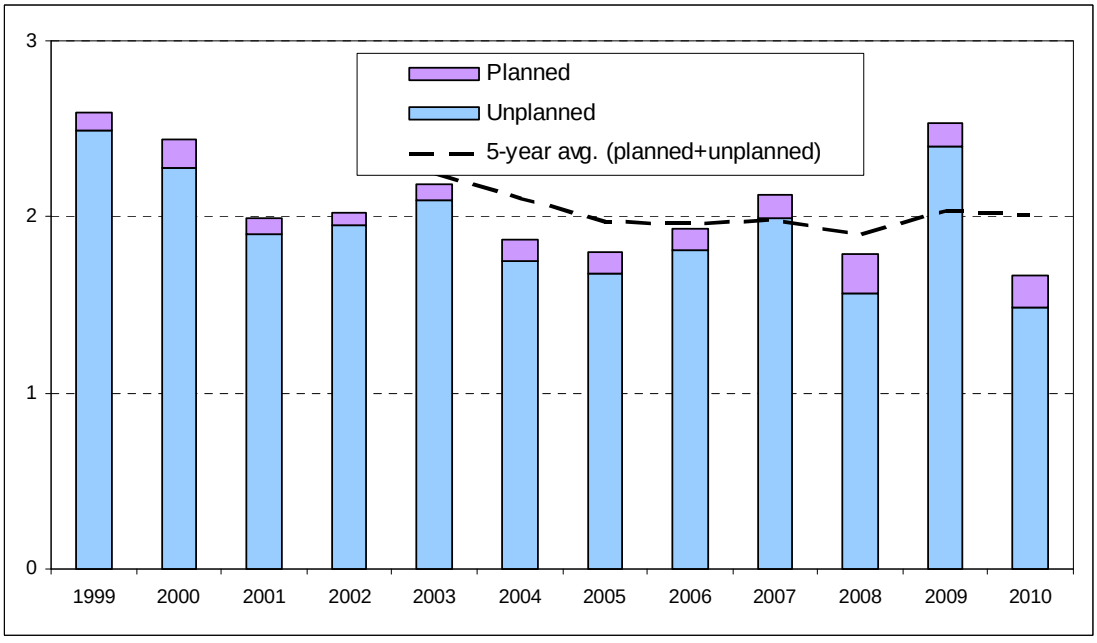


Figure 3.2 shows the total number of sustained interruptions per Victorian customer from 1999. In 2010 there was an average of 1.67 sustained interruptions. This was

approximately 34 per cent less sustained interruptions than in 2009 and is the lowest recorded average sustained interruptions since accurate reporting began. It is also consistent with a generally improving trend in the number of non-excluded sustained interruptions per customer which was evident before 2009. In 2009 DNSPs reported an average of 2.53 sustained interruptions per customer, which was the worst performance recorded since 1999.

Of the sustained interruptions recorded in 2010, 0.18 were planned interruptions required to conduct maintenance on the network. Another 0.02 were excluded events which were outside the control of the DNSPs.

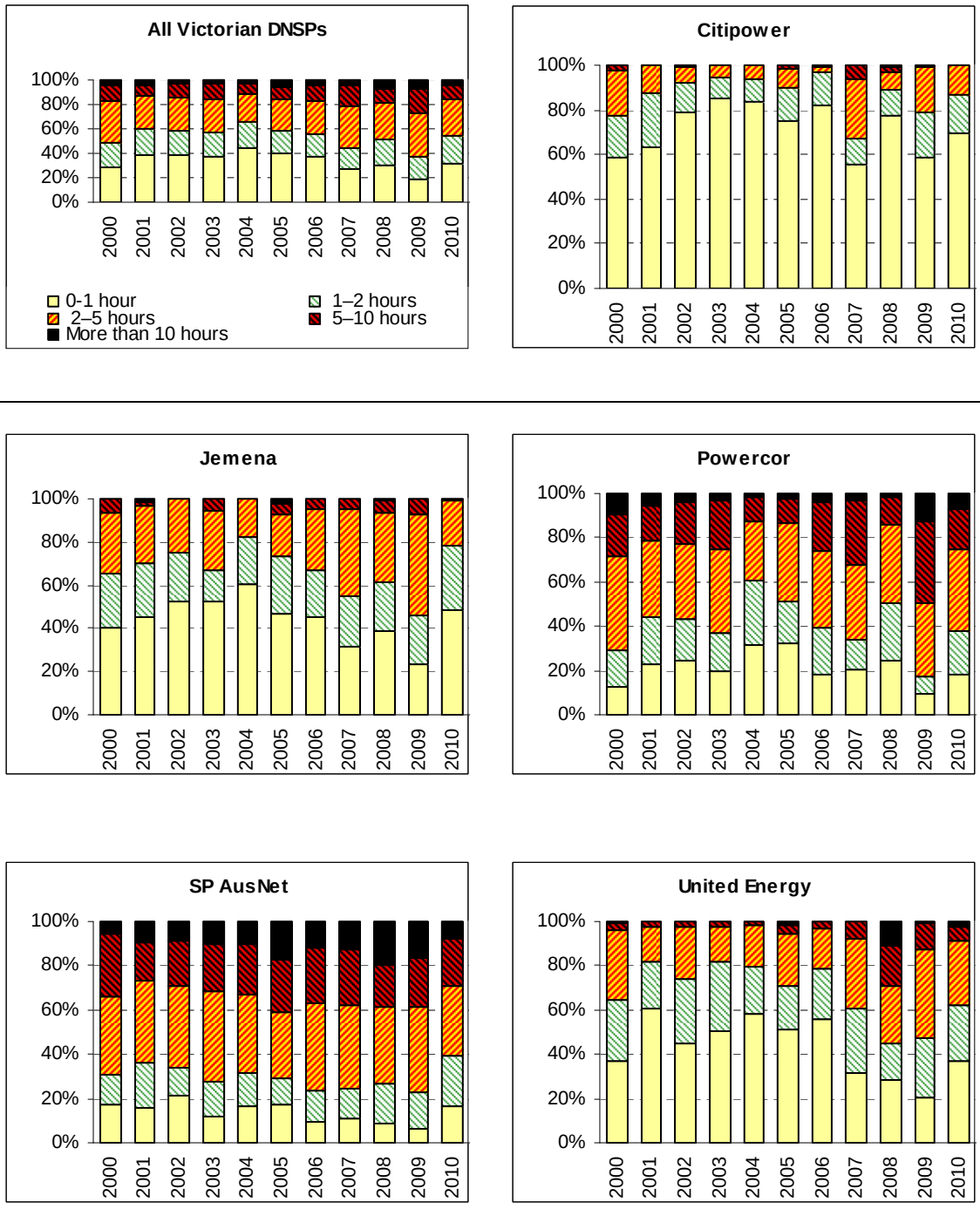
With excluded events removed, on average customers experiences 0.23 less sustained interruptions in 2010 compared to 2009. However, the DNSPs had around 41 per cent more planned sustained interruption in aggregate in 2010 than in 2009. In 2010 the average duration of these interruptions was 2 per cent longer than in 2009.

3.1.1.2 Customer experience—best and worst served customers

Supply reliability changes from year to year. The general trend has been a gradual improvement, but outages do not occur to the same extent across the state and the experience of customers varies markedly. To identify whether improvements flow to the worst served customers—rather than only to those who already have a reliable supply—the percentage of customers who experience cumulative minutes-off-supply in each of five off-supply time bands: less than 1 hour, 1–2 hours, 2–5 hours, 5–10 hours and more than 10 hours is presented. Figure 3.3 shows the movement of these percentages over time.

A reduction in the percentage of customers in the higher bands of minutes-off-supply and an increase in the percentage of those in the lower bands—a shrinking of the upper bands and lengthening of lower ones—would be a desirable outcome. Such a change would represent a general improvement in reliability for all customers. This is because there is a higher proportion of customers have experienced improved reliability and fewer customers have experienced poor reliability.

Figure 3.3 Minutes-off-supply distribution (figures include all outage events)



When comparing all Victorian DNSPs, supply reliability for customers improved and in particular that of the worst served customers improved in 2010 compared to 2009. In 2010 a smaller proportion of Victorian customers experienced outages totalling more than 10 hours and in the 5–10 hour band. This was also reflected by the

increasing proportions of customers who experienced outages in the 0–1 hour range or the 1–2 hour range.

The proportion of customers who experienced greater than 10 hours off supply decreased from 7.6 per cent to 4.2 per cent of customers. The proportion of customers who experienced between 5 and 10 hours off supply had a large decrease from 19.3 per cent to 11.8 per cent and the proportion of customers who experienced between 2 and 5 hours off supply also decreased from 36.0 per cent to 29.0 per cent. A reduction in the percentage of customers in the higher bands of minutes-off-supply is a desirable outcome as it means fewer customers are experiencing longer times off supply.

The decrease in the proportion of customers experiencing minutes off-supply greater than 2 hours is also reflected by the increase in the number of customers who experienced between 0 and 1 hour of outages over the year. In 2009 only 18.9 per cent of customers experienced less than 1 hour of outages whereas in 2010 32.1 per cent of customers experienced between 0 and 1 hour of outages. The reduction in the percentage of customers in the higher bands of minutes-off-supply and an increase in the percentage of those in the lower bands is a desirable outcome. This change represents a general improvement in reliability for all customers.

Jemena had a large increase in the number of customers experiencing less than 1 hour of outages over the course of the year from 23.2 per cent to 48.5 per cent. This was largely reflected in a decrease in the number of customers, from 46.2 per cent to 20.8 per cent of customers experiencing between 2 and 5 hours of outages over the year. No customers in Jemena's network experienced greater than 10 hours of outages over the year. Over the last 6 years the trend has been a decreasing number of customers experiencing less than 1 hour of outages over the year, from a high of 60.6 per cent in 2004 to 23.2 per cent in 2009. The increase in the number of customers in 2010 experiencing less than 1 hour of outages to 48.5 per cent is a reversal of this trend and shows an overall improvement in reliability for all customers.

CitiPower customers experienced best performance in terms of outages. In 2010 no customers in CitiPower's network experienced greater than 10 hours of outages. The proportion of customers experiencing between 5 and 10 hours of outages fell significantly from 1.1 per cent to 0.01 per cent. The proportion of customers experiencing less than 1 hour of outages over the year increased from 58.7 per cent to 69.5 per cent. This is reflected in a decrease in the proportion experiencing outages between 1 and 2 hours in total from 20.4 per cent to 17.1 per cent and in the proportion experiencing outages between 2 and 5 hours in total from 19.8 per cent to 13.4 per cent.

Powercor had decreases in the proportion of customers experiencing greater than 10 hours of outages and between 5 and 10 hours of outages. The proportion of customers experiencing greater than 10 hours of outages decreased from 12.7 per cent to 6.8 per cent, and the number of customers experiencing between 5 and 10 hours of outages decreased from 36.6 per cent to 18.2 per cent. This was largely reflected by an increase in the number of customers experiencing less than 1 hour of outages from 9.4 per cent to 18.4 per cent and in the proportion of customers experiencing between 1

and 2 hours of outages, from 8.2 per cent to 19.3 per cent. This reflects an overall improvement in reliability in 2010 in Powercor's network.

SP AusNet had a significant decrease in the proportion of customers experiencing greater than 10 hours of outages from 16.7 per cent to 7.6 per cent. The number of customers experiencing between 5 and 10 hours of outages also decreased from 22.2 per cent to 21.4 per cent. The number of customers experiencing less than 1 hour of outages increased from 6.2 per cent to 16.3 per cent and in the proportion of customers experiencing between 1 and 2 hours of outages increased from 16.7 per cent to 23.4 per cent. Overall this shows an improved in reliability in SP AusNet's network.

United Energy had an increase in the proportion of customers experiencing greater than 10 hours of outages, from 0.6 per cent in 2009 to 2.1 per cent in 2010. This is higher than their long term trend (United Energy generally had a small proportion of customers in this category), but still a significant improvement compared to 2008 when 11.4 per cent of customers experienced outages of greater than 10 hours. United Energy had a significant decrease, from 12.1 per cent to 6.2 per cent of customers experiencing between 5 and 10 hours of outages. United Energy's proportion of customers experiencing less than 1 hour of outages increased from 20.6 per cent in 2009 to 36.8 per cent in 2010.

Table 3.1 Worst served customers (average total time off supply for the worst served 15 per cent)

	Target	Reported	Better/(worse) than Target %
Jemena	267	168	37.2
CitiPower	138	177	(28.2)
Powercor	535	684	(27.8)
SP AusNet	734	720	1.9
United Energy	231	338	(46.1)

3.1.1.3 Causes of interruptions

Figure 3.4 shows the major causes of supply interruptions occurring across each network as reported by each DNSP.[15] The DNSPs reported 37 per cent less supply interruptions than in 2009. As is the case since 2007, equipment failure was the most frequent cause of interruptions. It accounted for around 32 per cent of all interruptions, up from 30 per cent in 2009.

[15] DNSPs report against specific categories of supply interruptions as defined in the ESCV's *Information Specification (Service Performance) for Victorian Electricity Distributors*, 1 January 2009.

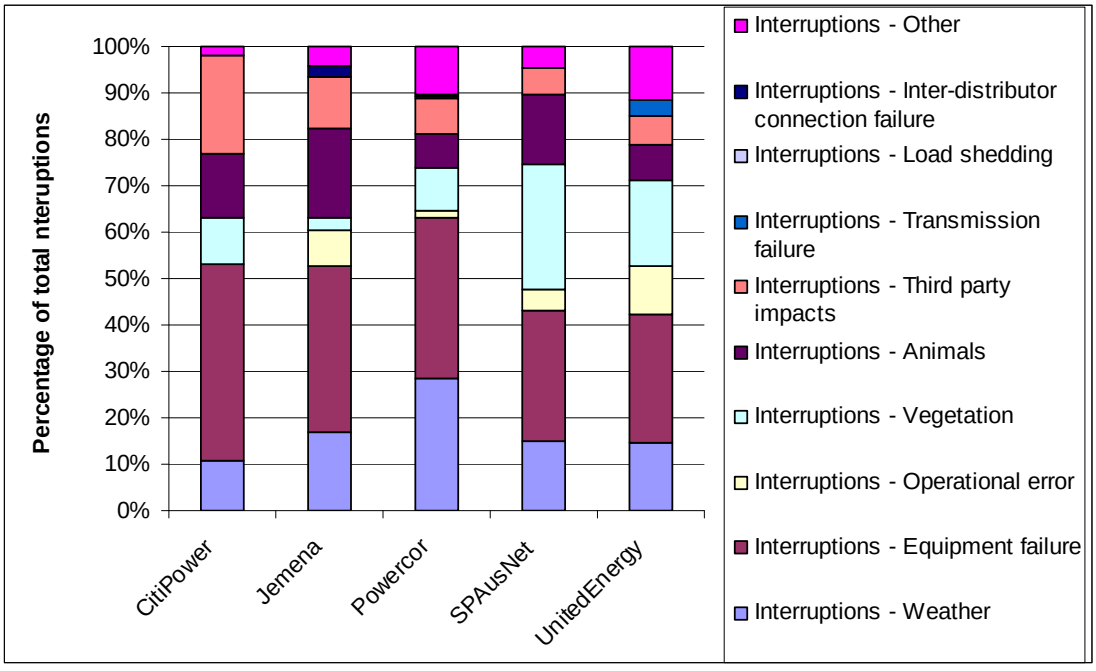
There is an unavoidable degree of uncertainty in the attribution and analysis of some of the causes of interruptions. For instance, a storm that uproots a tree and brings down a powerline may be recorded as Weather or Vegetation. Combined, they accounted for 37 per cent of the reported interruptions across the state (up from 26 per cent in 2009), ranging from 42 per cent for SP AusNet to 20 per cent for Jemena.

Weather alone was the cause of 20 per cent of all supply interruptions which was up from 14 per cent in 2009. There were no load shedding incidents in 2010, however, in 2009 load shedding accounted for 21 per cent of supply interruptions.

Animal interference in the network accounted for 11 per cent of all supply interruptions. DNSPs reported that operational error accounted for only 4 per cent of all supply interruptions, which is approximately double since 2009.

Powercor had 1 365 217 supply interruptions which was the most of any Victorian DNSP. This was 39 per cent less interruption than it experienced in 2009. CitiPower experienced the fewest number of interruptions, with 192 461 compared to 300 861 in 2009.

Figure 3.4 Causes of supply interruptions 2010



SP AusNet noted the outage proportion from vegetation causes is comparatively high, and this is due to the nature of the environment of the network. SP AusNet has been addressing this outage cause through a hazardous tree clearing program.

3.2 Victorian DNSPs

This section considers the supply reliability performance of each DNSP compared with its performance history since 1999. The DNSPs have very different network characteristics that can affect reliability. Powercor and SP AusNet both have significant numbers of customers in regional areas: the longer powerlines in these areas generally require longer travel times and longer times to locate and repair faults. Jemena and United Energy have mostly urban distribution networks. CitiPower's network in and around the CBD is substantially underground, and its high level of interconnection allows it to quickly reconnect customers to another source of supply during network faults. Appendix A contains further details of the networks.

In this section, the reliability of supply is considered without excluding the effects of abnormal events beyond the DNSPs control. The reliability figures reflect the customers' experience of all the outages that occurred.

3.2.1 Minutes-off-supply

Unplanned outages account for by far the larger part of the total minutes-off-supply. Generally, unplanned outages are also more troublesome to customers. Planned outages—for which customers are entitled to receive at least four days notice—generally relate to maintenance and other works that are under the DNSPs control. The 2006–10 price review set targets for each DNSPs reliability, in terms of minutes-off-supply and other measures. Section 3.4 discusses the DNSPs performance against these targets.

Figure 3.5 and figure 3.6 show each DNSPs level of supply reliability, in terms of average planned and unplanned minutes-off-supply per customer for each year since 1999. The five-year moving average also shows the trend in performance that customers experienced including the minutes-off-supply attributable to the January 2009 heatwave, extreme storms and other unusual events.

In terms of unplanned minutes-off-supply for Victoria, there was a 43 per cent decrease from 2009. This equates to a 33 per cent decrease in the total minutes-off-supply experienced by the average customer. All DNSPs except CitiPower and Powercor experienced a decreasing trend in the unplanned average minutes-off-supply experienced by customers.

- CitiPower reported 44 unplanned average minutes-off-supply which was 29 per cent less than in 2009. When removing excluded events CitiPower reported 40 unplanned average minutes-off-supply which was 36 per cent worse than 2009. CitiPower's customers experienced 50 minutes-off-supply which is fewer than the other DNSPs customers. This is unsurprising as it is given a higher value of customer reliability and its network is substantially undergrounded.

- Jemena reported 62 unplanned average minutes-off-supply which was 52 per cent less than in 2009. On average, Jemena's customers experienced 80 minutes-off-supply which was the second fewest minutes-off-supply of Victorian DNSPs after CitiPower. Jemena reported no excluded events in 2010. Jemena's 2010 results

reverses what has been a steadily increasing trend in the unplanned and planned minutes-off-supply.

- Powercor reported 198 unplanned average minutes-off-supply. This was 36 per cent less than in 2009. Powercor's customers on average experienced a total of 231 minutes-off-supply, or 31 per cent less than in 2009.

- SP AusNet reported 179 unplanned average minutes-off-supply. This was significantly less (51 per cent) than in 2009. This result is SP AusNet's best result since consistent reporting began in 1996 and reverses an increasing trend in unplanned minutes-off-supply since 2006. In total, SP AusNet's customers on average experienced 246 minutes-off-supply on average, which is 41 per cent less than in 2009. SP AusNet reported no excluded events in 2010, however it did note that three storms together contributed 48 minutes of the unplanned average minutes-off-supply.

- United Energy reported 80 unplanned average minutes-off-supply which was 39 per cent fewer minutes than in 2009. When removing excluded events, the unplanned average minutes off supply was 23 per cent fewer minutes than in 2009. On average, United Energy's customers experienced 128 total minutes-off-supply which was 18 per cent fewer than in 2009.

Figure 3.5 **Average unplanned minutes-off-supply per customer** [a]

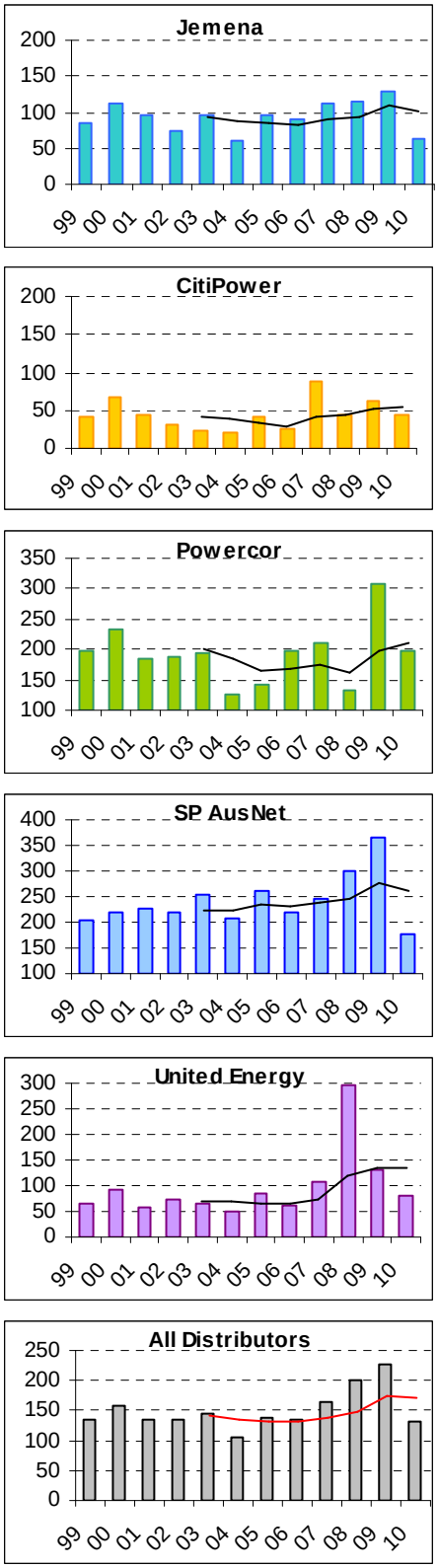
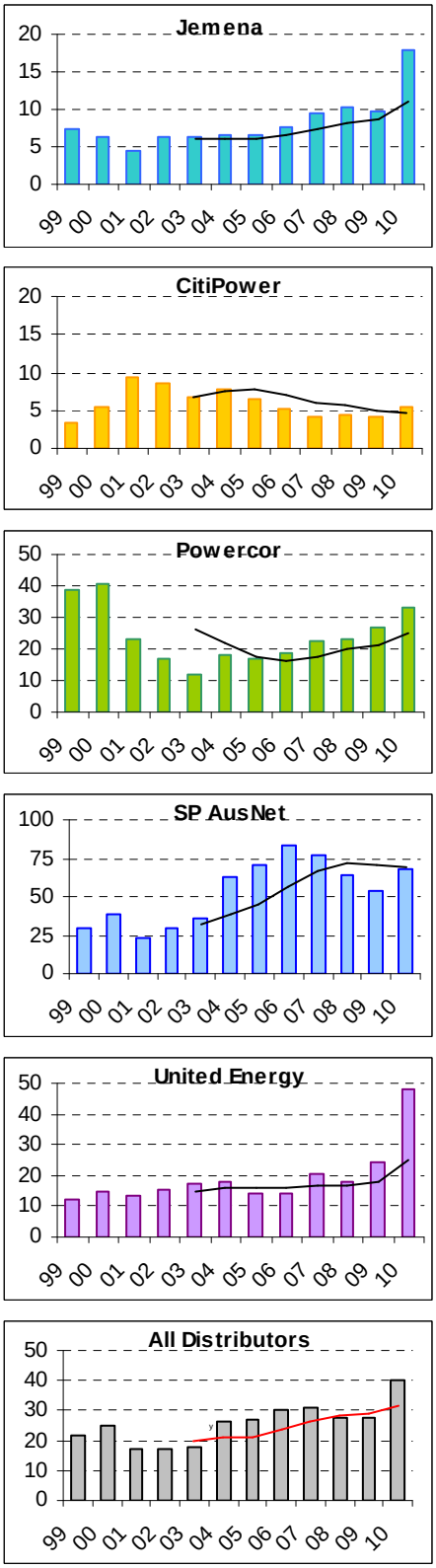


Figure 3.6 **Average planned minutes-off-supply per customer** [a]



[a] Includes the impact of the excluded events

Jemena stated that the increase in average planned minutes-off-supply reflects the type and volume of capital work performed in 2010. Jemena has reported higher capital expenditure than forecast by 43% and a larger percentage of the capital expenditure works program involved work which required customer outages, such as on distribution network assets (poles and wires).

3.2.2 Number of unplanned sustained interruptions

Supply interruptions lasting more than 1 minute are called 'sustained' interruptions. Figure 3.7 shows each DNSPs performance (including the impact of extreme events) for the average number of unplanned sustained interruptions experienced by their customers, along with the performance trends of the DNSPs:

- Jemena reported 51 per cent less planned and unplanned average sustained interruptions. Its unplanned average sustained interruptions decreased 53 per cent from 2.01 in 2009 to 0.93 in 2010. This is its best result since accurate reporting began in 1997. Jemena reported no excluded events.

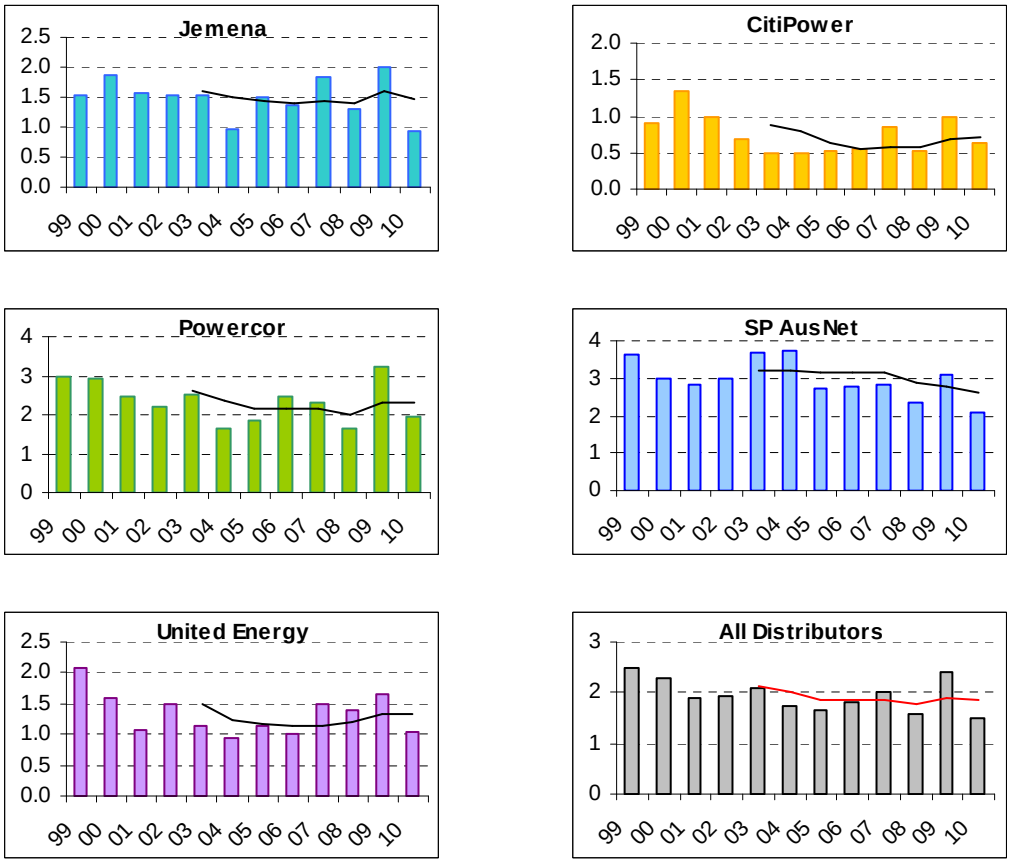
- CitiPower's unplanned average sustained interruptions decreased 37 per cent from 0.99 in 2009 to 0.62 in 2010. When removing excluded events from CitiPower's total average sustained interruptions its performance was 4 per cent better than in 2009. In 2009 CitiPower reported 0.43 excluded events compared to 0.09 in 2010.

- Powercor's customers also experienced a large decrease in the number of unplanned average sustained interruptions of 40.5 per cent, from 3.25 in 2009 to 1.93. Powercor's performance was 2.9 per cent better than in 2009 when removing excluded events. In 2009 Powercor reported 1.35 excluded events compared to 0.01 in 2010.

- SP AusNet reported fairly consistent unplanned average sustained interruptions from 2005–07, and a decrease of about 16 per cent from 2007–08. In 2009 SP AusNet recorded 3.11 unplanned sustained interruptions which was 32 per cent higher than in 2008. In 2010 SP AusNet reported 2.09 unplanned sustained interruptions which is 33 per cent less than in 2009. In 2010 its total of sustained interruptions was 2.46 compared with 3.37 the year before, which is 19.6 per cent less. SP AusNet reported no excluded events for sustained interruptions, but did note they were effected by three storms.

- United Energy reported 1.05 average unplanned sustained interruptions as compared to 1.66 in 2009. This was an improvement in performance of 36.6 per cent. United Energy's total sustained interruptions was 1.19 which was less than the 1.74 interruptions reported in 2009. When removing excluded events, United Energy recorded 18.8 per cent less interruptions than in 2009.

Figure 3.7 Average number of unplanned interruptions per customer [a]



[a] Includes the impact of the excluded events

3.2.3 Duration of unplanned sustained interruptions

Figure 3.8 shows the average duration of unplanned interruptions for each of the DNSPs since 1999. The average duration of interruptions, like other performance measures, is affected by the characteristics of the networks. For instance it will take longer to rectify a supply interruption in a long-rural network. Also, in a CBD or urban network fixing faults in underground cables can be a long process.

In aggregate, the average total outage duration for all Victorian DNSPs increased by only 1 minute from 101 minutes in 2009 to 102 minutes in 2010. SP AusNet and United Energy had a decrease in the average duration of interruptions from 2009.

- CitiPower has had an increasing trend in the average duration of unplanned interruptions for the past eight years. CitiPower's average duration of unplanned interruptions was 71 minutes which was 12.3 per cent more than in 2009.

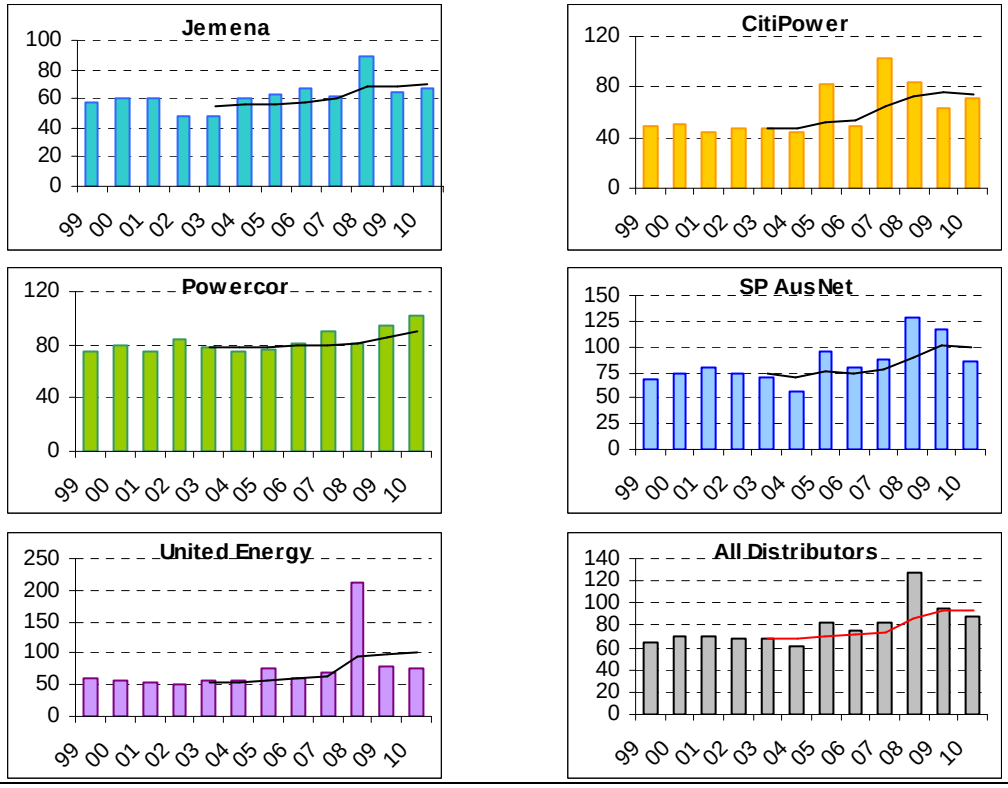
- Jemena's average unplanned network outage duration increased from 65 to 67 minutes, an increase of 3.1 per cent. This is the second highest unplanned network outage duration reported by Jemena since 1999.

- Powercor's average unplanned duration of supply interruptions has been trending upwards. Powercor's average unplanned duration of supply interruptions was 103 minutes which was 8.0 per cent more than in 2009.

- SP AusNet has had an increasing trend in the average duration of unplanned interruptions over the past eight years. However, in 2010 SP AusNet reported an average duration of unplanned interruptions of 85 minutes compared to 118 minutes in 2009. This is a significant decrease of 27.5 per cent, but is still higher than its lowest report of 56 minutes in 2004.

- United Energy's average unplanned network outage duration decreased from 79 minutes in 2009 to 76 minutes in 2010 which is a decrease of 3.4 per cent. The 2010 result returns United Energy closer to its long term average.

Figure 3.8 Average duration of unplanned interruptions per customer (minutes)



3.2.4 Momentary interruptions

Momentary interruptions are brief power outages lasting less than 1 minute. They are mainly caused by auto-reclose devices, which are installed on the network to restore supply following a transient fault. Such faults may be due to contact with birds, animals and vegetation, lightening or other causes. The auto-reclose devices isolate the damaged parts of the network and enable other healthy parts for almost instantaneous restoration of supply. The alternative to a momentary interruption is a sustained outage requiring an operator to restore supply, sometimes hours later.

Momentary interruptions generally have less impact on customers than sustained interruptions. Some transient faults may result in momentary interruptions that affect

more customers than necessary. Further, some customers may experience an excessive number of momentary interruptions, which also have the potential to damage some of the customer's equipment. As of 1 January 2006, DNSPs have a new obligation to make guaranteed service level (GSL) payments to customers who experience more than 24 momentary supply interruptions in a year. Part of the DNSPs revenue also depends on achieving targets for momentary interruption frequency under the S factor of the service incentive scheme.

Figure 3.9 and figure 3.10 show the trends of momentary interruptions to customers, measured in terms of whole and part feeder outages. The number of part feeder momentary interruptions generally increased over time because more auto-reclose devices were installed on distribution feeders to break down the lines into smaller sections and thus limit the number of customers affected by momentary interruptions. The more recent trend for all DNSPs in aggregate, however, appears to be downwards, perhaps in response to the introduction of financial incentives and penalties.

- Jemena has had a relatively flat trend in terms of whole feeder momentary interruptions. In 2010 the number of part feeder momentary interruptions increased compared to 2009 and reverses what has been declining trend since 2006.

- CitiPower has experienced a declining (improving) trend in terms of whole feeder momentary interruptions, except for a blip in 2009, when it experienced more interruptions than in 2008. 2010 saw again a decrease in whole feeder momentary interruptions. This was also its least number of momentary interruptions since 1994.

- Powercor has had a relatively flat trend in terms of whole feeder momentary interruptions. The trend for part feeder momentary interruptions trend is declining. Although, in 2010 it experienced more part feeder interruptions than in 2009.

- SP AusNet has a declining trend in whole feeder and part feeder momentary interruptions. Although, its 2009 performance deteriorated from 2008, 2010 again shows an improvement in whole and part feeder momentary interruptions.

- United Energy has a significantly declining trend in whole feeder momentary interruptions, reporting its best result in 2010. Its part feeder momentary interruptions reduced in 2009 and again 2010 from a high in 2008.

Figure 3.9 **Number of momentary interruptions per customer (whole feeder)** [a]

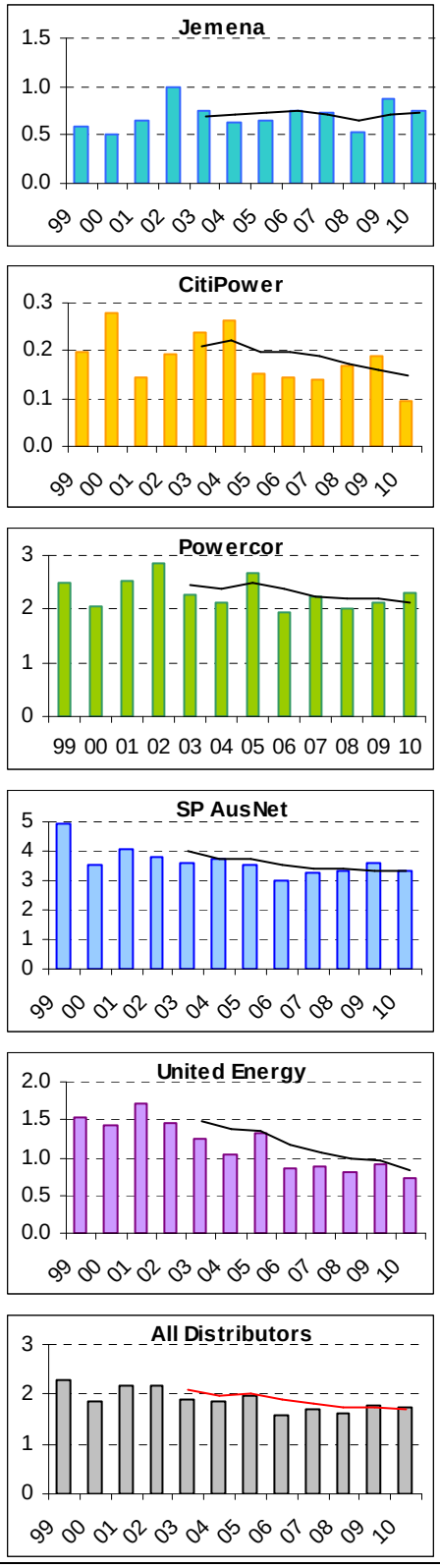
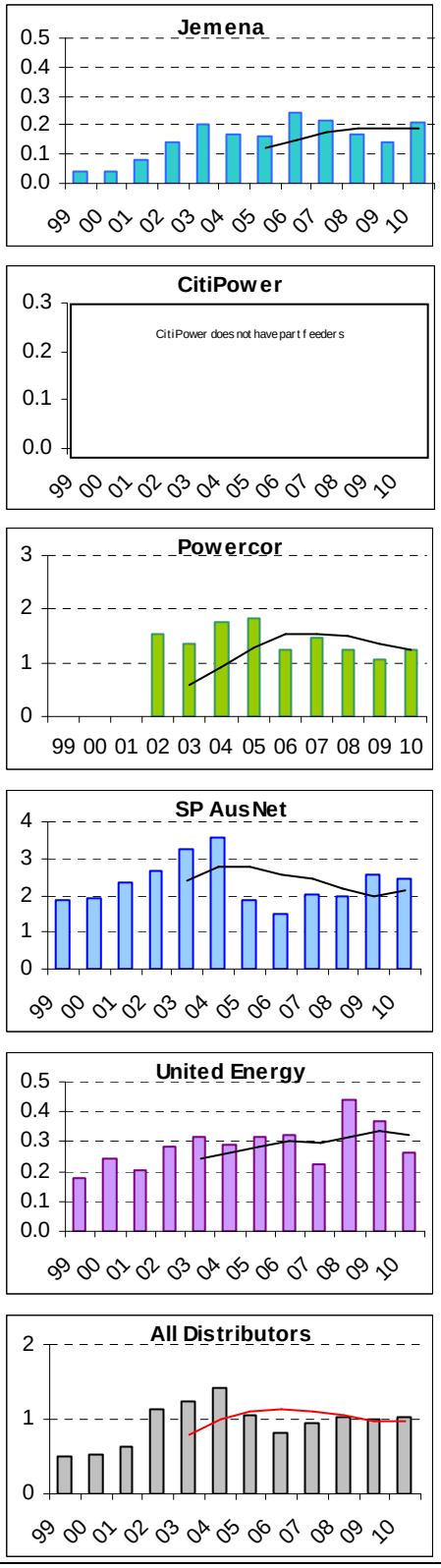


Figure 3.10 **Number of momentary interruptions per customer (part feeder)** [a]



[a] Figures include events exempted from the service incentive scheme (see section 3.4)

3.3 Supply areas

There are approximately 260 zone substations and supply areas across Victoria. Appendix D shows maps of the areas that are the responsibility of the DNSPs and details the reliability of supply in each zone for comparison over the past five years. The figures and maps in Appendix E show the average minutes-off-supply per customer in each supply area in 2010, to allow comparison of DNSPs across Victoria.

3.3.1 Worst performing supply areas—all DNSPs

Table 3.2 shows the three supply areas with the highest average minutes-off-supply for each DNSP—that is, those supply area that performed worst in 2010.

Table 3.2 Supply reliability for each DNSP for total minutes-off-supply in 2010

	Supply areas		Average minutes-off-supply per customer		
		Customers	2009 (minutes)	2010 (minutes)	Per cent change
CitiPower	Prahran	7 766	55	143	160
	Fairfield	3 100	79	127	61
	Northcote	17 551	209	126	(40)
Jemena	Sunbury	14 382	325	181	(44)
	Heidelberg	8 495	133	136	2
	Preston	9 229	99	109	10
Powercor	Wemen	230	675	1 953	189
	Cobden	774	1 178	1 556	32
	Electricity Trust SA	357	811	927	14
SP AusNet	Upwey	1 073	1 643	1 786	9
	Merrijig	1 260	73	1 094	1 398
	Kinglake	2 127	10 882	1 085	(90)
United Energy	Hastings	16 460	211	351	66
	Sorrento	17 273	236	345	46
	Dromana	14 717	242	311	28

CitiPower commented that storms affected performance to these areas in 2010.

Jemena commented that these figures reflect the level of Jemena's investment in areas where the supply reliability is low.

Powercor commented that storms and planned outages combined for the high figures in these areas.

SP AusNet commented that a storm, planned work and an underground cable failure contributed to the performance in these areas. The Kinglake feeders have been reviewed and a reliability improvement program has subsequently been implemented.

3.3.2 Comparison of central business district, urban and rural networks

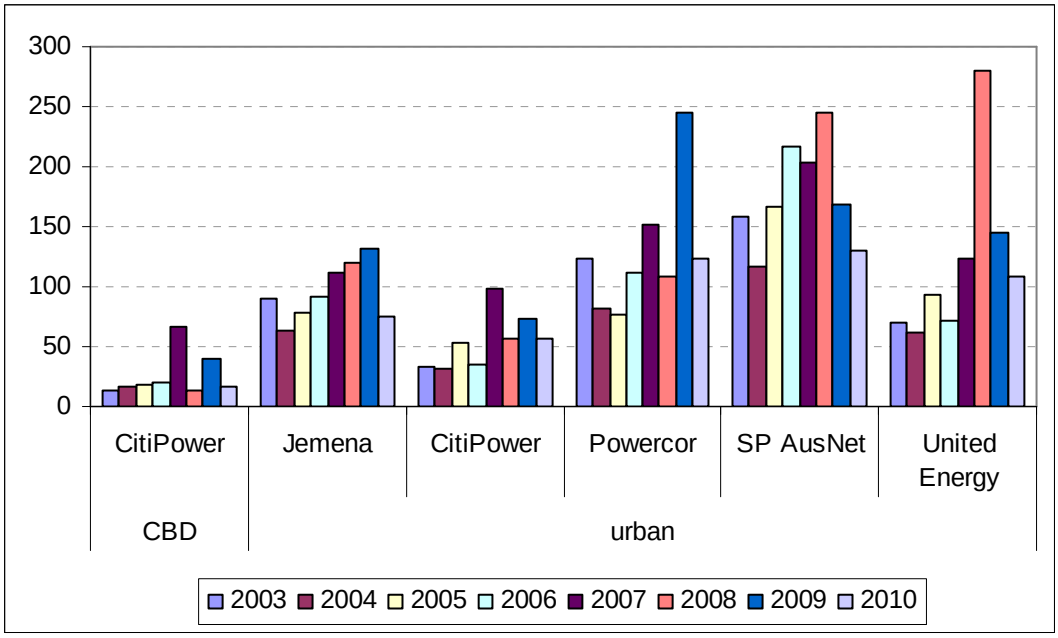
There are approximately 1880 active distribution feeders in Victoria categorised as CBD, urban, short rural and long rural. Potentially, feeders in the same category may perform to a similar level of reliability: CBD feeders should be more reliable than urban ones, which should be more reliable than rural feeders. These classifications, however, are somewhat general; reliability within a category varies from one DNSP to another, given differences in terrain, weather, asset condition and management performance.

Figure 3.11 to 3.14 demonstrate how supply reliability varies with the types of distribution feeder, and how the performance of feeders varies across the DNSPs. The figures include the total minutes-off-supply due to both planned and unplanned interruptions, and show the total number of such interruptions for the average customer in different areas of the Victorian network. The interruptions include those caused by abnormal events such as load shedding caused by the 16 January 2007 bushfires, the 2 April 2008 storm and the January heatwave in 2009.

3.3.2.1 Central business district

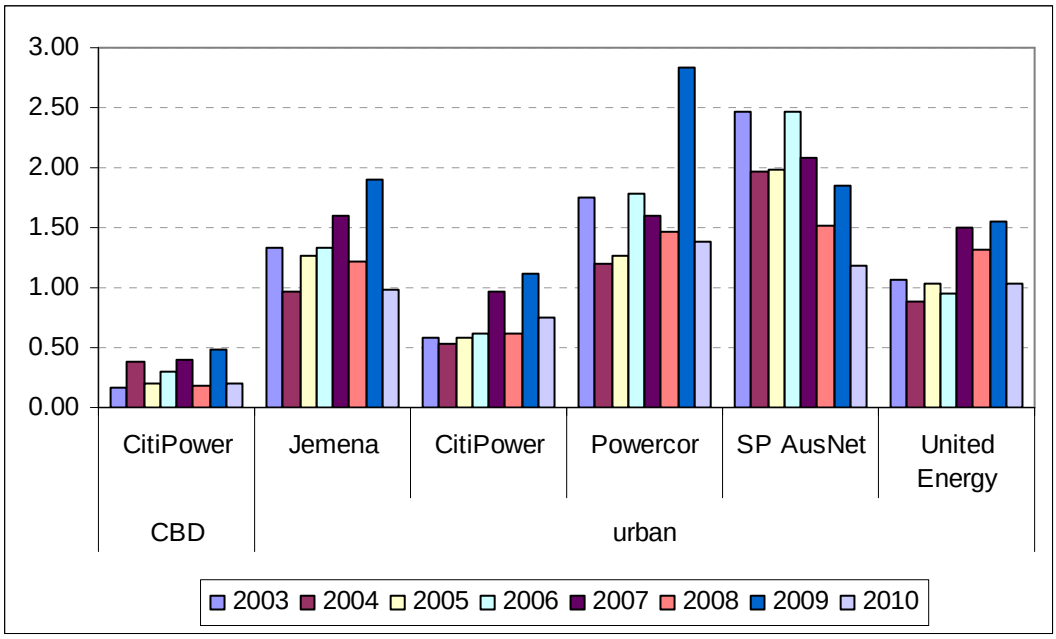
Only CitiPower has CBD feeders. CitiPower's CBD feeders performed well in 2010 compared to 2009. In 2010, the average CBD customer experienced 16 minutes-off-supply, which was significantly better than the 40 minutes experienced in 2009 (60 per cent improvement). The average-minutes-off-supply experienced by CitiPower's CBD customers was also 49 per cent less than its 5 year average.

Figure 3.11 Average minutes-off-supply per customer CBD and urban areas



The number of sustained interruptions experienced by CitiPower's CBD customers also decreased in 2010. The average number of sustained interruptions was 60 per cent lower than in 2009. This is one of CitiPower's best results. CitiPower's 2010 average sustained interruption performance was 37 per cent better than its 5 year average performance.

Figure 3.12 Average sustained interruption frequency CBD and urban areas



3.3.2.2 Urban

In CitiPower's urban network, the average minutes-off-supply decreased from 73 minutes in 2009 to 57 minutes, a 21 per cent reduction. Likewise, the average number of sustained interruptions had a significant decrease from 1.1 in 2009, to 0.74 in 2010. CitiPower's urban feeders still had fewer minutes-off-supply and sustained interruptions than any other DNSPs urban feeders.

Urban customers in Jemena's network have been experiencing a steady increase in the number of minutes-off-supply from 2004 until 2009. However, in 2010, the average customers in this network experienced a 43 per cent reduction in the average minutes-off-supply (76 minutes-off-supply compared to 132 minutes from the year before). The number of sustained interruptions per customer on average also decreased significantly from 1.89 in 2009 to 0.98 in 2010, a reduction of 48 per cent.

Powercor had the largest percentage decrease in the average number of minutes-off-supply of all the DNSPs urban networks of 49 per cent. In 2009, Powercor's urban customers experienced 245 minutes-off-supply on average, however, in 2010 the average customer experienced 124 minutes. However, this is still the third highest average minutes-off-supply recorded since 2002, but is nevertheless 16 per cent less than the five year average minutes-off-supply. The number of average sustained interruptions experienced by Powercor customers also decreased significantly from 2.83 in 2009 to 1.38 in 2010, a reduction of 51 per cent.

SP AusNet's urban customers experienced a reduction in the number of minutes-off-supply. In 2010, there were 130 minutes-off-supply, down from 168 minutes in 2009. This performance was also 33 per cent below the 5 year average of 193 minutes-off-supply. This is SP AusNet's second best result since 2002. The number of sustained

interruptions also decreased from 1.85 in 2009 to 1.19 in 2010. This is a 36 per cent reduction and is also 35 per cent better than the five year average.

United Energy's urban customers experienced an improvement in the number of minutes-off-supply compared to 2009. In 2010, the average minutes-off-supply was 109, down from 144 in 2009. This result was 25 per cent below the five year average of 145 minutes-off-supply. The average number of sustained interruptions also decreased from 1.55 in 2009 to 1.04 in 2010. This is a 33 per cent reduction.

3.3.2.3 Rural

Figure 3.13 Average minutes-off-supply per customer rural areas

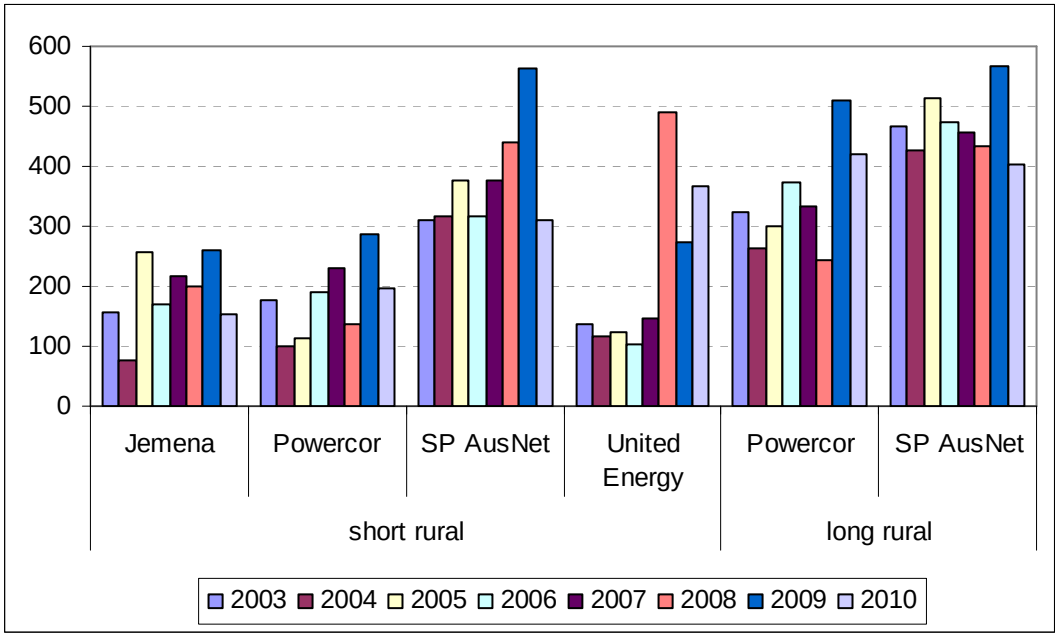
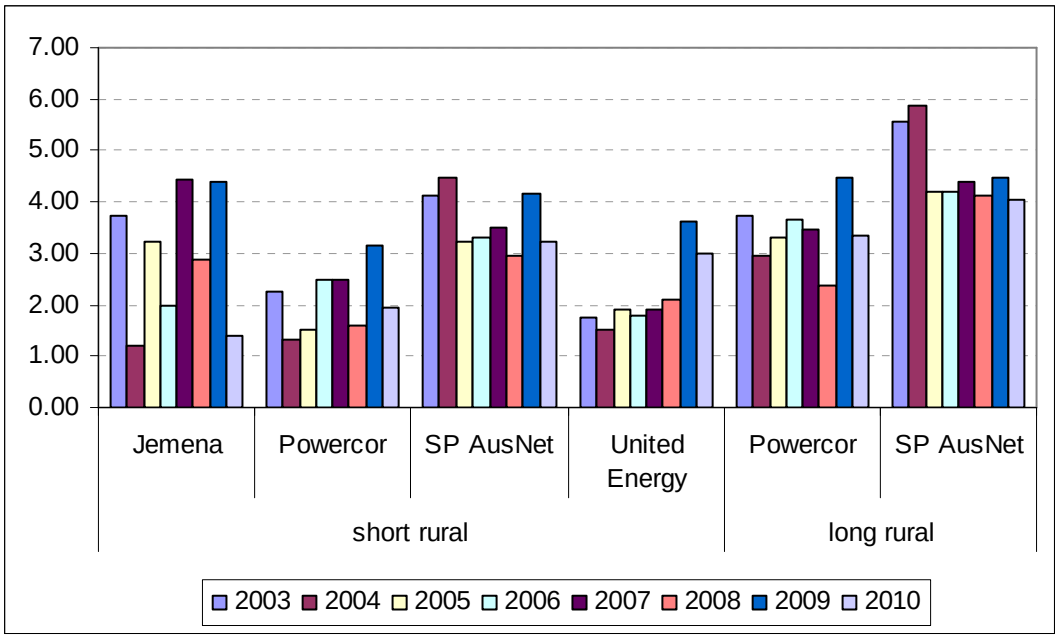


Figure 3.14 Average sustained interruption frequency rural areas



Jemena's supply reliability for short rural feeders improved in 2010 both in terms of the average number of minutes-off-supply and the average number of sustained interruptions. The average minutes-off-supply fell from 261 minutes in 2009 to 154 minutes in 2010. This is a 41 per cent reduction. The average number of sustained interruptions per short rural customer also decreased significantly, from 4.4 in 2009 to 1.4, a 68 per cent reduction and is 54 per cent below the five year average. Figure 3.14 shows that it is also Jemena's second best recorded result since 2002.

Short rural customers on Powercor's network also experienced less minutes-off-supply and sustained interruptions than in 2009. Average minutes-off-supply decreased 31 per cent from 2009 to a total of 196 minutes. The result was 6 per cent less than the most recent 5 year's average. From 2009, the average number of sustained supply interruptions decreased from 3.1 to 1.96. This is a 38 per cent decrease and is 16 per cent less than the most recent five year average.

Supply reliability on Powercor's long rural network also improved. In 2010, the average minutes-off-supply decreased to 421 minutes or by 17 per cent from 2009. Nevertheless, the 2010 performance was still 12 per cent higher than the past 5 year's average. The average number of sustained interruptions also decreased from 4.5 in 2009 to 3.3, which is a 25 per cent reduction. This is 4 per cent below the most recent five year average for sustained interruptions.

In SP AusNet's short rural feeder network, the average number of minutes-off-supply was 312 down from 563. This is a 45 per cent reduction and is 22 per cent below the five year average. This is also the largest decrease of all DNSPs reported for a short rural line. SP AusNet also reported a decrease in the average number of sustained interruptions per customer from 4.2 to 3.2 interruptions in 2010. This is a 22 per cent decrease and is 6 per cent below the five year average.

SP AusNet reported 402 minutes-off-supply on average for its long rural feeder. This was 29 per cent less than in 2009, and 14 per cent lower than its 5 year average. SP AusNet has maintained a relatively steady average number of sustained interruptions over the past 5 years, with the 2010 result the lowest recorded. It reported an average of 4.05 sustained interruptions in 2010, compared with 4.4 in 2009.

The number of minutes-off-supply for an average United Energy short rural customer increased in 2010, from 275 in 2009, to 366. This is a 33 per cent increase and is the second highest minutes-off supply recorded by United Energy for short rural customers. It is also 33 per cent higher than the five year average. However, in 2010, United Energy's sustained interruptions decreased by 18 per cent per cent from 3.6 to 3.0. The sustained interruptions in 2010 was still 20 per cent higher than the 5 year average.

3.3.3 Feeders below low-reliability thresholds

The ESCV set low-reliability thresholds for feeder classes, based on levels of reliability experienced by the worst-served five per cent of customers. These thresholds were revised in the 2006–10 price determination, based on feeder performance data for 1999 to 2004. The ESCV requires DNSPs to provide comments on their plans for each feeder which falls below the reliability threshold.

In revising the thresholds, the ESCV took into account that CitiPower's CBD network is predominantly underground. Any single outage occurring underground is likely to take significantly longer to locate and repair than an outage in an overhead powerline. To provide a more balanced view of when CBD customers experience poor reliability, the ESCV set a minutes-off-supply threshold in the CBD that only applies where average feeder interruption frequency is greater than one. The ESCV also introduced thresholds for the average number of momentary interruptions in all DNSPs urban and rural networks.

Table 3.3 shows the current and previous low-reliability feeder thresholds.

Table 3.3 Low-reliability feeder thresholds (by feeder category)

Feeder category	2001–05	2006–10	
	Average annual total minutes-off-supply (SAIDI)	Average annual total minutes-off-supply (SAIDI)	Momentary interruptions frequency per customer (MAIFI)
CBD	65	70 [a]	n/a
Urban	280	270	5
Short rural	710	600	12
Long rural	1010	850	25

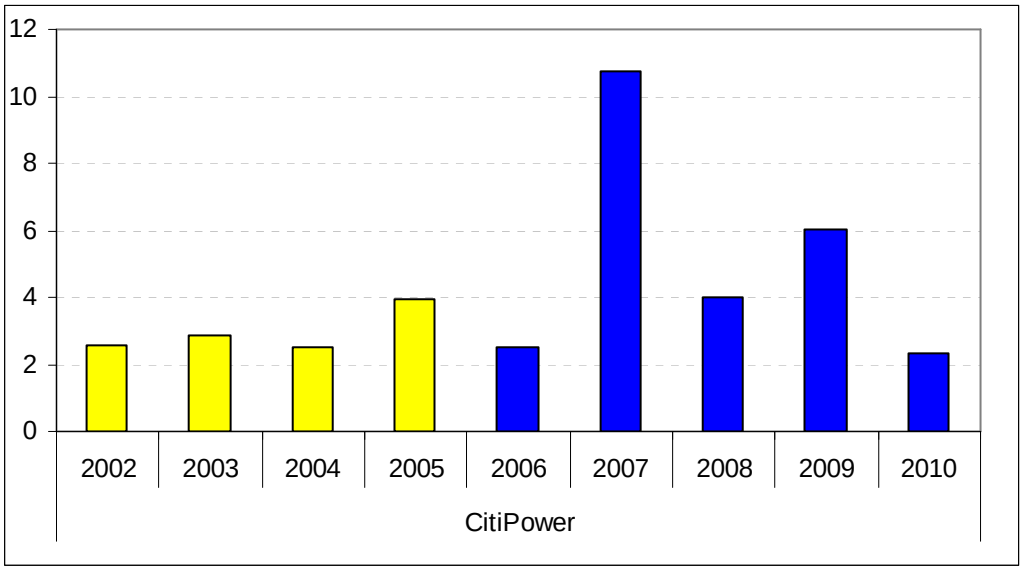
[a] When more than one sustained interruption occurs on the feeder.

Table C.22 in Appendix C identifies all the distribution feeders that did not achieve this threshold performance level in 2010. The table details the performance of these feeders in 2010 (and in 2009 if the feeders appeared in the previous report). Figure 3.15–3.18 compares low-reliability feeders for each feeder type and for each DNSP. The interruptions which result in feeders operating above the threshold levels include those caused by abnormal events such as the January 2009 heatwave and load shedding.

3.3.4 Low-reliability central business district feeders

Figure 3.15 shows the percentage of CitiPower's CBD feeders performing above the low-reliability threshold, or in other words, feeders which have low reliability as measured by this indicator. CitiPower recorded 2 per cent of feeders above the reliability threshold. This is an improvement in performance from 2009, during which 6 per cent of CBD feeders were above the threshold. The number of feeders above the low-reliability threshold in 2010 was also below the average from 2006 which is 5.1 per cent.

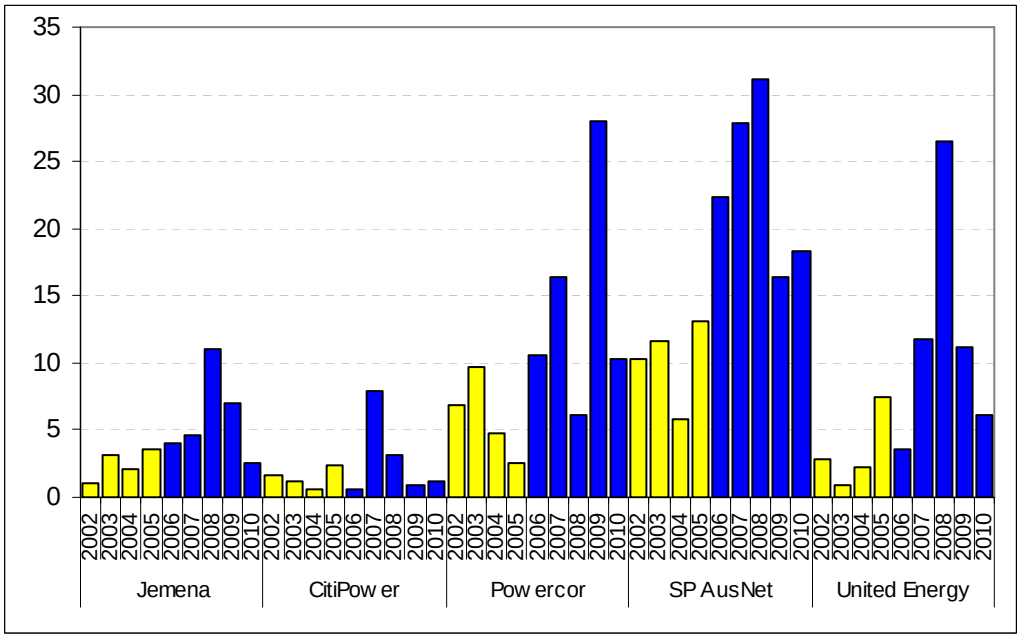
Figure 3.15 Central business district feeders (percentage of feeders in the category exceeding low-reliability threshold)



3.3.5 Low-reliability urban feeders

Figure 3.16 shows that there was variability between the performances of the DNSPs urban feeders. Jemena, Powercor and United Energy had fewer feeders above the low-reliability threshold than in 2009, however, CitiPower and SP AusNet had marginally more.

Figure 3.16 Urban feeders (Percentage of feeders in the category exceeding low-reliability threshold)



CitiPower recorded 1.1 per cent of its urban feeders above the low-reliability thresholds. This is marginally higher than the 0.86 reported last year and is CitiPower's second best recorded result since 2002.

In 2009 Powercor reported 28 per cent of urban feeders as having low-reliability in 2009. In 2010, 10 per cent of Powercor's urban feeders were above reliability thresholds, which is more in line with Powercor's previous results.

Jemena reported that 2.5 per cent of its urban feeders were above reliability thresholds as compared with 7 per cent in 2009. Jemena noted that the increase in percentage of low reliability feeders from 2005 was due to the increase in upstream supply failures and wide spread major events. This is more consistent with Jemena's previous results of around 2.4 per cent for the three years up to 2009, when approved exclusions are removed.

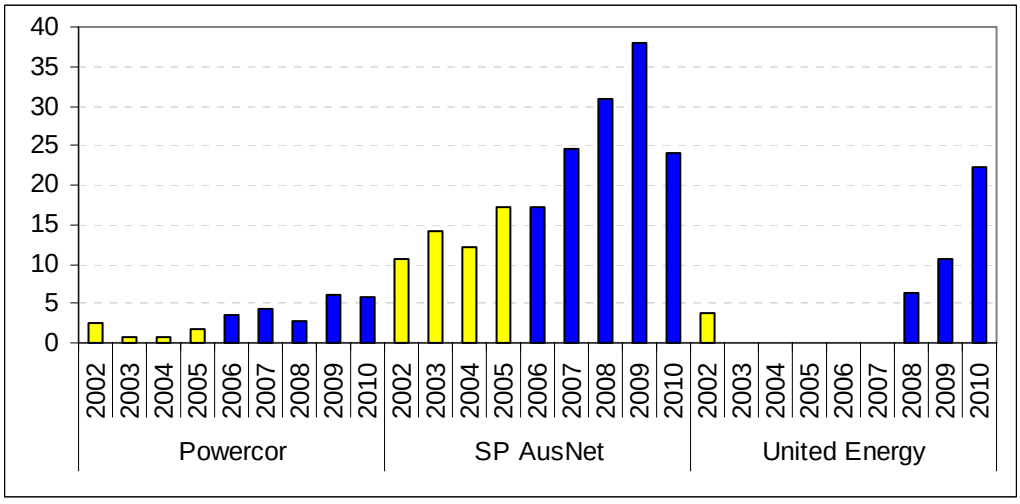
Around 18 per cent of SP AusNet's feeders were above the reliability threshold which is marginally more than the 16 per cent in 2009.

United Energy had a reduction in the percentage of low-reliability feeders to 6 per cent from around 11 per cent in 2009.

3.3.6 Low-reliability rural feeders

Rural feeders are categorised by the ESCV as either short rural feeders or long rural feeders. Short rural feeders are defined as feeders with a load density below 300 kVA/circuit km, the length of the feeder is less than 200 km and the network is typically composed of radial feeders. Long rural feeders are the same but have a feeder length of greater than 200km.

Figure 3.17 Short rural feeders (Percentage of feeders in the category exceeding low-reliability threshold)



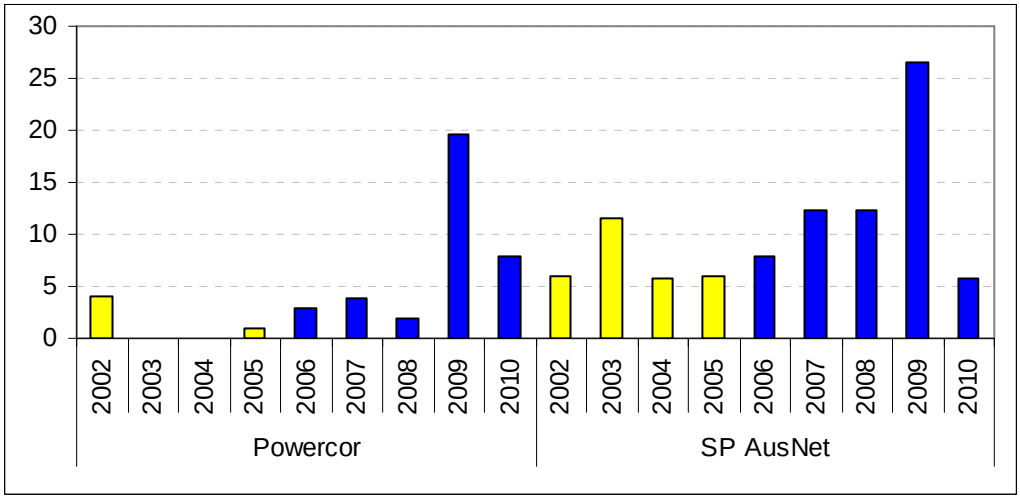
United Energy's percentage of feeders above the reliability thresholds was around 22 per cent. In 2009, the percentage of feeders above the threshold was about 10.5 per cent. The last three years shows an increasing trend in United Energy's percentage of feeders above the reliability threshold.

SP AusNet has experienced an increasing trend in the percentage of feeders above low-reliability thresholds. In 2009, 38 per cent of its short rural feeders were above

reliability thresholds, compared to 31 per cent the year before. However, in 2010 24 per cent of its short rural feeders were above reliability thresholds.

Only 5.9 per cent of Powercor's feeders were above reliability thresholds which was the lowest percentage of all the DNSPs with short rural feeders and is consistent with its results in previous years.

Figure 3.18 Long rural feeders (Percentage of feeders in the category exceeding low-reliability threshold)



Only Powercor and SP AusNet have long rural feeders. Both Powercor and SP AusNet had substantial increases in the number of long rural feeders above the thresholds in 2009 compared to 2008. However, in 2010 both DNSPs experienced significant decreases. Powercor reported 7.9 per cent of long rural feeds above thresholds compared to 19.6 per cent in 2009. SP AusNet reported 5.8 per cent of long rural feeders above thresholds compared to 26.5 per cent in 2009, and lowest since 2005.

Powercor commented that storms throughout the year affected the performance of the long run remote feeders.

3.4 Reliability of supply compared with price review targets

The ESCV's price review for the 2006–10 regulatory period set minimum service levels in terms of the number and duration of electricity outages. DNSPs are required to pay Guaranteed Service Level (GSL) payments to customers when the minimum service levels are not met. In the current system, any customers will automatically receive GSL payments if they experience cumulative unplanned sustained or momentary interruptions in a year above certain thresholds. The GSL payment rates were increased to four-times the previous rates in 2006. Chapter 4 gives details of the operation of GSLs.

The price review also reinforced the S factor financial incentive scheme to promote supply reliability. Under this scheme, DNSPs receive a financial reward or penalty

depending on whether they have achieved the performance targets set by the ESCV in the price review. The S factor scheme was first introduced in 2001.

The GSL and S factor schemes represent the value to society of not having electricity. The penalty rate is set at 1000 times the distribution service charge of the DNSPs for delivering electricity to the customers.

3.4.1 Excluded events

The high penalty rate represents a very high risk that could make the DNSPs unviable. Therefore, supply interruption events, which are outside the control of DNSPs, or outside the expected capacity of the DNSPs to manage, are excluded from the GSL and S factor schemes. The exempted events include supply outages due to a shortfall in generation capacity, transmission network outages and exceptionally wide-scale supply outages that exceed the thresholds set by the ESCV.

In 2010, four applications for excluded events were approved, of which:

- three related to transmission asset failures
- one related to rare events.

Table 3.4 summarises the effects on customer minutes-off-supply of the excluded events since 2002.

Table 3.4 Average minutes-off-supply per customer due to excluded events

Type of event	2002	2003	2004	2005	2006	2007	2008	2009	2010
Load shedding [a]						33.3	0.0	41.7	0.0
Failure of transmission connections		0.8	0.5	0.2	7.9	2.0	0.4	3.1	0.1
Rare events	1.7	13.4		40.5	8.0	8.2	117.2	5.2	0.5
Total	1.7	14.2	0.5	40.7	15.8	43.6	117.5	50.0	0.6

[a] some rare events are counted as load shedding as DNSPs can be directed to shed load during rare events

3.4.2 Targets for minutes-off-supply

Table 3.5 outlines the service performance targets for total minutes-off-supply in each DNSPs network. The targets for 2006–10 are fixed in terms of feeder type: CBD, Urban, Short Rural or Long Rural. They vary from year to year as network reconfigurations follow population shifts.

Table 3.5 Targets for total minutes-off-supply per customer (minutes)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
CitiPower	55.8	51.2	46.5	41.8	40.6	40.5	40.6	40.5	40.4
Jemena	90.0	87.0	85.0	83.0	83.1	83.1	82.2	81.8	81.7
Powercor	250.0	237.0	225.0	212.0	201.9	201.4	200.2	199.9	197.9
SP AusNet	246.0	237.0	227.0	218.0	209.0	211.5	213.7	214.6	205.1
United Energy	102.0	94.0	87.0	79.0	83.9	83.9	83.9	78.1	79.3

Table 3.6 Comparison between minutes-off-supply targets and reported reliability less excluded events

Performance measure, by DNSP	2010 reported result	2010 targets	Better/(worse) than target (%)
CitiPower			
Planned minutes-off-supply	5.4	9.2	40.7
Unplanned minutes-off-supply	40.3	31.2	(29.0)
Total minutes-off-supply	45.7	40.4	(13.1)
Jemena			
Planned minutes-off-supply	17.9	6.4	(178.1)
Unplanned minutes-off-supply	62.0	75.2	17.6
Total minutes-off-supply	79.9	81.7	2.2
Powercor			
Planned minutes-off-supply	33.4	37.5	10.8
Unplanned minutes-off-supply	197.6	160.4	(23.2)
Total minutes-off-supply	231.0	197.9	(16.8)
SP AusNet			
Planned minutes-off-supply	67.3	33.0	(104.4)
Unplanned minutes-off-supply	178.8	172.1	(3.9)
Total minutes-off-supply	246.1	205.1	(20.0)

United Energy			
Planned minutes-off-supply	48.1	17.5	(175.6)
Unplanned minutes-off-supply	80.2	61.8	(29.7)
Total minutes-off-supply	128.3	79.3	(61.9)

SP AusNet commented three big storm affected the reported result for 2010.

Figure 3.19 compares each DNSPs performance of unplanned minutes-off-supply per customer (less the impact of excluded events) against their targets, with a straight line trend also plotted. The service incentive scheme was introduced in 2001.

When a DNSPs performance in figure 3.19 is below the 100 per cent line, it represents that the DNSP performed better than its target. Jemena was the only DNSP to perform better than its target in 2010.

The orange line on the charts represents the trend for each of the DNSPs in relation to their performance targets. CitiPower, Powercor, SP AusNet and United have an upward—or deteriorating—trend. In particular, SP AusNet's trend line has exceeded the target since 2002.

The trend line is below the target rate for Jemena, CitiPower and Powercor — although increasing for CitiPower and Powercor. Jemena's trend line is just below its target. SP AusNet and United Energy have an increasing trend line which is above the target rate.

In 2010, only CitiPower and Powercor experienced an increase in the number of unplanned minutes-off-supply, CitiPower experienced a 36 per cent increase and Powercor experienced a 4 per cent increase compared to 2009. As mentioned, in 2010 Jemena was the only DNSP to have performance better than the target rate. Whereas two years earlier in 2008, all DNSPs actual performance was better the target rate.

The figure shows the following:

- In 2010, CitiPower was unable to outperform its target rate. The number of actual unplanned minutes-off-supply was 29 per cent worse than its target. Other than this result in 2010 and its 2007 performance, CitiPower has performed better than its target for all other years since reporting in 2000.

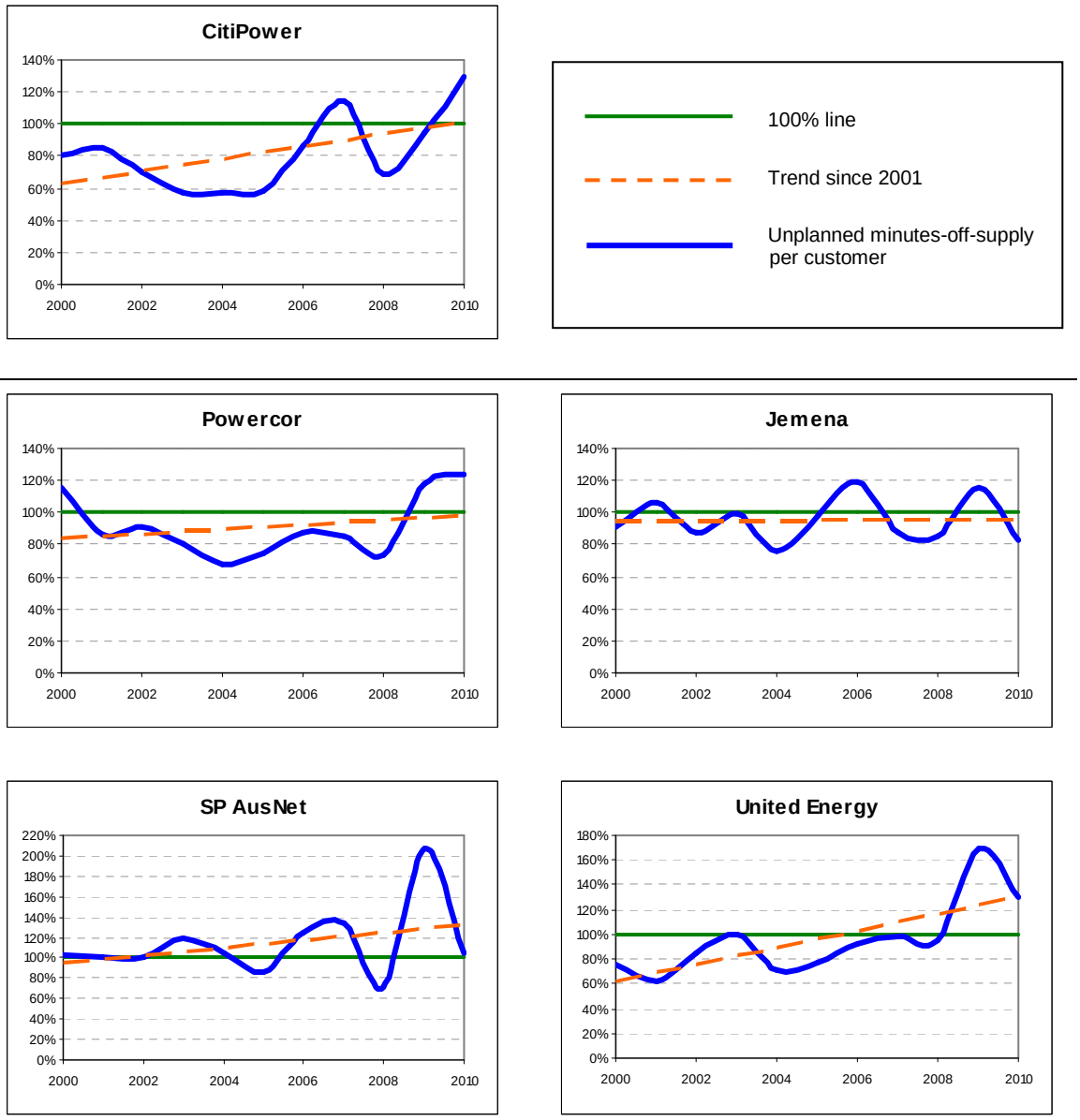
- In 2010, Jemena's average unplanned minutes-off-supply performance was 17.6 per cent better than its target. This is an improvement from 2009 when Jemena was around 11.5 minutes or 15.3 per cent worse than its target. The 2009 result was its second worse result. Jemena noted that in 2009, the January heatwave caused the average number of minutes-off-supply to be higher than usual—14.4 average minutes which were not excluded events.

- Powercor's number of average unplanned minutes-off-supply was worse than its target by around 37 minutes or 23.2 per cent. This was the second time since 2000 that Powercor has performed worse than its target. In 2009 Powercor performed around 16.7 per cent worse than target.

- SP AusNet has only performed better than its target in 2008 and 2005. In 2010 SP AusNet's number of average unplanned minutes-off-supply was worse than its target by around 6.7 minutes or 3.9 per cent. This is significantly better than its 2009 performance when the number of average unplanned-minutes-off-supply recorded by SP AusNet was 99.1 per cent more than its target.

- United Energy recorded performance 29.7 per cent worse than its target unplanned minutes-off-supply. This was the second time since 2003 it has breached its target. In 2009 United Energy recorded performance 68.3 per cent worse than target.

Figure 3.19 DNSPs unplanned minutes-off-supply (percentage of annual targets)



3.4.3 Targets for number and duration of interruptions

Table 3.7 shows that all the DNSPs performed better than their targets for the average number of unplanned interruptions per customer. Jemena and CitiPower were the best performers, beating their targets for total interruptions per customer by 30 per cent and 24 per cent respectively.

The performance measure of the average duration of unplanned interruptions is derived from the average minutes-off-supply and frequency that are reported for the same unplanned interruptions. In 2010, all DNSPs performed worse than their targeted average duration of interruptions. Jemena and SP AusNet performed less than target by 17 per cent and 29 per cent respectively. CitiPower was the worst performing DNSP with performance 70 per cent worse than its target.

Table 3.7 Comparison of frequency and duration targets with reported reliability less excluded events

	Average number of unplanned interruptions per customer			Average duration of unplanned interruptions		
	2010 reported result	2010 targets	Better/(worse) than target (%)	2010 reported result	2010 targets	Better/(worse) than target (%)
CitiPower						
unplanned interruptions	0.53	0.70	24	75.7	44.5	(70)
Jemena						
unplanned interruptions	0.93	1.33	30	66.6	56.8	(17)
Powercor						
unplanned interruptions	1.92	2.15	11	102.8	74.5	(38)
SP AusNet						
unplanned interruptions	2.09	2.61	20	85.4	66.0	(29)
United Energy						
unplanned interruptions	1.02	1.13	10	78.9	54.5	(45)

3.4.4 Targets for momentary interruptions

Table 3.8 shows that CitiPower, United Energy and Powercor exceeded their momentary interruption target. The best performing DNSP was CitiPower, which performed 63 per cent better than its target.

Table 3.8 Comparison of total momentary interruption targets with reported reliability, all momentary interruptions

	2010 reported result (less excluded events)	2010 targets	Better/(worse) than target (%)
CitiPower	0.09	0.25	63
Jemena	0.97	0.90	(7)
Powercor	3.53	4.13	14
SP AusNet	5.80	5.05	(15)
United Energy	1.01	1.55	35

3.4.5 AER observations regarding DNSPs supply reliability performance

Overall supply reliability in 2010 improved from previous years. The total minutes-off-supply decreased by approximately 33 per cent when compared with performance in 2009. Total sustained interruptions also decreased by 34 per cent.

When excluded events were removed from the overall performance, DNSPs supply reliability improved 17 per cent in terms of minutes-off-supply. In addition, the aggregate number of planned and unplanned sustained interruptions decreased by 12 per cent.

In 2010, the aggregate reliability for the worst served customers and the best served customers improved. Table 3.1 shows that for three of the DNSPs, the total minutes-off-supply for the worst served 15 per cent of customers was worse than the target level. In addition, there were a higher proportion of customers who experienced 0–1 hours of interruptions and a lower proportion of customers who experienced more than 10 hours without supply, from 7.6 per cent of customers in 2009 to 4.2 per cent.

As a result of this performance, in aggregate, the DNSPs were required to make approximately $6.92 million of GSL payments to customers, compared with $11.28 million in 2009, as discussed further in section 4.2.

The health card in chapter 5 consists of measures to indicate whether a DNSP has implemented appropriate long term strategy and plans to ensure adequate ongoing performance. CitiPower and Powercor received an ‘orange’ light, which was determined by worse than targeted level of reliability for unplanned minutes-off-supply or number of unplanned interruptions. SP AusNet and United Energy received a ‘red’ light for reliability of supply, which was determined by worse than targeted level of reliability for unplanned minutes-off-supply or number of unplanned interruptions during the last two years. CitiPower received a ‘red’ light for quality of supply, due to the voltage variations reported. In 2009, no DNSP received a ‘red’ light for either of these measures.

The improvement in supply reliability performance for 2010 can, in part, be attributed to the 2009 summer heatwave, which was an excluded event. However, even when

excluded exceptional events are removed from the performance data, the DNSPs aggregate performance in 2010 was worse than in 2008 and better than in 2009.

3.5 Quality of supply

As well as the reliability or availability of supply, customers can also be negatively impacted by poor quality electricity supply—namely, the technical characteristics of electrical energy delivered. Customers should receive their supply at the nominal voltage (230 volts for most customers) and at a single fundamental frequency of 50 hertz. The key elements for assessing quality of supply are voltage variations and harmonic distortion.

A supply that varies outside the specified limits may prevent the proper operation of customers' equipment or may damage it. The ESCV's Electricity Industry Guideline No. 11: Voltage Variation Compensation, defines the circumstances in which customers are entitled to compensation for damages due to voltage variations.

3.5.1 Performance monitoring

Quality of electricity supply in Victoria is monitored through two key sources:

- the level of customer complaints as reported by DNSPs
- the results of independent regulatory audits of DNSPs.

DNSPs have installed equipment to monitor the quality of supply at each zone substation and at the far end of one distribution feeder supplied from each zone substation. Under the 2006–10 price review, the two predominantly rural DNSPs, Powercor and SP AusNet, were funded to install additional sophisticated voltage monitoring equipment (27 locations for Powercor and 17 for SP AusNet). Installation of the additional monitoring equipment has been completed. The additional equipment will assist the DNSPs to address their supply quality issues.

Three DNSPs—Powercor, SP AusNet and United Energy—have been funded to improve the quality of their supply to customers. These DNSPs are required to report from 1 January 2006 on the number of customers receiving improved quality of supply.

The monitoring of supply quality covers limited supply areas of each DNSP, so direct comparison of each DNSPs recorded voltage variation events is not possible. The AER therefore monitors the trend of changes in the DNSPs reported information. However, the AER notes that the Victorian Government has mandated a complete rollout of smart meters to replace all existing energy meters by 2013. The new smart meters are expected to have the capability to monitor steady-state voltage as a factor of supply quality, and this monitoring will practically cover the entire customer base by 2013.

Table C.7 to C.9 in appendix C contain DNSPs reported information on over-voltage events. The performance indicators show that the number of voltage variation events in 2010 was similar to that in 2009, with a few exceptions:

- Jemena reported 4 voltage surge events, affecting 26 customers, down from the 18 surge related events which affected 246 customers in 2009.
- SP AusNet reported 11 voltage surge events, affecting 42 customers, down from the 31 surge related events which affected 86 customers in 2009.
- United Energy reported 33 voltage surge events, affecting 438 customers, down from the 46 surge related events which affected 730 customers in 2009.
- Jemena also reported 46 over-voltage events due to poor voltage regulation which affected 3271 customers, up from the 2684 customers affected by the 29 events in 2009.

Table 3.9 shows the cumulative number of Powercor, SP AusNet and United Energy customers who have received improved quality of supply since the start of the 2006–10 regulatory period, compared with the targets set for those three DNSPs in the price review. The table shows that all three DNSPs met their targets for 2010.

The table also shows the number of steady-state voltage variation events that the DNSPs recorded in 2010. SP AusNet and United Energy both reported fewer voltage variation events for both zone substations and distribution feeders in 2010. CitiPower reported significant increases in the number of voltage fluctuation events in both its zone substations and distribution feeders since 2009.

There is a degree of uncertainty in the collection and analysis of the voltage-variation data. DNSPs estimate the number of customers affected by over-voltage events and identify their causes, on the basis of the customers' complaints and the DNSPs own investigations. Data in 4.3 may show differences between the networks, in the customers' readiness to complain or the DNSPs readiness to recognise complaints.

Table 3.9 Number of recorded steady-state voltage variation events, 2010

	Number of customers who received improved quality of supply		Number of events (over- and under-voltage)			
	2010 target	2010 actual	Zone substations		Distribution feeders	
			2009	2010	2009	2010
CitiPower	n/a	n/a	63	93	2,063	54,953
Jemena	n/a	n/a	323	396	7,264	2,897
Powercor	59,000	59,385	266	117	8,161	8,880
SP AusNet	81,181	81,985	4,367	4,292	30,610	20,354
United Energy	1,000 – 2,000	5,701 [b]	47	32	2,382	65

[b] The cumulative number of customers who received improved quality of supply since 2006 in United Energy's network is 28 506. United Energy advised that it has no

specific project after 2007 to have significant improvement in quality of supply. The number indicated represents the five year average of this overall result.

4 Customer service

The performance levels of customer service that DNSPs achieved in 2010 were measured in terms of meeting the guaranteed service levels (GSLs). These GSLs relate to meeting appointments with customers on time, making supply connections and fixing streetlights by required dates and maintaining supply reliability above the minimum level. Customer service was also measured in terms of the levels of customer complaints.

4.1 Guaranteed service levels—appointments, connections and streetlights

Table 4.1 gives details of the GSL scheme applying in 2010 to encourage good customer service. The same GSLs applied to these categories of service in the 2001–05 regulatory period.

Table 4.1 Guaranteed payments to customers for poor service, thresholds and payments for the 2006–10 period

Measure	Level of service to incur GSL payment	Minimum GSL payment
Appointments	More than 15 minutes late for appointment with a customer	$20 per event
Connections	Failure to connect a customer by the date agreed	$50 per day (to a maximum of $250)
Streetlights	Failure to repair a streetlight within two business days or by date agreed	$10 [a]

[a] Paid only to the first customer reporting from the immediately neighbouring residence or business.

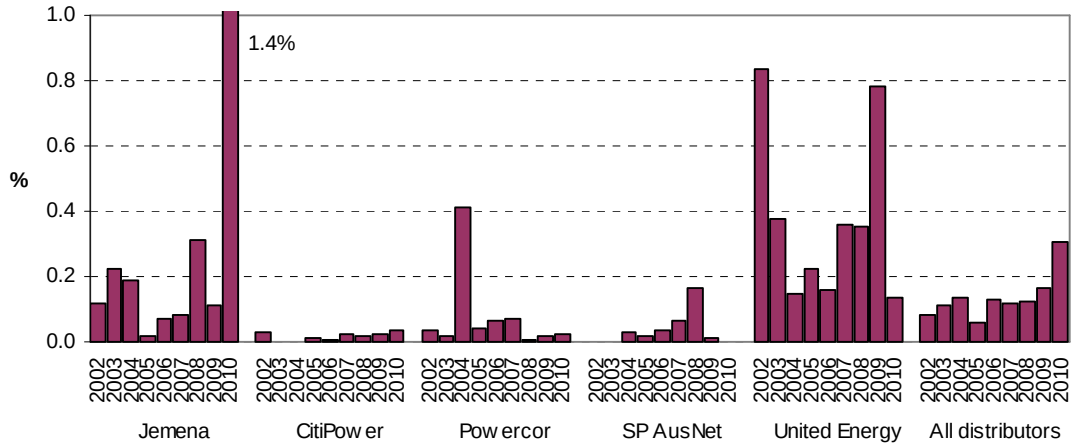
Figure 4.1, figure 4.2 and table 4.2 show the number of occasion on which GSL payments became due to customers, in terms of the percentage of customer appointments not met on time and the percentage of new connections not completed on time.

4.1.2 Meeting appointments on time

There has been an increase in the percentage of total appointments not met on time between 2009 and 2010 for most DNSPs, with the exception of SP AusNet. However, in aggregate the DNSPs have increased by five times the percentage of total appointments not met on time since 2009. In 2010, 586 of the appointments made by DNSPs did not commence within 15 minutes of the arranged time. Of these, Jemena had 211 late appointments out of the 11,792 booked with its customers.

Figure 4.1 shows the percentage of standard appointments not met on time and table 4.2 shows the number of customer arranged AMI appointments not met on time.

Figure 4.1 Appointments not met on time (percentage of appointments made) *



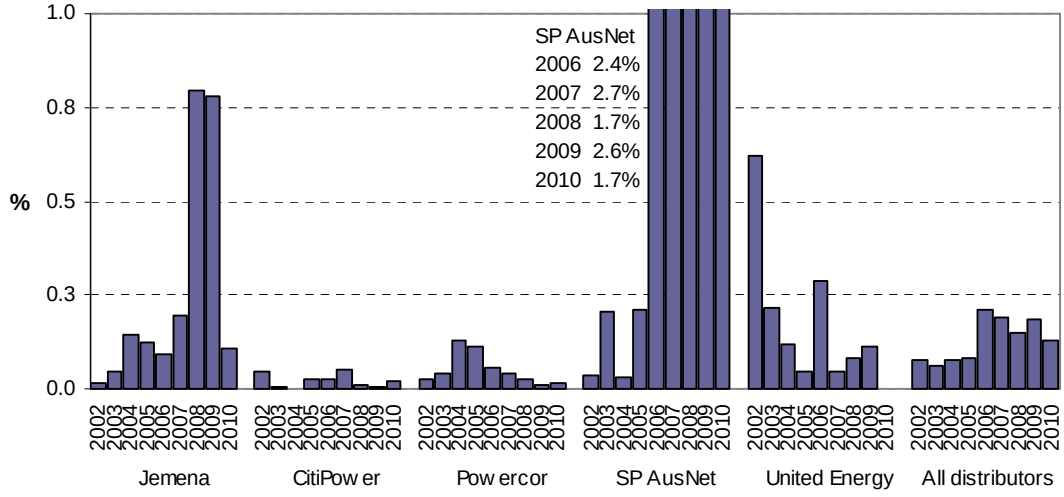
* Customer arranged AMI appointments are reported separately in Table 4.2.

Jemena advised that the large increase in the percentage of appointments not met on time was due to the change of its contractors, which occurred in 2010.

4.1.3 Making new connections by the agreed date

Figure 4.2 shows that of the 15,215 connections made by SP AusNet, in 265 instances or 1.7 per cent of connections, the connection was not completed by the required date. From 2009, the number of connections made by SP AusNet increased by about 2.1 per cent, however, the number of connections not made on the agreed date decreased around 31 per cent. The other DNSPs reported a similar percentage of connections not made by the agreed date as reported in 2009, with the exception of Jemena. Jemena reported approximately 0.1 per cent of connections not made, significantly reduced from 0.8 per cent in 2009. In aggregate, 12.7 in every 10 000 connections were not made on the agreed date which is less than the 18.4 in every 10 000 connection reported in the year before.

Figure 4.2 Connections not made by agreed date (percentage of new connections)



4.1.4 AMI appointments on time

Table 4.2 shows the number of appointments with regard to the installation of AMI smart meters. The percentage of appointments not met within 15 minutes of the agreed time ranges from 1.7 per cent to 2.6 per cent of appointments.

Table 4.2 AMI Appointments not met on time (percentage of appointments made)

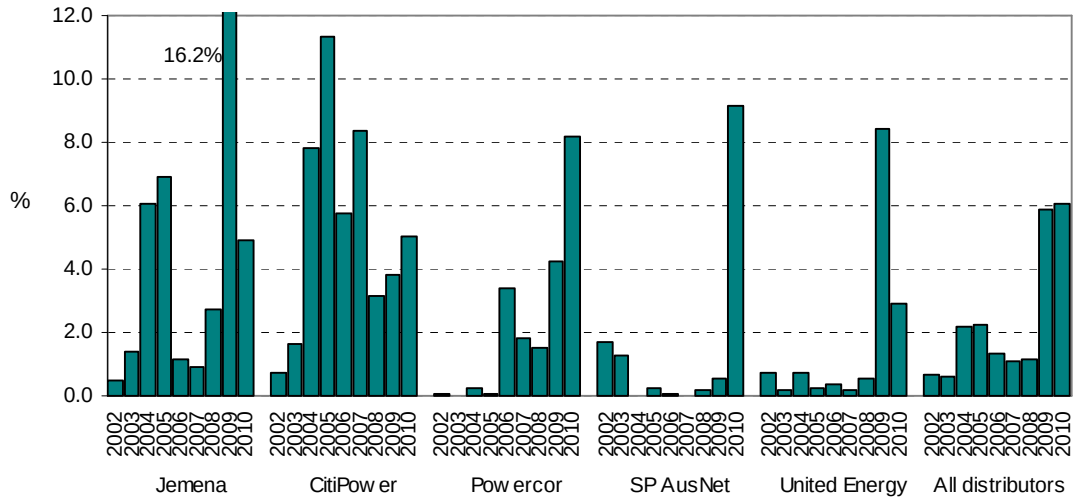
	Customer arranged AMI appointments	AMI appointments not met within 15 minutes of agreed time	Percentage of AMI appointments not met within 15 minutes of agreed time
CitiPower	2,555	62	2.4%
Jemena	4,455	107	2.4%
Powercor	2,411	41	1.7%
SP AusNet	*	*	*
United Energy	9,965	257	2.6%

* This data was not available for SP AusNet.

4.1.5 Repairing streetlights within the agreed time

Figure 4.3 reports the performance of the DNSPs in repairing streetlights within seven business days prescribed by the Public Lighting Code.

Figure 4.3 Streetlights not fixed by required time (percentage of lights reported broken)



SP AusNet, Powercor and CitiPower reported increases in the percentage of streetlights reported broken but not fixed within seven business days. SP AusNet reported that 9.2 per cent of its streetlights were not fixed by the required time, which was a significant increase from 0.5 per cent in 2009. Powercor reported that 8.2 per

cent of its streetlights were not fixed by the required time, which was a significant increase from 4.2 in 2009. Jemena and United Energy reported better performance in 2010 than in 2009 in this measure. Overall, this contributed to a slight increase in aggregate percentage streetlights not fixed by the required time from around 5.9 per cent in 2009 to 6.1 per cent in 2010.

Overall, the number of GSL payments decreased from 2009 by 2 per cent to 245 payments. This followed an 83 per cent increase in the number of GSL payments from 2008 to 2009.

Powercor advised that the increase in non standard fittings is a significant contributing factor to the rise of public lighting faults not fixed by the required time, as defined for AER reporting purposes. The increase in non-standard fittings has a direct impact on contractor performance due to the reliance on third parties to source and provide materials to complete a reported fault.

SP AusNet advised that the increase in the number of street lights not fixed within seven working days was mainly due to an increase in the “non standard” light faults. SP AusNet can only replace the lamp and PE cell. Any other repair takes longer as the lantern is removed and parts replaced that are supplied by the customer.

4.2 Guaranteed service levels — reliability payments

The price review requires DNSPs to make GSL payments to customers who experience reliability that is worse than the specified performance thresholds. From 1 January 2006, an enhanced scheme with additional measures of performance was brought into effect. Table 4.3 provides the details of the GSL scheme for 2006–10, compared to the previous scheme (for 2001–05).

Table 4.3 Guaranteed service level payments to customers for poor reliability, thresholds and payments for the 2001–05 and 2006–10 regulatory control periods

	Level 1		Level 2		Level 3	
	Threshold	**Payment ($)**	**Threshold**	**Payment ($)**	**Threshold**	**Payment ($)**
2006–10 regulatory period						
Annual cumulative duration of interruptions	20 hrs	100	30 hrs	150	60 hrs	300
Annual number of interruptions	10	100	15	150	30	300
Momentary interruptions [a]	24	25	36	35		
2001–05 regulatory period						
Duration of interruption	15 hrs	80				
Annual number of interruptions (urban)	9	80				
Annual number of interruptions (rural)	15	80				

[a] Momentary interruptions are temporary supply disruptions of less than 1 minute.

Table 4.4 summarises payments that the DNSPs made in 2009 and 2010 for not meeting the supply reliability thresholds for the duration and number of supply interruptions.

Payments made by Powercor for long supply restoration time increased by 45 per cent to $2,155,700. Powercor also had an increase of 37 per cent in the payments for low supply reliability. Overall the payments made by Powercor increased 41 per cent from 2009.

For all DNSPs in aggregate, the total amount for GSL payments decreased by about 39 per cent to under $7 million.

Table 4.4 Guaranteed service level payments for supply reliability, long supply restoration time

	Number		Number per 1000 customers		Amount paid ($)	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Payments due to long supply restoration time						
Jemena	545	78	1.79	0.25	54,750	8,000
CitiPower	5	1	0.02	0.00	500	100
Powercor	15,569	21,994	6.31	31.13	1,487,450	2,155,700
SP AusNet	43,186	21,635	70.66	34.71	6,184,400	2,724,050
United Energy	8,336	1,735	13.29	2.74	873,150	194,250
All DNSPs	67,641	45,443	26.64	17.61	8,600,250	5,082,100
Payments due to low supply reliability						
Jemena	0	0	0	0	0	0
CitiPower	0	0	0	0	0	0
Powercor	1,914	2,589	2.77	3.66	190,150	259,650
SP AusNet	14,976	8,083	24.50	12.97	1,673,350	877,800
United Energy	132	0	0.21	0	13,200	0
All DNSPs	17,022	10,672	6.70	4.14	1,876,700	1,137,450
Payments due to frequent momentary interruptions						
Jemena	0	0	0	0	0	0
CitiPower	0	0	0	0	0	0
Powercor	4,493	4,256	6.50	6.02	108,240	107,770
SP AusNet	25,123	22,334	41.10	35.83	690,775	595,180
United Energy	0	0	0	0	0	0
All DNSPs	29,616	26,590	11.67	10.31	799,015	702,950
Total GSL payments						
Jemena					54,750	8,000
CitiPower					500	100
Powercor					1,785,840	2,523,120
SP AusNet					8,548,525	4,197,030
United Energy					886,350	194,250
All DNSPs					**11,275,965**	**6,922,500**

4.3 Customer complaints

Figure 4.4 shows that Jemena and United Energy were the only DNSPs to report significantly more complaints in 2010 than in 2009. All DNSPs had a increase in the number of complaints received. Overall, the DNSPs recorded an increase in the number of complaints received from 1.1 to 2.3 complaints for every 1000 customers.

Jemena experienced the most number of customer complaints per 1000 customers in 2010, with a reported 5.5 complaints per 1000 customers.

CitiPower recorded the lowest level of complaints, at 0.18 per 1000 customers, increased from 0.14 in 2009. Powercor recorded the second lowest level of complaints, at 0.31 per 1000 customers, increased from 0.29 in 2009.

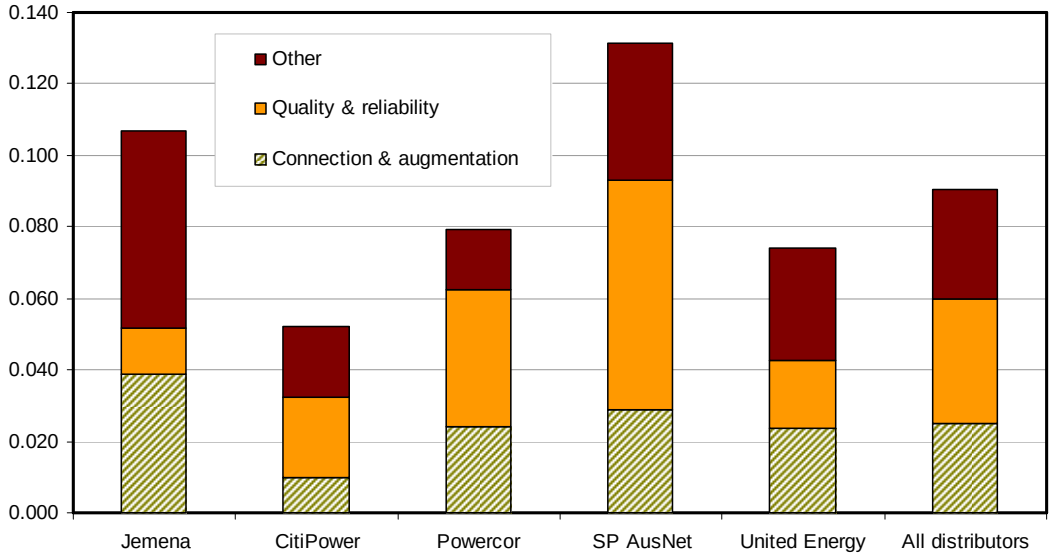
Complaints arising from the AMI rollout are included in the total complaints for 2010. The AMI complaints for United Energy accounted for 1.63 per 1000 customers and for Jemena 1.34 per 1000 customers.

Figure 4.4 Normalised number of complaints to DNSPs (per 1000 customers)

4.3.2 Complaints to Energy and Water Ombudsman (Victoria)

Figure 4.5 shows the number of complaints against the DNSPs that the Energy and Water Ombudsman (Victoria) (EWOV) received for full investigation in 2010 (see box 4.1 for explanation).

Figure 4.5 Normalised number of complaints received by EWOV for full investigation, per 1000 customers



There was a significant increase in the number of connection and augmentation and other distribution complaints received in 2010 compared with 2009. As was the case in 2009, the majority of complaints were in regards to quality and reliability, however the number of these complaints have decreased from the number reported in 2009.

Box 4.1 Explanatory note

EWOV defines a complaint as an expression of dissatisfaction regarding a policy, practice or customer service performance of an energy or water provider which is a participant in the EWOV scheme, where a response or resolution is explicitly or implicitly expected.

The figure above only shows 'complaints received for full investigation'. EWOV fully investigates complaints that remain unresolved following two or more contacts between the customer and the provider. In 2010, EWOV received 234 electricity distribution complaints for full investigation.

In addition to 'complaints received for full investigation', there are two other types of complaints:

1. Unassisted Referrals: If a customer has not yet spoken with the energy or water provider about their complaint, EWOV generally refers them back to the provider's call centre, or to a more relevant agency. In 2010, 677 electricity distribution complaints were classified as unassisted referrals.

2. Assisted Referrals: If the customer has spoken once with someone at the provider's call centre about their complaint but it remains unresolved, EWOV usually refers them to a higher-level contact at the provider. In calendar year 2010, EWOV referred 681 electricity distribution complaints to higher-level contacts in the electricity distribution businesses.

4.4 Call centre performance during wide-scale events

During wide-scale outage events, significantly more customers than usual contact DNSPs call centres to report supply interruptions, safety related matters and/or to obtain supply restoration information. Providing accurate and timely information to affected customers about supply restoration in these situations is an important part of the DNSPs services to their customers.

In 2006, ESCV undertook a review of DNSPs call centre performance during wide-scale emergencies during the late January 2006 heatwave period. It found that DNSPs call centre performance during normal operating conditions was generally satisfactory and trends indicated that their performance was improving over time. However, the ESCV found that the management of wide-scale emergency situations needed to be improved.[16]

Following the above findings, the ESCV modified the reporting arrangement of the DNSPs and required that DNSPs report their call centres' performance during wide-scale events from 2009. This section focuses on the reported performance of the Victorian DNSPs call centres on the five busiest days—as measured by the total number of calls entering the fault line. These days usually occur when there are wide-scale outage events affecting a DNSPs network, such as heatwaves and bushfires.

As this is the second year that the call centre performance indicators are reported, long-term trend analysis is not possible.

Table 4.5 shows the DNSPs five busiest days based on the number of calls to their call centre fault lines. There was a spread of busiest days across the DNSPs, the most frequent being 11 January, 11 February, 6 March and 5 September. Unlike in 2009 where the January heatwave was the three busiest days for all the DNSPs, in aggregate in 2010, the busiest days were spread across 8 months.

There is not a perfect relationship between the average total minute-off-supply and the number of calls to call centre fault lines. This is likely to be related to the timing and type of event. For instance, a short outage affecting a large number of customers may result in a different volume of calls than a prolonged outage affecting a smaller number of customers. SP AusNet commented that, another explanation in some instances is that, customers may have other priority considerations such as safety.

[16] Essential Services Commission, Victoria 2006, *Performance of Electricity Distribution Businesses' Call Centres during Wide-Scale Emergency Situations: Final Report*, 4 October 2006.

Table 4.5 Busiest days in 2010

	Busiest days, based on the number of calls to call centre fault line				
	1st	**2nd**	**3rd**	**4th**	**5th**
CitiPower	23-Mar	6-Mar	15-Oct	11-Dec	11-Feb
Jemena	11-Jan	6-Mar	16-May	11-Feb	7-Mar
Powercor	5-Sep	7-Mar	11-Feb	10-Feb	4-Sep
SP AusNet	5-Sep	11-Jan	6-Mar	17-Jun	6-Sep
United Energy	5-Sep	11-Jan	11-Feb	17-Jun	2-Dec

Table 4.6 Total calls on days of highest call volume (ratio to 2010 daily average)

	Busiest days based on calls to call centre fault line					
	1st	**2nd**	**3rd**	**4th**	**5th**	**2010 daily average**
CitiPower	3,251 (14.72)	3,062 (13.86)	1,724 (7.80)	1,474 (6.67)	1,263 (5.72)	221
Jemena	3,243 (11.31)	2,622 (9.14)	1,977 (6.89)	1,528 (5.33)	1,074 (3.74)	287
Powercor	20,836 (20.94)	12,671 (12.73)	8,881 (8.92)	7,838 (7.88)	6,250 (6.28)	995
SP AusNet	19,125 (22.17)	9,389 (10.88)	9,303 (10.78)	8,283 (9.60)	6,583 (7.63)	863
United Energy	15,566 (26.85)	8,003 (13.81)	2,926 (5.05)	2,638 (4.55)	2,483 (4.28)	580

* CitiPower did not supply data for its busiest day.

Table 4.7 shows the average waiting time of a caller for each DNSP over its five busiest days. For each DNSPs top five busiest days, the average wait times were well above the 2010 average.

The longest daily average waiting time was 28.2 minutes to Jemena's call centre on 6 March 2010.

Table 4.7 Average waiting time (seconds) on days of highest call volume

	Busiest days (based on calls to call centre fault line)					
	1st	**2nd**	**3rd**	**4th**	**5th**	**2010 daily average**
CitiPower	*	90	352	293	215	55
Jemena	640	1,690	107	268	231	72
Powercor	1,537	422	180	290	880	91
SP AusNet	256	226	502	149	91	28
United Energy	799	853	370	201	208	74

Note: Adjusted to remove abandoned calls from the calculation of average waiting times.
* CitiPower did not supply data for its busiest day.

Table 4.8 shows peak half-hourly average call waiting times on DNSPs five busiest days in terms of call volume. Table 4.8 shows that the day with the highest peak average wait time for each DNSP, corresponded to the day with the highest average waiting time.

Table 4.8 Peak average waiting time (seconds) on days of highest call volume

	Busiest days (based on calls to call centre fault line)				
	1st	**2nd**	**3rd**	**4th**	**5th**
CitiPower	*	280	755	576	493
Jemena	2,366	2,535	205	857	1,018
Powercor	5,422	1,470	480	559	2,252
SP AusNet	627	950	879	395	659
United Energy	3,280	2,712	790	765	1,615

* CitiPower did not supply data for its busiest day.

Of each DNSPs five busiest days, the highest peak waiting time was recorded by Powercor, on 5 September 2010, where it peaked at around 90.4 minutes—compared to its average waiting time over the year of 1 minute and 31 seconds.

5 Long term health assessment

In addition to reporting the actual levels of service delivered to customers, the ESCV considered there was a need to monitor whether the DNSPs long term business decisions are sufficient to achieve an adequate level of service in future. The existing performance indicators of the DNSPs (such as supply reliability measures) are lagging measures—that is, an indicator of the outcome of a previous change of the DNSPs asset management policy. The ESCV introduced 'health card' measures for the DNSPs for the 2006–10 regulatory period to monitor DNSPs capacity to achieve an adequate level of service in the future.

The health card consists of measures to indicate whether a DNSP has implemented appropriate long term strategy and plans to ensure adequate ongoing performance. The monitoring system seeks to identify changes that may indicate potential for the deteriorating 'health' of the DNSP, which may be due to an increase in the underlying risks assumed by the DNSP. The criteria therefore include comparisons of each DNSPs performance against its own performance in prior years—to identify trends—and against industry-wide standards—which on their own may not always sufficiently identify desirable and achievable performance levels.

The health card monitoring system is in the form of a traffic-light format, displayed as green (highest rating), orange or red (lowest rating). Table A.1 in appendix A details the assessment criteria of the health card indicators.

Table 5.1 shows the health card assessment results of the DNSPs. The number of red and orange lights has increased from 9 to 14. DNSPs reported the following:

- Jemena was the only DNSP to receive a 'green' rating for reliability of supply. This is reflective of the other DNSPs not meeting their targeted level of reliability in 2010.

- CitiPower received an 'orange' light for bushfire mitigation because it had 12 priority-2 category maintenance items outstanding at the beginning of the fire season on 5 December 2010. All these priority-2 items were located in a low bushfire risk area and were completed by 13 December 2010.

- Regarding correct application of excluded service charges, Powercor received 'orange' rating and CitiPower received 'red' rating. These DNSPs revised three and seven connection charge offers to customers respectively, as result of customers' complaints.

- The quality of supply measures for CitiPower was highlighted 'red' rating because its reported number of voltage variation events was significantly higher than that of the previous year.

Table 5.1 Health card status, electricity DNSPs, 2010 [17]

Key  = Red  = Orange  = Green

Measures	Jemena	CitiPower	Powercor	SP AusNet	United Energy
Reliability of supply					
Quality of supply		 a			
Network planning					
Complaints to EWOV received for full investigation					
Compliance with safety Regulations					
Bushfire mitigation		 b	 c		
Regulatory audits (ESC)	n/a	n/a	n/a	n/a	n/a
Safety audits (ESV)	 d				 d
Environmental infringements (EPA)					
Correct application of excluded service charges					
Electrical Incidents					
Quality systems certification (AS9000 series)					
Environmental systems certification (AS 14000)					

Notes:

[a] CitiPower advised that it was identified that distribution transformers supplying some of the CitiPower voltage monitoring meters on distribution feeders were not set at the preferred voltage tapping level, leading to a large number of recorded voltage variation events. While there was no evidence of any impact on customers, the identified transformers have since been adjusted to the preferred voltage tapping level.

[17] Refer to Table A.1 of appendix A for the assessment criteria of the health card system.

[b] CitiPower had 12 outstanding maintenance items (all under the same category) at the beginning of the fire season. These were re-scheduled and the works were completed on the 12 and 13 December 2010. CitiPower commented that bushfire seasons are not declared in CitiPower's area. CitiPower also commented that all these Priority 2 items were located in a low bushfire risk area on another distributor's controlled line and an outage was organised to complete these items. However the distributor did not card the customers to notify them of the shutdown and subsequently the shutdown was cancelled.

[c] Powercor completed all bushfire preparatory works on 5 December 2010, other than those where access was restricted. Access to 176 spans (part of the pre-summer vegetation management program) were restricted due to wet ground conditions. All sites were regularly checked to monitor access conditions to enable the works to be completed as soon as possible.

[d] Jemena and United Energy have advised that corrective actions for this non-compliance have been completed.

To continue providing information regarding the DNSPs supply reliability performance, the AER will develop an outcomes monitoring framework, under which the DNSPs will be required to report against. Reporting against this framework will monitor the consistency of the Victorian DNSPs with the AER's 2011–15 Victorian distribution determinations, and increase the transparency and accountability of the service levels delivered to customers. This framework has been foreshadowed in the AER's 2011–15 distribution determination.[18]

[18] Further information regarding the AER's outcome monitoring framework is available at the AER's *Victorian electricity distribution network service providers Distribution determination 2011–2015 Final decision*, chapter 21, http://www.aer.gov.au/content/index.phtml/itemId/740791

A Source of information and background information

This section covers the sources of information, any changes in the previous reporting format, errors identified in the previous report, and other background information relevant to the preparation and interpretation of this report.

Source of information

The analysis of the DNSPs performances is based on:

- regulatory accounting information provided annually by the DNSPs to the AER
- network performance and customer services information reported by the DNSPs
- complaint information supplied by the Energy and Water Ombudsman (Victoria).

Accuracy of reporting

A.1.1 Reporting consistency

The AER began compiling the performance reports of Victorian DNSPs in 2008. Previously the report was compiling by the ESCV. The AER has calculated the information in its reports from yearly data where previously it was calculated from monthly data. This results in a slight difference in the reporting of customer numbers, which feed into some of the performance measures. The effects of the different reporting methods are immaterial, and comparisons between the years can still be made.

Percentages throughout this document are calculated from the actual performance figures, and therefore may appear slightly different if calculated from the figures in this report due to rounding errors.

For metering services, from the 2009 comparative performance report, the AER has used the forecasts of revenue, capital and operating expenditure from the *Final determination—Victorian advanced metering infrastructure review, 2009–11 AMI budget and charges applications*. This is a departure from previous performance reports where the forecasts for metering services reflected those contained within the ESCV's 2006–10 EDPR. The AER considers this adjustment is necessary to properly compare DNSPs revenue against their forecast costs and revenue.

This report is prepared on the basis of the ESCV's reporting arrangements for the 2006–10 regulatory period and has been prepared to be, as far as practicable, consistent with the conventions used by the ESCV in preparing past performance reports. For this reason, the data presented in this report may not entirely match with the data presented in the Victorian electricity Distribution Price Review 2011–15.

A.1.2 Financial information

All financial results are inflation adjusted—the DNSPs price controls permit them to increase average prices each year in line with inflation. It is, therefore, more informative to compare forecasts and actual results when they are expressed in real (inflation-adjusted) terms. In this report, the forecasts and actual results are reported in the dollar value of 1 July 2004, that is, in terms of the purchasing power of a dollar in the middle of 2004. This approach is consistent with the inflation adjustment adopted for the 2006–10 price review.[19]

A.1.3 Reliability of supply and customer service information

Each DNSP undertook a regulatory compliance audit in 2010. The scope of the audit included the accuracy of selected performance information reported by the DNSPs to the AER. The audits were conducted by independent auditors nominated by the DNSPs and approved by the AER. The audit findings indicated that DNSPs generally maintained a satisfactory level of accuracy in reporting key performance indicators. Errors were typically less than 2 per cent.

Health card measures

A 'health card' summary of leading indicators has been developed to identify changes in DNSPs performance which may lead to deterioration of network services over time. The health card is presented in table 5.1 in the body of the report. The following defines the measures that are included in the health card.

[19] A contentious issue for utility regulators has been whether prices (and underlying asset values) should be escalated for the sharp jump in consumer prices caused by the introduction of the Goods and Services Tax (GST). No adjustment to the published price indexes has been made in this report.

Table A.1 Health card measures

Measure	Green light [a]	Orange light [a]	Red light [a]
Reliability	Equal or better than targeted level of reliability for unplanned SAIFI and unplanned SAIDI	Worse than targeted level of reliability for unplanned SAIFI or unplanned SAIDI during the year	Worse than targeted level of reliability for unplanned SAIFI or unplanned SAIDI during the last two years
Voltage quality	Decreasing or flat trend in the total number of voltage variations (steady state, 1 minute and 10 seconds) over the five year period, or part thereof where records are available (flat trend represents a less than 5 per cent increase in the number of voltage variations over the period) or voltage quality improvement projects implemented as forecast	Increasing trend in the total number of voltage variations (steady state, 1 minute and 10 seconds) over the five year period, or part thereof where records are available (increasing trend represents a 5 per cent or more, but less than 50 per cent, increase in the number of voltage variations over the period) or more than 20 per cent but less than 50 per cent of cumulative forecast voltage quality improvement projects not implemented	Increasing trend in the total number of voltage variations (steady state, 1 minute and 10 seconds) over the five year period, or part thereof where records are available (increasing trend represents a 50 per cent or more increase in the number of voltage variations over the period) or 50 per cent or more of cumulative forecast voltage quality improvement projects not implemented
Planning	Decreasing or flat trend, over a 5 year period or part thereof, in the annual load at risk due to late completion of projects which were planned by the distributor to provide capacity to meet the expected maximum demand in winter or summer (flat trend represents a less than 5 per cent increase in the annual load at risk)	Increasing trend, over a 5 year period or part thereof, in the annual load at risk due to late completion of projects which were planned by the distributor to provide capacity to meet the expected maximum demand in winter or summer (increasing trend represents a 5 per cent or more, but less than 50 per cent, increase in the annual load at risk)	Increasing trend, over a 5 year period or part thereof, in the annual load at risk due to late completion of projects which were planned by the distributor to provide capacity to meet the expected maximum demand in winter or summer (increasing trend represents a 50 per cent or more increase in the annual load at risk)
Service orders	Based on the B2B report card completed by the distributors and retailers – to be developed after B2B report card developed	Based on the B2B report card completed by the distributors and retailers – to be developed after B2B report card developed	Based on the B2B report card completed by the distributors and retailers – to be developed after B2B report card developed
Complaints	Number of complaints referred to EWOV no greater than 1.5 times the average annual number of complaints referred during the period 2002-2004 and number of complaints referred to EWOV less than 0.20 per 1,000 customers	Number of complaints referred to EWOV greater than 1.5 times but no greater than 2 times the average annual number of complaints referred during the period 2002-2004 or number of complaints referred to EWOV equal to or greater than 0.20 per 1,000 customers and less than 0.30 per 1,000 customers	Number of complaints referred to EWOV greater than 2 times the average annual number of complaints referred during the period 2002-2004 or number of complaints referred to EWOV equal to or greater than 0.30 per 1,000 customers

Measure	Green light [a]	Orange light [a]	Red light [a]
Safety regulations	No directions issued under section 141 of Electricity Safety Act are outstanding for more than 3 months during the year	A direction issued under section 141 of Electricity Safety Act is outstanding for more than 3 months but no more than 9 months during the year	A direction issued under section 141 of Electricity Safety Act is outstanding for more than 9 months during the year
Bushfire mitigation plan	No work outstanding at the start of the bushfire season	One of the seven categories of work reported on is not completed at the start of the bushfire season	More than one of the seven categories of work reported on is not completed at the start of the bushfire season
Regulatory audits	Score of more than 75 per cent for audit, based on level of non-compliance reported and the likely impact of that non-compliance	Score of more than 50 per cent but less than 75 per cent, for audit, based on level of non-compliance reported and the likely impact of that non-compliance	Score of 50 per cent or less for audit, based on level of non-compliance reported and the likely impact of that non-compliance
Safety audits (if undertaken)	No significant areas of non-compliance as determined by Energy Safe Victoria	Of the areas audited, one significant area of non-compliance as determined by Energy Safe Victoria	Of the areas audited, more than one significant area of non-compliance as determined by Energy Safe Victoria
Environmental (EPA)	No infringement notices for environmental regulations during the year	One infringement notice for environmental regulations during the year	Two or more infringement notices for environmental regulations during the year
Excluded service charges	No occasions where excluded service charges are revised by the distributor following contact by the customer with the Commission	No more than five occasions where excluded service charges are revised by the distributor following contact by the customer with the Commission	More than five occasions where excluded service charges are revised by the distributor following contact by the customer with the Commission
Electrical Incidents relating to a distributor's distribution system	Number of incidents reported to ESV is less than 1.25 times the number of incidents reported in the previous year and number of incidents reported to ESV is less than 0.5 per 1,000 customers	Number of incidents reported to ESV is equal to or greater than 1.25 times but less than 1.5 times the number of incidents reported in the previous year or number of incidents reported to ESV is equal to or greater than 0.5 per 1,000 customers and less than 1.0 per 1,000 customers	Number of incidents reported to ESV is equal to or greater than 1.5 times the number of incidents reported in the previous year or number of incidents reported to ESV is equal to or greater than 1.0 per 1,000 customers
	Green light (only)		
Quality systems certification (AS9000 series	Distribution business and/or its related party (where that related party undertakes a significant proportion of the distribution business's obligations under its licence) certified with no major non compliances from most recent audit		

Measure	Green light [a]	Orange light [a]	Red light [a]
Environmental systems certification (AS 14000)	Distribution business and/or its related party (where that related party undertakes a significant proportion of the distribution business's obligations under its licence) certified with no major non compliances from most recent audit		

[a] The AER may use its discretion to improve a rating from orange to green or red to orange, but may not move a rating from green to orange or orange to red. The "health card" will include a comments column which will explain the reasons for an orange light or a red light, and where the rating has been improved at the discretion of the Commission, will provide the rationale for this improvement.

Characteristics of the DNSPs

A.1.4 Jemena

Jemena supplies electricity to 310 000 customers (about 89 per cent residential) in a 950 km^2 area of Melbourne's city and north-western suburbs, with Tullamarine airport at its approximate centre. Its network includes around 11 000 km of powerline (about 83 per cent through the urban area) on 91 000 poles—although around 23 per cent of the urban network and 34 per cent of the rural network is underground. Related companies include United Energy and one of three gas distribution networks in Victoria.

A.1.5 CitiPower

CitiPower Pty supplies electricity to 308 000 customers (about 83 per cent residential) in a 157 km^2 area of Melbourne's CBD, docklands and inner city. Its network includes 6 500 km of powerline on approximately 50 000 poles. About 17 per cent (by length) is classed as 'CBD'; nearly 90 per cent of CBD lines are underground. It has common ownership and a common management structure with Powercor.

A.1.6 Powercor

Powercor Australia Ltd supplies electricity to 706 000 customers (85 per cent residential) in 146 000 km^2 of Victoria. Its network includes part of Melbourne's Docklands precinct, and extends from Williamstown, north to the Murray, west to the South Australian border and south to the coast. Powercor uses 84 000 km of powerline (82 per cent classified as 'rural') on approximately 486 000 poles, and about 10 per cent of its length runs underground.

A.1.7 SP AusNet

SPI Electricity Pty Ltd trades as SP AusNet. The business supplies electricity to 623 000 customers (89 per cent residential) in an 80 000 km^2 area. This extends from the outer-eastern suburbs of Melbourne, north and east to the New South Wales border (encompassing Seymour, Benalla, Wangaratta and Wodonga), south and east to the coast including many of the heavily treed areas of Victoria. SP AusNet's distribution network assets include 48 000 km of powerlines (89 per cent rural and 81 per cent above ground) and 384 000 poles. Its related companies also operate the

electricity transmission network and one of three gas distribution networks in Victoria.

A.1.8 United Energy

United Energy Distribution Pty Ltd supplies electricity to 635 000 customers (89 per cent residential) in a 1 500 km² area from the south-eastern suburbs, southwards down the Nepean peninsula. Powerlines on the network are more than 13 000 km long (14 per cent rural, 81 per cent above ground) on 211 000 poles.

B Financial information tables

Table B.1 Aggregate financial information—2004 dollars Jemena (see appendix A)

Jemena									Year ending 31 December	
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	136.7	129.7	131.2	132.3	133.0	137.7	137.5	137.6	137.0	160.9
Actual revenue	143.5	128.7	134.0	138.9	146.3	143.3	155.0	150.7	152.7	181.9
Forecast O & M expenditure	47.6	48.4	47.1	47.9	47.7	54.3	55.2	56.6	56.5	62.1
Reported O & M expenditure	49.0	49.2	49.8	47.8	49.0	51.6	54.0	46.8	49.8	57.1
Adjusted O & M expenditure		44.5	50.0	48.4						
Forecast capital expenditure	33.6	46.8	50.5	50.7	56.8	55.2	48.4	50.2	86.4	72.9
Reported capital expenditure	34.1	28.1	30.9	32.1	36.8	49.1	67.1	53.6	114.1	104.2
Adjusted capital expenditure		34.6	38.9	38.1						
Forecast customer contributions	7.2	1.7	1.8	1.8	1.8	4.4	4.5	4.2	4.4	5.1
Actual customer contributions	8.2	6.6	7.0	4.6	4.9	7.4	9.2	9.8	8.2	11.8
Forecast average asset value	561.7	597.3	608.1	618.8	630.8	587.7	601.5	610.7	642.4	672.0
Reported average asset value	555.6	572.8	562.8	554.3	547.6	550.9	570.9	590.4	647.7	704.7
Adjusted average asset value		582.6	572.7	564.1						

Table B.2 Aggregate financial information—2004 dollars CitiPower

CitiPower										Year ending 31 December
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	191.5	184.7	187.5	190.0	192.7	179.6	178.9	178.5	177.6	192.1
Actual revenue	194.3	184.3	187.5	199.9	199.9	194.5	196.1	190.1	195.5	205.3
Forecast O & M expenditure	69.8	55.3	55.4	56.1	56.7	37.8	39.3	39.7	47.3	45.2
Reported O & M expenditure	41.6	33.6	29.4	47.3	25.3	30.9	34.7	35.5	39.2	41.4
Adjusted O & M expenditure		87.6	101.1	103.5						
Forecast capital expenditure	58.4	72.7	77.9	72.1	61.2	103.0	105.9	101.4	119.2	115.5
Reported capital expenditure	59.3	65.5	62.3	66.9	71.7	83.3	66.8	75.9	91.6	116.3
Adjusted capital expenditure		139.2	149.6	161.9						
Forecast customer contributions	8.0	7.7	7.7	7.7	7.7	5.7	5.6	5.5	6.0	6.0
Actual customer contributions	5.6	8.1	8.9	10.1	11.7	7.4	12.3	26.3	23.0	17.7
Forecast average asset value	862.9	917.8	948.8	977.7	997.0	1,009.9	1,048.9	1,085.7	1,118.8	1,170.3
Reported average asset value	836.4	926.4	945.8	964.0	985.8	1,006.7	1,016.0	1,020.2	1,048.8	1,077.1
Adjusted average asset value		1,599.4	1,589.5	1,588.8						

Table B.3 Aggregate financial information—2004 dollars Powercor

Powercor									Year ending 31 December	
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	378.4	368.5	373.4	379.1	383.6	353.5	354.4	355.9	357.0	384.7
Actual revenue	398.5	372.8	399.1	408.8	420.4	383.9	374.8	385.9	405.6	429.5
Forecast O & M expenditure	121.8	118.7	120.5	118.9	120.4	127.1	130.5	133.4	145.0	141.9
Reported O & M expenditure	114.3	90.4	100.0	110.2	120.3	120.6	107.0	115.7	124.7	118.2
Adjusted O & M expenditure		87.6	101.1	103.5						
Forecast capital expenditure	114.1	127.2	126.0	149.3	143.1	158.2	188.0	198.7	197.3	240.4
Reported capital expenditure	128.0	108.1	120.7	126.7	136.9	166.0	159.2	167.1	167.4	239.1
Adjusted capital expenditure		139.2	149.6	161.9						
Forecast customer contributions	27.5	15.9	16.2	16.8	17.6	25.9	26.1	26.0	26.0	26.5
Actual customer contributions	30.6	32.0	38.8	37.1	35.3	31.0	60.3	48.8	51.4	51.5
Forecast average asset value	1,526.5	1,598.1	1,607.5	1,628.0	1,660.1	1,654.5	1,723.9	1,809.4	1,862.5	1,964.5
Reported average asset value	1,501.3	1,610.5	1,605.9	1,611.1	1,627.4	1,671.4	1,728.1	1,779.7	1,823.7	1,919.7
Adjusted average asset value		1,599.4	1,589.5	1,588.8						

Table B.4 Aggregate financial information—2004 dollars SP AusNet

SP AusNet									Year ending 31 December	
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	297.8	288.9	290.0	293.3	297.2	309.2	312.9	316.1	322.7	343.3
Actual revenue	306.0	289.6	308.9	300.1	311.4	297.9	318.7	329.0	314.7	379.8
Forecast O & M expenditure	107.2	102.8	106.4	105.5	105.3	123.3	126.2	131.0	141.4	143.6
Reported O & M expenditure	97.0	98.5	102.3	94.1	86.9	89.4	112.4	121.6	142.3	149.9
Adjusted O & M expenditure		90.1	86.1	93.4						
Forecast capital expenditure	87.8	120.9	106.7	97.5	110.6	139.8	130.4	148.6	188.9	179.6
Reported capital expenditure	78.6	57.2	79.7	100.8	162.9	121.0	128.2	185.6	237.3	276.1
Adjusted capital expenditure		79.2	108.1	128.4						
Forecast customer contributions	24.7	8.0	8.7	9.3	9.8	12.9	13.5	13.9	12.0	14.1
Actual customer contributions	19.5	23.0	29.9	27.6	19.6	24.3	18.8	17.8	22.0	27.6
Forecast average asset value	1,214.5	1,306.3	1,343.3	1,371.0	1,402.5	1,341.2	1,400.1	1,455.3	1,518.4	1,598.7
Reported average asset value	1,167.6	1,229.1	1,219.8	1,235.5	1,294.7	1,364.4	1,412.8	1,484.9	1,603.2	1,765.6
Adjusted average asset value		1,225.7	1,215.1	1,230.1						

Table B.5 Aggregate financial information—2004 dollars United Energy

United Energy									Year ending 31 December	
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	268.0	265.6	267.4	268.6	270.7	267.0	266.6	265.9	263.7	284.5
Actual revenue	284.2	284.5	303.2	306.5	297.8	278.5	280.4	279.5	267.8	292.2
Forecast O & M expenditure	95.9	87.9	85.7	86.0	85.4	87.6	89.5	92.3	92.5	97.9
Reported O & M expenditure	94.6	78.4	84.7	85.6	82.9	85.6	81.6	83.9	88.9	96.6
Adjusted O & M expenditure		72.6	74.6	74.9						
Forecast capital expenditure	72.3	114.0	109.0	105.0	115.5	107.0	103.8	113.4	156.8	151.3
Reported capital expenditure	66.9	78.4	79.3	77.3	71.6	91.4	80.7	100.3	172.5	166.9
Adjusted capital expenditure		89.5	87.1	83.2						
Forecast customer contributions	18.3	1.6	1.3	1.1	1.1	4.2	4.2	3.9	3.8	4.1
Actual customer contributions	14.7	11.7	7.7	5.9	12.3	11.4	17.2	12.4	10.9	11.6
Forecast average asset value	1,194.5	1,255.8	1,291.4	1,316.4	1,339.0	1,229.2	1,243.8	1,257.5	1,306.1	1,370.9
Reported average asset value	1,177.6	1,204.1	1,206.2	1,201.5	1,187.2	1,177.2	1,170.8	1,166.1	1,204.1	1,262.9
Adjusted average asset value		1,197.2	1,198.9	1,194.2						

Table B.6 Aggregate financial information—2004 dollars All DNSPs

All distributors									Year ending 31 December	
Revenue, expenditure, customer contributions and asset value ($m)	**1996-2001 average**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Forecast revenue	1,272.4	1,237.5	1,249.5	1,263.4	1,277.3	1,246.9	1,250.3	1,254.0	1,257.9	1,365.5
Actual revenue	1,326.5	1,259.8	1,332.7	1,354.1	1,375.7	1,298.2	1,325.0	1,335.2	1,336.3	1,488.6
Forecast O & M expenditure	442.3	413.0	415.1	414.5	415.3	430.1	440.6	453.0	482.8	490.8
Reported O & M expenditure	396.4	350.1	366.2	385.0	364.4	378.1	389.7	403.5	444.9	463.1
Adjusted O & M expenditure	0.0	382.4	412.9	423.7	0.0	0.0	0.0	0.0	0.0	0.0
Forecast capital expenditure	366.2	481.5	470.1	474.6	487.3	563.2	576.4	612.3	748.6	759.6
Reported capital expenditure	366.8	337.3	373.0	403.8	479.9	510.8	502.0	582.4	782.8	902.6
Adjusted capital expenditure	0.0	481.7	533.3	573.5	0.0	0.0	0.0	0.0	0.0	0.0
Forecast customer contributions	85.8	34.8	35.7	36.7	38.0	53.1	53.8	53.5	52.2	55.8
Actual customer contributions	78.6	81.5	92.2	85.4	83.8	81.6	117.9	115.1	115.6	120.1
Forecast average asset value	5,360.1	5,675.3	5,799.1	5,911.8	6,029.4	5,822.6	6,018.2	6,218.6	6,448.2	6,776.3
Reported average asset value	5,238.5	5,542.9	5,540.4	5,566.3	5,642.7	5,770.6	5,898.5	6,041.3	6,327.5	6,730.0
Adjusted average asset value	0.0	6,204.3	6,165.7	6,166.0	0.0	0.0	0.0	0.0	0.0	0.0

Table B.7 Forecast return on distribution assets, per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	10.4	7.5	7.4	7.0	6.8	8.0	7.2	6.5	5.2	6.8
CitiPower	10.7	9.4	9.2	8.9	8.9	7.6	7.0	6.6	5.9	6.7
Powercor	11.3	8.3	8.4	8.8	9.1	7.5	6.9	6.2	5.3	6.4
SP AusNet	11.4	8.3	8.0	8.4	8.5	8.5	7.6	6.7	5.5	5.6
United Energy	10.4	8.3	8.0	7.4	7.2	7.3	6.8	6.0	6.2	7.2

Table B.8 Average reported return on distribution assets, per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	11.7	7.5	8.0	9.0	10.0	10.0	10.8	10.7	8.5	10.0
CitiPower	14.0	11.6	11.9	11.0	12.9	9.8	9.4	8.5	8.9	8.8
Powercor	13.5	10.3	11.3	11.3	11.6	9.6	9.4	9.0	9.2	9.9
SP AusNet	13.4	9.2	10.7	10.8	11.7	10.0	8.9	8.0	4.7	6.9
United Energy	11.3	11.0	11.6	11.2	10.6	8.8	9.1	8.4	7.3	8.5

Table B.9 Energy distributed, difference between forecast and actual – per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	4.1	-4.6	-4.8	-5.4	-7.3	1.5	2.7	4.3	1.1	2.1
CitiPower	6.9	1.8	0.6	4.1	3.2	4.8	4.8	3.4	2.3	3.3
Powercor	4.6	2.0	-0.1	-0.4	-2.1	1.2	0.7	0.9	-1.1	-1.2
SP AusNet	5.5	-0.2	8.0	4.6	4.8	0.3	-1.2	1.3	-2.7	-3.2
United Energy	-2.2	1.8	3.6	4.1	3.6	2.7	2.0	-0.6	-0.4	0.0

Table B.10 Distribution revenue, difference between forecast and actual – per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	5.0	-0.8	2.1	5.0	10.0	4.1	12.7	9.6	11.5	13.0
CitiPower	1.4	-0.2	0.0	5.2	3.7	8.3	9.6	6.5	10.1	6.9
Powercor	5.2	1.2	6.9	7.8	9.6	8.6	5.7	8.4	13.6	11.6
SP AusNet	2.7	0.2	6.5	2.3	4.8	-3.7	1.9	4.1	-2.5	10.6
United Energy	6.0	7.1	13.4	14.1	10.0	4.3	5.2	5.1	1.6	2.7

Table B.11 Operating & maintenance expenditure, difference between forecast and actual—per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	2.9	1.7	5.8	-0.2	2.8	-5.0	-2.1	-17.4	-11.8	-8.1
CitiPower	-40.4	-39.2	-46.8	-15.7	-55.4	-18.1	-11.7	-10.6	-17.2	-8.4
Powercor	-6.2	-23.8	-17.0	-7.4	0.0	-5.1	-18.0	-13.3	-14.0	-16.7
SP AusNet	-9.6	-4.2	-3.8	-10.8	-17.5	-27.5	-10.9	-7.2	0.7	4.3
United Energy	-1.3	-10.7	-1.2	-0.5	-2.9	-2.2	-8.9	-9.1	-3.9	-1.4

Table B.12 Capital expenditure, difference between forecast and actual—per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	14.9	-40.0	-38.8	-36.6	-35.3	-11.0	38.7	6.8	32.0	43.0
CitiPower	0.4	-9.8	-20.1	-7.2	17.1	-19.1	-36.9	-25.2	-23.2	0.7
Powercor	12.5	-15.0	-4.2	-15.2	-4.3	4.9	-15.3	-15.9	-15.2	-0.5
SP AusNet	-9.7	-52.7	-25.4	3.4	47.3	-13.5	-1.7	24.9	25.6	53.7
United Energy	-1.8	-31.2	-27.2	-26.4	-38.0	-14.6	-22.2	-11.6	10.0	10.3

Table B.13 Customer contributions to capital expenditure, difference between forecast and actual—per cent

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	32.3	290.4	296.9	155.5	164.5	67.6	105.5	131.4	87.5	131.5
CitiPower	-26.4	5.1	14.8	31.8	53.4	29.1	121.8	377.0	285.3	196.2
Powercor	14.9	101.8	140.0	120.7	100.6	20.0	131.2	88.0	97.9	94.4
SP AusNet	-1.1	188.5	242.8	197.2	99.6	88.9	39.4	28.5	83.0	95.0
United Energy	89.6	654.7	476.0	415.8	992.9	171.4	312.6	214.0	184.9	180.2

Table B.14 Network revenue per MWh distributed, 2004 dollar values

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010	2006–10 average
Jemena	37.7	32.3	32.7	33.3	35.0	33.5	35.4	33.6	34.9	40.9	35.6
CitiPower	39.9	34.5	34.7	35.0	34.4	32.6	32.3	31.2	32.1	33.1	32.2
Powercor	47.9	39.8	42.4	42.4	43.2	37.8	36.4	36.7	38.7	40.2	38.0
SP AusNet	52.0	44.8	43.7	42.9	43.6	40.3	42.5	41.7	40.6	48.0	42.6
United Energy	43.1	40.0	41.2	40.8	39.0	35.4	35.2	35.4	33.4	35.8	35.0

Table B.15 Network revenue per customer, 2004 dollar values

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010	2006–10 average
Jemena	576.1	483.7	491.4	497.6	511.2	488.2	517.1	503.6	500.5	587.6	519.4
CitiPower	785.9	696.7	694.6	720.3	698.5	663.6	659.1	630.6	642.8	666.0	652.4
Powercor	705.5	623.0	651.3	649.3	652.6	584.4	560.4	561.1	586.9	607.8	580.1
SP AusNet	613.2	534.1	556.8	531.4	542.7	511.0	538.1	546.6	514.8	609.3	544.0
United Energy	515.1	489.0	510.4	508.6	488.5	451.9	452.5	452.8	427.0	462.2	449.3

Table B.16 Asset value per MWh distributed, reported average asset value—2004 dollar values

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010	2006–10 average
Jemena	145.7	143.6	137.5	133.1	131.2	128.8	130.4	131.5	148.1	158.4	139.4
CitiPower	171.5	173.6	175.0	168.6	169.8	168.5	167.1	167.3	172.1	173.5	169.7
Powercor	180.2	171.8	170.5	166.9	167.2	164.7	167.8	169.3	173.8	179.8	171.1
SP AusNet	197.9	190.0	172.4	176.8	181.2	184.4	188.4	188.3	206.9	223.2	198.2
United Energy	178.5	169.4	163.9	159.8	155.5	149.5	146.8	147.7	150.3	154.7	149.8

Table B.17 Electricity distributed, Gigawatt hours (GWh)

	1996–01 average	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jemena	3,817	3,988	4,093	4,165	4,173	4,278	4,379	4,489	4,375	4,450
CitiPower	4,879	5,336	5,404	5,718	5,805	5,975	6,079	6,099	6,096	6,210
Powercor	8,338	9,376	9,417	9,652	9,736	10,148	10,299	10,510	10,490	10,678
SP AusNet	5,908	6,469	7,076	6,987	7,147	7,398	7,500	7,886	7,750	7,909
United Energy	6,611	7,108	7,361	7,520	7,636	7,873	7,973	7,896	8,013	8,163

Table B.18 Maintenance expenditure, as a percentage of asset value—per cent

	2003	2004	2005	2006	2007	2008	2009	2010	Average % change 2006–10
Jemena	2.3	2.4	2.5	3.2	2.5	2.0	1.5	1.6	2.2
CitiPower	1.1	1.7	1.3	1.1	1.3	1.3	1.6	1.9	1.4
Powercor	3.0	3.1	3.6	3.7	3.6	3.4	3.6	3.6	3.6
SP AusNet	3.0	3.0	2.7	2.5	2.6	3.1	3.2	3.1	2.9
United Energy	2.2	2.3	2.2	2.1	2.0	2.1	1.3	1.6	1.8

Table B.19 Capital expenditure, as a percentage of asset value—per cent

	2003	2004	2005	2006	2007	2008	2009	2010	Average % change 2006–10
Jemena	5.5	5.8	6.7	8.9	11.8	9.1	17.6	14.8	12.4
CitiPower	6.6	6.9	7.3	8.3	6.6	7.4	8.7	10.8	8.3
Powercor	7.5	7.9	8.4	9.9	9.2	9.4	9.2	12.5	10.0
SP AusNet	6.5	8.2	12.6	8.9	9.1	12.5	14.8	15.6	12.2
United Energy	6.6	6.4	6.0	7.8	6.9	8.6	14.3	13.2	10.2

C Performance information tables

Table C.1 Definition of interruptions [a]

Measure	Index	Description
Average minutes-off-supply per customer	System Average Interruption Duration Index (SAIDI)	The average total minutes that a customer could expect to be without electricity over a specific period. Total SAIDI comprises both planned and unplanned minutes-off-supply.
Average number of interruptions per customer	System Average Interruption Frequency Index (SAIFI)	The average number of occasions per year when each customer could expect to experience an unplanned interruption. SAIFI is calculated as the total number of customer interruptions divided by the total number of connected customers averaged over the year. Unless otherwise stated, SAIFI excludes momentary interruptions (less than one minute duration).
Average interruption duration (minutes per interruption)	Customer Average Interruption Duration Index (CAIDI)	The average time taken for supply to be restored to a customer when an unplanned interruption has occurred. CAIDI is calculated as the sum of the duration of each customer interruption (in minutes), divided by the total number of customer interruptions (SAIDI divided by SAIFI). Unless otherwise stated, CAIDI excludes momentary interruptions (less than one minute duration).
Average number of momentary interruptions per customer	Momentary Average Interruption Frequency Index (MAIFI)	The average total number of momentary interruptions (less than one minute duration) that a customer could expect to experience in a year. MAIFI is calculated as the total number of customer interruptions of less than one minute duration, divided by the total number of connected customers averaged over the year.

[a] Customer interruptions include those interruptions due to outages of the transmission system.

Table C.2 Definition of feeder categories

Feeder category	Description
CBD	A feeder supplying Melbourne CBD determined from zone substation coverage maps.
Urban	A feeder, which is not a CBD feeder, with a load density greater than 0.3 MVA/km
Short rural [a]	A feeder, which is not a CBD or urban feeder, with a total length less than 200 km.
Long rural	A feeder, which is not a CBD or urban feeder, with total length greater than 200 km.

[a] Short rural feeders include feeders in urban areas with low load densities.

Table C.3 Average customer numbers

	Residential Customers		Business Customers		Total Customers	
	2010	Increase from 2009 (%)	2010	Increase from 2009 (%)	2010	Increase from 2009 (%)
Jemena	274,704	0.8	34,801	6.7	309,505	1.5
CitiPower	254,565	1.2	53,637	1.7	308,203	1.3
Powercor	600,714	2.7	105,863	-0.3	706,577	2.3
SP AusNet	551,692	2.2	71,615	0.1	623,307	2.0
United Energy	567,025	0.6	67,483	6.5	634,508	1.2
All DNSPs	2,248,700	1.6	333,399	2.1	2,582,100	1.7

Table C.4 Supply reliability by DNSP, actual results, no abnormal events excluded

All DNSPs	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	26.4	26.8	30.0	31.1	27.8	27.8	40.1	44
Unplanned	105.8	138.4	135.5	165.8	200.4	227.5	130.0	(43)
Total	132.3	165.2	165.4	196.9	228.3	255.3	170.1	(33)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.13	0.12	0.13	0.13	0.22	0.13	0.18	41
Unplanned	1.75	1.68	1.81	2.00	1.57	2.40	1.48	(38)
Total	1.88	1.80	1.94	2.12	1.79	2.53	1.67	(34)
Average Interruption Duration (CAIDI)								
Planned	203.1	220.0	229.0	244.7	126.5	213.9	218.2	2
Unplanned	60.6	82.5	75.0	83.0	127.6	94.7	87.8	(7)
Total	70.5	91.9	85.4	92.7	127.5	100.8	102.2	1
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	1.84	1.99	1.56	1.70	1.62	1.79	1.72	(4)
Part Feeder	1.42	1.04	0.80	0.96	1.04	1.01	1.02	2
Number of outages								
Planned	6,663	7,333	8,653	8,583	9,494	10,543	11,552	10
Unplanned	17,001	19,020	18,541	19,185	19,374	21,732	19,492	(10)
Momentary	2,116	2,313	1,912	2,154	2,017	2,216	2,297	4

Jemena	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	6.7	6.7	7.7	9.5	10.3	9.7	17.9	85
Unplanned	59.3	95.0	91.0	111.5	115.6	129.5	62.0	(52)
Total	66.0	101.7	98.8	121.0	125.9	139.2	79.9	(43)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.03	0.03	0.03	0.03	0.04	0.04	0.07	96
Unplanned	0.98	1.51	1.37	1.82	1.29	2.01	0.93	(54)
Total	1.01	1.54	1.40	1.85	1.33	2.04	1.00	(51)
Average Interruption Duration (CAIDI)								
Planned	220.6	246.8	260.6	271.3	247.1	274.7	258.5	(6)
Unplanned	60.5	63.0	66.5	61.3	89.7	64.5	66.6	3
Total	65.3	66.2	70.6	65.2	94.6	68.2	79.9	17
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	0.62	0.66	0.75	0.74	0.53	0.87	0.75	(14)
Part Feeder	0.17	0.16	0.24	0.22	0.17	0.14	0.21	47
Number of outages								
Planned	282	397	498	437	470	463	572	24
Unplanned	768	912	1,031	949	982	1,236	961	(22)
Momentary	104	100	114	102	106	113	111	(2)
Total	1,154	1,409	1,643	1,488	1,558	1,812	1,644	(9)

CitiPower	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	7.8	6.5	5.1	4.2	4.3	4.3	5.4	27
Unplanned	21.4	41.5	27.0	88.1	44.7	62.7	44.5	(29)
Total	29.2	48.0	32.2	92.3	49.0	67.0	49.9	(26)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.03	0.02	0.02	0.02	0.02	0.02	0.02	29
Unplanned	0.48	0.51	0.55	0.86	0.53	0.99	0.62	(37)
Total	0.51	0.53	0.57	0.87	0.55	1.00	0.65	(36)
***Average Interruption Duration (CAIDI*)**								
Planned	289.9	289.3	247.9	255.0	245.4	240.1	237.0	(1)
Unplanned	44.2	81.7	49.3	102.9	84.1	63.6	71.4	12
Total	57.1	90.6	56.5	105.7	89.3	66.7	77.3	16
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	0.24	0.26	0.15	0.14	0.14	0.19	0.09	(51)
Part Feeder								
Number of outages								
Planned	216	259	261	205	216	299	337	13
Unplanned	522	545	675	837	617	1,019	709	(30)
Momentary	67	34	42	38	49	69	24	(65)
Total	805	838	978	1,080	882	1,387	1,070	(23)

Powercor	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	18.3	16.7	18.7	22.3	23.2	26.6	33.4	26
Unplanned	124.5	141.3	198.5	209.9	133.5	308.5	198.0	(36)
Total	142.8	158.0	217.2	232.2	156.7	335.0	231.4	(31)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.13	0.15	0.12	0.13	0.13	0.16	0.19	21
Unplanned	1.65	1.84	2.47	2.32	1.64	3.25	1.93	(41)
Total	1.78	1.99	2.59	2.46	1.77	3.40	2.12	(38)
Average Interruption Duration (CAIDI)								
Planned	141.5	111.2	160.6	165.7	176.8	170.6	177.6	4
Unplanned	75.5	76.7	80.3	90.4	81.6	95.0	102.6	8
Total	80.3	79.3	83.9	94.5	88.7	98.5	109.2	11
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	2.12	2.66	1.95	2.22	2.01	2.12	2.30	8
Part Feeder	1.75	1.83	1.25	1.45	1.26	1.05	1.24	18
Number of outages								
Planned	3,004	3,197	3,817	3,282	3,264	2,933	3,241	11
Unplanned	6,191	6,778	6,430	6,153	7,681	7,125	7,460	5
Momentary	705	894	662	768	661	719	881	23
Total	9,900	10,869	10,909	10,203	11,606	10,777	11,582	7

SP AusNet	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	62.9	71.1	83.6	77.4	64.3	53.4	67.3	26
Unplanned	206.2	261.0	220.9	245.4	300.8	365.9	178.8	(51)
Total	269.1	332.1	304.4	322.8	365.1	419.3	246.1	(41)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.30	0.27	0.35	0.29	0.29	0.26	0.37	41
Unplanned	3.71	2.73	2.77	2.82	2.36	3.11	2.09	(33)
Total	4.01	3.00	3.11	3.11	2.64	3.37	2.46	(27)
Average Interruption Duration (CAIDI)								
Planned	208.6	268.4	241.7	270.1	224.0	203.3	183.8	(10)
Unplanned	55.6	95.6	79.8	87.0	127.7	117.8	85.4	(28)
Total	67.1	110.9	97.8	103.8	138.2	124.4	100.0	(20)
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	3.74	3.54	3.00	3.26	3.34	3.57	3.34	(7)
Part Feeder	3.59	1.89	1.50	2.04	1.99	2.55	2.46	(4)
Number of outages								
Planned	2,066	2,407	3,089	3,398	4,534	5,497	5,574	1
Unplanned	8,056	9,170	8,441	8,843	7,899	9,351	8,364	(11)
Momentary	950	951	832	949	939	1,030	1,025	0
Total	11,072	12,528	12,362	13,190	13,372	15,878	14,963	(6)

United Energy	2004	2005	2006	2007	2008	2009	2010	2009 - 2010 Change (%)
Average Minutes off Supply per Customer (SAIDI)								
Planned	18.1	14.3	14.1	20.3	17.7	24.6	48.1	96
Unplanned	51.8	84.4	60.7	106.3	295.1	131.1	80.3	(39)
Total	69.9	98.6	74.8	126.5	312.8	155.7	128.4	(18)
Average Number of Interruptions per Customer (SAIFI)								
Planned	0.06	0.05	0.05	0.07	0.05	0.07	0.13	80
Unplanned	0.93	1.12	1.00	1.50	1.39	1.66	1.05	(37)
Total	0.99	1.17	1.04	1.57	1.44	1.74	1.19	(32)
Average Interruption Duration (CAIDI)								
Planned	291.1	303.4	310.9	305.6	323.8	335.0	363.9	9
Unplanned	55.9	75.0	60.8	70.8	212.6	78.9	76.2	(3)
Total	70.8	84.2	71.7	80.7	216.8	89.7	108.2	21
Average Number of Momentary Interruptions per Customer (MAIFI)								
Whole Feeder	1.04	1.32	0.86	0.88	0.80	0.91	0.74	(19)
Part Feeder	0.29	0.31	0.32	0.23	0.44	0.37	0.26	(28)
Number of outages								
Planned	1,095	1,073	988	1,261	1,010	1,351	1,828	35
Unplanned	1,464	1,615	1,964	2,328	2,161	2,823	1,998	(29)
Momentary	290	334	262	278	258	255	256	0
Total	2,849	3,022	3,214	3,867	3,429	4,429	4,082	(8)

Table C.5 Percentage of Customers in each minutes-off-supply range

	Year	0-1 hour	1–2 hours	2–5 hours	5–10 hours	More than 10 hours
Jemena	2010	48.22	29.76	20.85	0.89	0.29
	2009	23.15	23.13	46.21	7.51	0.00
	2008	38.82	22.68	31.94	6.01	0.57
	2007	31.62	23.52	40.38	4.49	0.00
	2006	45.12	22.12	27.97	4.79	0.00
	2005	46.82	26.67	19.17	5.13	2.21
CitiPower	2010	60.74	17.13	13.39	0.01	8.74
	2009	58.72	20.41	19.82	1.05	0.00
	2008	77.22	11.91	7.58	2.73	0.53
	2007	55.38	12.10	26.35	5.87	0.30
	2006	81.82	14.99	2.68	0.40	0.11
	2005	74.84	15.23	8.55	1.36	0.02
Powercor	2010	18.24	19.33	37.30	18.18	6.95
	2009	9.35	8.18	33.13	36.61	12.73
	2008	24.62	26.06	34.92	13.20	1.19
	2007	20.28	13.76	33.42	29.64	2.90
	2006	18.35	21.10	34.36	22.32	3.87
	2005	32.00	19.50	34.73	11.71	2.05
SP AusNet	2010	15.50	23.61	31.68	21.56	7.65
	2009	6.16	16.73	38.17	22.23	16.71
	2008	9.00	18.01	34.66	18.86	19.48
	2007	11.15	13.28	37.51	25.48	12.58
	2006	9.78	14.01	39.08	25.46	11.68
	2005	16.93	12.31	30.08	23.06	17.61
United Energy	2010	36.55	25.20	29.73	6.23	2.30
	2009	20.61	26.80	39.98	12.06	0.56
	2008	28.12	16.69	25.95	17.84	11.40
	2007	31.18	29.42	31.20	7.98	0.23
	2006	55.85	23.21	18.13	2.80	0.00
	2005	51.51	19.02	23.94	3.92	1.60
All DNSPs	2010	30.80	22.80	29.24	11.79	5.38
	2009	18.94	18.10	36.02	19.31	7.62
	2008	30.36	20.72	29.99	12.15	6.78
	2007	26.45	18.53	33.82	17.32	3.87
	2006	36.63	19.34	26.81	13.40	3.83
	2005	40.19	18.01	25.90	10.44	5.45

Table C.6 Supply Reliability by network type

		Average minutes-off-supply						Average number of sustained interruptions per customer						Average duration of sustained interruptions (minutes)					
Feeder category	**DNSP**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
CBD	CitiPower	18.8	20.7	67.2	13.2	39.7	15.9	0.2	0.3	0.4	0.2	0.5	0.2	97.2	69.9	166.0	74.5	81.0	80.5
Urban	Jemena	78.3	92.0	111.5	120.6	131.6	124.1	1.3	1.3	1.6	1.2	1.9	1.4	61.5	68.6	69.7	98.9	69.5	90.0
	CitiPower	53.0	34.5	97.6	56.3	72.8	75.5	0.6	0.6	1.0	0.6	1.1	1.0	89.8	55.2	100.4	90.2	65.6	77.4
	Powercor	76.4	111.5	151.4	108.2	245.5	129.6	1.3	1.8	1.6	1.5	2.8	1.2	60.1	62.7	94.8	73.9	86.7	108.9
	SP AusNet	166.4	216.1	203.7	245.3	168.4	116.6	2.0	2.5	2.1	1.5	1.9	1.1	83.8	87.7	97.5	162.3	90.9	106.9
	United Energy	94.1	71.3	122.8	279.3	144.2	104.0	1.0	1.0	1.5	1.3	1.6	1.1	90.7	75.4	81.7	211.9	92.8	96.1
Short rural	Jemena	256.1	168.5	215.8	199.0	261.1	153.6	3.2	2.0	4.4	2.9	4.4	1.4	79.6	84.1	48.6	69.4	59.3	109.3
	Powercor	114.4	190.1	230.5	136.5	285.7	196.4	1.5	2.5	2.5	1.6	3.1	2.0	74.5	76.1	92.7	85.6	91.0	100.1
	SP AusNet	377.8	315.6	375.9	440.0	562.8	315.4	3.2	3.3	3.5	3.0	4.2	3.3	116.8	96.0	107.5	148.2	135.8	96.3
	United Energy	123.4	103.0	146.2	489.8	274.6	250.4	1.9	1.8	1.9	2.1	3.6	2.6	64.7	57.8	76.7	233.3	75.8	98.0
Long rural	Powercor	298.8	374.6	332.4	243.9	509.7	421.2	3.3	3.7	3.5	2.4	4.5	3.3	90.3	102.7	95.9	103.4	114.3	126.7
	SP AusNet	513.8	472.9	455.1	434.3	565.5	412.5	4.2	4.2	4.4	4.1	4.5	4.2	122.8	113.0	103.9	105.7	126.7	99.3

Table C.7 Quality of supply—Over-voltage events due to voltage surge, number of events [and number of customers affected]

	2005		2006		2007		2008		2009		2010	
Jemena	56	[104]	11	[225]	12	[136]	11	[69]	18	[246]	4	[26]
CitiPower [a]	0	[0]	0	[0]	0	[0]	0	[0]	0	[0]	0	[0]
Powercor	2	[2]	1	[1]	3	[3]	0	[0]	0	[0]	0	[0]
SP AusNet	31	[115]	16	[89]	28	[86]	9	[27]	31	[86]	11	[42]
United Energy	40	[584]	46	[664]	35	[528]	51	[907]	46	[730]	33	[438]

[a] CitiPower's voltage-monitoring system has reported only over-voltage injection incidents

Table C.8 Quality of supply—Over-voltage events due to lightning, number of events [and number of customers affected]

	2005		2006		2007		2008		2009		2010	
Jemena [b]	n/a	[n/a]	n/a	[n/a]	n/a	[n/a]	n/a	[n/a]	0	[0]	1	[13]
CitiPower	0	[0]	0	[0]	0	[0]	0	[0]	0	[0]	0	[0]
Powercor b	0	[0]	6	[6]	6	[6]	0	[0]	0	[0]	0	[0]
SP AusNet	87	[102]	34	[164]	85	[111]	34	[61]	35	[68]	30	[92]
United Energy	1	[12]	1	[7]	6	[49]	2	[10]	1	[1]	3	[9]

[b] Jemena and Powercor have not reported complete data

Table C.9 Quality of supply—Over-voltage events due to poor voltage regulation, number of events [and number of customers affected]

	2005		2006		2007		2008		2009		2010	
Jemena	31	[2025]	57	[4056]	102	[6173]	46	[3971]	29	[2684]	46	[3271]
CitiPower	0	[0]	0	[0]	1	[1]	0	[0]	0	[1]	0	[1]
Powercor [c]	n/a	[6]	0	[0]	11	[11]	9	[9]	0	[1]	0	[1]
SP AusNet	30	[30]	20	[24]	24	[25]	22	[70]	15	[20]	16	[18]
United Energy	1	[1]	0	[0]	0	[0]	0	[0]	0	[0]	0	[0]

[c] Powercor has not reported complete data

Table C.10 Guaranteed Service Level, payments for late appointments

	Appointments Made *				Appointments not met on time *		
	Number	Proportion of all customers (%)		Change in proportion: 2009 to 2010	Proportion of appointments made (%)		Change in proportion: 2009 to 2010	Amount paid ($)
	2010	2009	2010	(%)	2009	2010	(%)	2010
Jemena	11,792	2.36	3.81	61	0.11	1.79	1512	8,440
CitiPower	8,520	2.93	2.76	-6	0.02	0.75	3314	2,560
Powercor	14,983	1.88	2.12	13	0.02	0.29	1858	1,760
SP AusNet	5,698	1.19	0.91	-23	0.01	0.00	-100	0
United Energy	17,393	1.24	2.75	122	0.78	1.54	96	5,340
All DNSPs	58,386	1.74	2.26	30	0.17	1.00	501	18,100

* Appointments includes the AMI related appointments in 2010.

Table C.11 Guaranteed Service Level, payments for late new connections

	All new connections made				Connections not made by agreed date			
	Number	Proportion of all connections (%)		Change in proportion: 2009 to 2010	Proportion of connections made (%)		Change in proportion: 2009 to 2010	Amount paid ($)
	2010	2009	2010	(%)	2009	2010	(%)	2010
Jemena	6,600	2.06	2.13	4	0.89	0.11	-88	1,100
CitiPower	73,905	28.41	23.98	-16	0	0.02	n/a	1,800
Powercor	140,175	19.79	19.84	0	0.01	0.02	71	3,100
SP AusNet	15,215	2.44	2.44	0	2.58	1.74	-32	33,900
United Energy	10,427	1.38	1.65	20	0.12	0	n/a	0
All DNSPs	246,322	9.97	9.55	-4	0.18	0.13	-30	39,900

Table C.12 Guaranteed Service Level, payments for late streetlight repair

DNSP	All streetlights reported broken			Streetlights not fixed within 2 days			
	Average No	Proportion of all streetlights (%)	Change in proportion: 2009 to 2010	Proportion of lights reported (%)		Change in proportion: 2009 to 2010	Amount paid ($)
	2010	2009	2010	(%)	2009	2010	(%)	2010
Jemena	67,088	4.91	5.56	13	31.45	48.51	54	560
CitiPower	52,226	4.44	4.82	9	22.70	24.34	7	80
Powercor	143,990	3.54	3.22	-9	9.82	19.52	99	1,480
SP AusNet	124,511	5.00	4.30	-14	22.18	12.37	-44	1,650
United Energy	116,408	3.96	5.27	33	39.49	10.27	-74	110
All DNSPs	504,223	4.27	4.44	4	24.51	20.65	-16	3,880

Table C.13 Required performance levels, minimum standard for repair of standard streetlight fittings

	All lights reported broken			Streetlights not fixed by required date (in 7 days)				
	Average No	Number out	Average days to repair	Number not fixed in 7 days		Proportion of lights reported (%)		Change in proportion: 2009 to 2010
	2010	2010	2010	2009	2010	2009	2010	(%)
Jemena	67,088	3,727	3.9	516	183	16.21	4.91	-70
CitiPower	52,226	2,518	1.6	88	127	3.80	5.04	33
Powercor	143,990	4,631	1.1	209	378	4.23	8.16	93
SP AusNet	124,511	5,359	4.8	32	492	0.54	9.18	1,600
United Energy	116,408	6,132	2.1	385	177	8.42	2.89	-66
All DNSPs	504,223	22,367	2.8	1,230	1,357	5.86	6.07	4

Table C.14 Complaints, connection and augmentation—quality and reliability

	Connection and Augmentation				Quality and Reliability			
	Number	% of complaints to DNSP		Change in number: 2009 to 2010	Number	Complaints to DNSP (%)		Change in number: 2009 to 2010
	2010	2009	2010	(%)	2010	2009	2010	(%)
Jemena	258	16.2	15.2	115	305	35.5	17.9	16
CitiPower	13	31.8	23.6	-7	4	29.6	7.3	-69
Powercor	55	22.8	25.2	20	39	23.3	17.9	-17
SP AusNet	553	20.2	51.2	313	206	28.1	19.1	11
United Energy	131	14.7	4.7	-23	332	26.0	12.0	10
All DNSPs	1,010	17.2	17.3	109	886	28.9	15.2	9

Table C.15 Complaints, other complaints—total of all complaints

				Other complaints			Total of all complaints
	Number		% of complaints to DNSP	Change in number: 2009 to 2010	Number		Change in number: 2009 to 2010
	2010	2009	2010	(%)	2009	2010	(%)
Jemena	723	48.2	42.5	103	740	1,700	130
CitiPower	38	38.6	69.1	124	44	55	25
Powercor	124	54.0	56.9	14	202	218	8
SP AusNet	321	51.7	29.7	-6	662	1,080	63
United Energy	1,282	59.4	46.2	86	1,159	2,774	139
All DNSPs	2,488	53.9	42.7	64	2,807	5,827	108

Table C.16 Annual number of complaints, total of all complaints recorded per 1000 customers

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Change: 2009 to 2010 (%)
Jemena	0.96	0.71	1.34	1.73	1.55	1.47	1.42	2.43	5.49	126
CitiPower	0.44	0.23	0.1	0.08	0.18	0.15	0.12	0.14	0.18	27
Powercor	0.25	0.22	0.17	0.13	0.33	0.29	0.27	0.29	0.31	6
SP AusNet	1.29	1.96	2.86	1.94	2.23	1.78	1.29	1.08	1.73	60
United Energy	1.13	0.87	1.15	0.83	0.98	0.97	0.98	1.85	4.39	137
All DNSPs	0.83	0.86	1.19	0.93	1.08	0.94	0.81	1.11	2.26	103

Table C.17 Energy and Water Ombudsman (EWOV) complaints in 2010, level 1-3 complaints received by EWOV for full investigation

	Connection & augmentation		Quality & reliability		Other	
	Number	**Proportion per 1000 customers**	**Number**	**Proportion per 1000 customers**	**Number**	**Proportion per 1000 customers**
Jemena	12	0.039	4	0.013	17	0.055
CitiPower	3	0.010	7	0.023	6	0.019
Powercor	17	0.024	27	0.038	12	0.017
SP AusNet	18	0.029	40	0.064	24	0.039
United Energy	15	0.024	12	0.019	20	0.032
All DNSPs	65	0.025	90	0.035	79	0.031

Table C.18 Three worst-performing CBD feeders, total duration and number of sustained outages per customers

DNSP	Feeder	Supply areas	Minutes-off-supply per customer	Total sustained outages
CitiPower	LQ001	Little Queen	440.00	1.83
	SK018	St Kilda	201.58	2.80
	SO023	South Melbourne	188.00	2.00

Table C.19 Three worst-performing urban feeders, total duration and number of sustained outages per customers

DNSP	Feeder	Supply areas	Minutes-off-supply per customer	Total sustained outages
Jemena	ST 34	Somerton	490.95	3.92
Jemena	NT 10	Newport	480.17	1.98
Jemena	P 56	Preston	351.00	1.00
CitiPower	E021	Fisherman's Bend ('E feeders')	458.33	1.67
CitiPower	TK010	Toorak	299.63	1.80
CitiPower	FF085	Fairfield	294.82	2.07
Powercor	STN022	Shepparton	641.59	1.17
Powercor	SU004	Sunshine ('SU feeders')	555.36	1.75
Powercor	AL006	Altona	468.33	7.21
SP AusNet	FGY23	Ferntree Gully [a]	611.10	1.88
SP AusNet	FGY33	Ferntree Gully [b]	497.68	2.17
SP AusNet	MWE3	Morwell Open Cut[c]	460.00	6.00
United Energy	BW 04	Bulleen	1,090.55	2.66
United Energy	BW 08	Bulleen	954.33	4.22
United Energy	DVY34	Dandenong Valley	882.91	2.48

[a] SP AusNet advised that 90% of the minutes-off-supply were contributed by two incidents – a feeder tripped due to a surge diverter failure and a feeder tripped as a result of a tree falling across the HV line.

[b] SP AusNet advised that 59% of the minutes-off-supply were contributed by two incidents – a tree fell on the HV line and a cross arm broke due to a car hitting a pole.

[c] SP AusNet advised that this is a feeder supplying a power station open cut mine and 83% of the minutes-off-supply were planned.

Table C.20 Three worst-performing short rural feeders, total duration and number of sustained outages per customers

DNSP	Feeder	Supply areas	Minutes-off-supply per customer	Total sustained outages
Jemena	SBY11	Sunbury	362.84	3.14
Jemena	SHM11	Sydenham	231.59	0.74
Jemena	SBY32	Sunbury	189.88	2.44
Powercor	WMN001	Wemen	1,952.93	4.90
Powercor	MNA024	Mooroopna	869.70	3.46
Powercor	DDL022	Drysdale	734.13	4.87
SP AusNet	MBY14	Mount Beauty [a]	163,600.00	1,060.00
SP AusNet	MWE2	Morwell Open Cut [b]	3,301.86	5.00
SP AusNet	BGE22	Belgrave [c]	1,832.22	15.30
United Energy	DMA15	Dromana	778.48	1.75
United Energy	DMA13	Dromana	749.15	4.44
United Energy	MTN03	Mornington	615.06	5.53

[a] SP AusNet advised that this is an express feeder, only used during the winter season. 75% of the minutes-off-supply were contributed by two incidents – a feeder fault possibly due to a branch falling on the HV line and a feeder fault due to a blown lightening arrester.
[b] SP AusNet advised that this is a feeder supplying a power station open cut mine and 74% of the minutes-off-supply were contributed by a feeder fault caused by an insulator failure.
[c] SP AusNet advised that 58% of the minutes-off-supply were contributed by three storms.

Table C.21 Three worst-performing long rural feeders, total duration and number of sustained outages per customers

DNSP	Feeder	Supply areas	Minutes-off-supply per customer	Total sustained outages
Powercor	TRG005	Terang	1,975.81	7.45
Powercor	COB011	Cobden	1,626.48	7.30
Powercor	BAN011	Ballarat North	1,425.80	6.02
SP AusNet	BN1	Benalla	742.43	8.38
SP AusNet	WGL24	Warragul	713.13	9.43
SP AusNet	WN5	Wangaratta	710.48	9.84

Table C.22 Low-reliability distribution feeders, 2009–10, by DNSP—highlighting feeders that were classified as being of low reliability in prior years

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
Jemena – Urban									
2010	AW 05	Airport West	5.8	520	143373	149151	3	4	Damages repaired. No plan. 1 feeder outage due to lightning with significant secondary damage
2010	NT 10	Newport	2.7	63	30251	30251	2	2	Damages repaired. No plan. 2 sustained feeder outages: 2 x lightning. One had significant secondary damage
2010	P 56	Preston	2.3	1	351	351	1	1	Damages repaired. No plan. 1 sustained feeder outage due to high wind and fallen tree, significant primary & secondary damages
2009	P 56	Preston	2.3	1	0	481	0	1	No plan. Planned work to reposition poles in St Georges Rd median strip for longer turning lanes.
2010	ST 13	Somerton	9.1	181	45483	60303	6	7	
2010	ST 34	Somerton	12.7	223	109316	109481	8	9	Damages repaired. No plan. 4 sustained feeder outages: 2 x lightning; 1 x equipment; 1 x cause not found. 3 out of 4 had significant secondary damages
CitiPower – CBD									
2010	JA042	Little Bourke Street	4.7	980	42293	94673	1	3	None Required. Threshold exceeded due to Equipment Failure 6/3/2010 & Planned Outage 9/4/2010.
2010	LQ001	Little Queen	0.5	24	0	10560	0	2	None Required. Threshold exceeded due to Planned Outage on 17/4/2010 & 18/4/2010.
2010	SO005	South Melbourne	1.5	1189	129702	134457	1	3	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 6/3/2010.
2010	SO023	South Melbourne	1.1	184	34592	34592	1	1	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 18/4/2010.
2010	SO024	South Melbourne	1.8	204	26978	26978	1	1	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 18/4/2010.
2010	SO020	South Melbourne	1.5	328	26709	27144	1	2	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 18/4/2010.
2010	SO019	South Melbourne	1.2	526	49914	49914	1	1	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 18/4/2010.
2010	SK018	St Kilda	3.5	168	33865	33865	3	3	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Third Party damage 1/7/2010 & Equipment Failure 7/1/2010.
CitiPower – Urban									
2010	FF085	Fairfield	2.7	98	28892	28892	3	3	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Vehicle Impact 9/3/2010 & Equipment Failure 27/9/2010.

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
2010	E021	Fisherman's Bend ('E fdrs')	1.8	3	0	1375	0	1	None Required. Threshold exceeded due to Planned Outage on 23/5/2010.
2010	RD002	Riversdale	7.7	1794	476288	487248	13	16	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Vehicle Impact 26/12/2010 & Equipment Failure 31/1/2010.
2010	TK010	Toorak	4.9	577	172887	172887	4	4	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 6/3/2010.
Powercor – Urban									
2010	AL006	Altona	10.0	2110	988176	988176	14	14	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 6/3/2010, Vegetation 1/3/2010, Vehicle Impact 3/6/2010 and Transmission Failure 10/5/2010. Exemption granted for Transmission Failure.
2010	AL014	Altona	13.7	1959	619433	623138	5	6	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 6/3/2010 & Transmission Failure 10/5/2010. Exemption granted for Transmission Failure.
2010	BAS012	Ballarat South	11.2	2226	66750	98784	8	14	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	BBD022	Ballarat South	4.8	4	825	825	2	2	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	BET002	Bendigo Terminal	21.5	3516	963983	1029443	4	8	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 25/1/2010 & Animals 15/4/2010.
2009	BET002	Bendigo Terminal	21.3	4572	1887149	1905094	19	24	Feeder will be monitored and performance reviewed in 2010. Load re-configuration
2010	BLT023	Brooklyn	5.6	2	816	816	1	1	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 16/5/2010.
2010	CLC001	Colac	16.3	2847	303911	962371	7	25	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 4/9/2010 & Planned Outages on 12/3/2010, 15/3/2010 & 20/10/2010.
2010	CME022	Cobram East	16.9	708	102555	102590	3	4	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	GLE032	Geelong East	12.8	2660	597007	772764	7	16	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 15/8/2010.
2010	LVN021	Laverton North	5.5	16	5132	5132	4	4	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 5/9/2010.
2010	MDA024	Mildura	31.4	1043	116575	444786	6	30	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Planned Outage on 24/10/2010 & Storms 7/12/2010.
2010	MDA032	Mildura	13.7	2041	13013	41548	6	8	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	SA012	St Albans	12.2	262	109516	109516	6	6	Feeder will be monitored and performance reviewed in 2011. Threshold

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									exceeded due to Storms 2/12/2010 & Pole Fires 7/12/2010, 10/12/2010.
2010	SSE014	Sunshine East	8.6	1360	148600	206317	5	8	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	STN014	Shepparton	3.8	484	147413	150023	5	8	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 7/3/2010.
2010	STN022	Shepparton	14.4	2803	1764527	1798364	10	15	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 7/3/2010.
2010	SU004	Sunshine ('SU feeders')	15.9	3078	1647449	1709394	7	11	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Vehicle Impact 31/10/2010.
2009	SU004	Sunshine ('SU feeders')	15.8	3003	1211890	1236925	16	23	None Required. Threshold exceeded due to Heatwave 29/1/2009, Load Shedding 30/1/2009 & 8/10/2009. Exemption granted.
Powercor – Short Rural									
2010	BBD014	Ballarat South	16.0	17	2634	2634	1	1	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder recloses.
2010	BBD021	Ballarat South	155.3	264	106972	107352	9	10	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple feeder & ACR recloses.
2010	DDL022	Drysdale	70.6	3745	2268200	2749300	40	81	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 6/3/2010, 7/3/2010 & Vegetation on 14/11/2010.
2010	KRT022	Koroit	86.8	2761	1662714	1920541	65	102	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failures 20/2/2010, 27/10/2010 & Storms 4/9/2010.
2010	MBN013	Merbein	39.9	448	38022	77347	19	27	Feeder will be monitored and performance reviewed in 2011. MAIFI Threshold Exceeded due to multiple ACR recloses.
2010	MNA024	Mooroopna	38.5	1667	1420209	1449783	12	18	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 7/3/2010.
2010	WMN001	Wemen	167.5	230	277117	449175	13	23	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 26/11/2010 & Planned Outages 8/6/2010, 20/7/2010.
2009	WMN001	Wemen	170.5	234	34565	157870	8	16	Feeder will be monitored and performance reviewed in 2010. Threshold exceeded due to major Planned outages
Powercor – Long Rural									
2010	BAN008	Ballarat North	250.5	3336	4371591	4558624	70	80	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 4/9/2010.
2010	BAN011	Ballarat North	589.7	3556	4908474	5070161	92	118	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 4/9/2010 & 5/9/2010.
2010	BGO023	Bendigo	544.0	2596	2876170	2911812	73	86	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Equipment Failure 28/03/2010 & 22/10/2010, Storms 3/12/2010, Animals 26/3/2010 & Vegetation 7/12/2010.
2010	COB011	Cobden	258.2	737	1168514	1198716	55	65	Feeder will be monitored and performance reviewed in 2011. Threshold

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									exceeded due to Storms 11/8/2010.
2009	COB011	Cobden	258.7	739	802320	912927	35	55	Feeder will be monitored and performance reviewed in 2010. Threshold exceeded due to Load Shedding 30/1/2009 - Exemption granted and Weather 24/4/2009 and 3/8/2009.
2010	ETSA001	Eaglehawk	17.6	298	173833	329293	11	15	None Required. Threshold exceeded due to Planned Outage on 16/6/2010 and supply failure from South Australia on 19/4/2010 & 3/12/2010.
2009	ETSA001	Eaglehawk	17.6	296	274696	286176	15	18	None Required. Threshold exceeded due to Storm 2/2/2009. Exemption granted.
2010	SHN011	Shepparton North	322.6	1379	1206281	1228025	51	61	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 7/3/2010.
2010	TRG002	Terang	722.6	2048	723984	1790539	66	149	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 4/9/2010, 7/12/2010 & Planned Outages 19/5/2010.
2010	TRG005	Terang	238.1	1060	1921121	2094358	42	63	Feeder will be monitored and performance reviewed in 2011. Threshold exceeded due to Storms 4/9/2010, Vegetation 14/8/2010 & Planned Outages 8/9/2010.
2009	TRG005	Terang	236.7	1060	891913	1145303	38	45	Feeder will be monitored and performance reviewed in 2010. Threshold exceeded due to Load Shedding 30/1/2009. Exemption granted. Weather 22/9/2009 and Planned Outages 12-14/10/2009.
SP AusNet – Urban									
2010	BGE23	Belgrave	21.1	1981	362240	362330	22	23	BGE23 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	BRT11	Bright	25.9	1708	70777	136950	18	38	BRT11 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	BWN13	Berwick North	21.4	1155	118276	454740	3	8	BWN13 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	BWR13	Bayswater	42.1	4939	1210574	1283830	25	30	BWR13 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2010	BWR33	Bayswater	4.5	245	82248	82248	4	4	This feeder has low customer numbers. We will continue to monitor performance of this feeder.
2010	BWR34	Bayswater	11.8	2560	736482	829320	16	26	BWR34 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2010	CYN12	Croydon	13.3	2561.5	214202	340060	15	21	CYN12 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	CYN24	Croydon	14.5	1203	489758	533868	13	20	CYN24 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
2010	CYN33	Croydon	32.6	4032.5	1007465	1252673	26	45	CYN33 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	EPG31	Epping	19.8	3892.5	606699	804298	11	23	EPG31 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	FGY14	Ferntree Gully	11.2	2441	122415	153603	13	21	FGY14 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2010	FGY23	Ferntree Gully	4.5	1249	762902	763260	9	10	FGY23 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	FGY31	Ferntree Gully	16.3	1220	73559	128117	11	17	FGY31 distribution feeder automation schemes enabled to limit the impact of faults. We will continue to monitor this feeder for further reliability improvement opportunities.
2009	FGY31	Ferntree Gully	16.6	1170	333582	343675	15	18	This feeder has been reviewed in 2009/2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	FGY33	Ferntree Gully	29.3	1948.5	873184	969735	33	42	FGY33 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	FGY34	Ferntree Gully	25.4	3572	1269491	1479946	31	42	FGY34 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2010	MWE3	Morwell Open Cut	1.8	3.5	77	1610	1	4	This feeder has very few customers. We will continue to monitor performance of this feeder.
2010	NRN11	Narre Warren	3.9	1198	77587	307775	25	48	NRN11 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	NRN13	Narre Warren	16.8	2449	560525	687126	12	17	NRN13 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2009	NRN13	Narre Warren	14.0	2295.5	892856	1056590	15	17	This feeder has been reviewed in 2008/2009 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	OFR24	Nunawading	10.8	793	175827	316249	3	7	OFR24 was reviewed in early 2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	PHI13	Phillip Island	27.5	4032	213973	562903	20	32	PHI13 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	RWN22	Ringwood North	27.6	3695	144127	224585	24	32	RWN22 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
2010	RWT15	Ringwood Terminal	14.0	2578	359445	524883	13	23	RWT15 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	RWT22	Ringwood Terminal	13.7	3616.5	249418	299605	17	21	RWT22 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	TT6	Thomastown	15.3	3009	109989	207319	12	19	TT6 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	WO33	Wodonga	7.1	88	582	33412	2	5	This feeder has low customer numbers. We will continue to monitor performance of this feeder.
2010	WT10	Watsonia	4.8	1037.5	35880	310395	6	14	We will continue to monitor WT10 for reliability improvement opportunities
2010	WT13	Watsonia	25.5	3244	1307094	1457520	18	30	WT13 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2009	WT13	Watsonia	25.0	3102	612333	768698	21	31	WT13 was reviewed during 2007/2008 for reliability improvement opportunities. Adjacent feeders WT9, WT11, and WT12 will be reviewed in 2010/2011. Feeders in the Watsonia area will continue to be monitored for reliability improvements.
SP AusNet – Short Rural									
2010	BGE11	Belgrave	63.6	3161.5	3077497	3540673	84	137	BGE11 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	BGE11	Belgrave	63.6	3734.5	2907234	2939670	97	105	This feeder has been reviewed in 2009/2010 as part of BGE24 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	BGE22	Belgrave	103.1	2778	4928503	5089912	92	116	BGE22 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	BGE22	Belgrave	93.8	2325	1764634	2022144	76	108	This feeder was reviewed during 2008/2009 for reliability improvements. It falls into the LRF category because severe storms contributed to 56 per cent of total SAIDI. We will continue to monitor for reliability improvement opportunities
2010	BGE24	Belgrave	44.8	1538.5	1994558	2052187	62	70	BGE24 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2009	BGE24	Belgrave	44.8	1538.5	1602973	1616539	68	71	This feeder has been reviewed in 2009/2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	BRT21	Bright	89.8	1505	1287166	1375118	22	38	BRT21 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	KLK1	Kinglake	190.9	1297	1563046	1621523	48	69	KLK1 was reviewed in 07/08 for reliability improvement opportunities. We

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									will continue to monitor this feeder for further opportunities.
2009	KLK1	Kinglake	187.8	1350	14328600	14708198	68	141	This feeder was reviewed in 2007/2008. It falls in the LRF category due to the Black Saturday bushfires which resulted in a long power outage
2010	KLK2	Kinglake	86.8	714	580343	633563	29	39	KLK2 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	KLK2	Kinglake	86.4	757.5	7211863	7323971	31	58	This feeder was reviewed in 2007/2008. It falls in the LRF category due to the Black Saturday bushfires which resulted in a long power outage
2010	LDL21	Lilydale	39.7	2304.5	1635272	1771071	42	54	LDL21 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	LDL21	Lilydale	39.7	2298	1752487	1844017	58	62	This feeder has been reviewed in 2007/2008 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	LGA12	Leongatha	183.6	465.5	452609	797652	38	76	LGA12 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2010	LGA24	Leongatha	191.7	541	451050	510146	16	31	This feeder has low customer numbers. We will continue to monitor performance of this feeder.
2010	LLG12	Lang Lang	188.9	1323.5	972059	1118622	48	85	We will continue to monitor LLG12 for reliability improvement opportunities
2010	LLG13	Lang Lang	103.5	1142.5	187327	301091	35	56	LLG13 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	MBY14	Mount Beauty	8.9	2	326384	327200	4	5	This feeder has very few customers. We will continue to monitor performance of this feeder.
2009	MBY14	Mount Beauty	8.9	2	87393	87393	5	5	This feeder will continue to be monitored for reliability improvement opportunities.
2010	MDG1	Mount Dandenong	12.1	770	715924	825333	23	30	MDG1 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	MDG1	Mount Dandenong	12.1	772	735397	756522	26	28	This feeder has been reviewed in 2007/2008 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	MDI1	Murrindindi	25.6	57	24584	56804	4	7	This feeder has low customer numbers. We will continue to monitor performance of this feeder.
2009	MDI1	Murrindindi	24.7	56.5	527252	528887	11	19	This feeder falls in the LRF category due to the Black Saturday bushfires which resulted in a long power outage
2010	MJG11	Merrijig	99.9	1260	864867	1378042	24	48	MJG11 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	MOE21	Moe	186.0	680	279265	349250	47	64	MOE21 was reviewed in 10/11 for reliability improvement opportunities.

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									Future works have been planned for distribution feeder automation, and are currently in progress.
2009	MOE21	Moe	185.8	677	522702	1057649	67	129	This feeder has been identified for review during 2010/2011 for our reliability improvement programme
2010	MOE32	Moe	139.0	930.5	330744	365920	37	55	MOE32 is currently being reviewed for reliability improvement opportunities. Further construction works and distribution feeder automation schemes are being proposed.
2009	MOE32	Moe	139.6	895	741448	826619	38	71	This feeder falls into the LRF category because severe storms* contributed to 36 per cent of total SAIDI. We will continue to monitor it for reliability improvement opportunities
2010	MVE01	Rubicon A	170.4	945.5	981523	1022140	41	101	MVE01 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	MVE01	Rubicon A	169.9	1121.5	9889236	10041158	54	96	This feeder was reviewed during 2008/2009 for reliability improvements. It falls into the LRF category because severe storms contributed to several momentary interruptions. We will continue to monitor for reliability improvement opportunities
2010	MWE2	Morwell Open Cut	2.2	7	21643	23113	5	7	This feeder has very few customers. We will continue to monitor performance of this feeder.
2010	MYT8	Myrtleford	104.0	699.5	650461	723167	39	52	MYT8 was reviewed in early 2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	PHI11	Phillip Island	26.1	1265	469301	766701	13	30	We will continue to monitor PHI11 for reliability improvement opportunities
2009	PHI11	Phillip Island	31.2	1251.5	292754	358277	14	20	This feeder has been identified for review during 2010/2011 for our reliability improvement programme
2010	PHI12	Phillip Island	70.8	3867.5	464846	967919	49	93	Distribution feeder automation schemes have been enabled on PHI12 to limit the impact of faults. We will continue to monitor this feeder for further reliability improvement opportunities.
2009	PHI12	Phillip Island	70.8	3808.5	258165	333002	34	45	This feeder has been identified for review during 2010/2011 for our reliability improvement programme
2010	SFS1	Sassafras	20.4	1072	565430	1001006	29	39	SFS1 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2009	SFS1	Sassafras	20.3	1070.5	1889625	1973095	34	38	This feeder has been reviewed in 2009/2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, is currently in progress
2010	UWY1	Upwey	19.5	1073	1877909	1916804	23	29	UWY1 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	UWY1	Upwey	19.5	1066	1735024	1751575	37	40	This feeder was reviewed during 2008/2009 for reliability improvements. It falls into the LRF category because severe storms contributed to 66 per cent

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									of total SAIDI. We will continue to monitor for reliability improvement opportunities
2010	WGI23	Wonthaggi	134.7	2374.5	523844	1606196	51	110	WGI23 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	WGI23	Wonthaggi	132.6	2144.5	855420	902340	54	73	This feeder has been reviewed in 2009/2010 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and is currently in progress
2010	WGI31	Wonthaggi	73.1	3349.5	98684	310232	27	48	WGI31 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2010	WGL23	Warragul	166.8	1279.5	388064	752454	39	92	WGL23 was reviewed in 07/08 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	WGL23	Warragul	166.7	2014.5	658226	855076	50	68	This feeder was reviewed during 2007/2008 for reliability improvements. It falls into the LRF category because severe storms contributed several momentary interruptions. We will continue to monitor for reliability improvement opportunities
2010	WYK12	Woori Yallock	106.8	2019.5	1436137	1529476	46	70	WYK12 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	WYK12	Woori Yallock	106.5	2004.5	2726208	2930123	81	111	This feeder was reviewed during 2008/2009 for reliability improvements. It falls into the LRF category because severe storms contributed to 72 per cent of total SAIDI. We will continue to monitor for reliability improvement opportunities
2010	WYK23	Woori Yallock	129.7	3480.5	2223196	2333181	61	91	WYK23 was reviewed in 08/09 for reliability improvement opportunities. We will continue to monitor this feeder for further opportunities.
2009	WYK23	Woori Yallock	129.8	3467	4045118	4432195	68	97	This feeder was reviewed during 2008/2009 for reliability improvements. It falls into the LRF category because severe storms contributed to 60 per cent of total SAIDI. We will continue to monitor for reliability improvement opportunities
SP AusNet – Long Rural									
2010	ALA01	Rubicon A	434.0	2505.5	920653	994318	95	215	ALA01 was reviewed in 10/11 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2009	ALA01	Rubicon A	434.3	2483	1967226	2045554	70	143	This feeder has been identified for review during 2010/2011 for our reliability improvement programme
2010	KLO14	Kinglake	271.5	1352.5	516853	804655	22	83	Distribution feeder automation schemes have been enabled on KLO14 to limit the impact of faults. We will continue to monitor this feeder for further reliability improvement opportunities.
2010	LGA11	Leongatha	251.4	815.5	765519	862681	69	91	LGA11 was reviewed in 09/10 for reliability improvement opportunities. Future works have been planned for distribution feeder automation, and are currently in progress.
2010	LGA13	Leongatha	283.1	451.5	104249	465878	62	118	LGA13 was reviewed in 10/11 for reliability improvement opportunities.

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									Future works have been planned for distribution feeder automation, and are currently in progress.
United Energy – Urban									
2010	BH 12	Bendigo	5.9	777	71453	246123	1	9	Damage repaired. No Plan. 1 sustained feeder outage caused by third party. Planned outages for capacity upgrade.
2010	BU 14	Bouverie/Queensberry St	10.6	1566	437601	445451	9	11	Damage repaired. No Plan. 2 sustained feeder outages: 1x tree with significant secondary damages; 1 x cause not found
2010	BW 04	Bulleen	3.1	909	28170	991310	6	19	No plan. Planned outages for conversion from 6.6 to 11kV and distribution substations upgrade
2010	BW 05	Bulleen	5.2	1743	500218	518638	4	6	Damage repaired. No Plan. 3 sustained feeder outages: 1 high wind; 1x equipment failure, 1x cause not found
2010	BW 08	Bulleen	5.0	376	28173	358828	1	10	No plan. Planned outages for conversion from 6.6 to 11kV and distribution substations upgrade
2010	CFD14	Caulfield T/CFD	2.9	741	74570	261125	5	7	Damage repaired. No Plan. 3 sustained feeder outages: 1x shared SubT asset failure; 1x bird with significant secondary damage; 1x equipment failure. Planned outages for capacity upgrade.
2010	CRM21	Carrum	41.5	3821	973909	1404604	14	32	Damage repaired. No Plan. 2 sustained feeder outages: 1x equipment failure; 1x lightning
2010	DSH32	Dandenong South	5.7	175	166	62836	0	2	No plan. Planned outages for capacity upgrade.
2010	DVY34	Dandenong Valley	22.9	649	528771	573007	4	17	Damage repaired. No Plan. 1 sustained feeder outage caused by Wind/tree on 5 Sep. Unplanned SAIDI 7.7 minutes if this event was excluded.
2010	EM 09	Eltham	5.7	1594	353922	558578	4	10	Damage repaired. No Plan.1 sustained feeder outage caused by lightning. Planned outages for capacity upgrade.
2010	FSH22	Frankston South	11.6	2391	1541275	1732115	4	13	Damage repaired. No Plan. 3 sustained feeder outages: 1x lightning; 1x High wind/tree; 1x equipment failure
2010	M 17	Lyndale (LWN)	5.4	1062	34444	300996	5	11	No plan. Planned outages for capacity upgrade.
2010	MC 03	Mount Beauty	11.0	2611	983676	1137746	12	17	Damage repaired. No Plan. 1 sustained feeder outage caused by possum on 22kV Bus at the ZS. 2 sustained ACR outages: 1x lightning; 1x storm 5 Sep. Unplanned SAIDI 61 minutes if 5 Sep storm event was excluded.
2010	MC 07	Mount Beauty	15.6	1402	180831	516446	14	21	No plan. Planned outages for capacity upgrade & asset replacement.
2010	MC 10	Mount Beauty	8.3	379	1213	3628	1	3	Animal proofing. 6 feeder momentary outages caused by birds
2010	MTN06	Mornington	16.3	3319	1364391	1514366	9	13	Vegetation management. 1 sustained feeder outage due to high wind/tree on 5 Sep. Unplanned SAIDI 74.6 minutes if 5 Sep storm event was excluded.
2010	NO 02	Newmerella	5.0	184	55444	56084	1	3	Vegetation management. 1 sustained feeder outage caused by tree
2010	OAK34	Oakleigh	4.4	1082	151666	325786	4	10	Protection reviewed; damage repaired. No plan. 2 sustained feeder outages: 1x incorrect protection operation; 1x equipment failure. Planned outages for capacity upgrade & asset replacement.
2010	OR 09	Nunawading	5.8	1302	325191	492441	3	7	Damage repaired. No Plan. 1 sustained feeder outage caused by high wind with significant secondary damage. Planned outages for capacity upgrade &

Year	Feeder ID	Area	Length (km)	No. of customers on feeder	Unplanned minutes-off-supply	Total minutes-off-supply	No. of unplanned outage events	Total no. of outage events	Plan, if stated, and other comments by DNSPs
									asset replacement.
2010	RD 02	Redcliffs Terminal	1.7	154	28067	50327	3	4	No plan. Shared feeder with CitiPower. 1 sustained outage due to vehicle into pole (UE asset). Planned outages for asset replacement.
2010	SH 70	Sassafras	4.0	1043	397171	397171	1	1	Vegetation management. 1 sustained feeder outage due to high wind/tree with significant secondary damage.
2010	SH 75	Sassafras	2.3	1332	251511	537311	8	20	Animal proofing. 2 sustained feeder outages: 1x bird; 1x cause not found. Planned outages for capacity upgrade & asset replacement.
2010	SR 25	South Melbourne	4.8	833	143229	278554	5	12	Damage repaired. No Plan. 3 sustained feeder outages: 1x crossarm fire; 2x equipment failure. Planned outages for capacity upgrade & asset replacement.
2010	STO22	Sorrento	11.8	1705	575813	805128	8	17	No plan. Planned outages for capacity upgrade.
2010	STO23	Sorrento	18.2	3683	1195193	1309037	8	13	Vegetation management. Was STO14. 1 sustained feeder outage caused by third party. 1 sustained ACR outage caused by tree.1 HV operation due to high wind/tree contributed 96.2 unplanned SAIDI minutes
United Energy – Short Rural									
2010	DMA15	Dromana	48.5	1525	893983	1187188	11	36	Damage repaired. No Plan. 1 sustained feeder outage caused by high wind/tree on the 5 Sep storm. Unplanned SAIDI 32.2 minutes if this event was excluded.
2010	DMA13	Dromana	135.6	2767	1183665	2072893	55	115	Animal proofing; vegetation management. 1 sustained feeder outage caused by possum. 6 sustained outages: 2x possum; 2x tree; 2x lightning; 1x vandalism. Planned outages for steel conductor replacement and HV ABC installation for bushfire area
2010	MTN03	Mornington	110.4	1438	736915	884457	34	67	Vegetation management. 1 sustained feeder outage with cause not found. 3 sustained ACR outages: 1x tree; 2x high wind/tree on 5 Sep. Unplanned SAIDI 162.2 minutes if 5 Sep storm event was excluded. Planned outages for capacity upgrade & asset replacement.
2010	STO21	Sorrento	37.4	3150	1765378	1910122	17	35	Vegetation management. 1 sustained feeder outage due to high wind/tree on 5 Sep. Unplanned SAIDI 133.6 minutes if 5 Sep storm event was excluded.

D Supply areas (zone substations) reliability information, 2005–2010

CitiPower

Figure D.1 CitiPower supply area map

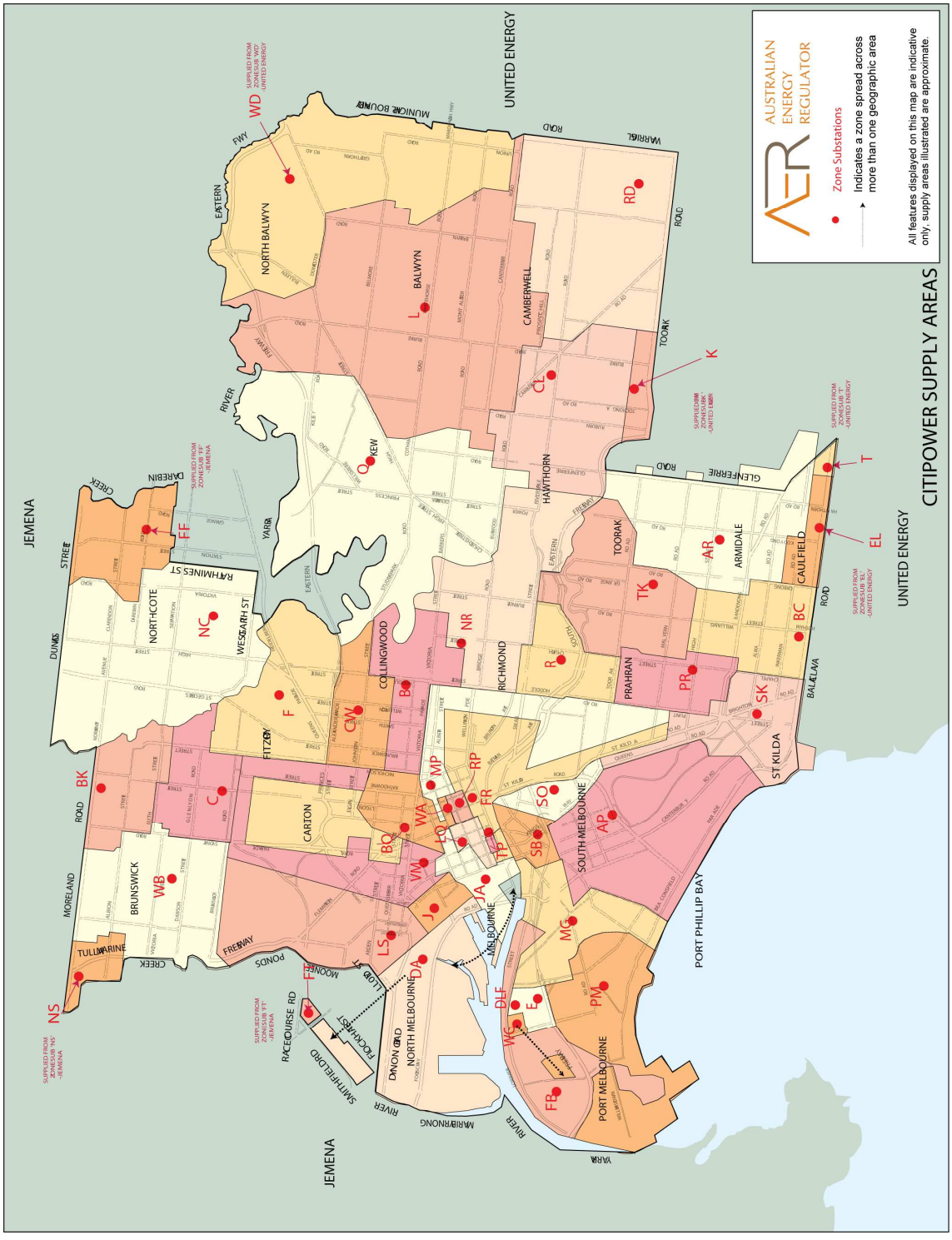


Table D.2 CitiPower substation abbreviations

Zone Substations

AP	Albert Park	MP	McIlwraith Place
AR	Armadale	NC	Northcote
B	Collingwood	NR	North Richmond
BC	Balaclava	PM	Port Melbourne
BK	Brunswick	PR	Prahran
BSBQ	Bouverie/Queensberry St	Q	Kew
C	Brunswick	R	Richmond
CL	Camberwell	RD	Riversdale
CW	Collingwood	RP	Russell Place
DA	Dock Area	SK	St Kilda
E	Fisherman's Bend	SB	Southbank
F	Fitzroy	SO	South Melbourne
FB	Fisherman's Bend	TK	Toorak
FR	Flinders-Ramsden	TP	Tavistock Place
J	Spencer Street	VM	Victoria Market
JA	Little Bourke Street	W	Celestial Place
L	Balwyn		(switching station only)
LQ	Little Queen	WA	Waratah Place
LS	Laurens Street	WB	West Brunswick
MG	Montague	WG	Westgate

Other DB Zone Substations supplying CitiPower areas

DLF	Dockland	K	Gardiner
EL	Elsternwick	NS	North Essendon
FF	Fairfield	T	Caulfield
FT	Flemington	WD	West Doncaster

Table D.3 CitiPower supply area performance

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Albert Park	AP	2010	16,777	21.1	24.5	0.4	0.4
		2009	16,683	129.3	137.0	1.8	1.8
		2008	16,370	13.0	23.6	0.2	0.3
		2007	15,473	17.4	20.7	0.4	0.4
		2006	14,661	14.3	16.3	0.2	0.3
Armadale	AR	2010	11,526	19.2	25.9	0.2	0.2
		2009	11,964	67.6	75.2	1.1	1.1
		2008	12,544	34.7	42.5	0.3	0.3
		2007	12,529	82.5	88.6	0.7	0.8
		2006	12,432	13.2	28.7	0.3	0.3
Balaclava	BC	2010	11,788	12.2	30.9	0.3	0.3
		2009	11,590	28.6	29.8	0.6	0.6
		2008	10,829	2.7	7.4	0.0	0.1
		2007	10,677	62.6	68.4	0.9	0.9
		2006	10,744	32.1	39.4	1.5	1.5
Balwyn	L	2010	14,210	80.2	83.1	1.7	1.7
		2009	14,143	63.5	64.6	1.5	1.5
		2008	14,086	95.2	100.6	0.7	0.7
		2007	14,329	56.9	59.5	1.0	1.0
		2006	14,604	26.3	28.8	0.5	0.5
Bouverie/Queensberry St	BSBQ	2010	7,463	100.8	105.6	0.5	0.6
		2009	7,383	2.1	15.8	0.1	0.2
		2008	7,423	8.4	8.5	0.1	0.1
		2007	7,382	75.3	77.0	0.3	0.3
		2006	7,395	16.0	38.2	0.2	0.3
Brunswick ('BK feeders')	BK	2010	6,582	13.3	18.4	0.2	0.2
		2009	6,542	21.6	27.1	0.3	0.4
		2008	6,537	24.1	24.7	0.4	0.4
		2007	6,499	28.5	30.0	0.4	0.4
		2006	6,419	11.9	21.6	0.3	0.3
Brunswick ('C feeders')	C	2010	5,157	16.5	22.0	0.3	0.3
		2009	5,072	4.6	11.4	0.1	0.1
		2008	4,983	26.4	27.8	0.3	0.3
		2007	4,932	17.2	21.3	0.3	0.3
		2006	4,874	2.6	5.9	0.0	0.1
Brunswick ('WB feeders')	WB	2010	11,345	3.0	12.7	0.0	0.1
		2009	11,175	158.6	161.2	1.8	1.8
		2008	12,752	47.7	48.0	0.6	0.6
		2007	11,023	230.0	230.8	1.3	1.3
		2006	10,855	118.6	121.6	1.6	1.6
Camberwell	CL	2010	11,484	67.1	68.5	1.5	1.6
		2009	11,250	15.7	18.3	0.2	0.2
		2008	11,332	41.6	45.1	0.4	0.4
		2007	11,205	197.1	200.8	1.4	1.4
		2006	11,031	14.3	24.9	0.3	0.3
Caulfield	T	2010	473	13.9	13.9	0.2	0.2
		2009	467	9.9	9.9	0.9	0.9
		2008	268	0.1	0.1	0.0	0.0
		2007	71	1.1	1.1	0.0	0.0
		2006	70	1.7	1.7	0.0	0.0
Collingwood ('B feeders')	B	2010	6,425	55.3	56.6	0.5	0.5
		2009	5,862	18.3	32.7	0.3	0.3
		2008	5,010	3.5	4.0	0.0	0.1
		2007	5,007	10.2	13.8	0.3	0.3
		2006	4,986	6.4	7.5	0.2	0.2

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Collingwood ('CW feeders')	CW	2010	9,845	19.4	22.6	0.3	0.3
		2009	9,686	4.5	7.0	0.1	0.1
		2008	9,574	22.8	29.2	0.4	0.4
		2007	9,478	14.6	16.7	0.2	0.2
		2006	9,419	17.0	17.8	0.4	0.4
Dock Area	DA	2010	3,267	3.2	4.4	0.0	0.0
		2009	3,263	116.4	117.4	1.4	1.4
		2008	3,310	8.2	11.2	0.2	0.2
		2007	3,239	225.5	225.7	2.1	2.1
		2006	3,113	2.6	5.5	0.0	0.1
Dockland ('DLF feeders')	DLF	2010	38	0.0	0.0	0.0	0.0
		2009	25	0.0	0.0	0.0	1.6
		2008	4	0.0	0.0	0.0	0.0
		2007	1	0.0	0.0	0.0	0.0
Elsternwick	EL	2010	1,032	0.7	0.7	0.0	0.0
		2009	1,030	48.3	49.6	1.0	1.0
		2008	1,161	15.9	49.6	0.3	0.4
		2007	1,328	4.5	6.0	0.1	0.1
		2006	1,304	64.4	64.4	1.1	1.1
Fairfield	FF	2010	3,100	126.5	126.7	1.2	1.2
		2009	3,069	74.5	78.8	1.4	1.5
		2008	3,043	19.4	20.8	0.2	0.2
		2007	3,029	107.8	108.4	0.9	0.9
		2006	3,014	6.7	8.2	0.1	0.1
Fisherman's Bend ('E feeders')	E	2010	60	0.0	22.9	0.0	0.1
		2009	43	165.8	165.8	2.2	2.2
		2008	21	0.0	0.0	0.0	0.0
		2007	11	229.1	240.9	0.9	1.0
		2006	8	0.0	0.0	0.0	0.0
Fisherman's Bend ('FB feeders')	FB	2010	279	15.3	15.3	0.1	0.1
		2009	265	123.6	123.6	1.0	1.0
		2008	239	8.7	54.0	0.2	0.3
		2007	215	239.1	251.2	1.1	1.1
		2006	207	10.7	10.7	0.3	0.3
Fitzroy	F	2010	8,015	27.0	28.8	0.4	0.4
		2009	7,952	24.2	24.2	0.4	0.4
		2008	7,939	9.0	9.4	0.2	0.2
		2007	7,835	19.2	27.6	0.3	0.3
		2006	7,696	28.8	28.9	0.5	0.5
Flemington	FT	2010	404	2.7	2.7	0.0	0.0
		2009	404	61.8	67.3	2.7	3.2
		2008	403	414.6	414.6	1.5	1.5
		2007	403	184.4	186.1	2.0	2.0
		2006	403	100.1	100.1	1.5	1.5
Flinders-Ramsden	FR	2010	4,709	5.2	6.1	0.1	0.1
		2009	4,669	0.8	2.7	0.0	0.0
		2008	4,606	11.5	15.0	0.2	0.2
		2007	4,603	8.1	14.1	0.2	0.2
		2006	4,433	4.2	10.6	0.0	0.1
Gardiner	K	2010	1,135	60.8	64.6	0.8	0.8
		2009	1,137	119.7	120.1	1.8	1.8
		2008	1,126	115.8	122.5	0.7	0.7
		2007	1,119	137.1	140.7	1.0	1.0
		2006	1,131	7.6	7.6	0.2	0.2
Kew	Q	2010	13,839	81.4	86.3	1.8	1.8
		2009	13,845	52.7	56.7	1.0	1.0
		2008	13,798	70.8	73.0	1.4	1.4

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2007	14,366	36.0	44.4	1.5	1.5
		2006	13,336	33.0	35.5	0.8	0.8
Laurens Street	LS	2010	5,048	41.9	54.1	0.3	0.3
		2009	4,890	24.5	29.6	0.3	0.3
		2008	4,886	37.2	37.5	0.7	0.7
		2007	4,815	5.0	10.1	0.1	0.1
		2006	4,738	35.1	35.9	0.3	0.3
Little Bourke Street	JA	2010	6,866	9.3	17.6	0.2	0.2
		2009	6,497	4.5	5.1	0.2	0.2
		2008	5,506	4.0	7.7	0.0	0.1
		2007	4,937	9.2	10.3	0.1	0.1
		2006	4,527	1.6	1.9	0.0	0.0
Little Queen	LQ	2010	4,909	2.8	6.0	0.0	0.1
		2009	4,855	1.7	8.6	0.1	0.1
		2008	4,937	0.2	0.6	0.0	0.0
		2007	5,086	0.7	0.7	0.0	0.0
		2006	5,034	12.8	17.1	0.2	0.2
McIlwraith Place	MP	2010	9,740	12.8	16.4	0.2	0.2
		2009	9,542	58.0	62.1	0.6	0.6
		2008	9,356	2.9	5.4	0.1	0.1
		2007	9,445	17.6	18.5	0.5	0.5
		2006	9,401	12.1	14.9	0.4	0.4
Montague	MG	2010	6,348	41.6	51.7	0.3	0.4
		2009	6,919	165.1	170.9	2.1	2.2
		2008	6,823	9.3	21.9	0.5	0.5
		2007	6,418	11.1	17.7	0.3	0.3
		2006	5,905	64.2	68.3	0.9	0.9
North Essendon	NS	2010	1,527	0.3	0.7	0.0	0.0
		2009	1,511	37.2	37.2	0.6	0.6
		2008	1,519	5.6	5.6	0.1	0.1
		2007	1,499	63.4	63.4	1.0	1.0
		2006	1,470	13.5	13.5	0.5	0.5
North Richmond	NR	2010	13,327	28.5	32.6	0.5	0.5
		2009	13,558	73.1	75.0	2.1	2.1
		2008	14,247	33.9	42.5	0.6	0.6
		2007	14,244	17.7	22.3	0.4	0.4
		2006	14,036	23.2	26.1	0.5	0.6
Northcote	NC	2010	17,551	123.0	126.4	1.5	1.5
		2009	17,367	207.6	209.1	2.7	2.7
		2008	17,276	95.7	99.1	1.1	1.1
		2007	17,210	307.5	309.4	2.6	2.6
		2006	17,121	79.9	82.8	1.0	1.0
Port Melbourne	PM	2010	2,944	56.0	93.6	0.5	0.7
		2009	2,951	187.2	199.2	2.9	2.9
		2008	2,925	15.8	20.5	0.4	0.4
		2007	2,861	274.5	278.5	1.4	1.4
		2006	2,723	2.8	26.5	0.1	0.1
Prahran	PR	2010	7,766	137.7	143.3	1.5	1.5
		2009	7,920	50.0	55.1	0.9	0.9
		2008	8,010	98.4	99.9	1.2	1.2
		2007	7,149	167.8	176.1	1.0	1.0
		2006	6,424	3.6	5.1	0.1	0.1
Richmond	R	2010	6,739	37.9	55.5	0.2	0.3
		2009	6,750	49.8	54.0	1.0	1.0
		2008	6,434	3.2	10.6	0.1	0.1
		2007	6,200	209.6	215.6	1.0	1.1
		2006	6,220	45.8	55.5	0.9	1.0
Riversdale	RD	2010	12,399	61.5	64.6	0.6	0.6

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2009	12,387	63.1	66.3	1.0	1.0
		2008	12,271	155.8	163.5	1.0	1.1
		2007	11,788	52.6	53.1	0.7	0.7
		2006	11,368	26.4	31.0	0.4	0.5
Russell Place	RP	2010	1,016	1.6	1.6	0.0	0.0
		2009	978	0.6	0.6	0.0	0.0
		2008	963	0.4	0.4	0.0	0.0
		2007	949	1.0	1.0	0.0	0.0
		2006	963	0.7	0.7	0.0	0.0
South Melbourne ('SO/SM feeders')	SO	2010	5,917	60.8	62.4	0.6	0.6
		2009	6,189	115.8	116.1	1.8	1.8
		2008	6,146	15.8	16.1	0.2	0.2
		2007	9,175	206.8	207.2	1.1	1.1
		2006	6,322	0.4	1.8	0.0	0.0
South Melbourne, SM	SM	2006	2,773	25.7	35.9	0.9	0.9
Southbank	SB	2010	3,248	3.8	3.8	0.5	0.5
Spencer Street	J	2010	1,393	0.4	0.4	0.0	0.0
		2009	1,393	7.7	9.1	0.1	0.1
		2008	1,425	1.7	13.8	0.0	0.1
		2007	1,431	2.8	3.0	0.0	0.0
		2006	1,315	0.7	2.8	0.0	0.0
St Kilda	SK	2010	12,239	8.2	19.3	0.1	0.2
		2009	12,252	1.5	4.4	0.1	0.1
		2008	12,624	75.0	78.7	1.3	1.4
		2007	13,687	50.3	55.1	0.9	0.9
		2006	13,315	11.6	15.6	0.3	0.3
Tavistock Place	TP	2010	619	0.5	10.3	0.0	0.0
		2009	631	0.7	11.7	0.0	0.0
		2008	655	0.4	0.8	0.0	0.0
		2007	660	0.3	0.3	0.0	0.0
		2006	664	7.8	7.8	0.1	0.1
Toorak	TK	2010	13,590	67.2	71.6	0.6	0.6
		2009	13,640	27.2	30.4	0.4	0.4
		2008	12,799	25.9	29.3	0.2	0.3
		2007	12,871	14.5	27.4	1.3	1.3
		2006	12,446	36.6	47.8	1.6	1.6
Victoria Market	VM	2010	11,053	13.8	17.9	0.3	0.3
		2009	10,731	12.6	23.2	0.1	0.2
		2008	10,532	5.6	9.5	0.1	0.1
		2007	10,450	264.9	269.4	1.0	1.0
		2006	9,646	14.3	18.6	0.1	0.2
Waratah Place	WA	2010	5,942	1.6	2.9	0.0	0.0
		2009	5,763	0.7	3.9	0.0	0.1
		2008	5,724	3.3	3.8	0.1	0.1
		2007	5,716	6.3	6.3	0.1	0.1
		2006	5,696	16.7	19.7	0.3	0.4
West Doncaster	WD	2010	8,967	81.1	81.3	1.2	1.2
		2009	8,934	101.1	102.1	2.1	2.1
		2008	8,924	184.1	188.0	1.7	1.7
		2007	9,034	53.0	54.6	0.8	0.8
		2006	9,016	16.1	21.3	0.7	0.7
Westgate	WG	2010	975	3.8	4.6	0.0	0.0
		2009	1,721	71.4	110.6	0.7	0.9
		2008	1,181	14.6	16.4	0.3	0.3
		2007	1,011	35.4	117.3	0.2	0.5
		2006	124	3.4	5.2	0.0	0.0

Jemena

Figure D.2 Jemena supply area map

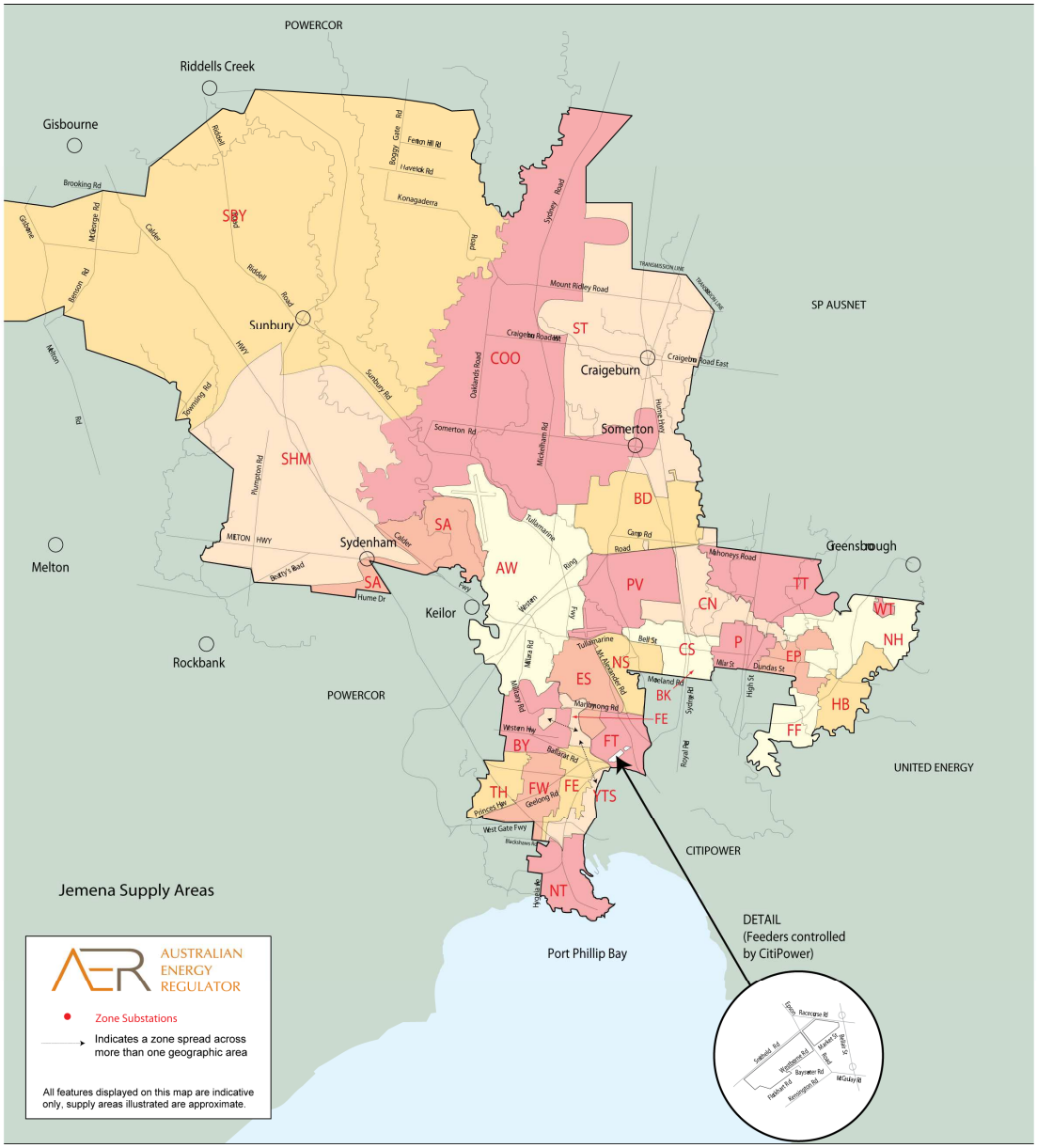


Table D.4 Jemena substation abbreviations

Zone Substations

AW	Airport West
BD	Broadmeadows
BK	Brunswick
BY	Braybrook
COO	Coolaroo
CN	Coburg North
CS	Coburg South
EP	East Preston
ES	Essendon
FE	Footscray East
FF	Fairfield
FT	Flemington
FW	Footscray West
HB	Heidelberg
NH	North Heidelberg
NS	North Essendon
NT	Newport
P	Preston
PV	Pascoe Vale
SA	St Albans
SBY	Sunbury
SHM	Sydenham
ST	Somerton
TH	Tottenham
TT	Thomastown
WT	Watsonia
YTS	Yarraville Terminal Station

Table D.5 Jemena supply area performance

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Airport West	AW	2010	22,944	73.2	89.3	0.9	0.9
		2009	25,822	117.7	123.6	3.0	3.0
		2008	24,768	40.7	57.1	0.7	0.7
		2007	23,799	138.8	153.2	2.3	2.4
		2006	22,826	130.4	134.9	1.8	1.8
Braybrook	BY	2010	9,497	76.4	99.2	1.0	1.1
		2009	10,877	110.2	111.3	1.5	1.5
		2008	8,549	149.6	154.5	1.2	1.2
		2007	8,862	43.5	56.8	0.9	0.9
		2006	8,130	105.4	110.7	1.6	1.6
Broadmeadows	BD	2010	15,957	32.3	39.2	0.7	0.7
		2009	19,302	82.9	85.1	1.5	1.5
		2008	16,150	48.5	54.3	0.6	0.6
		2007	19,206	198.1	202.3	2.6	2.6
		2006	18,576	159.4	163.2	2.5	2.5
Brunswick ('BK feeders')	BK	2008	0	0.0	0.0	0.0	0.0
		2007	0	0.0	0.0	0.0	0.0
		2006	2	0.0	0.0	0.0	0.0
Coburg North	CN	2010	22,522	90.0	107.5	1.3	1.4
		2009	19,415	141.6	157.7	2.2	2.2
		2008	21,108	176.4	182.8	2.2	2.2
		2007	20,014	80.7	83.9	1.1	1.2
		2006	18,847	127.5	129.3	2.0	2.0
Coburg South	CS	2010	17,777	72.7	79.4	2.1	2.1
		2009	16,751	61.5	65.0	1.0	1.0
		2008	16,606	148.2	163.9	2.1	2.2
		2007	17,046	90.4	97.9	1.2	1.2
		2006	16,352	189.5	193.5	2.5	2.5
Coolaroo	COO	2010	9,248	53.8	72.5	0.5	0.6
		2009	9,084	126.6	144.3	2.4	2.5
		2008	10,009	73.9	79.6	0.5	0.5
East Preston	EP	2010	4,869	33.7	39.6	0.4	0.4
		2009	4,808	90.6	91.9	0.8	0.8
		2008	6,918	63.6	82.4	0.8	1.1
		2007	6,767	57.7	60.0	0.9	0.9
		2006	6,450	39.7	46.5	1.4	1.4
Essendon	ES	2010	15,664	35.9	50.7	0.6	0.6
		2009	13,714	158.2	162.9	1.7	1.8
		2008	13,596	17.1	25.4	0.2	0.2
		2007	14,265	48.1	55.9	0.7	0.7
		2006	15,470	39.8	42.6	0.5	0.5
Fairfield	FF	2010	6,206	58.9	69.4	1.1	1.1
		2009	6,879	119.3	127.6	1.5	1.5
		2008	6,492	152.9	153.3	0.7	0.7
		2007	7,360	55.0	64.5	0.9	0.9
		2006	7,402	74.6	89.3	0.9	1.0
Flemington	FT	2010	14,251	48.5	51.7	0.4	0.4
		2009	13,827	177.6	186.7	2.2	2.2
		2008	14,699	76.3	79.9	0.7	0.7
		2007	13,836	206.6	210.5	2.9	2.9
		2006	15,675	98.3	102.3	1.7	1.7
Footscray East	FE	2010	13,019	66.4	94.0	1.0	1.0
		2009	13,548	162.1	169.3	2.2	2.2
		2008	13,070	70.9	75.5	0.4	0.4
		2007	13,542	146.1	149.5	2.0	2.0

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2006	11,682	23.0	26.5	0.4	0.4
Footscray West	FW	2010	12,895	46.7	52.7	0.8	0.8
		2009	11,936	256.5	262.0	2.5	2.5
		2008	11,779	222.5	232.1	1.8	1.8
		2007	12,061	260.2	284.0	3.0	3.0
		2006	13,222	35.4	36.3	0.6	0.6
Heidelberg	HB	2010	8,495	93.5	136.0	0.8	0.9
		2009	7,973	91.4	132.9	0.9	1.1
		2008	7,969	233.2	239.2	1.6	1.6
		2007	8,012	48.2	49.7	0.5	0.5
		2006	7,217	66.7	71.8	0.9	0.9
Newport	NT	2010	12,073	61.8	79.6	1.8	1.9
		2009	13,868	187.6	189.8	2.2	2.2
		2008	14,046	172.6	173.9	1.2	1.2
		2007	11,892	85.9	90.4	1.3	1.3
		2006	11,868	91.5	99.4	1.3	1.4
North Essendon	NS	2010	10,354	28.6	46.7	0.4	0.5
		2009	10,141	80.5	81.2	1.2	1.2
		2008	10,039	32.2	54.1	0.2	0.2
		2007	10,728	56.2	61.1	1.1	1.1
		2006	10,312	71.0	88.8	1.1	1.2
North Heidelberg	NH	2010	20,137	73.9	76.3	0.6	0.6
		2009	19,905	126.9	136.3	1.6	1.6
		2008	19,940	227.2	232.0	2.9	2.9
		2007	17,785	96.0	100.2	1.5	1.5
		2006	17,106	92.5	103.5	1.1	1.2
Pascoe Vale	PV	2010	17,927	33.1	39.1	0.5	0.5
		2009	16,454	40.6	47.9	0.6	0.7
		2008	16,159	31.2	37.8	0.5	0.5
		2007	17,241	72.5	76.3	1.7	1.7
		2006	16,990	47.4	51.7	0.4	0.4
Preston	P	2010	9,229	29.3	108.9	0.3	0.9
		2009	10,228	52.9	98.8	0.6	0.8
		2008	9,491	138.7	145.6	0.4	0.4
		2007	9,885	32.3	39.6	0.4	0.4
		2006	9,291	48.3	54.0	0.7	0.8
Somerton	ST	2010	18,678	71.3	99.2	1.3	1.4
		2009	14,983	85.5	93.4	1.6	1.6
		2008	14,461	182.0	225.0	2.3	2.5
		2007	19,802	188.9	219.3	4.0	4.0
		2006	17,287	51.7	77.8	1.4	1.5
St Albans	SA	2010	2,053	27.4	67.2	2.7	2.8
		2009	2,037	41.8	70.9	1.3	1.4
		2008	5,212	96.3	101.2	1.7	1.7
		2007	8,158	46.9	65.9	1.2	1.3
		2006	7,772	26.3	34.8	2.4	2.5
Sydenham	SHM	2010	11,990	32.3	61.8	0.1	0.2
		2009	11,714	214.4	227.0	4.7	4.8
		2008	9,478	19.7	24.2	0.2	0.2
Sunbury	SBY	2010	14,382	144.4	181.1	1.7	1.8
		2009	13,969	304.5	324.8	5.2	5.2
		2008	18,843	100.9	121.0	2.3	2.4
		2007	18,819	134.7	143.0	3.5	3.6
		2006	18,280	137.3	159.3	1.3	1.4
Thomastown	TT	2010	14,520	59.2	66.4	0.9	1.0
		2009	14,170	90.5	93.5	1.7	1.7
		2008	14,040	161.7	165.9	2.5	2.5
		2007	14,396	33.3	35.1	0.4	0.4

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2006	16,886	90.7	92.5	1.2	1.2
Tottenham	TH	2010	1,125	47.3	105.8	0.6	0.7
		2009	1,100	237.7	268.9	2.9	3.1
		2008	1,070	50.1	64.3	0.6	0.7
		2007	1,126	16.0	19.6	0.2	0.2
		2006	1,041	105.6	107.3	1.7	1.8
Watsonia	WT	2010	139	9.3	9.3	0.0	0.0
		2009	137	61.1	62.3	2.0	2.0
		2008	134	405.5	405.5	1.6	1.6
		2007	132	48.4	52.7	0.6	0.7
		2006	128	182.5	182.5	5.0	5.0
Yarraville Terminal Station	YTS	2010	5,479	66.0	81.6	1.0	1.1
		2009	5,245	77.5	78.2	1.2	1.2
		2008	5,140	178.9	184.9	1.1	1.1
		2007	5,229	139.9	187.3	2.0	2.1
		2006	5,066	59.9	70.0	0.6	0.7

Powercor

Figure D.3 Powercor supply area map

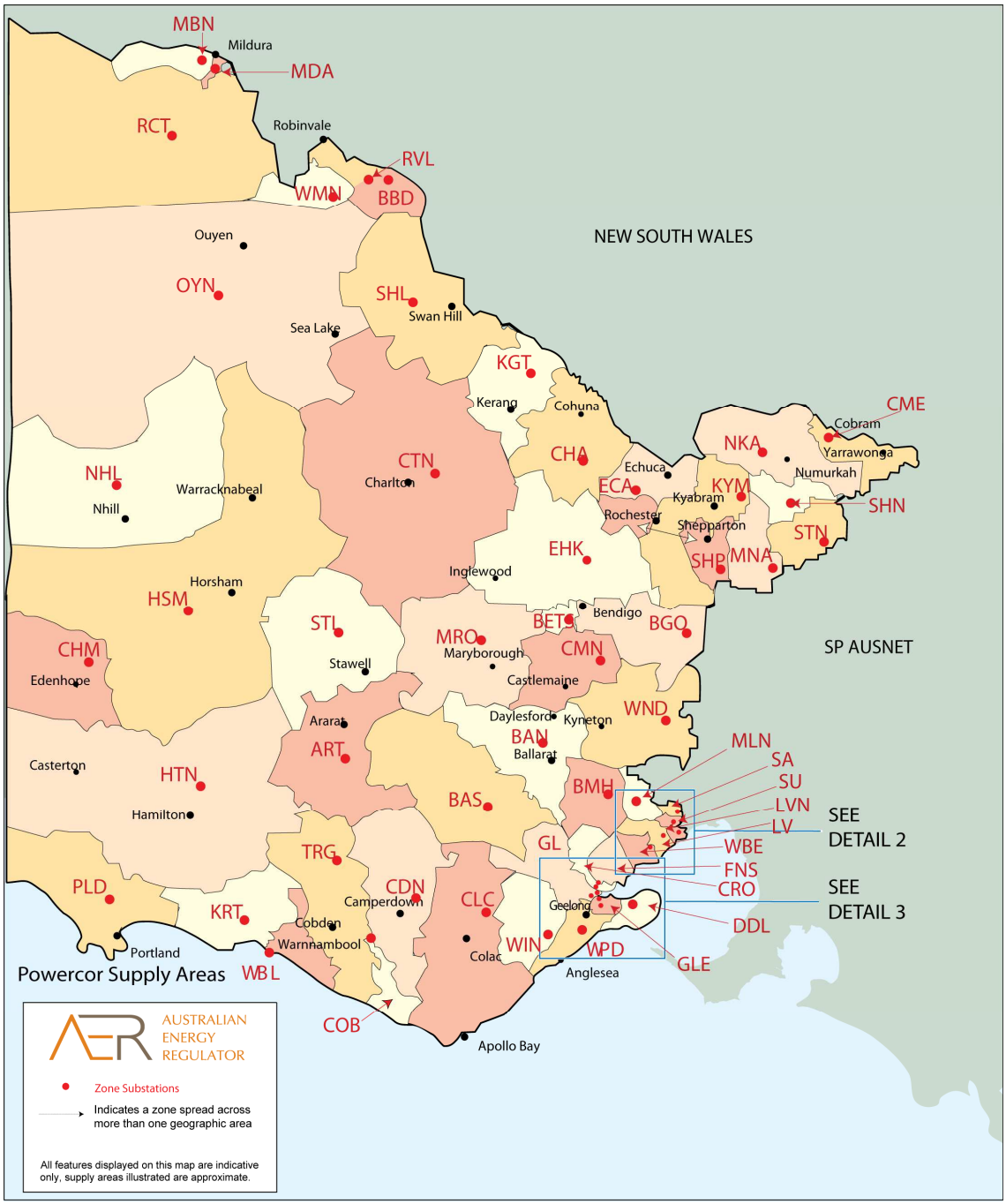


Figure D.4 Powercor supply area maps

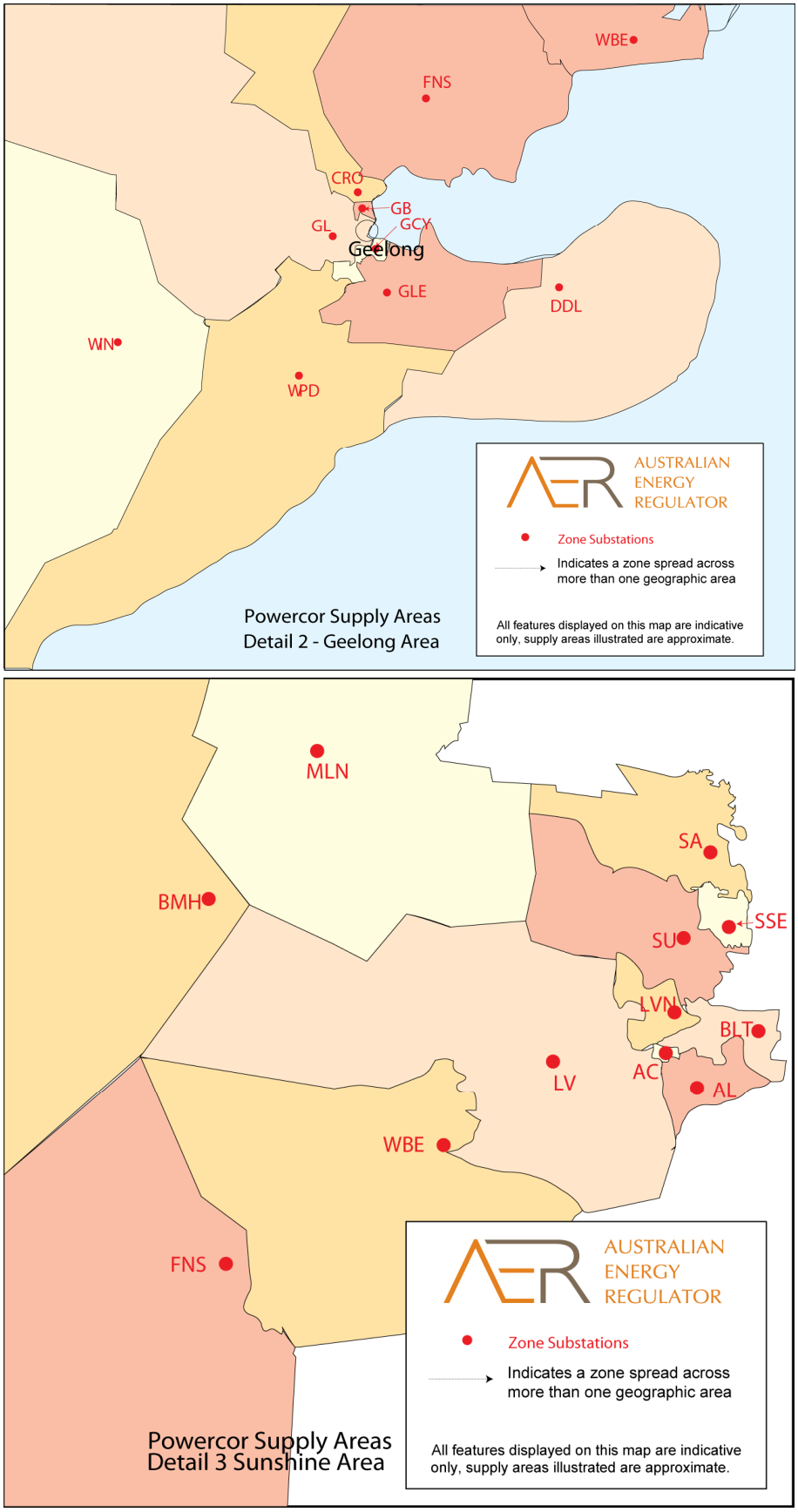


Table D.6 Powercor substation abbreviations

Zone Substations

AC	Altona Chemicals
AL	Altona
ART	Ararat
BAN	Ballarat North
BAS	Ballarat South
BBD	Boundary Bend
BGO	Bendigo
BMH	Bacchus Marsh
CDN	Camperdown
CHA	Cohuna
CHM	Charam
CLC	Colac
CME	Cobram East
CMN	Castlemaine
COB	Cobden
CRO	Corio
CTN	Charlton
DDL	Drysdale
DLF	Dockland
ECA	Echuca
EHK	Eaglehawk
FNS	Ford North Shore
GB	Geelong B
GCY	Geelong City
GL	Geelong
GLE	Geelong East
HSM	Horsham
HTH	Hattah (switching station only)
HTN	Hamilton
KRT	Koroit
KYM	Kyabram
LV	Laverton
LVN	Laverton North
MBN	Merbein
MDA	Mildura
MLN	Melton
MNA	Mooroopna
MRO	Maryborough
NHL	Nhill
NKA	Numurka
OYN	Ouyen
PLD	Portland
RVL	Robinvale
SA	St Albans
SHL	Swan Hill
SHN	Shepparton North
SHP	Stanhope
SSE	Sunshine East
STL	Stawell
STN	Shepparton
SU	Sunshine
TRG	Terang
WBE	Werribee
WBL	Warrnambool
WIN	Winchelsea
WMN	Wemen
WND	Woodend
WPD	Waurn Ponds

SP AusNet Terminal Stations supplying Powercor areas

BET	Bendigo Terminal Station
BLT	Brooklyn Terminal Station
KGT	Kerang Terminal Station
RCT	Redcliffs Terminal Station

ETSA Zone Substations supplying Powercor areas

ETSA	Electricity Trust SA

Table D.7 Powercor supply area performance

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Altona	AL	2010	6,297	306.6	307.4	4.0	4.1
		2009	6,258	204.8	209.8	1.6	1.6
		2008	6,242	40.7	47.5	0.7	0.7
		2007	6,230	91.6	115.1	0.9	1.0
		2006	6,173	65.9	73.2	1.3	1.3
Altona Chemicals	AC	2010	15	59.0	62.0	1.0	1.1
		2009	14	111.9	236.4	0.9	1.4
		2008	12	164.3	164.3	0.3	0.3
		2007	10	0.0	0.0	0.0	0.0
		2006	10	11.4	11.4	0.1	0.1
Ararat	ART	2010	6,477	232.3	260.7	2.9	3.0
		2009	6,400	157.9	180.9	1.1	1.2
		2008	6,321	140.2	172.7	0.7	0.9
		2007	6,296	62.1	122.3	1.5	1.8
		2006	6,282	475.2	502.8	4.0	4.2
Bacchus Marsh	BMH	2010	9,599	298.2	316.5	1.4	1.5
		2009	9,254	359.9	420.0	4.0	4.4
		2008	8,251	154.2	159.9	1.1	1.1
		2007	8,939	275.5	288.4	3.1	3.2
		2006	8,728	149.6	177.1	1.7	2.0
Ballarat North	BAN	2010	32,887	401.4	429.3	1.9	2.1
		2009	32,368	181.9	192.9	2.1	2.3
		2008	32,037	108.5	132.3	1.4	1.5
		2007	31,559	156.0	167.5	2.3	2.4
		2006	31,000	182.3	187.6	5.0	5.0
Ballarat South	BAS	2010	29,862	181.7	207.1	2.8	2.9
		2009	29,438	206.4	247.7	1.9	2.1
		2008	28,568	121.8	132.1	1.4	1.5
		2007	28,182	85.9	98.6	1.8	1.8
		2006	27,684	149.7	162.7	2.9	3.0
Bendigo	BGO	2010	15,994	271.8	291.5	3.0	3.1
		2009	15,707	217.8	230.7	3.8	3.9
		2008	17,889	68.8	83.1	1.0	1.1
		2007	15,920	306.9	364.0	2.7	3.3
		2006	16,829	209.5	230.4	1.0	1.1
Bendigo Terminal	BET	2010	18,107	140.6	197.2	1.5	1.7
		2009	17,018	191.6	210.4	1.8	1.8
		2008	11,370	54.4	70.7	0.7	0.8
		2007	15,817	283.0	302.6	3.4	3.5
		2006	16,848	328.4	338.3	3.3	3.5
Boundary Bend	BBD	2010	294	380.7	381.9	2.2	2.2
Brooklyn	BLT	2010	6,588	126.8	136.4	1.5	1.6
		2009	6,539	401.8	408.1	2.7	2.8
		2008	5,836	130.7	137.9	1.8	1.9
		2007	6,130	234.9	243.3	2.1	2.1
		2006	6,063	146.2	160.5	1.8	1.9
Camperdown	CDN	2010	5,738	362.8	439.0	2.3	2.6
		2009	5,727	498.2	528.6	3.3	3.6
		2008	8,159	267.4	307.8	1.7	1.9
		2007	5,711	405.7	436.8	3.4	3.5
		2006	5,714	267.2	290.6	3.3	3.4
Castlemaine	CMN	2010	9,039	221.6	261.9	4.1	4.3
		2009	9,403	188.6	196.7	3.6	3.7
		2008	9,619	100.3	124.4	1.2	1.3
		2007	9,714	433.3	467.2	4.7	4.9

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2006	9,614	373.3	402.3	1.9	2.1
Charam	CHM	2010	1,594	421.8	437.0	2.6	3.6
		2009	1,592	505.6	546.2	2.8	3.1
		2008	1,235	201.9	216.2	1.0	2.0
		2007	1,594	597.6	679.6	2.0	2.6
		2006	1,599	729.2	736.0	6.5	6.6
Charlton	CTN	2010	8,089	259.7	332.7	4.7	7.0
		2009	8,102	539.2	575.2	4.5	4.9
		2008	6,495	126.1	157.9	1.2	1.5
		2007	8,157	498.5	504.1	5.0	5.1
		2006	8,186	609.1	617.5	5.8	5.9
Cobden	COB	2010	774	1,517.2	1,556.2	6.9	7.0
		2009	775	1,035.4	1,178.1	6.6	7.0
		2008	3,234	112.3	365.0	1.0	1.0
		2007	781	406.5	424.2	4.7	4.7
		2006	782	380.5	394.1	3.7	3.8
Cobram East	CME	2010	8,196	157.0	161.7	1.1	1.1
		2009	8,077	309.6	331.4	3.9	4.0
		2008	11,496	264.0	318.8	4.0	4.3
		2007	7,838	70.5	86.7	1.3	1.4
		2006	7,683	64.0	88.2	1.9	2.2
Cohuna	CHA	2010	4,372	275.1	323.6	1.4	1.6
		2009	4,383	420.5	503.7	3.2	3.7
		2008	3,090	182.6	221.9	2.4	3.0
		2007	4,285	134.5	181.1	1.0	1.2
		2006	4,159	130.9	137.5	0.9	0.9
Colac	CLC	2010	16,101	267.8	365.3	2.4	2.7
		2009	15,956	370.2	427.7	5.3	5.5
		2008	13,504	204.7	229.9	1.5	1.8
		2007	15,739	131.6	178.9	1.8	2.0
		2006	15,550	175.9	217.0	3.0	3.3
Corio	CRO	2010	10,188	212.5	228.5	1.2	1.3
		2009	10,119	339.9	357.0	2.1	2.1
		2008	9,001	44.7	60.5	0.2	0.3
		2007	10,062	192.8	226.9	0.8	0.9
		2006	10,106	200.8	215.1	1.2	1.2
Dockland ('DLF feeders')	DLF	2010	810	0.0	0.0	0.0	0.0
		2009	776	0.0	0.0	0.0	1.0
		2008	5,940	83.5	122.3	1.1	1.2
		2007	769	0.2	0.2	0.0	0.0
		2006	765	0.4	0.4	0.0	0.0
Drysdale	DDL	2010	25,149	211.3	303.6	2.6	3.0
		2009	24,615	328.9	350.5	3.4	3.4
		2008	20,924	133.4	164.5	1.6	1.8
		2007	23,637	309.5	338.1	2.8	2.9
		2006	23,314	105.7	130.2	1.2	1.3
Eaglehawk	EHK	2010	16,337	102.6	128.0	1.3	1.4
		2009	17,105	301.5	327.5	4.8	5.3
		2008	16,645	63.1	78.2	0.7	0.7
		2007	16,648	311.9	335.5	4.5	4.6
		2006	16,410	330.4	353.1	2.1	2.3
Echuca	ECA	2010	8,818	150.1	180.0	1.5	1.7
		2009	8,771	168.5	182.8	2.4	2.5
		2008	6,475	35.2	55.3	0.3	0.3
		2007	8,632	34.6	46.7	0.4	0.6
		2006	8,484	162.6	181.4	3.7	3.8
Electricity Trust SA	ETSA	2010	357	488.9	924.4	5.3	8.6
		2009	355	779.0	811.0	6.1	5.7

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2008	3,583	89.2	951.0	0.7	0.8
		2007	353	893.1	901.9	5.2	5.3
		2006	349	1,221.0	1,227.8	2.8	2.9
Ford North Shore	FNS	2010	9,610	159.3	191.6	0.7	0.9
		2009	9,391	297.4	338.3	2.4	2.7
		2008	9,075	161.0	191.2	1.7	1.8
		2007	9,144	248.3	350.5	2.8	3.4
		2006	9,003	136.7	148.8	1.8	1.9
Geelong	GL	2010	23,562	146.0	180.3	1.0	1.1
		2009	23,253	436.4	489.3	3.3	3.6
		2008	22,658	82.4	112.9	0.8	0.9
		2007	22,769	252.0	283.3	2.2	2.3
		2006	22,773	130.9	149.0	1.3	1.4
Geelong B	GB	2010	1,019	27.9	58.4	0.6	0.6
		2009	1,011	159.1	260.2	1.2	1.5
		2008	713	83.0	88.1	0.8	0.8
		2007	995	143.2	174.1	1.3	1.4
		2006	632	70.0	311.4	1.4	2.6
Geelong City	GCY	2010	9,503	67.0	77.7	0.7	0.8
		2009	9,147	343.7	359.3	4.1	4.2
		2008	4,034	19.0	73.0	0.2	0.4
		2007	8,485	171.0	189.2	1.5	1.6
		2006	8,461	56.9	75.0	0.8	0.8
Geelong East	GLE	2010	18,484	111.0	141.6	1.9	2.0
		2009	17,877	403.2	409.0	2.9	2.9
		2008	19,770	196.4	233.8	1.7	1.9
		2007	17,359	370.4	387.3	2.9	2.9
		2006	17,133	87.1	111.4	1.7	1.8
Hamilton	HTN	2010	13,598	260.1	282.2	2.6	2.7
		2009	13,597	468.9	540.0	3.7	4.0
		2008	13,493	148.8	169.8	1.4	1.6
		2007	13,434	266.3	275.0	3.1	3.1
		2006	13,406	542.4	561.3	4.5	4.6
Horsham	HSM	2010	16,751	196.7	232.4	1.9	2.1
		2009	16,950	424.0	450.6	2.9	3.0
		2008	14,941	129.1	146.7	1.6	1.7
		2007	17,137	124.9	138.1	1.2	1.2
		2006	17,012	225.6	246.7	2.1	2.2
Kerang Terminal Station	KGT	2010	4,522	392.6	417.3	3.7	3.9
		2009	4,126	83.7	140.2	0.9	1.2
		2008	7,591	190.4	208.6	2.0	2.1
		2007	4,142	163.1	207.8	0.9	1.2
		2006	4,138	323.8	367.3	2.2	2.3
Koroit	KRT	2010	7,350	397.6	456.5	4.4	4.7
		2009	7,229	428.9	473.6	3.7	3.9
		2008	7,700	197.6	210.7	2.7	2.7
		2007	7,283	334.2	342.4	4.1	4.2
		2006	7,414	452.8	466.0	5.2	5.3
Kyabram	KYM	2010	7,452	185.1	214.7	1.3	1.5
		2009	7,391	345.1	375.5	3.7	3.8
		2008	6,538	237.4	295.6	2.6	2.8
		2007	7,443	194.2	226.5	2.3	2.4
		2006	7,496	212.7	273.4	5.0	5.2
Laverton	LV	2010	33,872	185.2	201.0	3.1	3.2
		2009	30,810	319.4	330.6	3.9	3.9
		2008	26,181	241.1	252.5	3.5	3.5
		2007	28,900	109.6	116.5	1.5	1.5
		2006	29,115	97.8	109.6	2.0	2.1

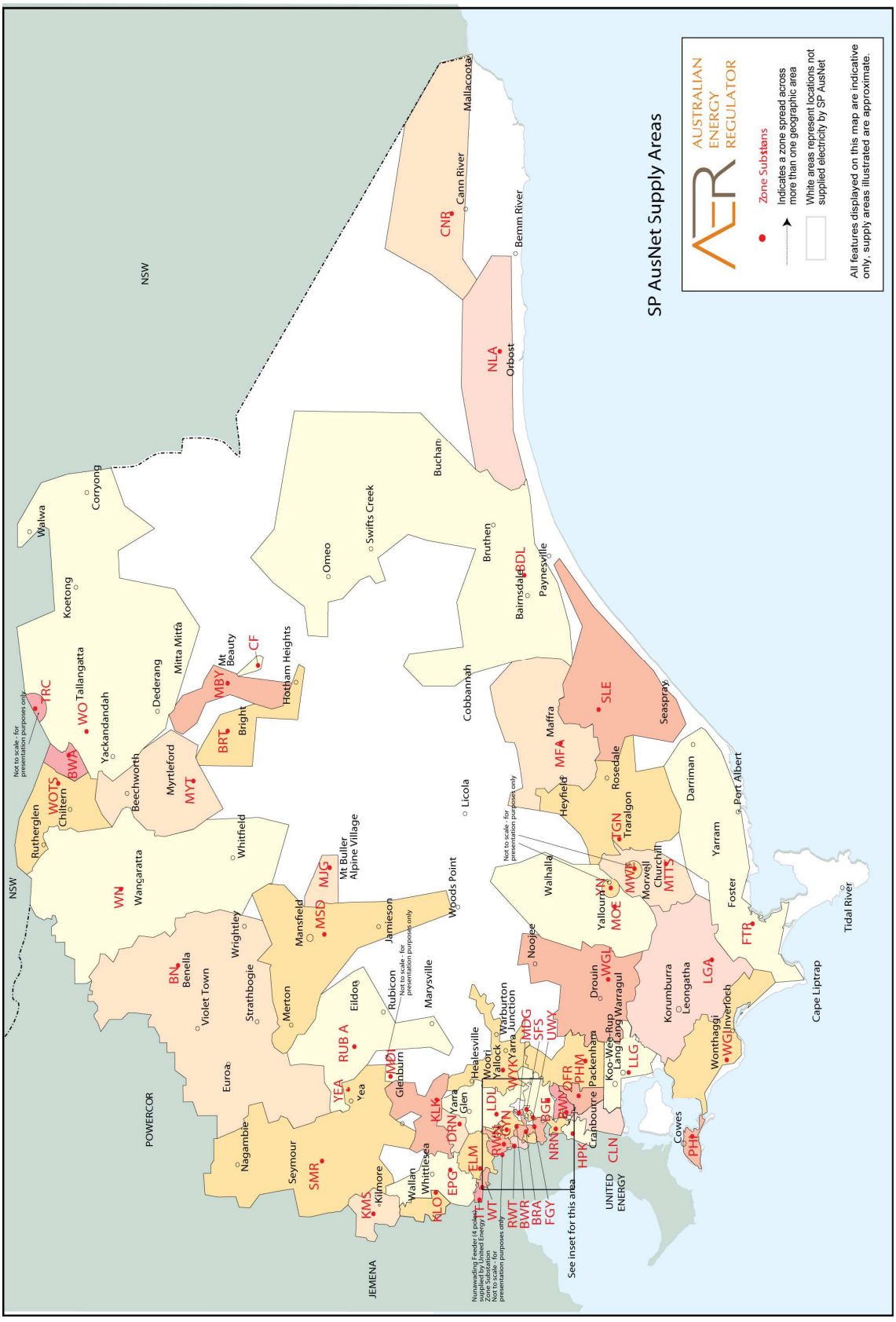
Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Laverton North	LVN	2010	5,312	119.0	141.3	1.9	2.0
		2009	5,271	272.2	281.0	4.2	4.2
		2008	10,894	141.7	146.9	1.5	1.5
		2007	4,989	22.4	29.9	0.1	0.1
		2006	2,782	47.3	50.8	0.4	0.4
Maryborough	MRO	2010	9,977	254.7	272.5	2.0	2.1
		2009	9,576	285.9	302.1	4.7	4.8
		2008	7,804	197.8	234.8	2.0	2.5
		2007	9,148	515.6	523.9	4.8	5.0
		2006	9,105	387.2	399.5	1.6	1.7
Melton	MLN	2010	18,989	143.7	167.3	1.7	1.8
		2009	17,982	334.9	353.7	4.8	4.8
		2008	15,669	81.0	89.0	1.1	1.2
		2007	16,645	108.4	125.8	1.5	1.5
		2006	16,062	44.3	57.8	0.4	0.4
Merbein	MBN	2010	7,347	62.8	85.8	0.6	0.8
		2009	7,170	136.7	162.7	1.0	1.1
		2008	4,031	133.4	172.6	1.8	2.0
		2007	6,919	107.8	135.1	0.8	1.0
		2006	6,580	174.0	200.7	2.8	2.9
Mildura	MDA	2010	12,649	67.3	129.2	1.2	1.4
		2009	12,515	35.1	66.1	0.5	0.6
		2008	11,558	70.5	83.6	0.7	0.8
		2007	12,408	51.7	60.9	0.6	0.7
		2006	12,413	199.5	226.4	3.2	3.4
Mooroopna	MNA	2010	9,147	387.8	434.7	2.3	2.5
		2009	8,634	290.4	317.5	3.5	3.6
		2008	11,404	85.4	108.4	1.0	1.1
		2007	8,067	91.9	112.5	0.9	1.0
		2006	8,006	66.8	96.2	0.8	1.0
Nhill	NHL	2010	4,507	107.9	179.5	1.3	1.6
		2009	4,507	472.4	481.1	4.1	4.2
		2008	5,639	89.6	101.3	0.9	1.0
		2007	4,567	256.6	292.3	2.5	3.7
		2006	4,590	585.7	607.4	4.5	5.1
Numurka	NKA	2010	7,965	469.3	485.7	3.3	3.3
		2009	7,965	317.5	332.0	3.4	3.5
		2008	7,815	288.2	324.6	2.1	2.3
		2007	7,930	322.0	352.7	2.8	3.0
		2006	7,874	105.9	142.4	1.5	1.6
Ouyen	OYN	2010	3,440	165.8	201.4	1.1	2.3
		2009	3,464	778.9	849.6	4.9	6.3
		2008	5,682	120.5	131.7	1.4	1.5
		2007	3,506	461.5	473.1	4.1	4.2
		2006	3,535	461.1	471.2	7.2	8.3
Portland	PLD	2010	9,035	91.4	153.4	1.1	1.3
		2009	8,985	393.3	459.9	2.8	3.1
		2008	5,535	176.3	196.9	2.0	2.5
		2007	8,903	255.5	312.8	2.8	3.2
		2006	8,795	315.1	322.6	1.7	1.8
Redcliffs Terminal	RCT	2010	6,089	94.5	202.4	1.2	1.6
		2009	6,087	415.6	527.0	2.3	2.6
		2008	8,633	137.8	162.6	1.6	1.7
		2007	6,029	359.2	386.3	2.4	2.5
		2006	6,003	174.2	204.3	1.4	1.7
Robinvale	RVL	2010	2,114	174.0	178.1	1.2	1.2
		2009	2,116	45.9	55.2	0.9	0.9
		2008	3,755	140.0	202.2	0.7	1.1

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2007	2,413	332.2	366.7	4.1	4.4
		2006	2,384	89.5	186.6	3.5	3.9
Shepparton	STN	2010	10,528	295.1	310.4	1.2	1.3
		2009	10,820	216.7	243.2	3.3	3.5
		2008	13,675	115.0	135.3	1.5	1.6
		2007	10,846	96.8	114.0	1.4	1.4
		2006	10,618	52.4	78.3	0.9	1.0
Shepparton North	SHN	2010	9,976	271.8	288.9	1.3	1.4
		2009	9,793	112.5	127.9	2.3	2.3
		2008	11,947	113.1	147.6	1.8	2.0
		2007	9,651	62.7	80.1	0.8	0.9
		2006	9,532	66.9	85.4	0.7	0.8
St Albans	SA	2010	35,800	123.8	139.6	1.4	1.4
		2009	34,987	107.7	115.2	1.7	1.7
		2008	31,571	87.3	118.4	1.3	1.4
		2007	33,146	131.2	136.7	1.6	1.7
		2006	32,763	65.9	76.5	2.1	2.2
Stanhope	SHP	2010	5,075	275.8	283.2	1.7	1.7
		2009	5,076	231.6	280.0	3.4	3.6
		2008	4,798	36.5	43.3	0.5	0.6
		2007	5,151	97.9	125.3	0.8	0.9
		2006	4,904	253.8	275.2	3.3	3.5
Stawell	STL	2010	6,645	109.7	119.7	0.5	0.6
		2009	6,340	343.8	376.6	2.4	2.5
		2008	7,733	49.8	56.7	0.3	0.4
		2007	6,044	186.5	208.0	2.1	2.2
		2006	6,024	440.1	463.6	2.0	2.1
Sunshine ('SU feeders')	SU	2010	28,582	141.1	151.4	1.5	1.6
		2009	27,314	333.7	341.3	4.5	4.5
		2008	22,943	95.2	116.5	1.1	1.2
		2007	29,239	259.7	265.8	3.0	3.1
		2006	27,411	107.4	113.3	1.9	1.9
Sunshine East	SSE	2010	11,036	85.5	109.3	1.3	1.4
		2009	10,952	436.5	440.4	3.6	3.6
		2008	5,239	94.7	100.0	1.2	1.3
		2007	6,713	116.5	128.5	0.9	0.9
		2006	6,670	45.3	46.5	0.3	0.3
Swan Hill	SHL	2010	8,928	79.8	99.8	0.8	0.8
		2009	9,294	312.4	390.5	3.3	3.6
		2008	7,268	90.7	103.5	0.9	1.0
		2007	9,225	121.7	170.4	2.0	2.3
		2006	9,144	213.6	254.0	0.8	1.0
Terang	TRG	2010	6,794	524.8	752.4	3.6	5.4
		2009	6,787	498.9	563.2	4.0	4.4
		2008	11,103	78.2	82.7	1.2	1.2
		2007	6,769	306.4	344.7	3.0	3.2
		2006	6,777	529.5	545.3	6.0	6.1
Warrnambool	WBL	2010	15,694	126.5	162.0	2.1	2.2
		2009	15,449	219.5	256.4	2.4	2.6
		2008	23,725	94.5	111.6	2.2	2.2
		2007	14,833	111.9	137.2	1.9	2.1
		2006	14,335	381.7	388.6	3.7	3.8
Waurn Ponds	WPD	2010	28,110	160.3	179.5	1.6	1.7
		2009	28,066	409.8	424.7	5.5	5.6
		2008	38,340	204.7	247.3	3.3	3.5
		2007	27,438	379.0	417.5	4.5	4.7
		2006	27,714	225.5	247.3	3.7	3.8
Wemen	WMN	2010	230	1,204.9	1,952.9	3.2	4.9

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2009	234	147.7	674.7	0.7	2.5
		2008	2,190	111.5	112.0	4.1	4.1
		2007	230	346.0	705.7	2.9	6.0
		2006	232	726.2	781.9	7.6	7.7
Werribee	WBE	2010	31,978	49.4	63.2	0.7	0.8
		2009	30,200	273.2	284.1	2.4	2.5
		2008	15,843	179.7	199.1	1.9	2.0
		2007	28,203	96.2	105.0	1.6	1.7
		2006	24,430	116.5	130.4	2.7	2.7
Winchelsea	WIN	2010	3,115	438.6	505.5	4.1	4.4
		2009	3,072	460.8	498.2	2.8	3.3
		2008	6,509	275.7	279.6	5.8	5.8
		2007	3,021	295.0	313.5	2.4	2.4
		2006	2,996	256.1	276.2	2.3	2.5
Woodend	WND	2010	20,653	301.4	323.0	2.9	3.0
		2009	20,283	578.7	598.3	5.8	5.8
		2008	13,972	194.8	227.9	2.1	2.3
		2007	19,669	283.0	294.8	3.1	3.4
		2006	19,360	161.3	179.1	2.3	2.3

SP AusNet

Figure D.5 SP AusNet supply area map



SP AusNet supply area map

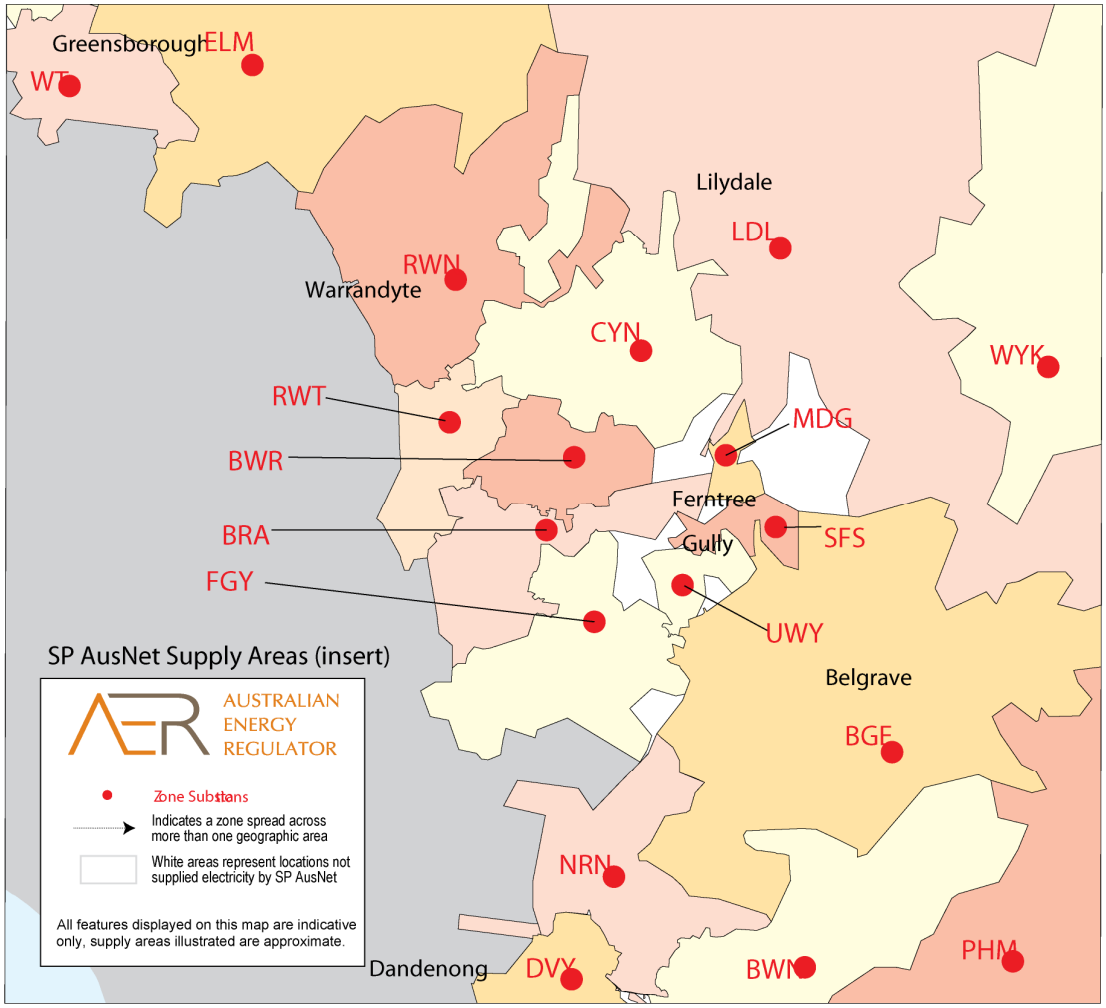


Table D.8 SP AusNet substation abbreviations

Zone Substations

ALA	Rubicon A
BDL	Bairnsdale
BGE	Belgrave
BN	Benalla
BRA	Boronia
BRT	Bright
BWA	Barnawartha
BWN	Berwick North
BWR	Bayswater
CF	Clover Flat
CLN	Clyde North
CNR	Cann River
CYN	Croydon
DRN	Doreen
DVY	Dandenong Valley
ELD	Rubicon A
ELM	Eltham
EPG	Epping
FGY	Ferntree Gully
FTR	Foster
HPK	Hampton Park
KLK	Kinglake
KMS	Kilmore South
KLO	Kalkallo
LDL	Lilydale
LGA	Leongatha
LLG	Lang Lang
LYD	Lysterfield
LYS	Loy Yang
MBY	Mount Beauty
MDG	Mount Dandenong
MDI	Murrindindi
MFA	Maffra
MJG	Merrijig
MOE	Moe
MSD	Mansfield
MVE	Rubicon A
MWE	Morwell Open Cut
MWTS	Morwell Terminal Station
MYT	Myrtleford
NLA	Newmerella
NRN	Narre Warren
OFR	Officer
PHI	Phillip Island
PHM	Pakenham
RUBA	Rubicon A
RWN	Ringwood North
RWT	Ringwood Terminal
SFS	Sassafras
SLE	Sale
SMR	Seymour
TGN	Traralgon
TRC	Wodonga-Tumut
TT	Thomastown
UWY	Upwey
WGI	Wonthaggi
WGL	Warragul
WN	Wangaratta
WO	Wodonga
WOTS	Wodonga Terminal Station
WT	Watsonia
WYK	Woori Yallock
YEA	Yea
YN	Yallourn Open Cut
YPS	Yallourn Power Station

Table D.9 SP AusNet supply area performance

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Bairnsdale	BDL	2010	20,798	125.5	195.2	2.4	2.7
		2009	20,505	164.5	229.0	3.7	4.1
		2008	20,150	138.4	303.5	1.9	2.6
		2007	19,915	281.8	353.0	2.6	2.8
		2006	19,608	70.2	349.2	1.1	2.0
Barnawatha	BWA	2010	1,775	78.8	148.2	0.6	2.5
		2009	1,771	112.2	122.1	2.1	2.2
		2008	1,759	49.1	101.1	1.2	1.9
		2007	1,745	224.4	274.9	4.3	4.4
		2006	1,740	117.5	207.5	2.8	3.2
Bayswater	BWR	2010	15,459	161.9	181.7	1.6	1.7
		2009	15,306	86.1	97.8	1.5	1.6
		2008	14,830	105.3	176.9	1.5	1.7
		2007	15,290	147.2	204.0	1.9	2.1
		2006	15,100	370.1	398.0	3.7	3.8
Belgrave	BGE	2010	11,720	956.2	1,054.2	8.5	9.0
		2009	11,846	769.5	829.1	8.6	8.8
		2008	11,803	989.2	1,066.2	5.3	5.7
		2007	11,190	1,039.8	1,218.0	8.4	9.0
		2006	11,370	534.4	636.3	7.3	7.8
Benalla	BN	2010	11,702	404.5	446.1	2.0	2.2
		2009	11,652	261.8	288.8	2.3	2.5
		2008	11,576	76.1	118.3	0.9	1.1
		2007	11,511	203.3	257.0	1.4	1.6
		2006	11,420	221.0	312.6	2.2	2.6
Berwick North	BWN	2010	6,646	65.3	213.7	0.9	2.0
		2009	8,239	319.5	425.6	4.0	4.4
		2008	10,318	187.7	234.7	1.5	1.7
		2007	10,352	178.8	210.5	1.6	1.8
		2006	10,619	92.4	135.2	1.5	1.7
Boronia	BRA	2010	22,224	39.3	84.9	0.3	0.6
		2009	21,495	213.8	223.4	1.8	1.9
		2008	21,152	109.0	135.5	0.7	0.8
		2007	21,896	130.0	161.9	1.0	1.2
		2006	20,903	140.6	191.1	1.5	1.7
Bright	BRT	2010	3,952	438.0	485.3	2.4	2.6
		2009	3,905	227.2	299.5	3.2	3.7
		2008	3,850	240.1	246.3	3.2	3.2
		2007	3,816	97.3	115.7	1.7	1.9
		2006	3,744	55.3	128.5	0.9	1.1
Cann River	CNR	2010	1,378	125.8	184.1	3.4	3.7
		2009	1,360	2,344.4	2,442.8	9.8	10.1
		2008	1,337	838.0	989.5	10.6	12.1
		2007	1,334	978.8	1,012.0	9.3	9.4
		2006	1,334	1,309.2	1,309.3	8.1	8.1
Clover Flat	CF	2010	707	68.2	132.2	3.8	4.2
		2009	674	571.2	633.1	6.1	6.2
		2008	626	1.4	6.0	0.0	0.0
		2007	606	95.7	122.3	2.9	3.0
		2006	599	334.8	353.3	2.9	3.0
Clyde North	CLN	2010	23,884	17.1	61.6	0.2	0.4
		2009	22,477	227.6	306.8	3.2	3.6
		2008	20,511	167.1	250.8	0.9	1.2
		2007	18,327	113.6	135.0	1.7	1.8
		2006	14,457	114.6	155.3	2.9	3.5

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Croydon	CYN	2010	26,074	137.4	167.4	1.4	1.6
		2009	26,224	141.4	146.9	2.1	2.1
		2008	26,272	257.1	315.9	2.2	2.4
		2007	25,924	192.8	257.0	2.6	2.8
		2006	27,594	192.3	261.8	2.6	2.9
Dandenong Valley	DVY	2010	0	0.0	0.0	0.0	0.0
		2009	0	0.0	0.0	0.0	0.0
		2008	0	0.0	0.0	0.0	0.0
		2007	0	0.0	0.0	0.0	0.0
		2006	3	0.0	0.0	0.0	0.0
Doreen	DRN	2010	16,709	195.1	277.5	2.2	2.4
		2009	11,394	190.7	273.9	2.9	3.2
		2008	4,583	1,300.4	1,352.1	2.5	2.7
		2007	3,615	205.9	288.9	4.2	4.6
		2006	1,614	36.3	37.3	4.1	4.2
Eltham	ELM	2010	28,061	120.9	184.4	1.8	2.1
		2009	28,457	268.3	317.5	2.8	3.0
		2008	28,016	387.7	431.1	2.2	2.4
		2007	27,189	230.4	325.9	2.4	2.6
		2006	26,958	184.9	249.5	1.7	1.9
Epping	EPG	2010	26,886	78.6	114.3	1.3	1.5
		2009	29,892	255.4	300.0	2.4	2.7
		2008	32,799	233.9	268.7	3.4	3.5
		2007	31,045	167.4	247.4	1.7	1.9
		2006	30,740	168.1	222.3	2.3	2.5
Ferntree Gully	FGY	2010	22,418	190.4	225.2	1.5	1.6
		2009	21,822	212.4	253.7	2.8	3.0
		2008	21,811	343.0	374.9	1.6	1.7
		2007	20,426	162.5	180.4	1.9	2.0
		2006	19,732	104.6	137.7	2.1	2.2
Foster	FTR	2010	8,543	226.2	425.0	4.5	5.7
		2009	8,522	559.3	660.3	6.7	7.2
		2008	8,442	672.4	772.4	5.4	6.1
		2007	8,345	506.0	655.2	6.2	6.9
		2006	8,298	248.0	429.0	3.2	4.0
Hampton Park	HPK	2010	28,636	22.4	82.6	0.3	0.6
		2009	29,906	102.8	140.7	1.8	1.9
		2008	29,718	45.5	105.2	0.8	1.0
		2007	30,359	126.0	138.3	2.3	2.3
		2006	32,570	64.2	91.9	0.8	1.0
Kalkallo	KLO	2010	2,764	208.0	357.0	2.7	3.4
Kilmore South	KMS	2010	3,236	130.3	196.7	1.4	1.9
		2009	3,150	169.3	203.6	2.4	2.5
		2008	3,079	77.8	113.7	3.4	3.6
		2007	2,992	140.2	199.0	4.3	4.5
		2006	2,912	334.4	408.9	6.5	7.1
Kinglake	KLK	2010	2,127	1,016.6	1,084.8	7.1	7.5
		2009	2,246	10,645.1	10,882.4	7.7	8.7
		2008	2,436	336.9	626.9	4.6	5.6
		2007	2,422	1,487.4	1,655.7	11.6	12.2
		2006	2,397	1,177.0	1,278.0	7.8	8.2
Lang Lang	LLG	2010	5,583	295.9	430.5	3.8	4.9
		2009	5,449	306.2	427.1	4.3	5.0
		2008	5,303	741.5	848.0	3.7	4.6
		2007	2,611	36.8	195.7	0.4	1.1
Leongatha	LGA	2010	11,058	228.6	359.9	2.3	3.2
		2009	10,824	275.8	456.6	4.4	5.2
		2008	10,705	476.1	657.4	6.7	7.5

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2007	11,070	247.3	382.3	3.4	3.9
		2006	11,424	326.8	594.8	6.1	7.0
Lilydale	LDL	2010	25,400	211.1	274.7	2.2	2.4
		2009	25,118	768.8	794.9	5.0	5.1
		2008	24,820	359.9	418.8	2.6	2.9
		2007	23,813	228.1	323.6	1.8	2.1
		2006	21,939	179.4	258.3	2.6	2.9
Lysterfield	LYD	2010	3,602	1.0	1.2	0.1	0.1
Loy Yang	LYS	2010	1	231.0	363.0	1.0	2.0
Maffra	MFA	2010	7,932	148.2	270.3	1.6	2.6
		2009	7,859	153.6	256.6	1.8	2.4
		2008	7,788	153.0	355.1	1.8	2.6
		2007	7,708	184.3	333.0	2.0	2.5
		2006	7,603	208.5	343.0	2.1	2.6
Mansfield	MSD	2010	5,704	423.8	468.0	3.2	3.4
		2009	5,633	223.8	288.1	1.3	1.6
		2008	5,567	89.6	149.6	0.7	1.1
		2007	5,503	481.9	622.4	5.0	5.5
		2006	5,398	491.7	598.0	1.2	1.6
Merrijig	MJG	2010	1,260	686.4	1,093.7	2.6	4.0
		2009	1,254	54.3	73.0	0.3	0.4
		2008	1,239	246.7	254.5	1.5	1.5
		2007	1,213	315.4	361.0	4.2	4.7
		2006	1,179	642.9	716.4	5.2	5.4
Moe	MOE	2010	14,218	199.4	248.0	3.0	3.2
		2009	14,031	376.8	484.2	3.6	4.1
		2008	13,874	214.5	272.1	3.3	3.6
		2007	13,786	165.8	201.5	1.3	1.5
		2006	13,658	247.2	287.3	2.9	3.1
Morwell Open Cut	MWE	2010	34	796.8	885.1	2.6	3.2
		2009	12,292	381.9	463.1	3.5	3.9
		2008	35	1,253.4	3,288.1	4.0	5.3
		2007	34	198.1	301.9	1.8	2.8
		2006	31	71.7	80.0	0.7	1.4
Morwell Terminal Station	MWTS	2010	12,340	143.8	189.9	1.4	1.6
		2008	12,214	117.4	178.7	1.4	1.7
		2007	12,121	227.4	315.8	2.4	2.6
		2006	11,961	297.8	351.4	1.9	2.2
Mount Beauty	MBY	2010	1,993	358.4	411.3	3.4	3.7
		2009	1,984	273.8	348.7	5.1	5.5
		2008	1,977	288.2	326.0	1.1	1.3
		2007	1,967	303.3	375.8	3.1	3.4
		2006	1,919	687.3	1,452.9	2.4	4.0
Mount Dandenong	MDG	2010	770	929.8	1,071.9	9.1	9.9
		2009	772	952.6	980.0	11.5	11.6
		2008	768	555.1	1,212.4	3.1	5.4
		2007	763	2,347.2	2,762.7	6.4	7.9
		2006	762	873.2	1,092.4	3.9	4.4
Murrindindi	MDI	2010	57	431.3	996.6	2.6	4.7
		2009	57	9,331.9	9,360.8	6.5	7.7
		2008	61	121.8	289.2	3.0	5.5
		2007	63	699.5	1,031.5	5.1	6.1
		2006	63	935.7	1,238.9	5.7	6.7
Myrtleford	MYT	2010	5,628	244.0	301.7	1.9	2.2
		2009	5,592	749.4	783.3	2.6	2.7
		2008	5,554	232.7	295.3	3.2	3.5
		2007	5,539	82.2	113.0	2.6	2.7
		2006	5,509	81.8	113.0	0.9	1.1

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Narre Warren	NRN	2010	8,372	128.8	205.2	1.6	2.0
		2009	11,041	162.3	203.0	2.4	2.6
		2008	10,995	68.8	88.7	0.1	0.2
		2007	10,357	116.6	132.9	1.6	1.7
		2006	9,686	58.5	103.2	0.8	1.1
Newmerella	NLA	2010	3,552	46.1	138.1	0.8	1.1
		2009	3,518	901.2	960.3	5.1	5.3
		2008	3,484	274.9	390.1	2.6	3.6
		2007	3,456	169.8	193.9	2.6	2.6
		2006	3,409	498.5	582.1	3.3	3.6
Officer	OFR	2010	11,262	144.5	244.0	2.2	2.6
Pakenham	PHM	2010	11,428	98.7	192.0	2.6	3.6
		2009	13,605	302.8	401.0	3.8	4.2
		2008	15,553	647.2	710.5	2.7	3.0
		2007	15,946	252.5	349.6	2.5	2.8
		2006	16,436	357.1	416.0	4.2	4.4
Phillip Island	PHI	2010	9,165	125.3	250.7	1.7	2.8
		2009	8,991	111.5	147.1	2.6	2.7
		2008	8,778	302.9	368.9	1.4	2.0
		2007	8,433	318.2	457.8	3.5	3.9
		2006	8,067	260.8	431.0	4.4	5.1
Ringwood North	RWN	2010	19,292	124.2	159.0	2.0	2.2
		2009	18,874	282.5	342.4	2.5	2.7
		2008	18,894	447.5	470.7	2.3	2.4
		2007	19,207	303.0	422.2	5.3	5.7
		2006	17,852	196.5	269.5	2.5	2.8
Ringwood Terminal	RWT	2010	14,845	57.9	122.7	0.8	1.1
		2009	15,343	99.1	101.5	1.4	1.4
		2008	15,214	171.5	190.9	1.9	1.9
		2007	15,122	140.6	223.9	2.1	2.4
		2006	15,763	304.5	370.1	3.1	3.3
Rubicon A	ALA	2010	2,506	367.5	396.9	1.8	2.0
		2009	2,483	792.3	823.8	3.5	3.7
		2008	2,458	810.3	829.4	7.3	7.5
		2006	2,401	238.0	272.5	3.5	3.7
Rubicon A	ELD	2010	1,006	125.6	126.4	1.3	1.3
		2009	1,001	1,367.1	1,404.1	4.8	5.0
		2008	996	442.2	457.1	5.1	5.2
		2006	984	942.7	961.1	4.5	4.6
Rubicon A	MVE	2010	946	1,038.1	1,081.1	6.4	6.7
		2009	1,122	8,817.9	8,953.3	9.8	11.0
		2008	1,352	1,425.7	1,432.4	9.9	9.9
		2006	1,332	208.2	225.3	4.1	4.2
Rubicon A (ALA, ELD, MVE)	RUB-A	2007	4,746	820.9	835.6	9.5	9.5
Sale	SLE	2010	11,677	112.2	271.4	2.5	3.2
		2009	11,563	291.7	333.3	3.7	3.9
		2008	11,408	77.9	160.7	1.3	1.7
		2007	11,232	579.4	779.6	4.7	5.3
		2006	11,084	356.3	435.5	2.7	3.0
Sassafras	SFS	2010	1,072	527.5	933.8	5.0	6.2
		2009	1,071	1,765.2	1,843.2	9.9	10.3
		2008	1,069	1,094.9	1,239.5	6.0	7.0
		2007	1,071	821.2	875.2	5.9	6.2
		2006	1,068	858.5	1,045.5	8.7	9.3
Seymour	SMR	2010	10,790	176.9	242.7	1.9	2.5
		2009	10,772	882.3	937.1	4.4	4.7
		2008	10,760	336.6	381.2	4.9	5.0

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2007	10,740	190.1	296.6	5.2	5.5
		2006	10,671	263.3	455.3	4.0	4.6
Thomastown	TT	2010	11,155	31.1	55.3	0.6	0.7
		2009	12,604	159.1	190.9	1.3	1.5
		2008	13,710	314.3	356.2	2.2	2.4
		2007	13,980	200.7	245.8	2.0	2.2
		2006	13,850	191.6	277.3	2.5	2.9
Traralgon	TGN	2010	16,014	173.8	231.7	3.8	4.1
		2009	15,736	442.1	510.5	3.1	3.4
		2008	15,467	140.0	195.3	1.7	1.9
		2007	15,171	254.7	312.8	4.4	4.6
		2006	14,734	126.7	179.8	1.3	1.5
Upwey	UWY	2010	1,073	1,750.1	1,786.4	7.1	7.2
		2009	1,066	1,627.6	1,643.1	10.4	10.5
		2008	1,065	1,346.0	1,420.2	3.1	3.3
		2007	1,063	1,101.3	1,293.9	7.2	7.8
		2006	1,062	218.8	240.2	2.0	2.1
Wangaratta	WN	2010	16,482	282.9	315.5	2.4	2.5
		2009	16,286	111.1	163.5	1.2	1.4
		2008	16,135	59.3	166.5	1.2	1.6
		2007	15,974	135.1	208.6	2.0	2.2
		2006	15,804	180.4	284.0	2.6	3.0
Warragul	WGL	2010	18,842	303.0	422.6	6.5	7.0
		2009	18,277	523.0	601.3	5.7	6.2
		2008	17,839	400.2	453.5	5.8	6.2
		2007	17,404	273.7	328.4	5.6	5.9
		2006	16,974	347.3	442.0	4.7	5.0
Watsonia	WT	2010	22,011	97.9	154.3	1.2	1.4
		2009	21,122	136.5	151.6	1.2	1.3
		2008	20,794	406.6	434.3	1.1	1.2
		2007	21,211	40.8	71.9	0.4	0.5
		2006	21,154	163.4	196.0	3.7	3.9
Wodonga	WO	2010	12,968	54.8	80.8	2.7	2.8
		2009	12,661	97.9	113.3	1.9	2.0
		2008	12,459	68.3	96.5	1.6	1.7
		2007	12,314	43.7	60.7	0.7	1.0
		2006	12,196	109.7	118.9	3.0	3.1
Wodonga	WOTS	2010	9,071	323.7	363.2	2.4	2.6
		2009	9,009	340.3	376.3	4.4	4.6
		2008	8,904	251.9	287.3	2.8	2.9
		2007	8,778	131.0	179.4	2.1	2.3
		2006	8,653	207.3	238.7	2.4	2.6
Wodonga-Tumut	TRC	2010	233	187.4	201.9	4.2	5.2
		2009	232	188.8	230.5	3.0	7.2
		2008	231	216.8	361.0	2.1	5.7
		2007	230	628.8	630.1	7.9	8.9
		2006	228	278.0	392.7	4.0	5.4
Wonthaggi	WGI	2010	17,415	101.6	236.5	1.3	1.9
		2009	17,226	226.2	313.4	2.6	3.0
		2008	16,896	706.2	861.4	3.1	3.8
		2007	17,067	338.8	627.7	3.2	4.2
		2006	17,166	261.0	447.6	4.3	5.1
Woori Yallock	WYK	2010	12,388	472.7	517.8	3.6	3.9
		2009	12,296	955.1	1,046.6	5.9	6.4
		2008	12,183	464.6	500.7	2.1	2.3
		2007	12,791	625.2	708.9	5.4	5.8
		2006	13,380	294.0	389.0	3.3	3.7
Yallourn Open Cut	YN	2010	24	0.0	65.2	0.0	0.3

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2009	23	0.0	0.0	0.0	0.0
		2008	22	602.1	723.9	2.0	2.3
		2007	20	0.0	0.0	0.0	0.0
		2006	18	261.8	261.8	1.8	1.8

United Energy

Figure D.6 United Energy supply area map

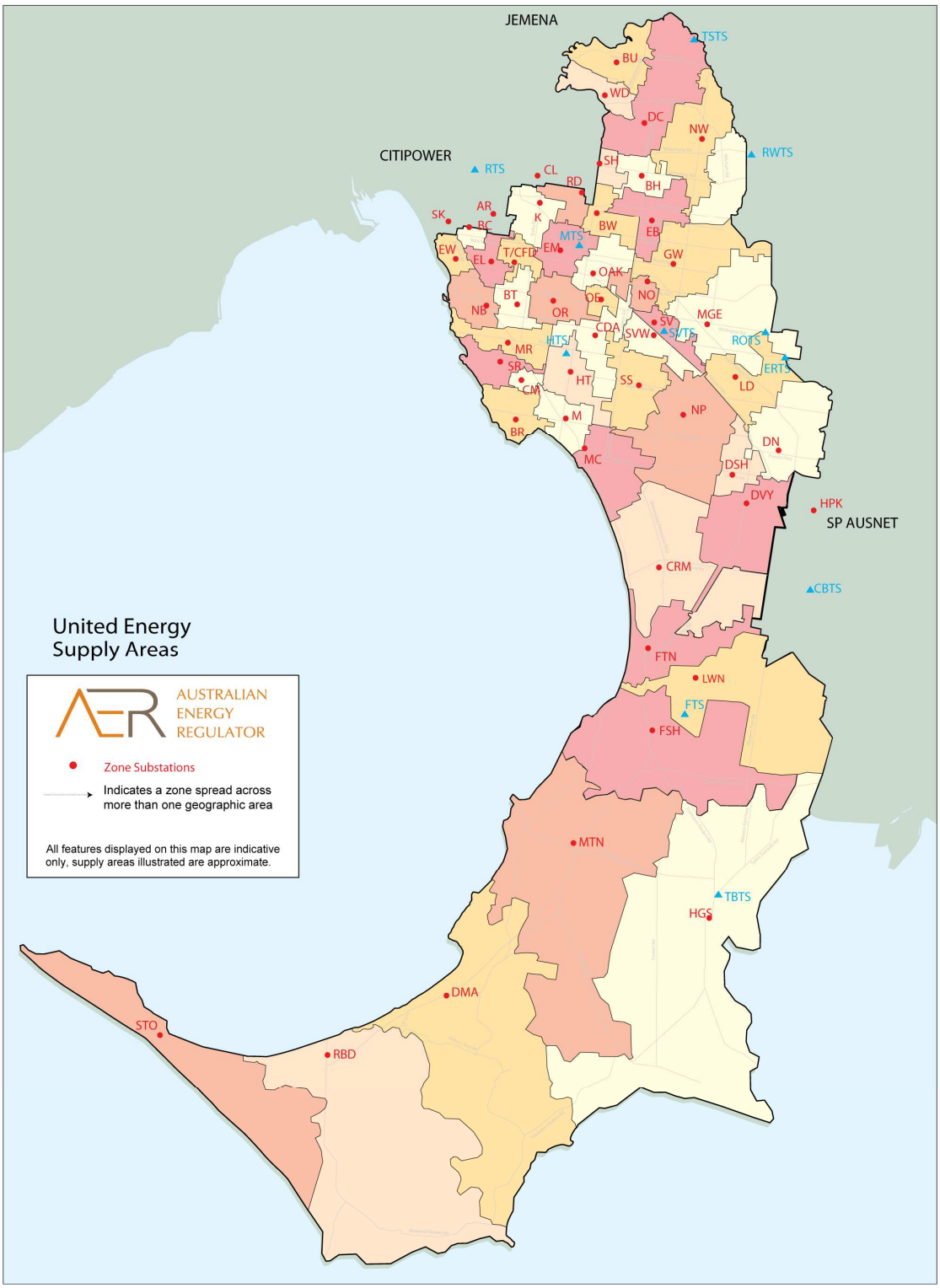


Table D.10 United Energy substation abbreviations

Zone Substations

AR	Armadale
BC	Balaclava
BH	Box Hill
BR	Beaumaris
BT	Bentleigh
BU	Bulleen
BW	Burwood
CDA	Clarinda
CFD	Caulfield T/CFD
CM	Cheltenham
CRM	Carrum
DC	Doncaster
DMA	Dromana
DN	Dandenong
DSH	Dandenong South
DVY	Dandenong Valley
EB	East Burwood
EL	Elsternwick
EM	East Malvern
EW	Elwood
FSH	Frankston South
FTN	Frankston
GW	Glen Waverley
HGS	Hastings
HT	Heatherton
K	Gardiner
LD	Lyndale
LWN	Langwarrin
M	Mentone
MC	Mordialloc
MGE	Mulgrave
MR	Moorabbin
MTN	Mornington
NB	North Brighton
NO	Notting Hill
NP	Noble Park
NW	Nunawading
OAK	Oakleigh
OE	Oakleigh East
OR	Ormond
RBD	Rosebud
RD	Riversdale
RWT	Ringwood Terminal
SH	Surrey Hills
SK	St Kilda
SR	Sandringham
SS	Springvale South
STO	Sorrento
SV	Springvale
SVW	Springvale West
T	Caulfield T/CFD
WD	West Doncaster

Table D.11 United Energy supply area performance

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Armadale	AR	2010	1,073	56.5	56.7	0.4	0.4
		2009	1,075	10.1	10.1	0.1	0.1
		2008	1,042	42.7	145.0	0.1	0.3
		2007	1,011	15.0	38.9	0.3	0.3
		2006	1,018	0.4	0.6	0.0	0.0
Balaclava	BC	2010	3,191	46.0	86.6	0.5	0.6
		2009	3,186	78.0	80.4	0.6	0.6
		2008	3,121	7.1	15.8	0.1	0.1
		2007	3,104	23.0	56.4	0.2	0.3
		2006	3,130	73.9	84.3	1.9	1.9
Beaumaris	BR	2010	9,311	42.2	73.7	0.5	0.5
		2009	9,265	183.6	192.1	1.7	1.7
		2008	9,175	402.3	426.3	1.2	1.3
		2007	9,163	192.1	218.5	2.3	2.4
		2006	9,213	78.3	84.2	1.0	1.0
Bentleigh	BT	2010	11,001	39.7	48.5	0.4	0.5
		2009	10,907	107.1	124.8	0.7	0.8
		2008	11,316	35.0	70.0	0.4	0.5
		2007	11,743	99.2	174.0	1.8	2.0
		2006	13,050	32.8	39.2	0.5	0.5
Box Hill	BH	2010	10,538	27.1	57.7	0.5	0.6
		2009	10,401	76.1	82.9	1.1	1.2
		2008	10,061	270.1	279.5	1.8	1.8
		2007	9,985	158.4	163.3	2.3	2.3
		2006	9,958	143.1	153.8	1.2	1.3
Bulleen	BU	2010	10,741	125.4	179.5	1.8	2.0
		2009	10,762	36.9	51.2	0.9	1.0
		2008	10,757	533.6	549.2	1.0	1.1
		2007	10,767	57.8	72.3	0.9	0.9
		2006	10,717	45.3	59.2	0.6	0.7
Burwood	BW	2010	9,047	119.4	268.8	1.3	1.7
		2009	8,639	112.7	123.8	1.4	1.5
		2008	8,588	209.7	223.8	0.9	1.0
		2007	8,464	103.4	109.3	1.4	1.4
		2006	8,423	46.6	63.1	0.7	0.8
Carrum	CRM	2010	26,900	84.7	135.5	1.0	1.2
		2009	21,680	260.4	299.3	4.6	4.7
		2008	20,910	181.0	202.9	1.3	1.4
		2007	20,196	102.2	123.6	1.3	1.4
		2006	21,080	22.2	29.1	0.3	0.3
Caulfield T/CFD	CFD	2010	14,537	55.1	106.0	1.9	2.0
		2009	14,099	102.5	131.1	1.0	1.0
		2008	9,349	147.3	161.1	0.9	0.9
Caulfield T/CFD	T	2008	2,661	112.8	113.3	0.2	0.2
		2007	11,015	18.4	40.6	0.2	0.3
		2006	10,240	23.3	38.1	0.3	0.4
Cheltenham	CM	2010	2,923	74.9	96.0	0.7	0.8
		2009	2,907	71.2	78.7	0.5	0.5
		2008	2,875	146.7	158.7	1.2	1.2
		2007	2,857	227.7	250.3	2.9	3.0
		2006	2,839	36.3	63.8	0.9	1.0
Clarinda	CDA	2010	13,927	17.3	69.1	0.4	0.5
		2009	11,009	109.0	138.7	1.3	1.4
		2008	10,951	199.5	206.4	2.1	2.1
		2007	10,915	215.5	236.9	5.3	5.3
		2006	10,870	104.2	110.9	2.3	2.4
Dandenong	DN	2010	18,171	67.5	105.2	1.9	2.0

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2009	18,331	133.7	154.4	1.1	1.2
		2008	18,062	115.3	133.0	0.8	0.9
		2007	17,422	169.4	194.1	1.7	1.8
		2006	16,991	31.7	35.4	0.3	0.3
Dandenong South	DSH	2010	4,446	10.3	103.9	0.5	0.7
		2009	4,169	26.4	47.0	0.2	0.2
		2008	4,006	8.1	31.2	0.1	0.2
		2007	4,182	250.0	255.4	1.7	1.7
		2006	4,433	27.3	31.3	0.7	0.7
Dandenong Valley	DVY	2010	2,260	246.1	294.3	0.8	0.9
		2009	5,143	67.9	121.1	0.8	0.9
		2008	5,874	555.9	569.4	1.6	1.6
		2007	5,980	82.6	104.6	1.6	1.7
		2006	5,928	43.7	75.3	0.2	0.3
Doncaster	DC	2010	28,042	64.6	119.6	1.0	1.2
		2009	27,984	122.8	163.4	1.2	1.4
		2008	27,964	767.2	784.0	2.3	2.4
		2007	28,013	31.1	42.8	0.5	0.5
		2006	28,315	89.7	101.7	1.2	1.3
Dromana	DMA	2010	14,717	159.2	310.5	0.9	1.3
		2009	14,421	216.4	241.9	3.7	3.8
		2008	14,108	1,015.3	1,036.1	4.3	4.4
		2007	13,435	148.8	193.3	2.7	2.8
		2006	6,409	45.0	111.0	0.7	0.9
East Burwood	EB	2010	17,747	18.4	40.8	0.4	0.4
		2009	17,681	67.7	81.6	0.8	0.8
		2008	15,863	330.5	346.9	0.9	0.9
		2007	15,021	40.6	63.9	0.3	0.4
		2006	14,825	64.1	69.6	1.3	1.3
East Malvern	EM	2010	13,469	104.9	135.0	1.5	1.6
		2009	13,280	83.2	109.4	1.3	1.3
		2008	13,635	797.9	816.9	0.7	0.8
		2007	13,884	73.3	85.2	1.4	1.4
		2006	13,934	30.5	39.7	0.8	0.8
Elsternwick	EL	2010	9,340	22.3	73.3	1.2	1.3
		2009	9,396	174.3	195.8	1.1	1.1
		2008	9,583	153.3	167.0	0.6	0.7
		2007	9,879	73.8	89.7	1.0	1.0
		2006	10,002	31.9	35.4	0.3	0.3
Elwood	EW	2010	15,017	35.1	51.8	0.5	0.5
		2009	14,756	108.7	128.5	1.4	1.5
		2008	14,292	71.8	83.4	1.0	1.1
		2007	14,031	117.5	120.6	1.6	1.6
		2006	13,935	47.6	70.1	0.7	0.8
Frankston	FTN	2010	18,299	62.0	104.6	0.7	0.8
		2009	19,723	160.9	206.2	3.8	4.0
		2008	22,192	305.3	317.2	2.4	2.5
		2007	21,913	89.2	97.3	1.1	1.2
		2006	20,416	82.4	90.4	1.3	1.3
Frankston South	FSH	2010	23,495	195.3	256.4	1.9	2.1
		2009	27,375	118.6	148.1	1.6	1.7
		2008	32,054	781.4	804.4	2.7	2.8
		2007	32,593	73.6	104.0	1.2	1.3
		2006	32,755	95.1	122.5	1.7	1.8
Gardiner	K	2010	12,589	20.5	71.2	0.2	0.3
		2009	12,893	73.4	89.3	0.4	0.4
		2008	13,086	502.3	540.8	1.3	1.4
		2007	12,791	229.6	244.3	2.6	2.7

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2006	12,738	27.8	48.7	0.3	0.4
Glen Waverley	GW	2010	20,010	33.2	85.7	0.5	0.6
		2009	19,881	82.6	103.3	1.2	1.3
		2008	20,651	281.3	293.7	1.1	1.2
		2007	21,737	214.4	235.9	1.9	2.0
		2006	21,756	33.4	39.8	0.6	0.6
Hastings	HGS	2010	16,460	288.4	350.9	3.5	3.7
		2009	16,491	152.1	211.0	2.2	2.4
		2008	15,865	247.9	263.6	1.4	1.5
		2007	15,103	114.5	166.5	2.0	2.2
		2006	15,166	84.4	124.6	1.5	1.6
Heatherton	HT	2010	8,034	28.5	55.9	0.4	0.5
		2009	8,020	164.1	177.1	1.4	1.4
		2008	7,876	81.1	87.8	1.0	1.1
		2007	7,758	137.2	164.3	3.5	3.6
		2006	7,756	68.4	99.7	1.3	1.4
Lyndale	LD	2010	16,335	49.3	103.9	0.9	1.0
		2009	15,994	98.7	119.4	0.8	0.9
		2008	15,802	130.1	160.8	1.3	1.4
		2007	14,893	173.7	195.4	2.7	2.7
		2006	14,000	33.8	43.7	0.7	0.8
Langwarrin	LWN	2010	14,667	69.1	106.9	0.9	1.0
		2009	7,570	97.5	104.7	2.5	2.5
Mentone	M	2010	13,641	49.8	99.3	0.5	0.6
		2009	13,554	169.3	181.8	1.4	1.5
		2008	13,519	116.0	127.3	0.9	0.9
		2007	14,106	142.4	156.8	1.8	1.8
		2006	14,624	31.1	48.1	0.4	0.4
Moorabbin	MR	2010	12,343	16.2	108.7	0.2	0.5
		2009	12,692	52.5	63.6	0.5	0.5
		2008	13,218	107.2	133.1	0.6	0.7
		2007	13,707	96.0	106.6	1.1	1.1
		2006	13,978	62.5	70.6	0.8	0.8
Mordialloc	MC	2010	12,505	157.6	218.4	1.3	1.5
		2009	13,630	188.2	205.7	1.5	1.6
		2008	13,435	253.7	274.7	3.1	3.1
		2007	13,073	219.3	237.6	2.4	2.5
		2006	12,355	143.5	150.9	1.7	1.7
Mornington	MTN	2010	19,824	173.3	210.2	1.1	1.2
		2009	19,234	253.9	290.6	2.5	2.6
		2008	18,651	134.2	161.8	1.0	1.1
		2007	18,919	55.0	72.2	1.2	1.3
		2006	19,869	65.4	82.6	1.2	1.3
Mulgrave	MGE	2010	18,472	33.0	55.2	0.7	0.7
		2009	17,986	156.3	194.0	2.3	2.4
		2008	17,929	61.6	75.5	0.2	0.3
		2007	18,836	71.2	106.6	1.7	1.9
		2006	19,812	58.9	74.0	1.5	1.5
Noble Park	NP	2010	26,839	56.7	85.3	1.3	1.4
		2009	26,988	126.9	145.0	1.3	1.4
		2008	26,916	185.1	208.0	1.9	2.0
		2007	26,526	78.1	86.8	1.3	1.3
		2006	26,223	67.8	84.5	0.9	0.9
Narre Warren North	NRN	2010	2	0.0	0.0	0.0	0.0
		2009	2	0.0	0.0	0.0	0.0
		2008	1	0.0	0.0	0.0	0.0
North Brighton	NB	2010	13,626	75.3	102.1	0.8	0.9
		2009	13,876	78.7	98.6	0.4	0.5

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2008	13,894	100.1	130.4	1.0	1.1
		2007	13,556	25.1	41.9	0.4	0.4
		2006	13,520	46.4	58.4	0.5	0.6
Notting Hill	NO	2010	4,427	49.1	93.0	1.0	1.1
		2009	4,401	36.8	47.5	0.1	0.1
		2008	4,325	223.8	228.0	0.2	0.2
		2007	4,258	139.1	143.0	1.7	1.7
		2006	4,153	26.3	45.3	0.8	0.9
Nunawading	NW	2010	22,199	65.1	97.7	1.5	1.6
		2009	22,164	194.9	213.7	2.6	2.7
		2008	22,045	478.3	482.4	2.5	2.5
		2007	21,762	174.7	184.1	2.4	2.4
		2006	19,214	103.4	107.4	1.6	1.6
Oakleigh	OAK	2010	12,142	56.7	100.7	1.9	2.0
		2009	11,110	102.5	141.8	1.2	1.3
		2008	10,783	243.5	258.0	0.2	0.3
		2007	10,493	39.4	49.5	0.7	0.7
		2006	10,446	13.3	25.8	0.1	0.1
Oakleigh East	OE	2010	3,393	89.9	133.1	0.6	0.7
		2009	3,371	43.8	84.4	0.6	0.7
		2008	3,397	71.7	89.0	0.3	0.3
		2007	3,416	186.6	189.3	1.0	1.0
		2006	3,338	47.4	52.7	0.5	0.5
Ormond	OR	2010	15,578	57.5	111.4	0.6	0.7
		2009	15,495	97.9	114.3	0.9	0.9
		2008	15,502	133.4	141.9	0.6	0.6
		2007	16,836	82.3	92.7	1.4	1.4
		2006	15,975	19.8	24.7	0.2	0.2
Ringwood Terminal	RWT	2010	12,649	39.6	90.9	0.7	0.8
		2009	12,651	147.7	168.1	1.9	2.0
		2008	13,210	133.3	140.3	2.2	2.3
		2007	13,820	27.2	65.0	0.7	0.9
		2006	15,194	128.7	159.9	1.8	1.9
Riversdale	RD	2010	3,071	72.2	95.8	0.8	0.9
		2009	3,060	68.5	87.1	0.7	0.8
		2008	3,038	126.6	150.6	0.1	0.1
		2007	3,040	56.5	57.2	0.2	0.2
		2006	3,042	81.0	83.2	1.3	1.3
Rosebud	RBD	2010	17,182	118.8	166.0	1.8	2.0
		2009	17,269	168.7	202.1	2.7	2.8
		2008	17,726	109.4	135.9	1.5	1.6
		2007	17,035	164.9	188.1	1.9	1.9
		2006	21,784	55.3	66.6	2.2	2.3
Sandringham	SR	2010	12,290	37.4	96.8	0.4	0.5
		2009	11,885	62.5	79.6	0.7	0.7
		2008	11,573	276.3	287.8	0.8	0.8
		2007	11,580	78.5	102.0	0.9	1.0
		2006	11,489	52.2	59.9	1.6	1.6
Sorrento	STO	2010	17,273	260.5	344.9	2.3	2.6
		2009	17,065	198.5	235.7	4.1	4.2
		2008	16,562	106.1	135.2	0.9	1.0
		2007	17,053	82.6	109.9	1.1	1.2
		2006	17,429	74.5	103.7	1.0	1.0
Springvale	SV	2010	5,873	14.6	29.6	0.1	0.1
		2009	5,830	108.3	111.7	0.9	0.9
		2008	5,720	65.7	70.8	0.3	0.3
		2007	8,193	124.5	149.0	1.8	1.8
		2006	10,750	52.1	62.3	0.8	0.9

Zone substation location	Zone code	Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Springvale South	SS	2010	11,290	34.4	49.2	0.5	0.6
		2009	11,258	158.6	180.5	2.1	2.2
		2008	11,241	115.0	122.8	0.3	0.4
		2007	11,193	57.8	64.6	0.7	0.7
		2006	11,188	123.7	129.1	1.4	1.4
Springvale West	SVW	2010	5,453	5.6	45.9	0.0	0.2
		2009	5,397	221.7	234.5	0.9	0.9
		2008	5,228	47.3	56.9	0.4	0.4
		2007	2,547	88.4	89.3	0.9	0.9
St Kilda	SK	2010	277	1.6	2.2	0.0	0.0
		2009	255	1.9	5.5	0.0	0.0
		2008	256	143.5	168.3	2.1	2.2
		2007	304	151.9	188.8	2.9	2.9
		2006	351	1.3	1.3	0.0	0.0
Surrey Hills	SH	2010	3,993	167.6	267.9	1.1	1.4
		2009	4,189	18.8	22.7	0.5	0.5
		2008	4,434	516.4	535.0	1.0	1.0
		2007	4,644	66.1	83.1	0.9	0.9
		2006	4,738	9.0	11.7	0.1	0.1
West Doncaster	WD	2010	6,871	15.9	20.0	0.4	0.4
		2009	6,910	72.8	72.9	0.4	0.4
		2008	6,771	599.3	604.0	0.8	0.9
		2007	6,596	8.2	30.4	0.1	0.2
		2006	6,568	34.2	41.2	0.4	0.5

E Supply area reliability maps

This section provides, for each DNSP:

- a chart representing the average total minutes-off-supply experienced by customers in each of the DNSPs zone substation supply areas
- one or more maps of the DNSPs supply areas, shaded to show the relative reliability of supply.

CitiPower

Figure E.1 CitiPower minutes-off-supply, average total minutes-off-supply per customer, 2010

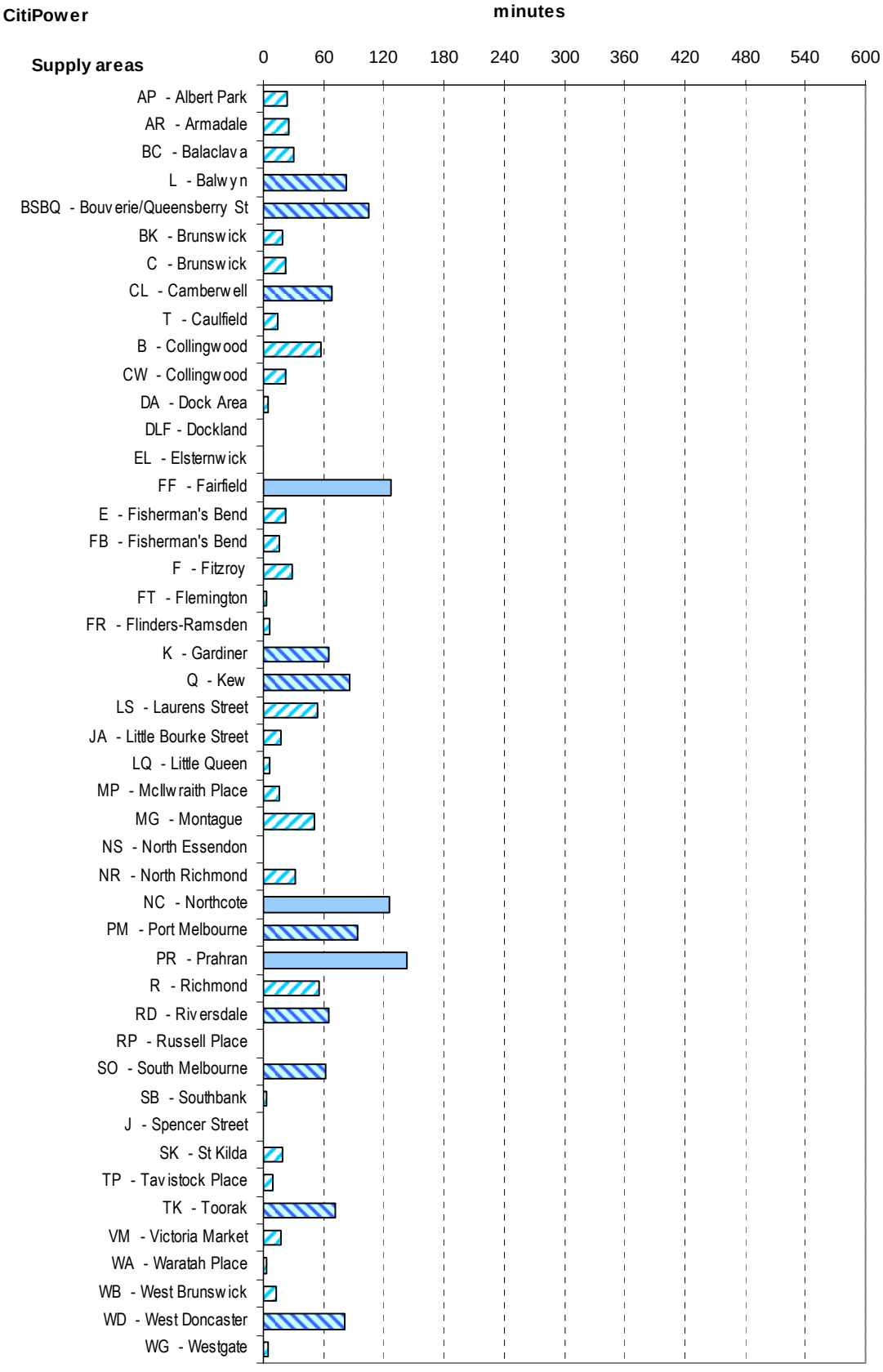
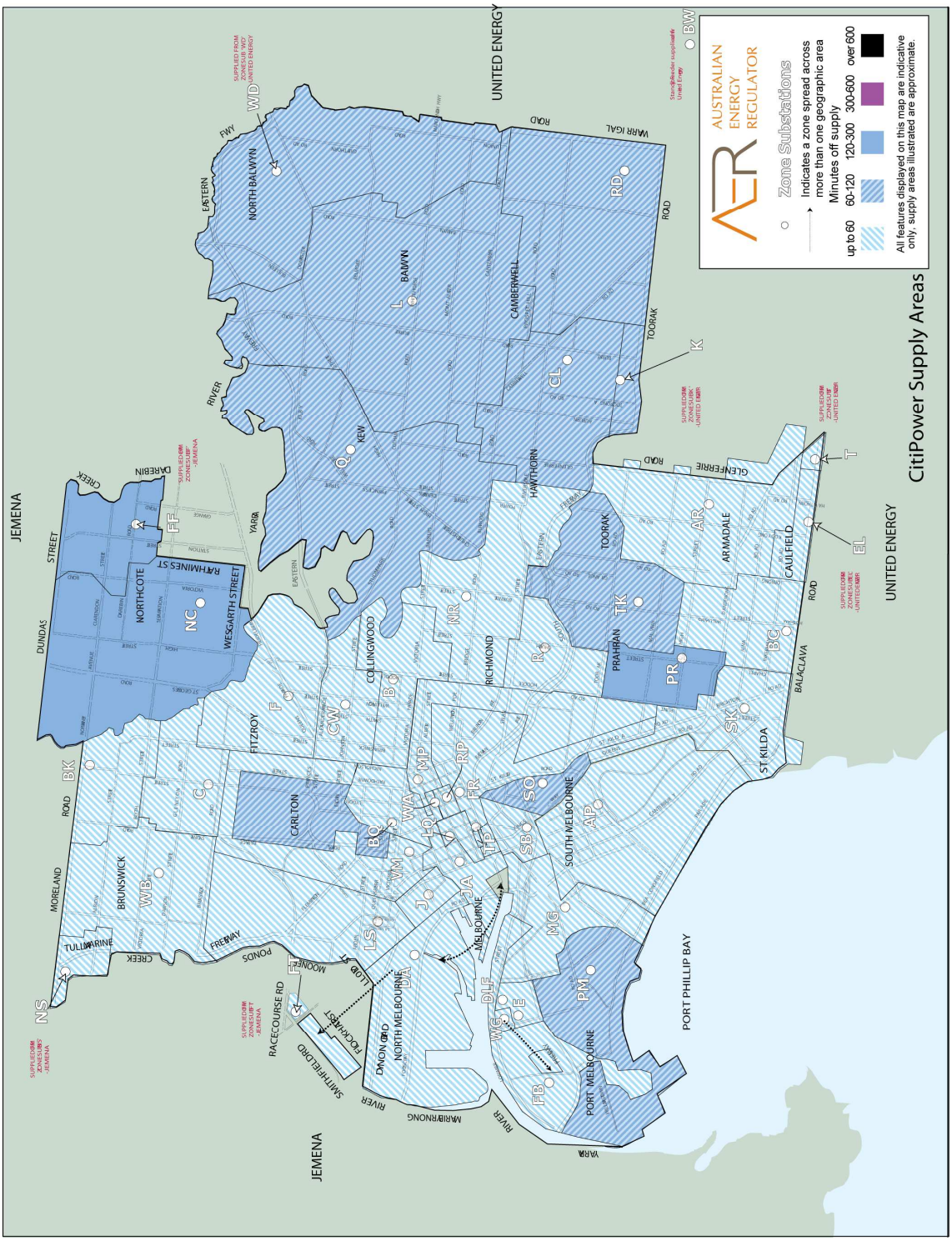


Figure E.2 CitiPower reliability map



Jemena

Figure E.3 Jemena minutes-off-supply, Figure A.1 average total minutes-off-supply per customer, 2010

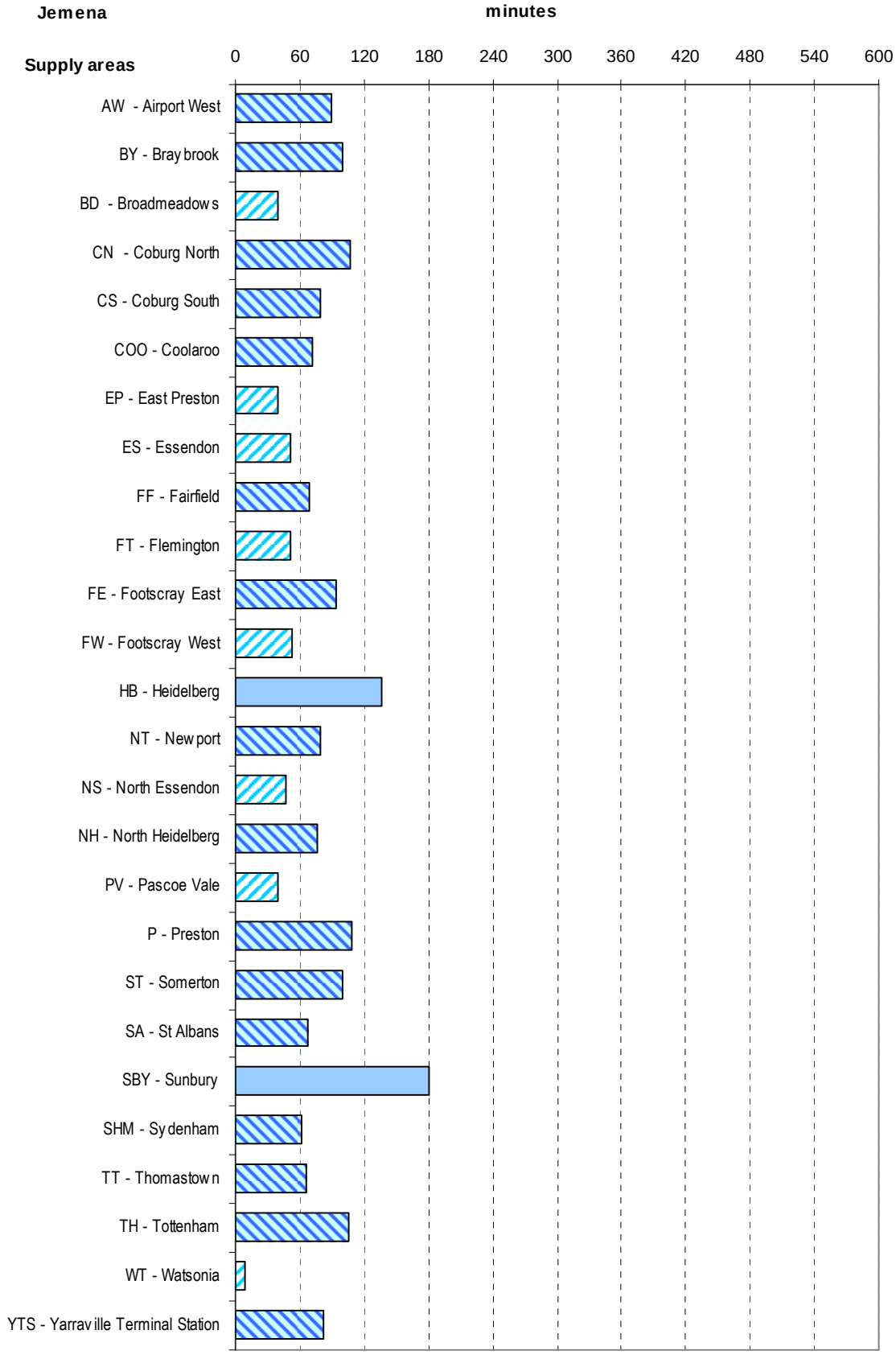
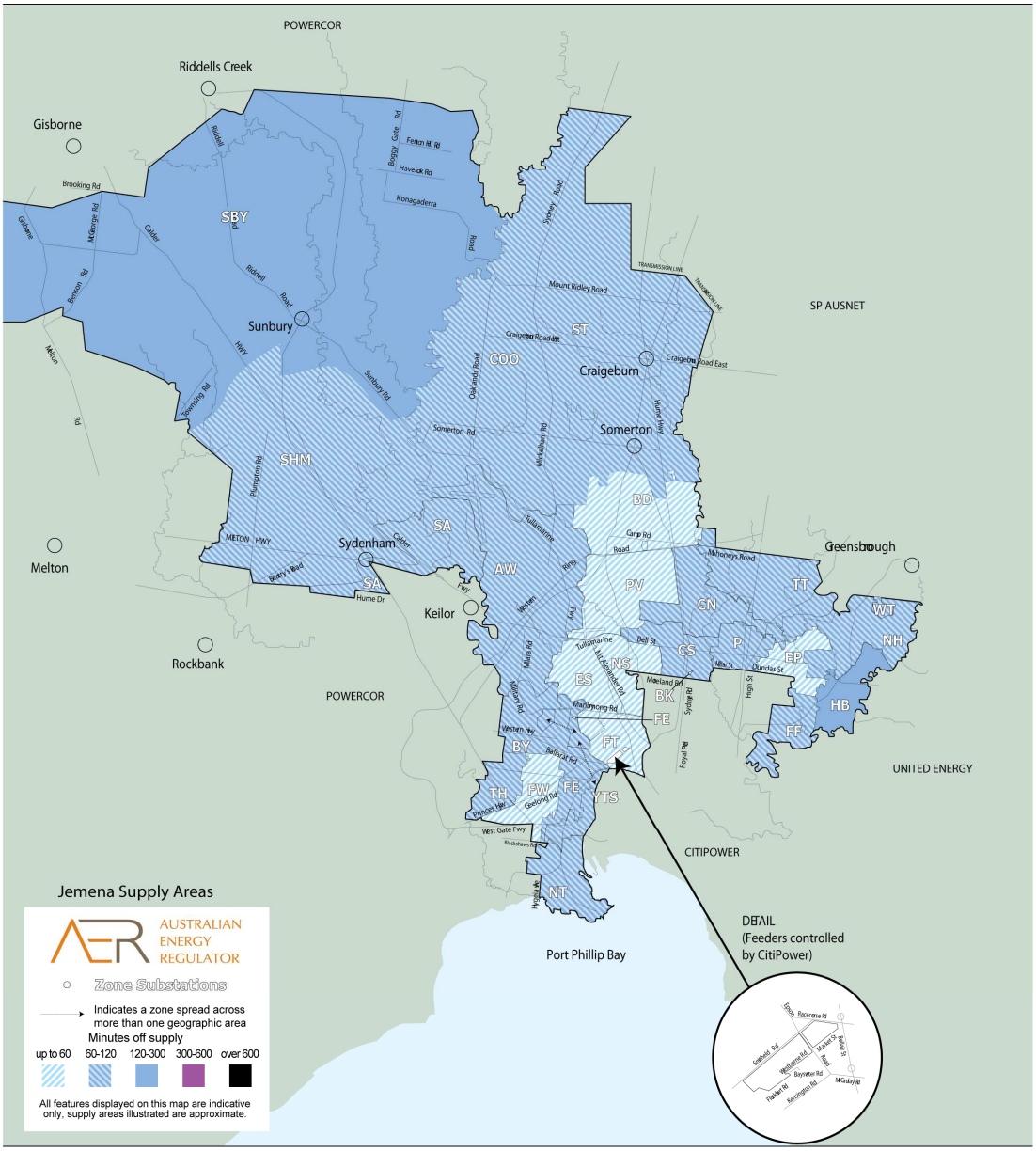


Figure E.4 Jemena reliability map



Powercor

Figure E.5 Powercor minutes-off-supply, average total minutes-off-supply per customer, 2010

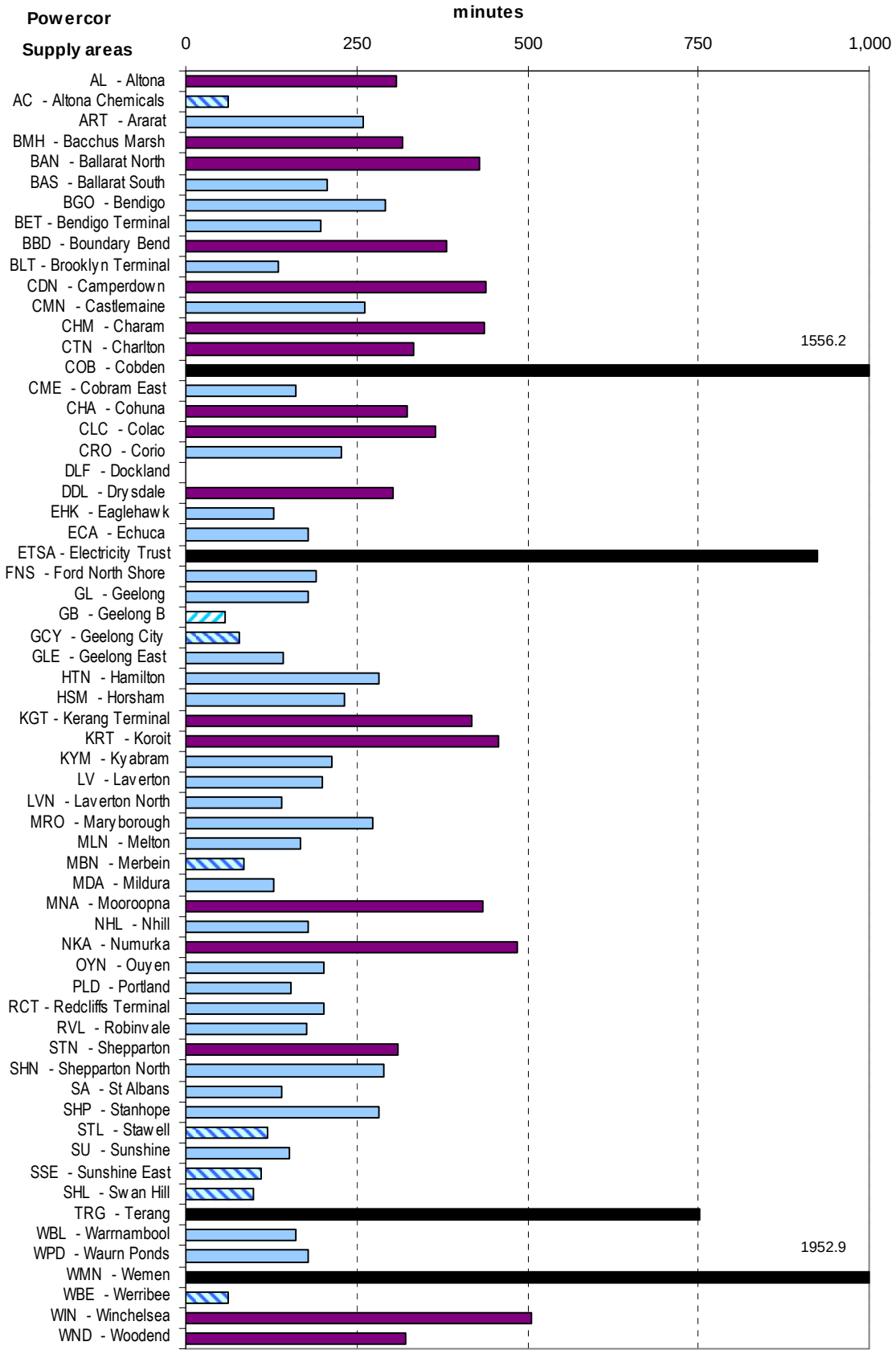


Figure E.6 Powercor reliability map

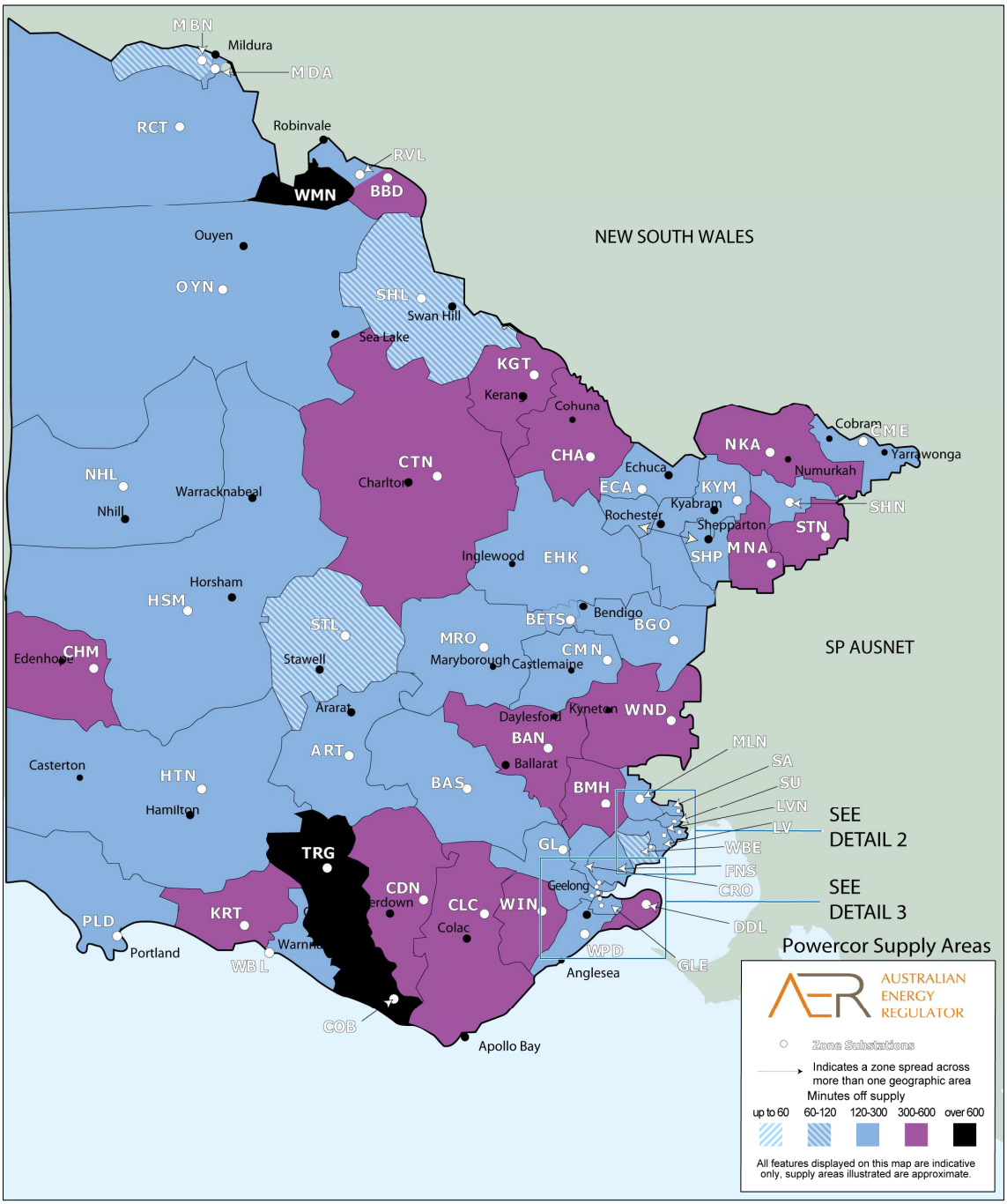
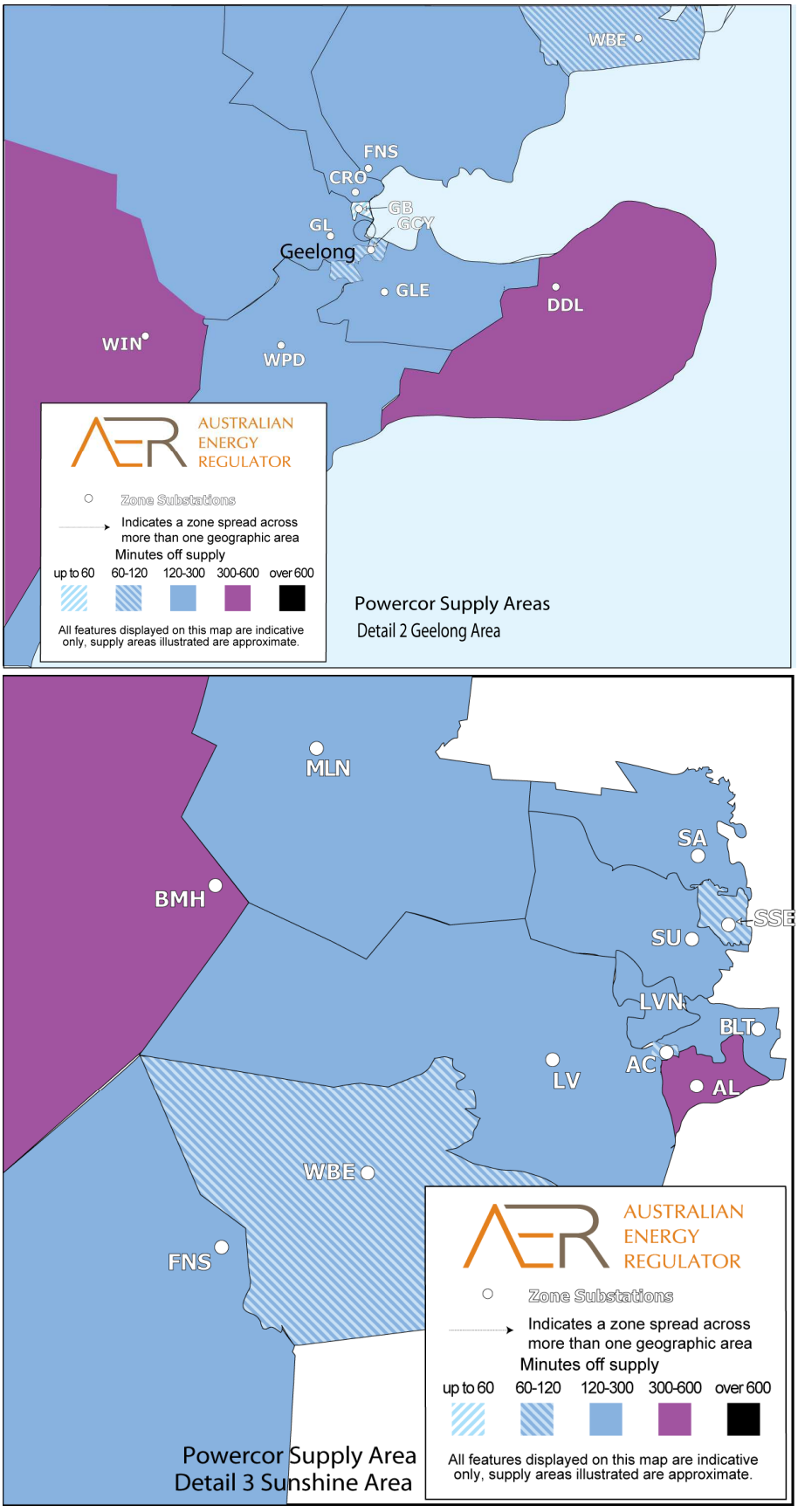


Figure E.7 Powercor reliability maps (Geelong and Sunshine areas)



SP AusNet

Figure E.8 SP AusNet minutes-off-supply, average total minutes-off-supply per customer, 2010

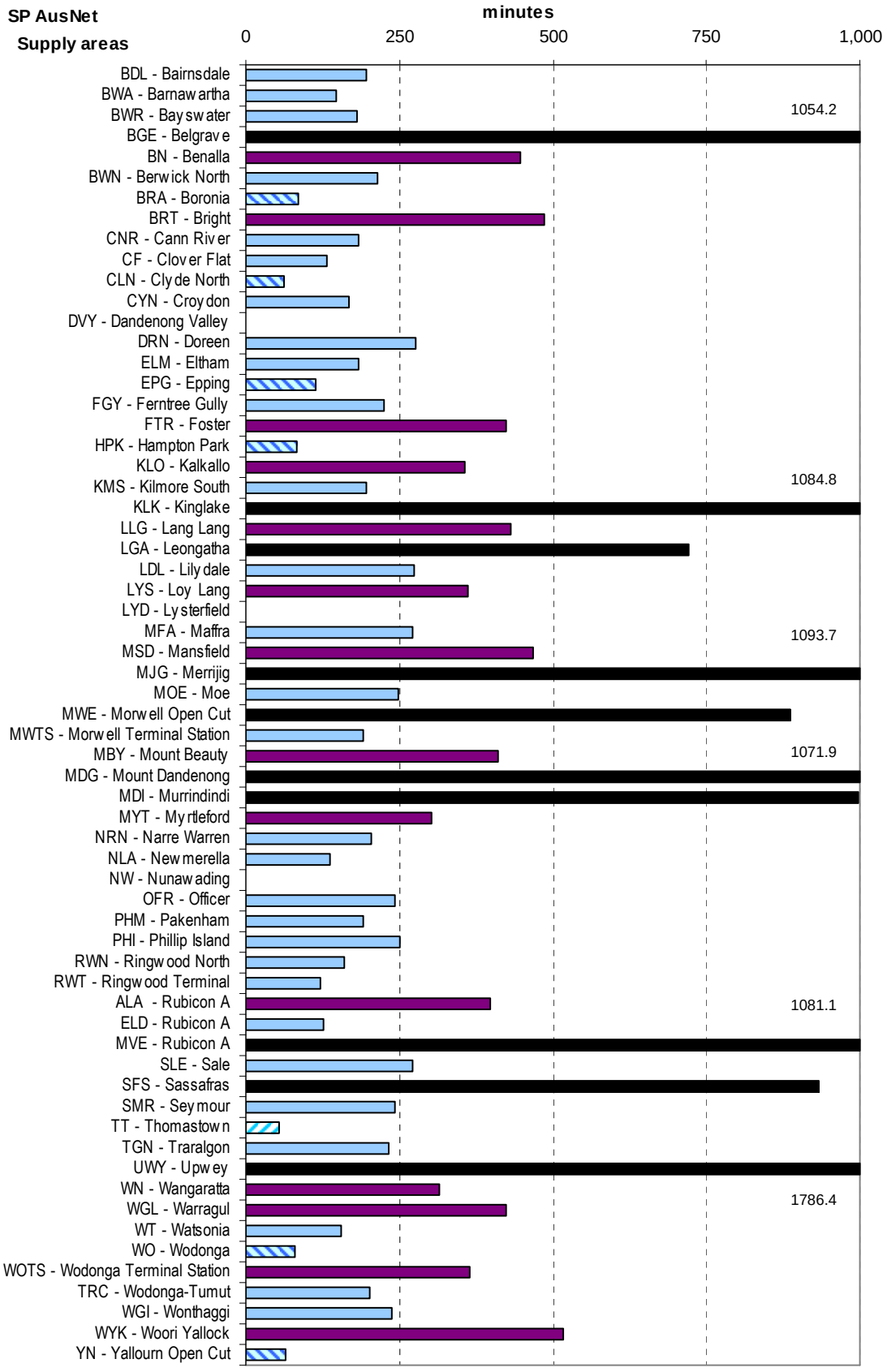


Figure E.9 SP AusNet reliability map

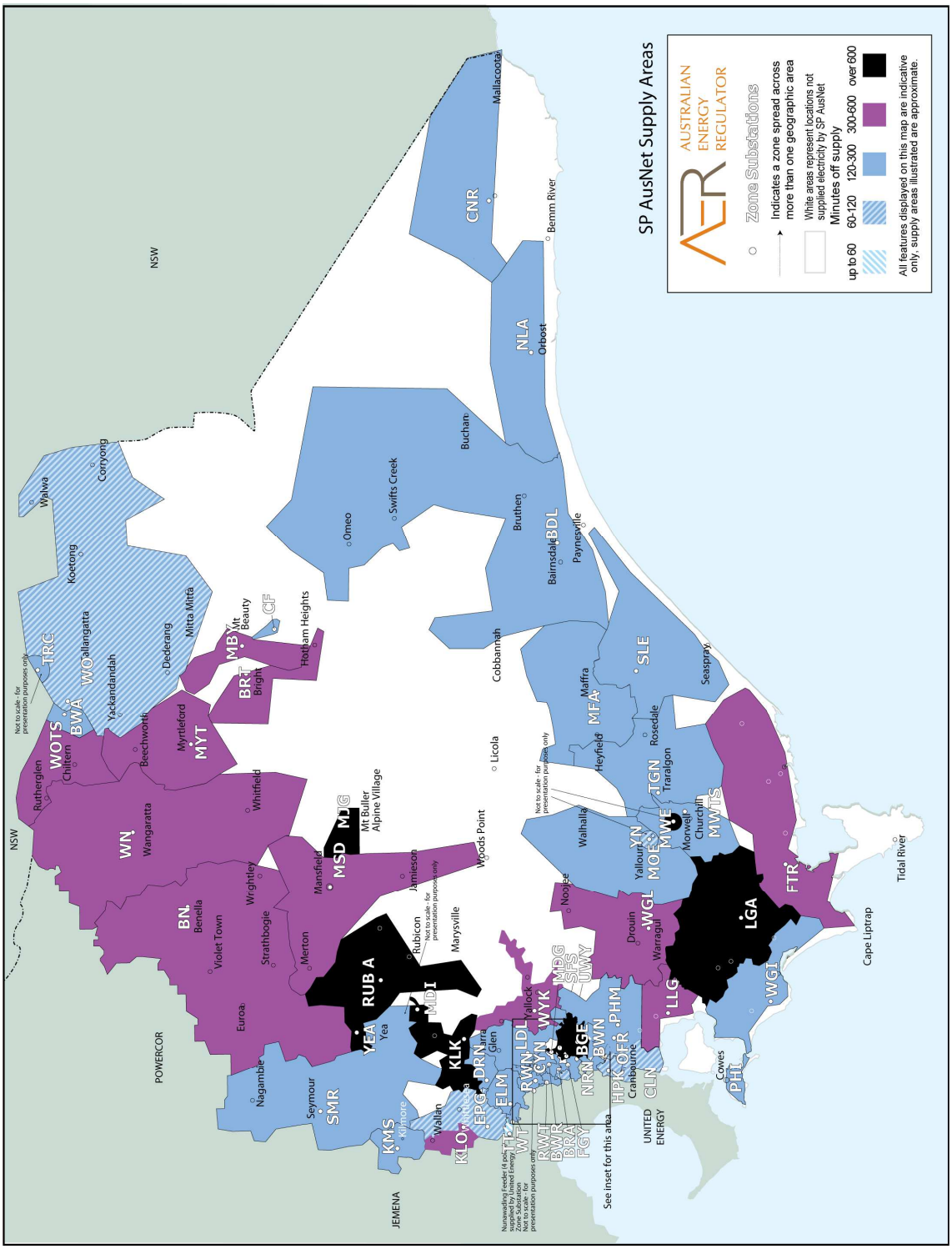
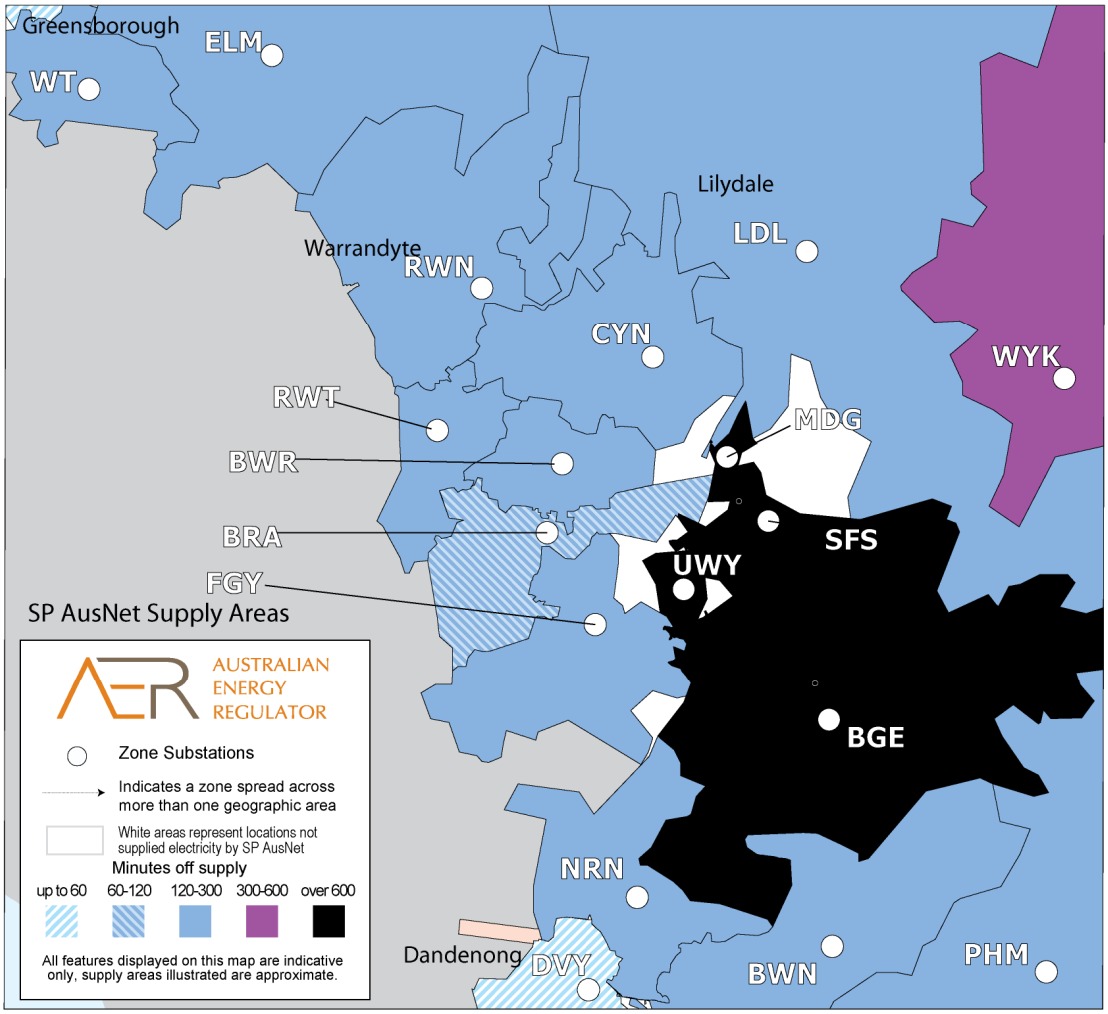


Figure E.10 SP AusNet reliability map (insert)



United Energy

Figure E.11 United Energy minutes-off-supply, average total minutes-off-supply per customer, 2010

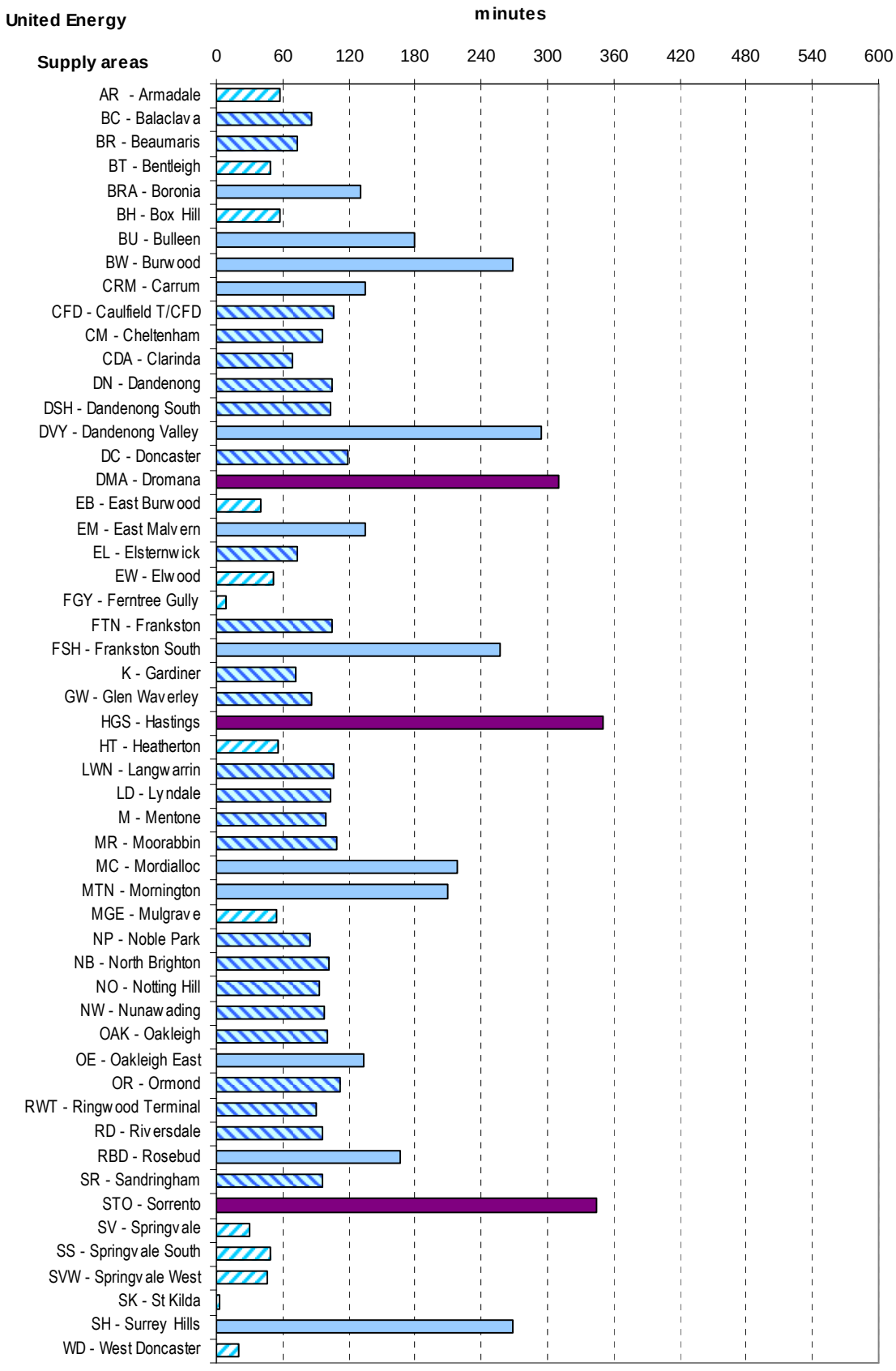


Figure E.12 United Energy reliability map