Victorian Electricity Distribution Businesses

Comparative Performance Report 2008

November 2009

AUSTRALIAN ENERGY REGULATOR

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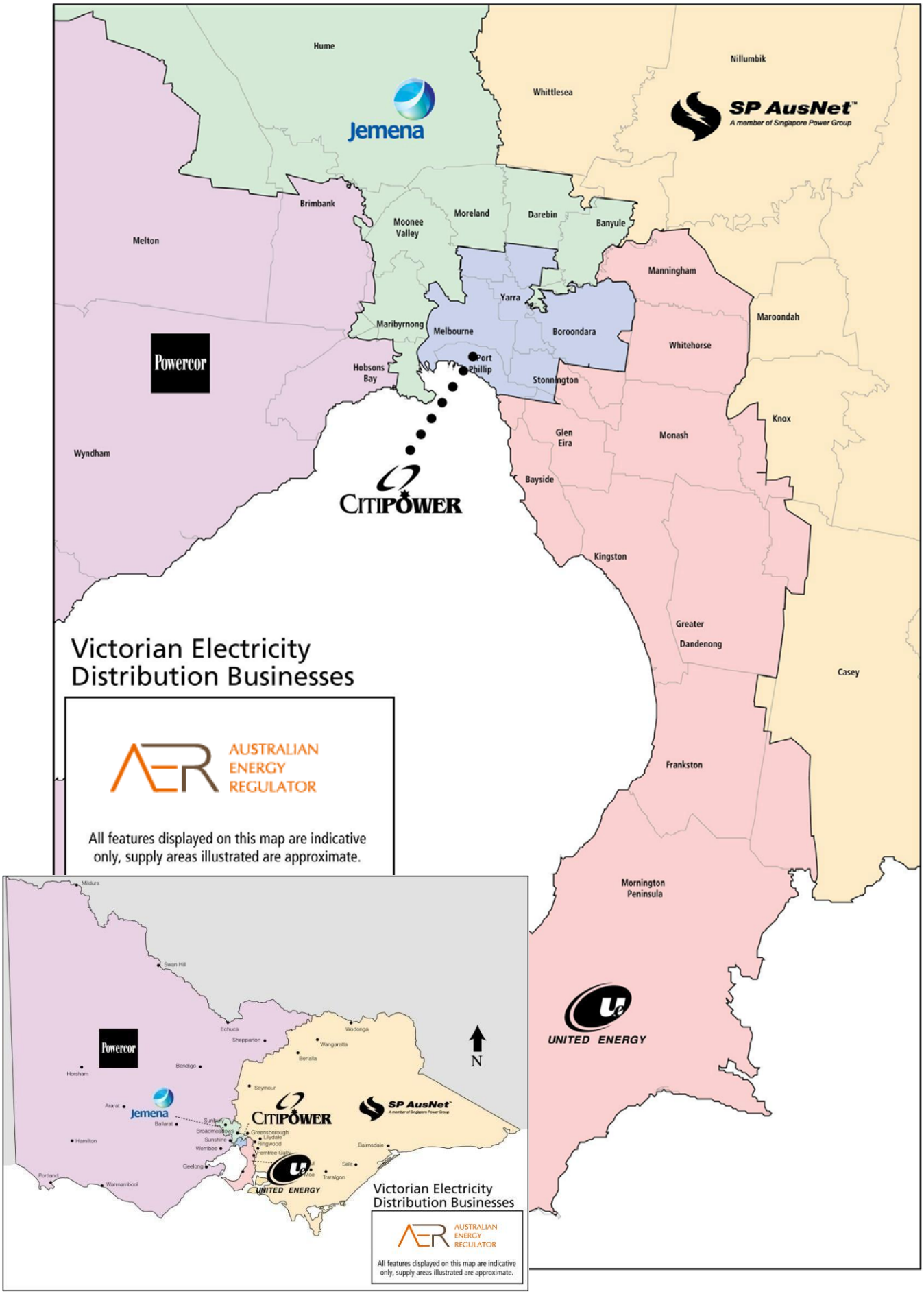
Supply Areas of Victorian Electricity Distribution Businesses



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Preface

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 current Victorian distribution network revenue and service level targets were set by the ESCV for the current 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.

The AER will be setting the new revenue and service levels for the 2011-15 regulatory control period under the *National Electricity Rules*.

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, or commonly referred to as electricity distributors). This includes the monitoring of the service performance levels provided by the DNSPs. As public reporting of performance of these monopoly businesses is one of the key elements that underpins the economic regulatory frameworks under both the current Victorian system as well as under the national framework, the AER decided to continue the performance reporting system of the ESCV until the end of the current regulatory period in 2010.

This report is prepared by the AER under the Victorian regulatory framework as a continuation of the series of performance reports previously published by the ESCV. The AER is developing a new reporting framework for DNSPs under the *National Electricity Rules*.

Previous reports published by the ESCV are available from www.esc.vic.gov.au/public/Energy/Regulation+and+Compliance/Performance+Reports/.

Purpose of this report

This report covers the supply reliability and quality, customer service and profitability for the 2008 regulatory year of the five Victorian DNSPs: Jemena Electricity Networks[1], CitiPower, Powercor, SP AusNet[2] and United Energy. It provides an overview of the operating environment of these distribution businesses and summarises their performance against the financial assumptions and service standards underlying their respective revenue determinations.

In addition to providing customers comprehensive information about the services they receive, annual DNSP performance reports promote better service by comparing and encouraging businesses to improve their performance relative to other distributors.

Controls on distributors' prices were fixed for the 2006–10 regulatory period under the EDPR. If a distributor outperforms the financial assumptions underpinning these price controls, it may retain the resulting increase in profits for a period. When the AER determines the price controls for the ensuing regulatory control period, it will consider any cost reductions and other efficiency gains made by the distributor in the previous period. Encouraging distributors 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 ESCV influences distributors' reliability of supply through a financial incentive scheme, which encourages the distributors 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 distributor provides an average level of reliability above 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 distributors' average performance in the preceding year.

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 distributors' attention to the worst served customers.

Comparisons of the financial or operational performance levels achieved by these businesses 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 price review.

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1 Prior to August 2008 Jemena was known as Alinta AE. It was known as AGL Electricity Ltd before 2006.

2 SP AusNet is the trading name of SPI Electricity Pty Ltd.

1 Summary

1.1 Introduction

This report presents the 2008 financial and service quality performance of Victoria's five electricity distribution businesses: CitiPower, Jemena Electricity Networks, Powercor, SP AusNet[3], and United Energy Distribution. The report also provides details of the businesses' progressive performance trends over the regulatory period of the Electricity Distribution Price Review 2006–10 (EDPR) and, where relevant, the previous 1996–2000 and 2001–05 regulatory periods.

This section provides an overview of the distribution businesses' profitability, and their services delivered to customers in 2008 in terms of the levels of supply reliability, quality of electricity supply, GSL payments made to customers, and level of customer complaints.

1.2 Profitability

Continuing the trend that has prevailed throughout the 2001–05 regulatory period and in the current period, all distributors reported higher actual returns on their regulated assets than forecast for 2008. Jemena exceeded the forecasts by 4.4 per cent, CitiPower by 1.9 per cent, Powercor by 2.8 per cent, SP AusNet by 1.3 and United Energy by 2.4 per cent. The following are the key reasons for the above forecast returns:

- All distributors reported higher than forecast revenue in 2008. Jemena by 9.6 per cent, CitiPower by 6.5 per cent, Powercor by 8.4 per cent, SP AusNet by 4.1 per cent and United Energy by 5.1 per cent.

- All distributors spent less on operating and maintenance in 2008 than forecast, Jemena by 17.4 per cent, CitiPower by 10.6 per cent , Powercor by 13.3 per cent, SP AusNet by 7.2 per cent and United Energy by 9.1 per cent.

- With the exception of Jemena and SP AusNet, which reported a 6.8 per cent and 24.9 per cent higher capital expenditure than forecast respectively, all other distributors spent less on capital works than forecast: CitiPower by 25.2 per cent, Powercor by 15.9 per cent, and United Energy by 11.6 per cent.

- All five distributors in 2008 reported customer contributions for customer initiated augmentation works substantially higher than forecast for the eighth consecutive year. All of the distributors exceeded the forecasts by a significant margin: Jemena by 131 per cent, CitiPower by 377 per cent, Powercor by 88 per cent, SP AusNet by 28 per cent and United Energy by 214 per cent.

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[3] 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 following table and charts show the distributors' average pre-tax return on asset, revenue, operating and maintenance expenditures, and capital expenditures compared with the original forecast.

Table 1.1 **Average pre-tax return on distribution assets, 2008**
Percentage

	Forecast	*Actual*
Jemena	6.5	10.8
CitiPower	6.6	8.5
Powercor	6.2	9.0
SP AusNet	6.7	8.0
United Energy	6.0	8.4

Figure 1.1 **Electricity distributors' revenue**
Difference from forecast

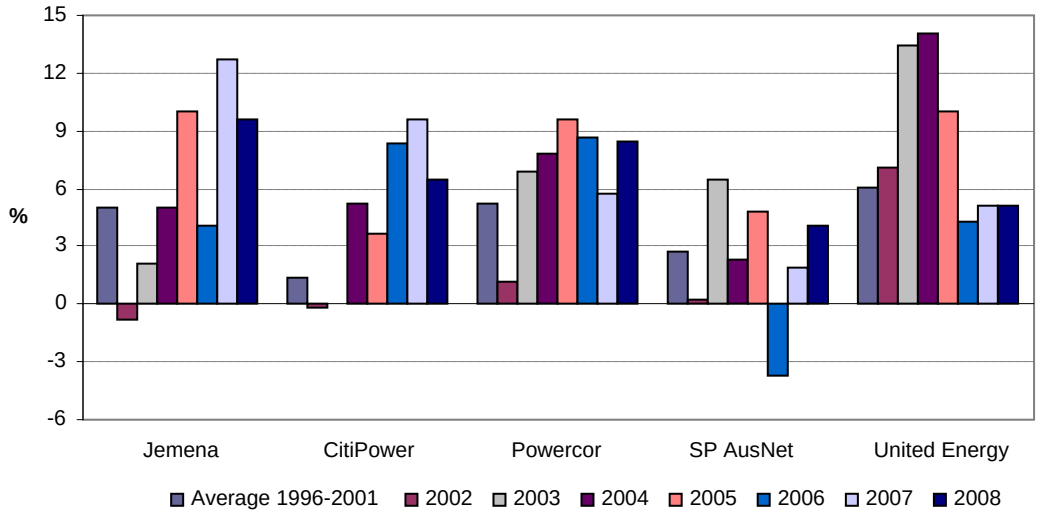


Figure 1.2 **Operating and maintenance expenditure by electricity distributors**
Difference from forecast

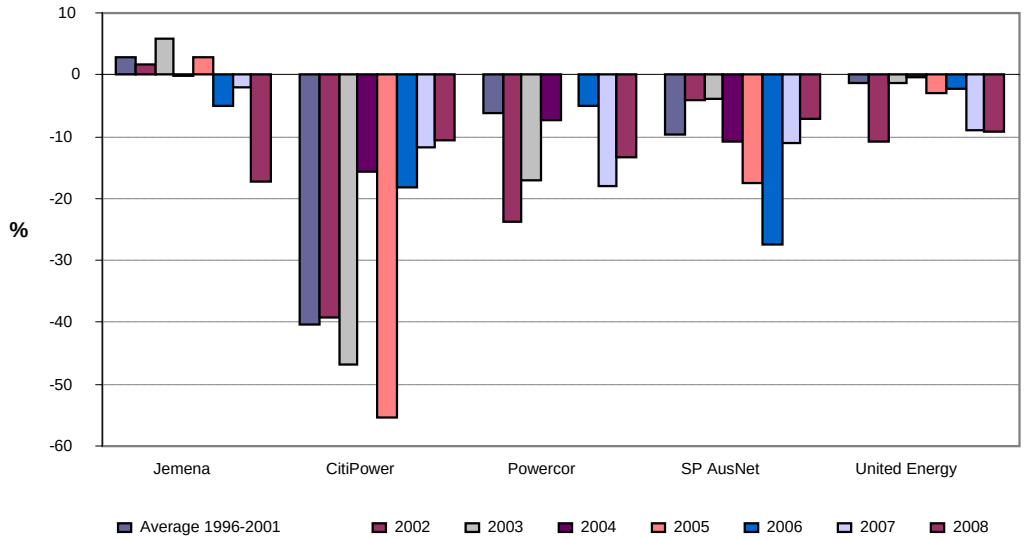
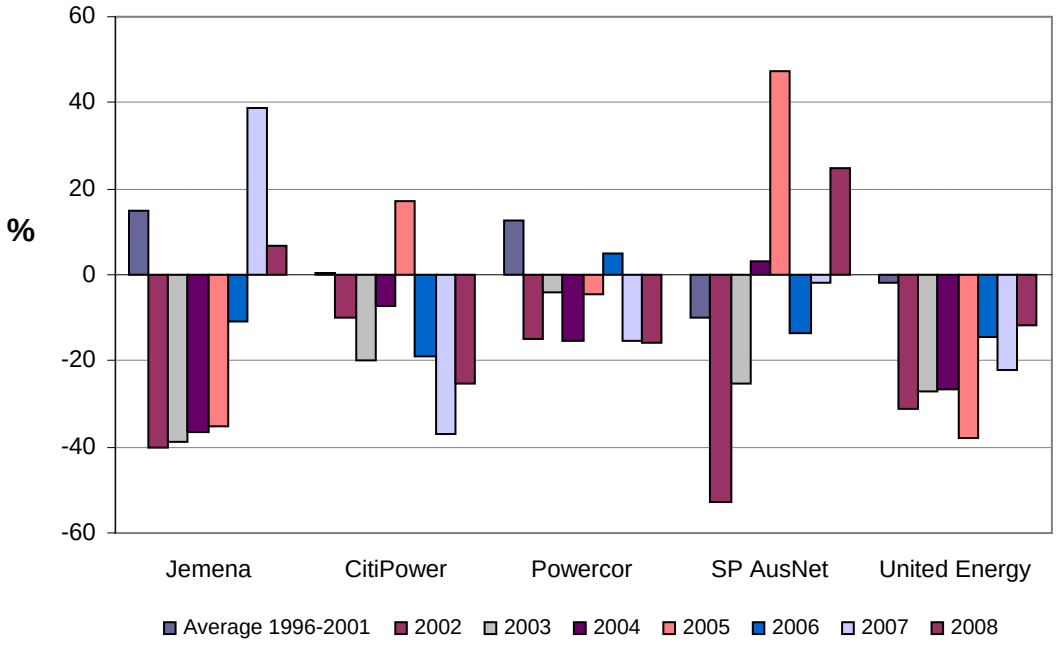


Figure 1.3 **Net capital expenditure by electricity distributors**
Difference from forecast



1.3 Reliability and quality of supply

1.3.1 State-wide

Extreme storms and other unusual events in the four years 2005–08 have affected a longstanding trend of general improvement in supply. The overall reliability declined, in terms of average total minutes-off-supply experienced by a Victorian customer, as this measure increased from 2006 to 2008. The effect of extreme storms was particularly pronounced in 2008, due to a powerful storm which swept through Victoria on 2 April 2008.

In a report published by the ESCV,[4] the 2 April 2008 storm event was described as the largest on record as measured by the percentage of customer base suffering from sustained supply interruptions. The storm event caused extensive damage to properties as well as electricity supply networks.

In terms of the number of customers interrupted, the level of impact of the 2 April storm was 75 per cent higher that the second worst storm on record, the 2-3 February 2005 storm. A total of 655,000 customers (21 per cent of all Victorian customers) were affected during the 2 April storm. The overall impact of this storm represented an average of 71.2 minutes-off-supply per customer for all of Victoria.

Figure 1.4 shows the impact of the 2 April storm, and other events in 2008 that were outside the control of the distributors. The impacts of these unusual events appear at the topmost shaded segment of the column showing minutes-off-supply in 2008 (and similarly in other years). This figure also shows the pattern in supply reliability over past years in relation to the ESCV's targets for progressive annual improvements in unplanned and total minutes-off-supply (lower and upper solid lines). These targets are set in terms of the cumulative minutes-off-supply experienced on average by customers across the state. Over the period 2001–08, distributors were expected to perform at levels equal to, or better than, these targets.

In addition to network average performance measures, the AER also monitors the supply reliability to the worst-served customers. In terms of customer experience, the total proportion of customers that suffered more than 10 hours-off-supply increased to 8 per cent. This is the highest proportion in nine years. The total proportion of customers that experienced outages of greater than five hours remained steady however. The number of customers that experienced less than 2 hours increased to 49.1 per cent, with 29.2 per cent experiencing less than one hour-off-supply in total. The 2 April storm significantly contributed to the decline in supply reliability experienced by electricity users. Figure 3.3 shows the trends and variation between best-served and worst-served customers, and Figure 3.4 shows the reasons for outages.

Another performance measure to monitor each distributor's service to the worst-served community is the levels of "low reliability feeders" within their respective networks (see section 3.3.3 for details). In urban areas, the number of low reliability feeders increased significantly in 2008 mainly because of the impact of the 2 April storm.

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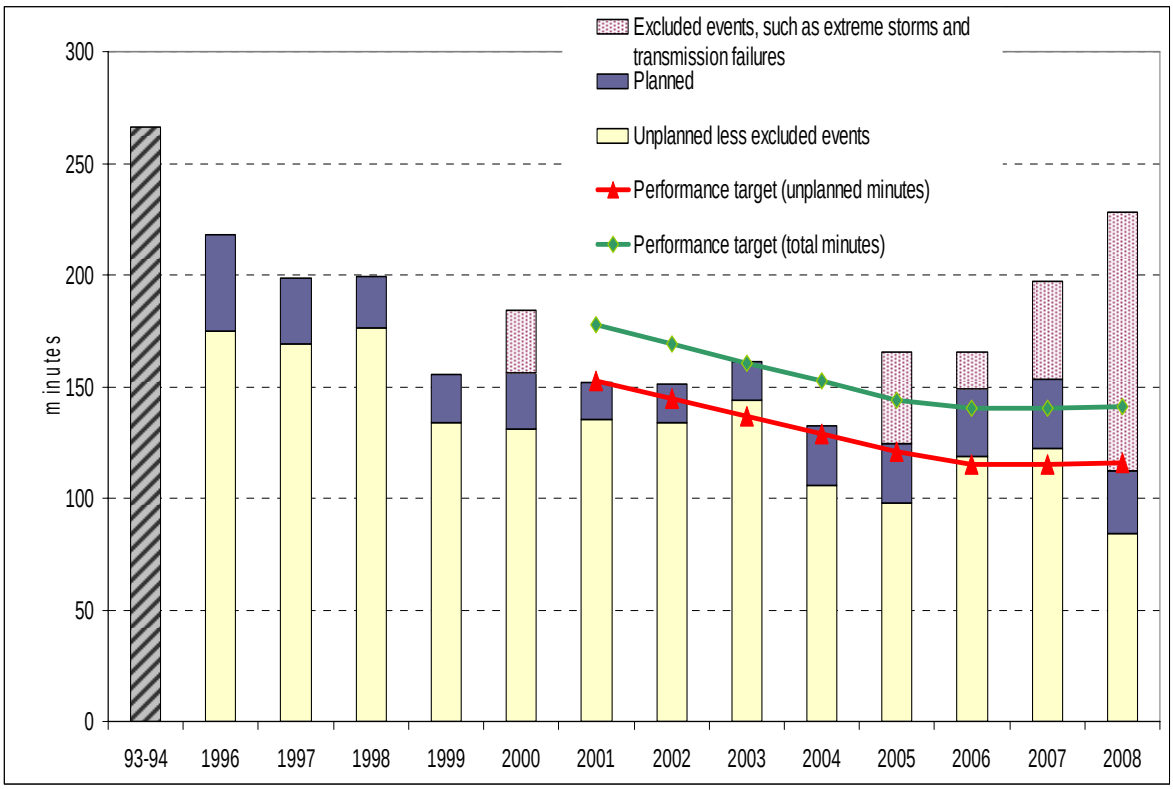
[4] Essential Services Commission, *Review findings report, Electricity Distribution Businesses' Responses to the Storm Events of 2 April 2008.*

Notwithstanding the long-term trend of improving average reliability, pockets of lower supply reliability continued to persist in rural areas, particularly for customers connected to low reliability rural feeders in SP AusNet's network. While the 2 April storm did have some impact on rural feeders, the level of under-performance for rural feeders remained significant in 2008, even if the effect of the 2 April storm were discounted. The AER will continue to monitor the service level to these customers.

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, distributors' performance targets were not separated into planned and unplanned outages.

Discounting the effects of excluded events outside the distributors' control, the total minutes-off-supply per customer fell by 16 per cent in 2008, to a lower level than the targets set by the ESCV.

The total unplanned minutes-off-supply for SP AusNet in 2008 was 301 minutes (23 per cent higher than the previous year). However, 170 of the 301 minutes were due to the 2 April storm. Discounting the effect of the 2 April storm, which was exempted by the ESCV from the performance measures for the service incentive scheme, SP AusNet's unplanned minutes-off-supply for 2008 was 129 minutes (28 per cent better than the target of 179 minutes for 2008).

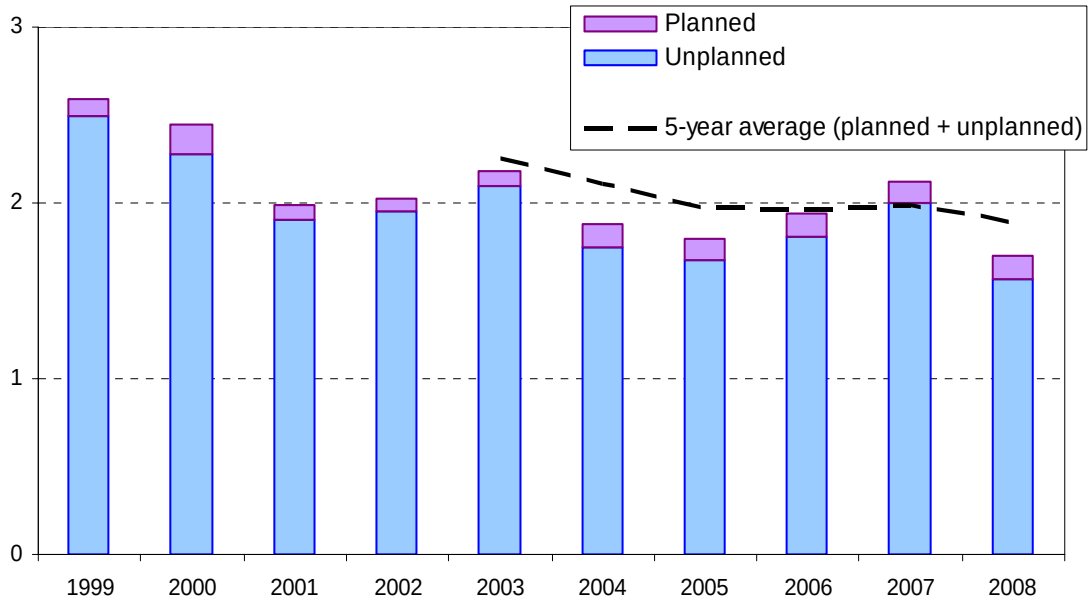
Powercor also reported a level of unplanned minutes-off-supply substantially below target. Its unplanned minutes-off-supply for 2008, discounting the effect of the 2 April storm, was 119 minutes (37 per cent better than the target of 163 minutes for 2008).

Jemena and CitiPower reported an improvement from their respective unplanned minutes-off-supply targets at 15 and 2 per cent respectively. United Energy reported deterioration against its unplanned minutes-off-supply target, at less than 1 per cent above target.

Section 3.2 provides more detail of distributors' performance against S factor targets, and 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 (without excluding the effects of the abnormal events).

Figure 1.5 **Average number of sustained supply interruptions per customer**



The figure shows that over the last 10 years there has been a gradual downward trend in the number of supply interruptions per customer. In 2006 and 2007 the five year average rose slightly, however on the back of good performance in 2008 the trend has now decreased. The 2008 result is the best result in the 10 years presented, despite the 2 April storm.

1.3.2 Individual distributors – overall reliability

As noted in the previous section, all distributors were significantly impacted by the 2 April storm. In order to provide readers with the actual experience of customers on average, without excluding the effects of rare and abnormal events, the performance of distributors in 2008 is reported without separating out the unusual events, which were exempted from the service incentive scheme. Below is a summary of the distributors' performance as experienced by their customers:

- Despite the impact of the 2 April storm, **CitiPower** reported a significant (49 per cent) decrease in unplanned minutes-off-supply, from 88 minutes in 2007 to 45 minutes in 2008. Its planned minutes-off- supply remained at 4 minutes, after decreasing to below 5 minutes in 2007 for the first time since 1999. CitiPower's unplanned sustained interruptions was also improved by of 38 per cent in 2008 to 0.53 interruption per year.

- **Jemena** recorded actual unplanned minutes-off-supply per customer of 15 per cent better than its target in 2008. Its average planned minutes-off-supply increased to 10 minutes per customer for the first time. The average number of unplanned sustained interruptions per customer fell by 29 per cent, from 1.82 in 2007 to 1.29 in 2008.

- Similar to its sister company (CitiPower), **Powercor** reported a significant improvement (down 36 per cent) in unplanned minutes-off-supply in 2008 to 133.5 minutes, despite the impact of the 2 April storm. The total minutes-off-supply was 157 minutes-off-supply, down 33 per cent from 2007's figure of 232 minutes. Powercor's planned minutes-off-supply has been steadily increasing since 2004, to 23 minutes in 2008. It also reported a significant improvement in the number of unplanned sustained interruptions per customer to 1.64 interruptions per year, a 30 per cent drop from 2007.

- **SP AusNet's** performance in 2008 was badly affected by the 2 April storm. It reported an average of 365 minutes-off-supply per customer, of these 64 were planned. However, it reported a 17 per cent decrease in the number of unplanned sustained interruptions to 2.36 interruptions per year. It should be recognised that, discounting the effect of the 2 April storm, SP AusNet's unplanned minutes-off-supply for 2008 was 129 minutes (28 per cent better than the target of 179 minutes for 2008).

  In terms of measurements against its service incentive scheme targets, SP AusNet's performance in 2008 was the best since the scheme began in 2001 and a significant reversal from its historical performance record. More details of the service incentive scheme are available from section 3.4.

- Compared with the other four distributors, **United Energy** was the worst affected business by the 2 April storm. It reported 295 minutes of unplanned interruptions per customer, almost three-times as much as the 2007 level. Planned minutes-off-supply was reduced by 13 per cent to 17.7 minutes. The number of unplanned interruptions fell from 1.5 per customer in 2007 to 1.39 per customer in 2008 (8 per cent improvement). The number of planned interruptions also fell from 0.07 to 0.05 per customer.

Further information on each distributor's performance is provided in section 3.2.

1.3.3 Individual distributors – reliability excluding abnormal events

As in 2007, all the distributors' networks were affected to varying degrees by extreme storm and load shedding due to generation capacity shortages again in 2008, over which they had no control. Figure 3.19 shows that by excluding the effects of such events, the distributors' performance was as follows:

- **CitiPower,** after excluding abnormal events outperformed its target minutes-off-supply per customer in 2008 by 15 per cent. It has performed better than its target minutes-off-supply per customer since 2005.

- **Jemena** recorded actual minutes-off-supply per customer 15 per cent better than its target in 2008. Jemena also beat its target for minutes-off-supply per customer in 2005 and 2007. However, in 2006 it recorded a result of 19 per cent worse than target. Jemena's planned minutes- off-supply in 2008 was 10.3 minutes, which exceeded the target by 3.8 minutes.

- **Powercor** continued to perform better than its targets for total minutes-off-supply in 2008. After excluding abnormal events, Powercor out-performed the target by 46 per cent. This was a further improvement from 2006 and 2007 where Powercor managed to beat its target by 20 per cent.

- **SP AusNet** beat its target for minutes-off-supply in 2008 for the first time since 2006. After excluding abnormal events, SP AusNet had 10 per cent fewer minutes-off-supply per customer than its targeted amount.

- Discounting the impact of abnormal events, **United Energy** out-performed its target for minutes-off-supply per customer by 1 per cent in 2008. As illustrated in Figure 3.19 United Energy's minutes-off-supply per customer is increasing to a level marginally better than its target, a deterioration compared to its earlier achievements between 2001-04.

Further information on each distributor's performance is provided in section 3.4.

1.3.4 Quality of Supply

Except for SP AusNet, all distributors reported similar numbers of steady-state voltage variation events in 2008 as in 2007. SP AusNet's reported event in 2008 was 59 per cent more than the previous year.

In terms of over-voltage and voltage surges:

- **Jemena** reported 46 over-voltage events due to poor voltage regulation in 2008 (with 3971 customers affected), down from such 102 events affecting 2000 customers in 2007.

- **SP AusNet** reported 9 over-voltage events due to surges in 2008 down from the previous year's figure of 28. SP AusNet reported 85 over-voltage events due to lightning in 2007 and 34 such events in 2008, the number of customers affected was lower in 2008 with the amount of customers affected being 61.

- **United Energy** had 51 over-voltage events due to power surges in 2008.

- **Powercor** reported voltage regulation events affecting customers for the second time. Powercor had not reported any voltage regulation events prior to 2007.

Under the 2006-10 EDPR, Powercor, SP AusNet and United Energy have all been funded to improve the quality of their supply to customers. Powercor has met its target for the improvement of supply and SP AusNet has performed better than its target by a wide margin.

Further information on each distributor's performance is provided in section 3.5.

1.3.5 Guaranteed service level payments

When distributors do not achieve a minimum standard of customer service, they are required to make GSL payments to affected customers. In this context, distributors performed generally well. However, the AER notes that:

- for arriving late for appointments, the trend has been steady over 2003–08, representing a good level of performance over the period. In 2008, distributors made 46 appointments which were not commenced within 15 minutes of the arranged time. Of these, United Energy had 29 late appointments out of the 8279 booked with its customers. Jemena experienced an increase in the amount of appointments not met on time for 2008, 24 out of 3832 appointments.

- for connections not made by the agreed date, the number decreased from 19 in every 10 000 appointments in 2007 to 15 in every 10 000 appointments in 2008, continuing the steady reduction in late appointments since 2006.

- for not repairing streetlights within two working days, the number of GSL payments made by distributors increased by 56 per cent, from 88 in 2007 to 137 in 2008. Jemena reported the highest number (52 payments, up from 17 in 2007), SP AusNet reported making only 2 payments and United Energy reported an increase in payments from 4 in 2007 to 32 in 2008.

Figures 4.1 to 4.3 in Chapter 4 provide further details.

1.3.6 Customer complaints

All distributors reported a steady or improving performance in complaints per thousand customers in 2007-08. CitiPower and Powercor have consistently reported low numbers of complaints per thousand customers, and both improved again in 2008. Over the 2003–08 period, United Energy has reported the next lowest level of complaints per thousand customers and its performance has remained steady.

Jemena continued its gradual improvement, again reporting a minor improvement in 2007-08. SP AusNet reported a significant improvement, corresponding to a reduction of 277 (or 26 per cent) in the total number of complaints over 2008, to 778 complaints. However, on a per capita basis, the level of complaints to SP AusNet is 5 times higher than Powercor, a similar urban/rural mix business.

Further information on each distributor's performance is provided in section 4.3.

1.3.7 Long term health assessment

The 'health card'[5] assessment result of the distributors shows that the distributors have a reasonably robust long term business management strategy. The assessment is shown in Table 5.1. The AER notes the following concerns:

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[5] In addition to reporting the actual levels of service delivered to customers, the ESCV considered there is a need to monitor whether the distributors' long term business decisions are sufficient to achieve an adequate level of service in future. The existing performance indicators of the distributors (such as supply reliability measures) are lagging measures — that is, an indicator of the outcome of a

- The number of electrical incidents reported by CitiPower was rated 'orange', reflecting an increase from 70 incidents in 2007 to 97 incidents in 2008.

- Jemena's assessment included one 'orange' rating in the area of network planning, reflecting an increased level of customer load at risk due to late completion of projects.

- The quality of supply measures for SP AusNet was given a 'red' rating as its reported number of voltage variation events was 59 per cent higher than that of the previous year.

Further information on each distributor's performance is provided in section 5.

1.3.8 Format of this report

The remaining sections of this report are as follows:

- Chapter 2 outlines distributors' reported financial performance for 2008 against the original 2004 forecasts.

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

- Chapter 4 describes the standard of service delivered to customers.

- Chapter 5 presents the health card report of the distribution businesses.

- Appendixes contain financial and operational performance information.

previous change of the distributors' asset management policy. The ESCV thus introduced 'health card' measures for the distributors for the 2006–10 regulatory period.

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 distributors may charge for the distribution of electricity[6] from 1 January 2006 to 31 December 2010. 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
- the returns needed to continue to attract investment capital to the regulated activities.

This section reports on the distributors' recent performance against these financial assumptions, compared with their performance for the previous regulatory period 2001–05. The distributors' performance for the previous period is of historical interest and may indicate trends in the distributors' expenditure.

2.2 Accuracy of the 2004 financial data submitted by distributors

The AER is currently reviewing the financial data provided by distributors under the ESCV's *Electricity industry guideline no. 3: regulatory accounting information requirements*. The review process is not yet completed. In order to ensure timely publication of this report, all reported financial data by distributors under this guideline have been used without adjustment. The reporting of the financial information of individual distribution businesses in this report should not be taken as acceptance by the AER of this information for the purpose of the 2011-15 price reset under the *National Electricity Rules*.

Controls on the distributors' prices are fixed for the 2006–10 regulatory period.[7] However, if a distributor outperforms the financial assumptions underpinning the price

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6 Distributors transport electricity along high and low voltage powerlines. The cost of distribution to customers represents approximately 32 per cent of an average residential customer's electricity bill; the other components are transportation of electricity over the high voltage transmission grid (approximately 8 per cent), generation of electricity (approximately 50 per cent) and the retailing of electricity (approximately 10 per cent). The distributors also provide other services ancillary to the distribution of electricity at regulated prices, such as connecting a new house to the grid. (*Source*: Charles River Associates (Asia Pacific) Pty Ltd 2003, *Electricity and gas standing offers and deemed contracts (2004–2007)*, Report to the Department of Infrastructure, Melbourne).
The information provided in this section relates to only the distribution of electricity.

7 The average price that each distributor may charge for distribution services is affected by inflation, the distributor's service performance over the period, and the introduction of a change in certain taxes. In all other respects, it is fixed. This means a reduction in demand or a fall in operating costs, for example, would affect the distributor's profit rather than its prices. Note that the average price is capped, but individual tariffs may vary (subject to certain controls).

controls,[8] it may retain some of the resulting increase in profits. The setting of price controls for the next regulatory period (2011–15) will consider any cost reductions and other efficiency gains made by the distributors during 2006-10. Encouraging the distributors to improve their efficiency 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 distributor's 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 distributors' financial performance regarding:

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

2.3 Return on assets

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

$$\text{Return on assets (per cent)} = \frac{(\text{Revenue} - \text{Operating and maintenance expenditure} - \text{Regulatory depreciation})}{\text{Average regulatory asset value}}$$

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 distributor's 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.

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 distributors' calculated returns, three points must be considered:

[8] 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.

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

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

3. The process of setting the price controls includes a smoothing of the distributors' 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.[9]

Table 2.1 **Expected real pre-tax return on assets, 2006–10**
Percentage

	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 shows that all distributors earned returns above forecast in 2008—Jemena exceeded the forecasts by 4.4 per cent, CitiPower by 1.9 per cent, Powercor by 2.8 per cent, SP AusNet by 1.3 and United Energy by 2.4 per cent. The following are the key reasons for the above forecast returns:

- All distributors reported higher than forecast revenue in 2008. Jemena by 9.6 per cent, CitiPower by 6.5 per cent, Powercor by 8.4 per cent, SP AusNet by 4.1 per cent and United Energy by 5.1 per cent.

- All distributors spent less on operating and maintenance in 2008 than forecast, Jemena by 17.4 per cent, CitiPower by 10.6 per cent , Powercor by 13.3 per cent, SP AusNet by 7.2 per cent and United Energy by 9.1 per cent.

- With the exception of Jemena and SP AusNet, which reported a 6.8 per cent and 24.9 per cent higher capital expenditure than forecast respectively, all other distributors spent less on capital works than forecast: CitiPower by 25.2 per cent, Powercor by 15.9 per cent, and United Energy by 11.6 per cent.

[9] The returns described are the real returns the distributors are expected to receive, that is, the return 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.

- All five distributors in 2008 reported customer contributions for customer initiated augmentation works substantially higher than forecast for the eighth consecutive year. All of the distributors exceeded the forecasts by a significant margin: Jemena by 131 per cent, CitiPower by 377 per cent, Powercor by 88 per cent, SP AusNet by 28 per cent and United Energy by 214 per cent.

Figures 2.1–2.5 show each distributor's actual returns compared with the forecast pre-tax returns[10] over the 2001–05 regulatory period and three years into the 2006–10 regulatory period. The figures show that the actual returns on assets of all distributors exceeded the forecast for 2008.

Table 2.2 **Average pre-tax return on distribution assets, 2008**
Percentage, based on 2008 reported asset values

	Forecast	*Actual*
Jemena	6.5	10.8
CitiPower	6.6	8.5
Powercor	6.2	9.0
SP AusNet	6.7	8.0
United Energy	6.0	8.4

[10] Forecast revenue shown is prior to smoothing, thus reflecting the third consideration.

Figure 2.1 **Jemena pre-tax return on distribution assets**

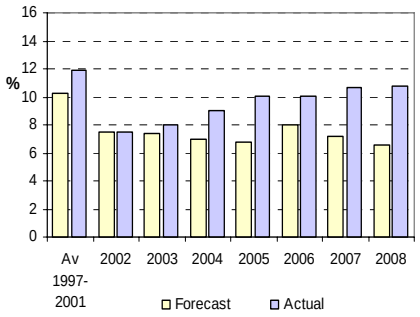


Figure 2.2 **CitiPower pre-tax return on distribution assets**

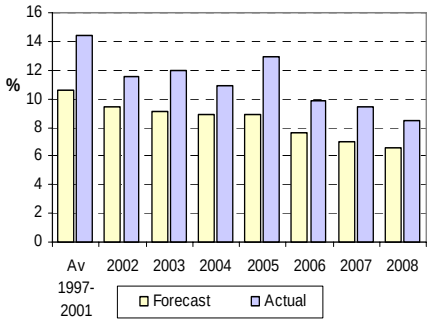


Figure 2.3 **Powercor pre-tax return on distribution assets**

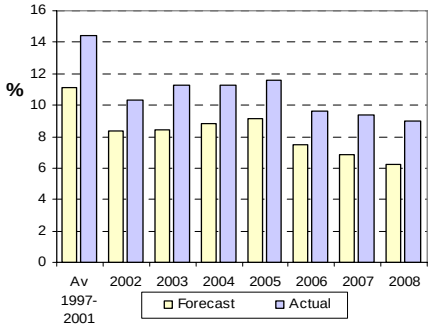


Figure 2.4 **SP AusNet pre-tax return on distribution assets**

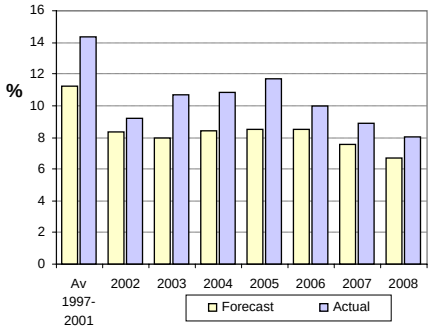
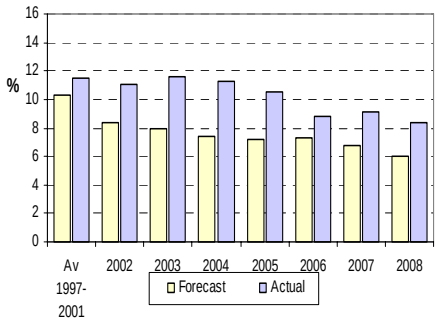


Figure 2.5 **United Energy pre-tax return on distribution assets**



Distributors' returns on assets shown in figures 2.1–2.5 include the movements in provisions for operating and maintenance expenditures.[11] The exclusion of movements in provisions does not have a significant impact on the return on assets reported for 2008.

2.4 Distribution business revenue

The energy distributed by the electricity distribution businesses substantially governs the revenue they receive. Figures 2.6 and 2.7 show the distribution revenue earned[12] and energy distributed, in terms of the variance between the forecast and actual amounts each year. Figure 2.6 shows that all distributors reported higher than forecast revenue in 2008: Jemena by 9.6 per cent, CitiPower by 6.5 per cent, Powercor by 8.4 per cent, SP AusNet by 4.1 per cent and United Energy by 5.1 per cent.

Figure 2.6 **Electricity distributors' revenue**
Difference from forecast

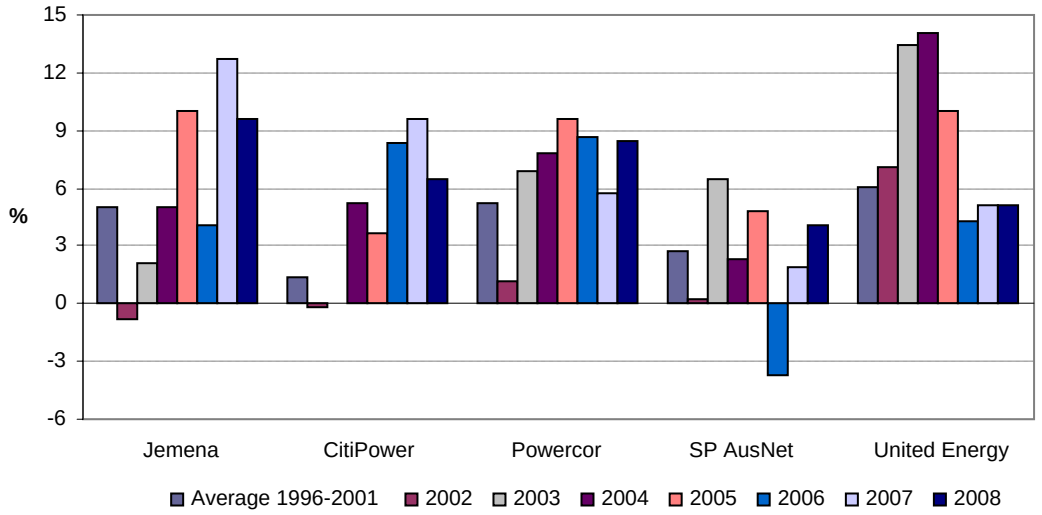
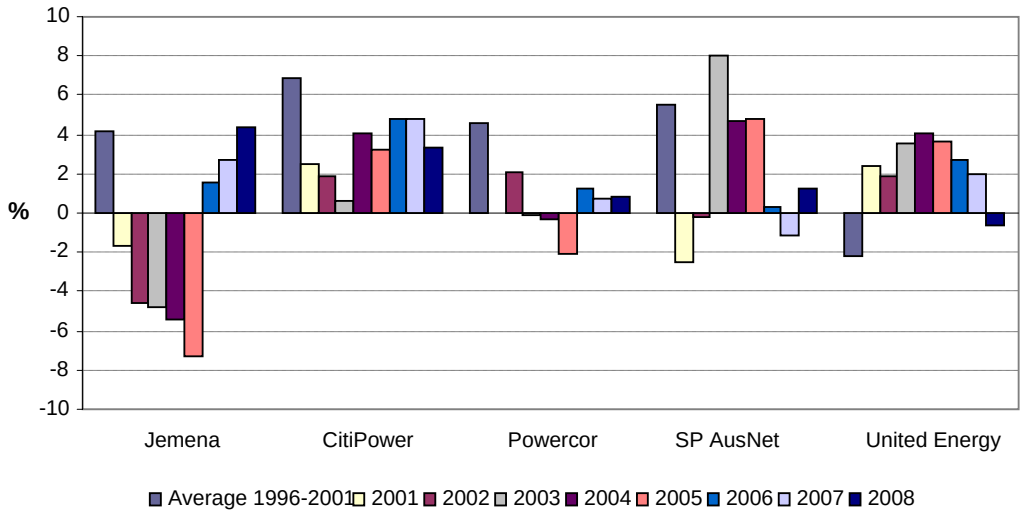


Figure 2.7 shows that four distributors distributed more energy in 2008 than forecast: Jemena by 4.4 per cent, CitiPower by 3.4 per cent, Powercor by 0.9 per cent and SP AusNet by 1.3 per cent. United Energy, however, reported that energy distributed was 0.6 per cent lower than forecast.

[11] Provisions are created when an expense is recognised in a company's accounts prior to that expense being paid. Ignoring the movement in provisions implies not that expenditure items are being excluded, but rather that the expenditure will be recognised in the year the money is spent. It follows that the removal of the movement in provisions provides a closer proxy for the cash expenditure of the distributors in the relevant year. There is an argument that cash expenditure is more relevant for regulatory purposes, and costs associated with possible future events should thus be recorded when (and if) they materialise, rather than in advance, based on estimates of the future expenditure requirements. This approach has been adopted since the 2001–05 regulatory period.

[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 distributors' year-on-year returns, but their net effect will be zero in the longer term.

Figure 2.7 **Energy distributed by electricity distributors**
Difference from forecast

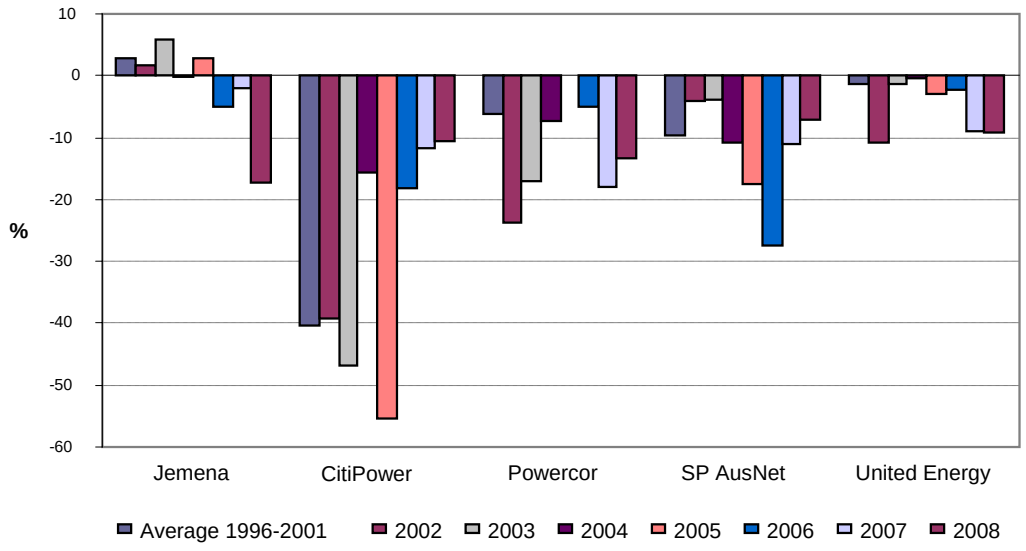


2.5 Distribution business expenditures

Operating expenditure

Figure 2.8 compares actual and forecast operating expenditure under the price review. It details the differences between the distributors' actual and forecast operating and maintenance expenditures. The figure shows that all of the distributors spent less on operating and maintenance in 2008 than forecast. CitiPower, Powercor and SP AusNet continued their trend of spending substantially less than the forecast, underspending by 10.6 per cent, 13.3 per cent and 7.2 per cent respectively. Jemena and United Energy spent 17.4 per cent and 9.1 per cent, respectively, less than forecast for 2008.

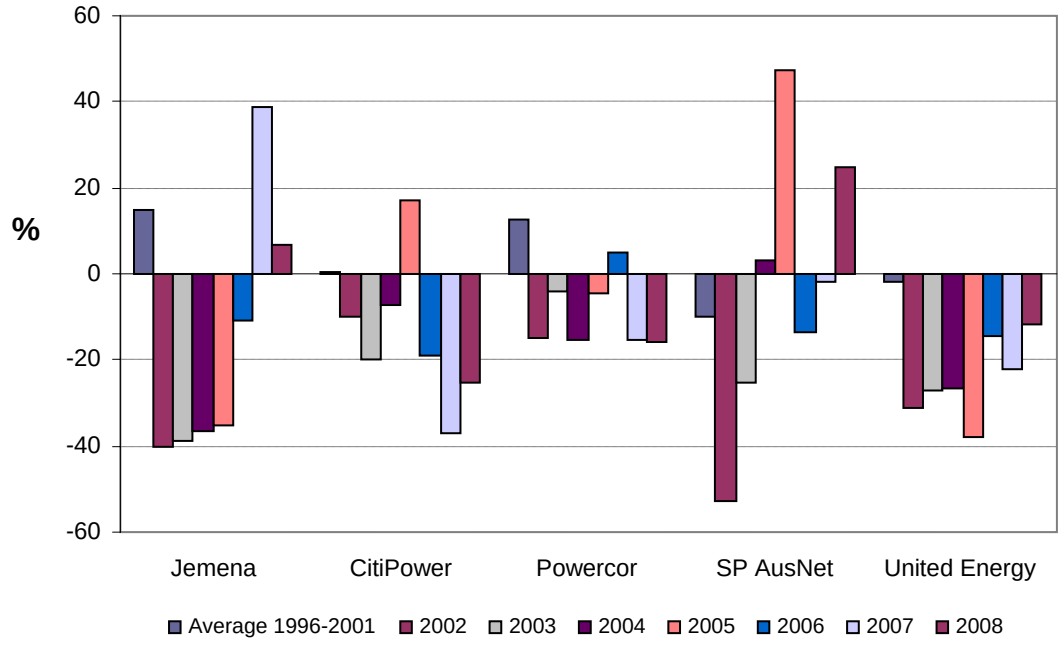
Figure 2.8 **Operating and maintenance expenditure by electricity distributors**
Difference from forecast



Capital expenditure

Figure 2.9 shows the difference between distributors' actual and forecast capital expenditure. The capital expenditure reported is the portion that the distributors finance; it excludes the value of any assets paid for by customers. Both Jemena and SP AusNet reported a 6.8 per cent and 24.9 per cent higher capital expenditure than forecast, all other distributors spent less on capital works than forecast: CitiPower by 25.2 per cent, Powercor by 15.9 per cent, and United Energy by 11.6 per cent.

Figure 2.9 **Net capital expenditure by electricity distributors**
Difference from forecast

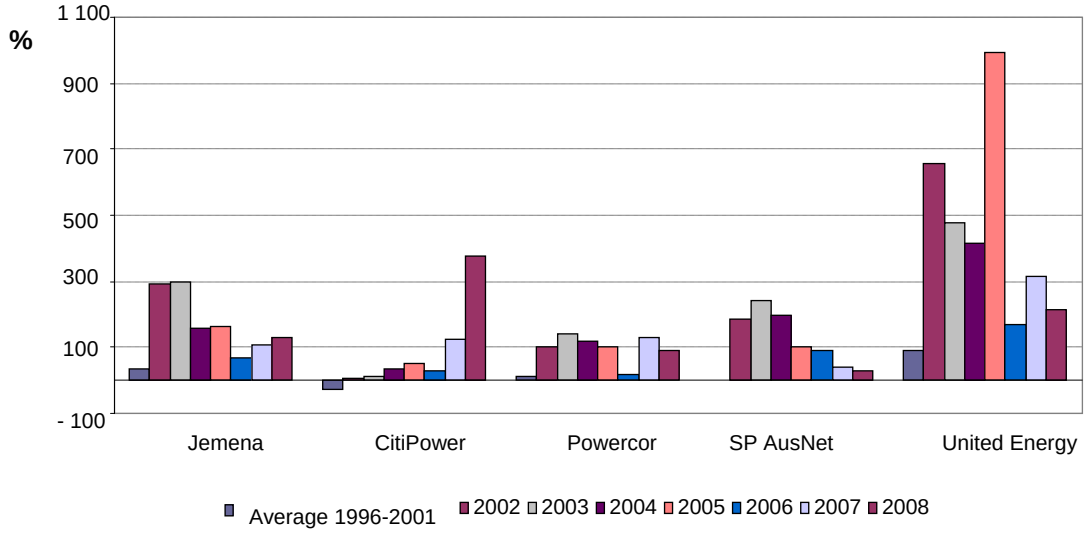


Distributors can obtain a contribution from customers towards the costs of capital works, under the ESCV's *Electricity industry guideline no. 14: provision of services by electricity distributors*. This applies when the works are required to enable an increase in the customer's use of the network (for example, an industrial customer expanding operations), or to connect a new subdivision to the grid. An increase in the level of customer contributions[13] may reduce the distributor's capital expenditure requirement, which may be reflected as an efficiency gain because it increases the measured return on assets.

Figure 2.10 shows the difference between forecast and actual customer contributions for customer initiated augmentation works. This figure shows that all five distributors reported customer contributions in 2008 substantially higher than forecast for the eighth consecutive year. All of the distributors exceeded the forecasts by a significant margin: Jemena by 131 per cent, CitiPower by 377 per cent, Powercor by 88 per cent, SP AusNet by 28 per cent and United Energy by 214 per cent.

[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.

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 distributors' supply areas
- distributors' 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 distributor needs to disconnect supply to undertake maintenance or construction works. The *Electricity Distribution Code* requires that distributors 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 distributor.

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

The ESCV influences distributors' reliability of supply through a financial incentive scheme, which encourages the distributors 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 distributor provides an average level of reliability above 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 distributors' 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 distributors' attention to the worst served customers.

For the 2006-10 period, S factor elements and GSL rates have been 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 distributors' marginal costs of network improvements. The new rate is based on the 2002 Victorian Energy Network Corporation 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. The GSL payment rates have been increased around fourfold.

Based on information from the distributors, 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 distribution business (section 3.1.2) — a comparison of the average performance of each distributor with its peers, across all of its network types
- supply areas (section 3.1.3) — the general level of supply reliability of all bulk supply points (zone substations) of each distributor
- distribution feeders (section 3.1.4) — the levels of supply reliability of each category of the distribution feeders (CBD, urban and rural) of the distribution businesses. It provides an overall picture of the relative reliability across CBD, urban and rural supply areas of the distributors.

3.1.1 State-wide

Extreme storms and other unusual events in the four years 2005–08 have affected a longstanding trend of general improvement in supply. The overall reliability declined, in terms of average total minutes-off-supply experienced by a Victorian customer, as this measure increased from 2006 to 2008. The effect of extreme storms was particularly pronounced in 2008, due to a powerful storm which swept through Victoria on 2 April 2008.

In a reported published by the ESCV,[14] the 2 April 2008 storm event was described as the largest on record as measured by the percentage of customer base suffering from sustained supply interruptions. The storm event caused extensive damage to properties as well as electricity supply networks.

In terms of number of customers interrupted, the level of impact of the 2 April storm was 75 per cent higher that the second worst storm, the 2-3 February 2005 storm, on record. A total of 655,000 customers (21 per cent of all Victorian customers) were affected during the 2 April storm. The overall impact of this storm represented an average of 71.2 minutes-off-supply per customer for all of Victoria.

United Energy and SP AusNet were the worst affected distributors by the 2 April storm, with 219,382 and 212,008 sustained interruptions to customers respectively. The storm interrupted supply to 35.7 per cent of United Energy's customers, and caused an average of 232.7 minutes-off-supply per customer (3.6 times the annual performance target level). SP AusNet was affected to a similar degree with 35.4 per cent of all their customers experiencing supply interruptions causing an average of 171.8 minutes-off-supply per customer (96 per cent of its annual performance target level).

Figure 3.1 shows the impact of the April 2 storm, and other events in 2008 that were outside the control of the distributors. The impacts of these unusual events appear at the topmost shaded segment of the column showing minutes-off-supply in 2008 (and similarly in other years). This figure also shows the pattern in supply reliability over past years in relation to the ESCV's targets for progressive annual improvements in unplanned and total minutes-off-supply (lower and upper solid lines). These targets are set in terms of the cumulative minutes-off-supply experienced on average by customers across the state. Over the period 2001–08, distributors were expected to perform at levels equal to, or better than, these targets.

Discounting excluded events

Discounting the effects of excluded events outside the distributors' control, the distributors achieved good results in both 2004 and 2005, when the total of planned and unplanned minutes-off-supply per customer improved. However, the total rose again, by 20 per cent in 2006 and a further 2 per cent in 2007.

In 2008, the total minutes-off-supply per customer, discounting the effects of excluded events, fell by 16 per cent, to a level better than the targets set by the ESCV. This is the best result since accurate reporting began in 1996. The 16 per cent drop in average minutes-off-supply in Victoria reversed the trend of declining supply reliability in 2006 and 2007.

The total unplanned minutes-off-supply for SP AusNet in 2008 was 301 minutes (23 per cent higher than previous year). However, 172 of the 301 minutes were due to the 2 April storm. Discounting the effect of the 2 April storm, which was approved by the ESCV to be exempted from the performance measures for the service incentive scheme, SP AusNet's unplanned minutes-off-supply for 2008 was 129 minutes (28 per cent better than the target of 179 minutes for 2008).

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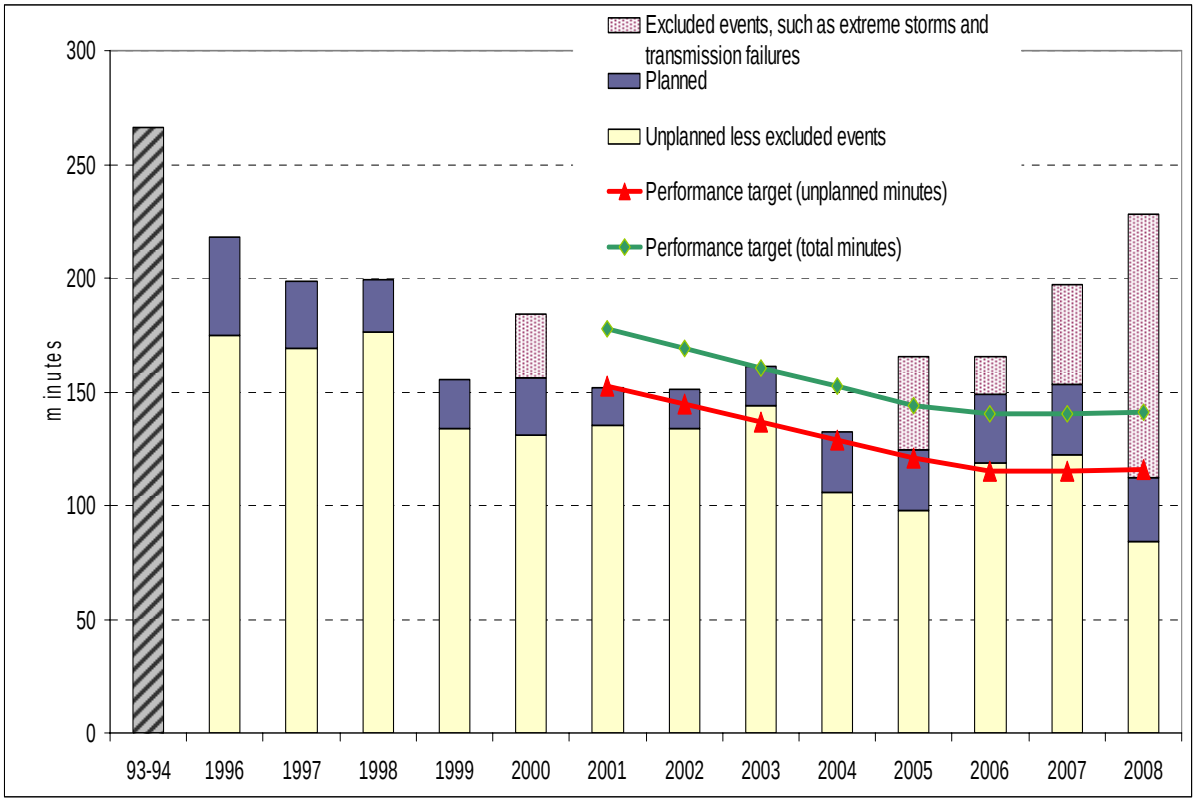
[14] Essential Services Commission, *Review findings report, Electricity Distribution Businesses' Responses to the Storm Events of 2 April 2008.*

Powercor's also reported a level of unplanned minutes-off-supply below target. Its unplanned minutes-off-supply for 2008, discounting the effect of the 2 April storm, was 119 minutes, beating the target of 163 minutes.

Jemena and CitiPower reported improvement from their respective unplanned minutes-off-supply targets at 15 and 2 per cent respectively. United Energy reported deterioration against its unplanned minutes-off-supply target, at less than 1 per cent above target.

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



Notes: 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, distributors' performance targets were not separated into planned and unplanned outages.

Figure 3.2 Average number of sustained supply interruptions per customer

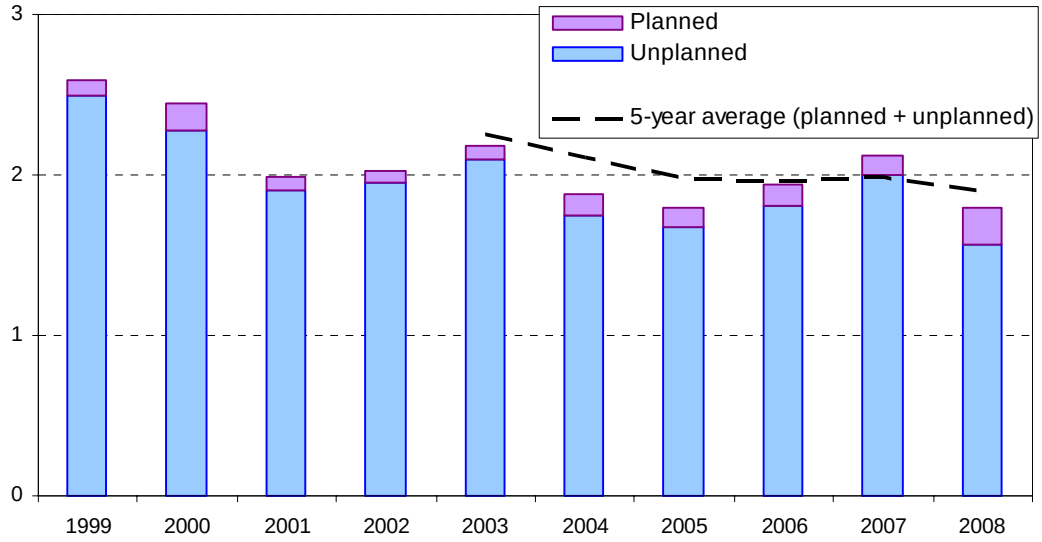


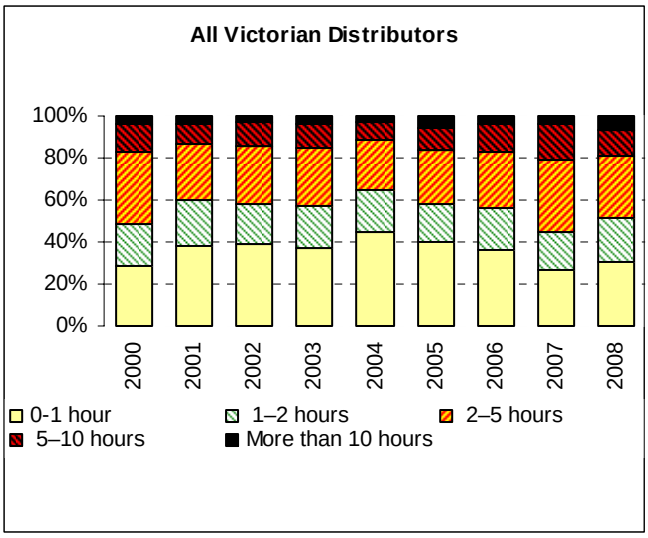
Figure 3.2 shows the total number of sustained interruptions per customer for Victoria going back to 1999. In 2008 there was an average of 1.78 sustained interruptions per customer. Of these 0.15 were planned interruptions required to conduct maintenance on the network. Another 0.27 sustained interruptions per customer were caused by major storm events or transmission failures, of which the April 2 storm greatly contributed.

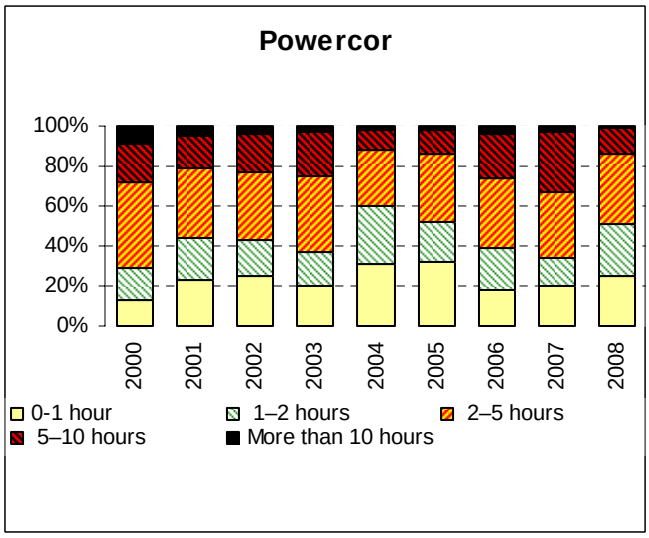
Over the last 10 years there has been a gradual downward trend in the number of supply interruptions per customer. In 2006 and 2007 the five year average rose slightly, however on the back of good performance in 2008 the trend has now decreased. The 2008 result is the best result in the 10 years presented, despite the April 2 storm. The previous best result was 1.80 in sustained interruptions per customer in 2005.

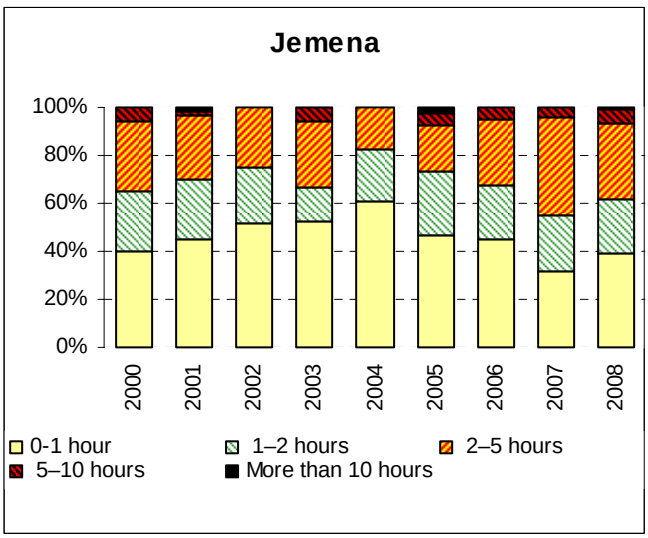
Customer experience — best and worst served customers

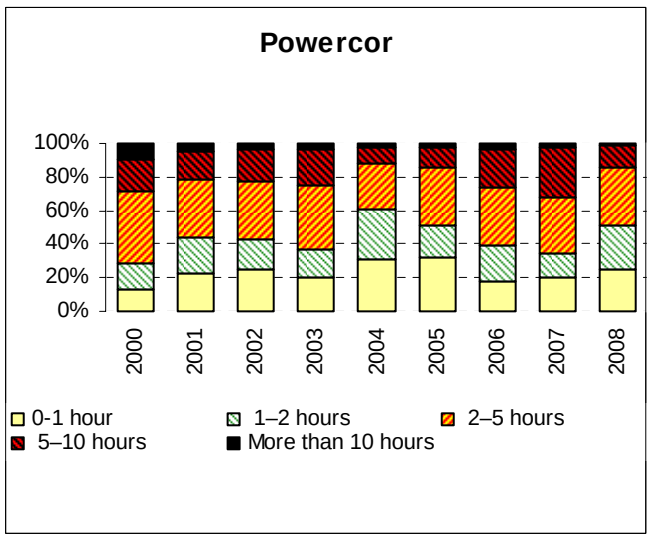
Supply reliability changes from year to year. The general trend has been a gradual improvement, but outages do not occur to the same extent across the state and the experience of customers varies markedly. To identify whether improvements flow to the worst served customers — rather than only to those 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.

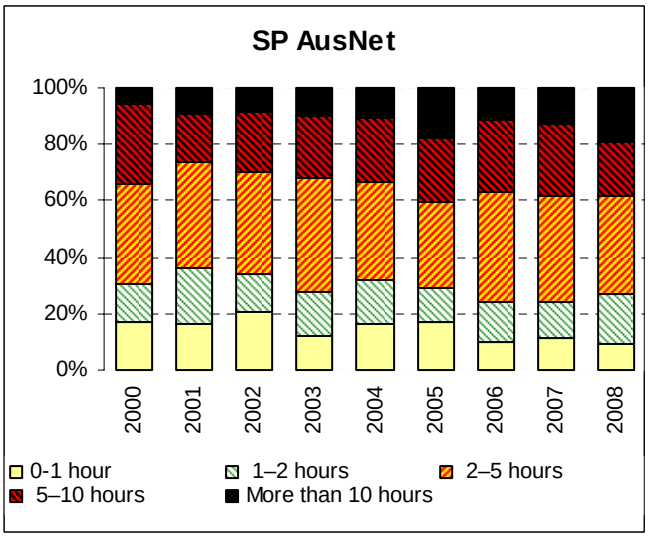
Figure 3.3 Minutes-off-supply distribution











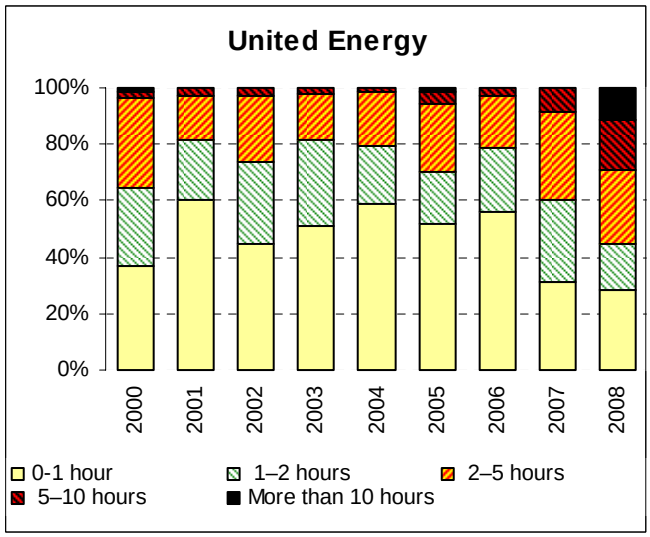


Figure 3.3 demonstrates that 2008 was a tough year for the worst served customers. The total proportion of customers that experienced more than 10 hours-off-supply increased to 8 per cent. This is the highest proportion in the nine years recorded on the graph. The total proportion of customers that experienced outages of greater than five hours remained steady however. The number of customers that experienced less than 2 hours increased to 49.1 per cent, with 29.2 per cent experiencing less than one hour-off-supply in total. It is likely that the supply reliability declined due to the severe storm on 2 April.

In SP AusNet's network, the number of customers that experienced more than 10 hours-off-supply increased by 6.9 per cent to 19.5 per cent of all customers. The number of customers that experienced greater than 5 hours-off-supply remained steady at 38.3 per cent.

Powercor improved its performance markedly in 2008 from the previous two years. Only 1.2 per cent of all Powercor's customers experienced annual outage durations of greater than 10 hours – which is the lowest level in the last nine years. The total proportion of customers with minutes-off-supply greater than 5 hours also decreased by 18.1 per cent to 14.4 per cent.

The greatest increase in the percentage of customers experiencing more than 10 hours-off-supply was in United Energy's network, with the proportion increasing by 11.2 per cent to 11.4 per cent of United Energy's customers. CitiPower and Jemena both improved their performance in 2008, with the proportion of customers experiencing annual hours-off-supply of more than 2 hours decreasing.

The distributors have been required from 2006 to report the annual minutes-off-supply experienced by the 15 per cent of customers who experience the longest time off supply in the year, and to identify the major causes of supply interruptions. This reporting is intended to maintain distributors' focus and accountability on the reliability of supply to the worst served customers. Table 3.1 shows the different experiences of customers in each of the distribution network areas. With the exception of Powercor, no distributor was able to achieve their reliability targets for worse served customers in 2008 as a result of the 2 April storms.

Table 3.1 Worse served customers

	Target	Reported	Without exclusions	Better/*worse* than Target %
Jemena	267	304	n.a.	*(12.2)%*
CitiPower	138	221	n.a.	*(37.6)%*
Powercor	535	420	n.a.	27.4%
SP AusNet	734	1,011	369	*(27.4)%*
United Energy	231	1,164	242	*(4.5)%*[a]

a. United Energy's percentage worse than target is calculated without exclusions.
n.a. Data not provided by the distributor.

Distributors advised that:

- Excluding the effects of the 2 April storm, the worst served 15 per cent of United Energy's customers experienced on average 242 minutes off supply in 2008, close to the target of 231 minutes. The major contributors to the 242 minutes figure were

outages with a longer than usual duration on 3 April, where resources were dedicated to continuing the restoration of customers that lost supply on 2 April.

- For SP AusNet, after excluding the effects of 2 April storm, its worst served 15 per cent customers experienced 369 minutes off supply in 2008, substantially less than the target of 734 minutes.

- After excluding major events, Jemena's reported figure for its worst served customers was 12 per cent better than its target in 2008.

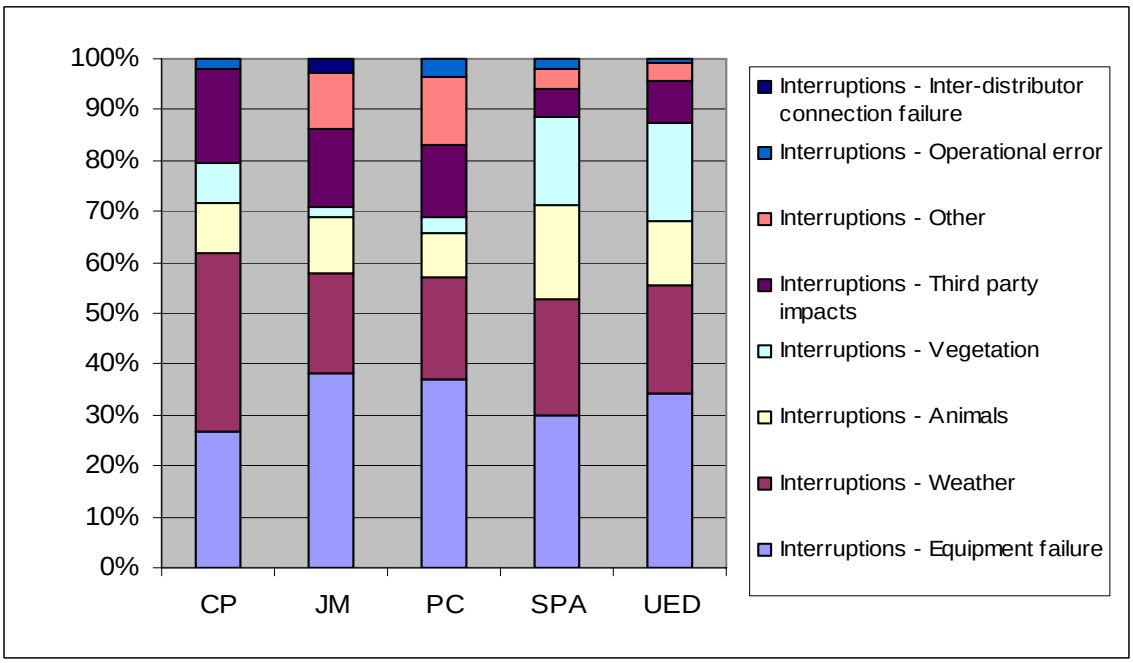
Causes of interruptions

Figure 3.4 shows the major causes of supply interruptions occurring across each network, as reported by each distributor. As in 2006 and 2007, the distributors reported that equipment failure was the most frequent cause of interruptions, accounting for around 33 per cent of all interruptions.

There is an unavoidable degree of uncertainty in the attribution and analysis of some of the causes. For instance, a storm that uproots a tree and brings down a powerline may be recorded as Weather or Vegetation. Combined, they accounted for 33 per cent of the reported interruptions across the state, ranging from 43 per cent for CitiPower to 21 per cent for Jemena.

Weather was the cause of 22 per cent of all supply interruptions in 2008, which is up 9 per cent from 13 in 2007. In 2007 load shedding accounted for 13 per cent of all supply interruptions. In 2008 there were no load shedding incidents, and as such these are not represented in the graph. Animal interference in the network accounted for 13 per cent of all supply interruptions. Distributors reported that operational error accounted for only 2 per cent of all supply interruptions.

Figure 3.4 Causes of supply interruptions 2008



CitiPower and Powercor advised that the main cause of their significant weather interruptions was the 2 April storm.

Jemena's advised that its equipment failures (Figure 3.4) were mainly due to pole and cross-arm fires, and underground cable failures. Jemena is currently in the process of reviewing and executing its mitigation plan.

Weather and vegetation related faults contributed to 40% of the total customer interruptions for SP AusNet in 2008. One third of total weather and vegetation related faults were due to the 2 April storm.

United Energy advised that it is continuing with its approved vegetation management plan—managed and audited externally and endorsed by Energy Safe Victoria—which focuses on the high risk areas, including the installation of HV aerial bundled cables.

3.2 Distribution businesses

This section considers the supply reliability performance of each distributor in 2008 compared with its performance history since 1996. The businesses 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 section 3.1.2, the reliability of supply is considered without excluding the effects of abnormal events beyond the distributors' control. The reliability figures reflect the customers' experience of all the outages that occurred.

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 distributors' control. The 2006–10 price review set targets for each distributor's reliability, in terms of minutes-off-supply and other measures. Section 3.2 discusses the distributors' performance against these targets.

Figures 3.5 and 3.6 show each distributor's 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 extreme storms and other unusual events.

In terms of unplanned minutes-off-supply, for the state as a whole there was a 22 per cent increase in the minutes-off-supply. All distributors showed a trend in supply reliability over the period that was level at best, or slightly worsening, and only CitiPower showed an improvement in planned minutes-off-supply:

- Despite the impact of the 2 April storm, **CitiPower** reported a significant (49 per cent) decrease in unplanned minutes-off-supply, from 88 minutes in 2007 to 45 minutes in 2008. Its planned minutes-off- supply remained at 4 minutes, after decreasing to below 5 minutes in 2007 for the first time since 1999. CitiPower's unplanned sustained interruptions was also improved by of 38 per cent in 2008 to 0.53 interruption per year.

- **Jemena** recorded a 4 per cent increase in unplanned minutes-off-supply to 115.6 minutes in 2008. Jemena's planned minutes-off-supply have been steadily increasing since 2000. Its average planned minutes-off-supply increased to 10 minutes per customer for the first time. The average number of unplanned sustained interruptions per customer was reduced by 29 per cent, from 1.82 in 2007 to 1.29 in 2008.

- **Powercor** reported a significant improvement (down 36 per cent) in unplanned minutes-off-supply in 2008 to 133.5 minutes, despite the impact of the 2 April storm. The total minutes-off-supply was 157 minutes-off-supply, down 33 per cent from 2007's figure of 232 minutes. Powercor's planned minutes-off-supply has been steadily increasing since 2004, to 23 minutes in 2008. It also reported a significant improvement in the number of unplanned sustained interruptions per customer to 1.64 interruptions per year, a 30 per cent decrease from 2007.

- **SP AusNet's** performance in 2008 was badly affected by the 2 April storm. It reported an average of 365 minutes-off-supply per customer, of these 64 minutes were planned. However, it reported a 17 per cent decrease in the number of unplanned sustained interruptions to 2.36 interruptions per year. It should be recognised that, discounting the effect of the 2 April storm, SP AusNet's unplanned minutes-off-supply for 2008 was 129 minutes (28 per cent better than the target of 179 minutes for 2008).

  In terms of measurements against its service incentive scheme targets, SP AusNet's performance in 2008 was the best since the scheme began in 2001 and a significant reversal from its historical performance record. More details of the service incentive scheme are available from section 3.4.

- Compared with the other four distributors, **United Energy** was the worst affected business by the 2 April storm. It reported 295 minutes of unplanned interruptions per customer, almost three-times as much as the 2007 level. Planned minutes-off-supply was reduced by 13 per cent to 17.7 minutes. The number of unplanned interruptions fell from 1.5 per customer in 2007 to 1.39 per customer in 2008 (8 per cent improvement). The number of planned interruptions also fell from 0.07 to 0.05 per customer.

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

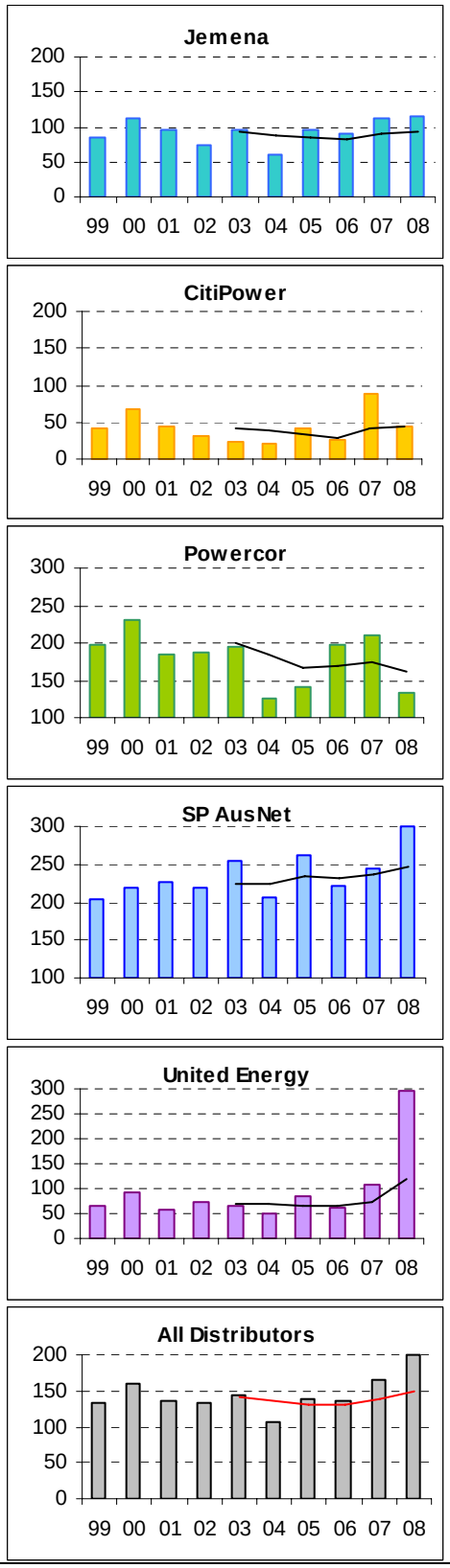
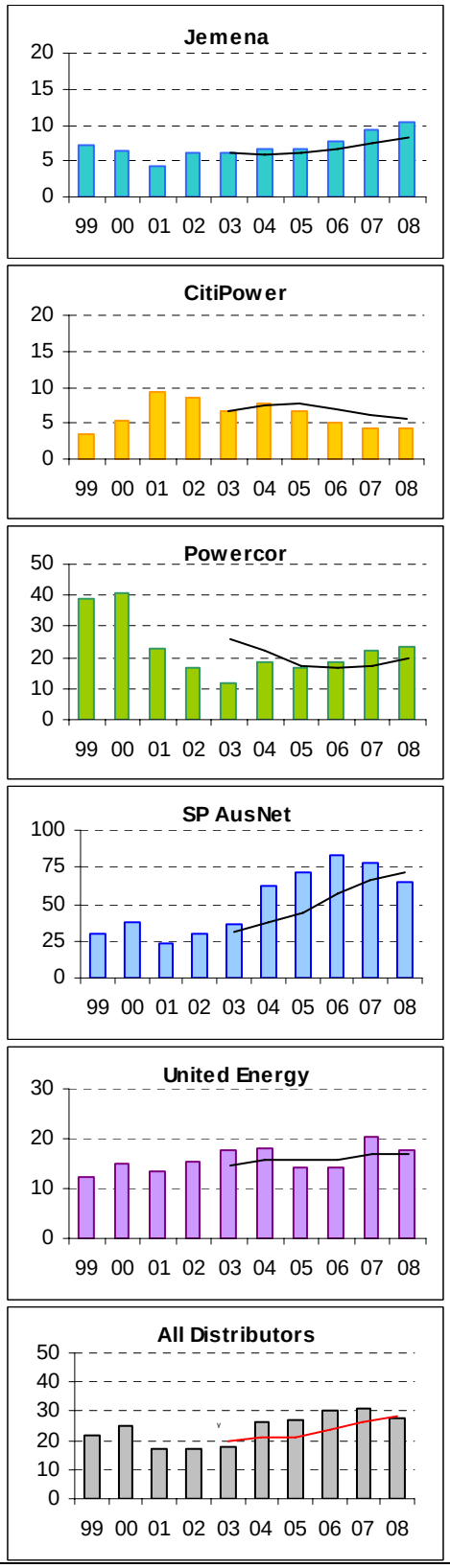


Figure 3.6 Average planned minutes-off-supply per customer[(a)]



[(a)] Includes the impact of the 2 April storm and other exempted events.

Number of unplanned sustained interruptions

Supply interruptions lasting more than 1 minute are called 'sustained' interruptions. Figure 3.7 shows each distributor's performance (including the impact of the 2 April storm) for the average number of unplanned sustained interruptions experienced by their customers, along with the performance trends of the distributors:

- **Jemena** decreased the average number of unplanned sustained interruptions per customer from 1.82 in 2007 to 1.29 in 2008. Of the 1.29 recorded in 2008, 0.41 were caused by excluded events. On the back of this result the five year average improved after declining slightly in 2007. This is also Jemena's second best result since 1999, the best being 2004 when there were only 0.98 interruptions per customer.

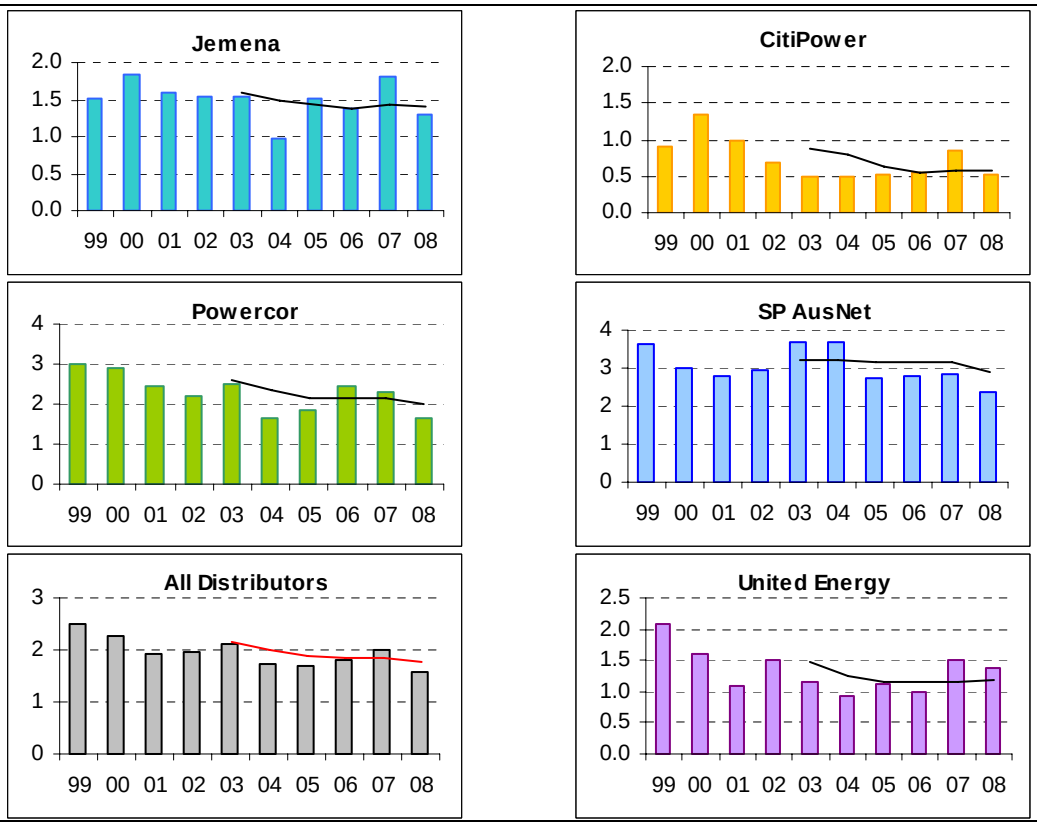
- **CitiPower's** unplanned interruptions per customer decreased from 0.86 to 0.53, a decrease of 38 per cent. In 2008, 0.17 interruptions per customer were caused by excluded events. In 2007, 0.3 interruptions per customer were caused by excluded events, which may partly explain the improvement in service. CitiPower's performance in 2008 is similar to that of its performance between 2003-2006 where the number of sustained interruptions was about 0.5 per customer.

- **Powercor's** customers also experienced a large decline in the average number of sustained interruptions per customer falling from 2.32 in 2007 to 1.64 in 2008. This was an improvement of 30 per cent. This is the lowest number of unplanned interruptions per customer for the last nine years. Also, a large number of the total exclusions (0.14 per customer) were classified as excluded events.

- **SP AusNet's** average number of outages per customers decreased 17 per cent from 2.82 in 2007 to 2.36 in 2008. The 2.36 outages per customer included 0.40 excluded events. SP AusNet continues to have the highest number of interruptions on average per customer. The result in 2008, however, is SP AusNet's lowest number of interruptions per customer in the last ten years.

- **United Energy's** customers experienced less unplanned interruptions in 2008 than they did in 2007. The number of interruptions fell from 1.5 per customer to 1.39 per customer. The 1.39 outages per customer included 0.37 excluded events. The number of planned interruptions fell from 0.07 to 0.05 per customer. Total interruptions per customer also fell from 1.57 interruptions per customer to 1.44 interruptions per customer. This represents an improvement of 8 per cent in the total number of interruptions per customer.

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



(a) Includes the impact of the 2 April storm and other exempted events.

Duration of unplanned sustained interruptions

Figure 3.8 shows the average duration of unplanned interruptions for each of the distribution businesses 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 an urban network, fixing faults in underground cables can be a long process.

The average unplanned outage duration for all Victorian customers increased in 2008. As the average number of outages per customer fell in 2008, and the average minutes-off-supply per customer also increased due to the April 2 storms, much of the increase in the average duration of unplanned outages can be directly attributable the April 2 storms.

- **CitiPower's** average duration of unplanned network outages has been increasing over the last five years. This is reflected in 2008's result which was CitiPower's second longest average unplanned outage duration since 1999. The average length of unplanned outages in 2008 was 18 percent less than in 2007, falling from 103 to 84 minutes on average.

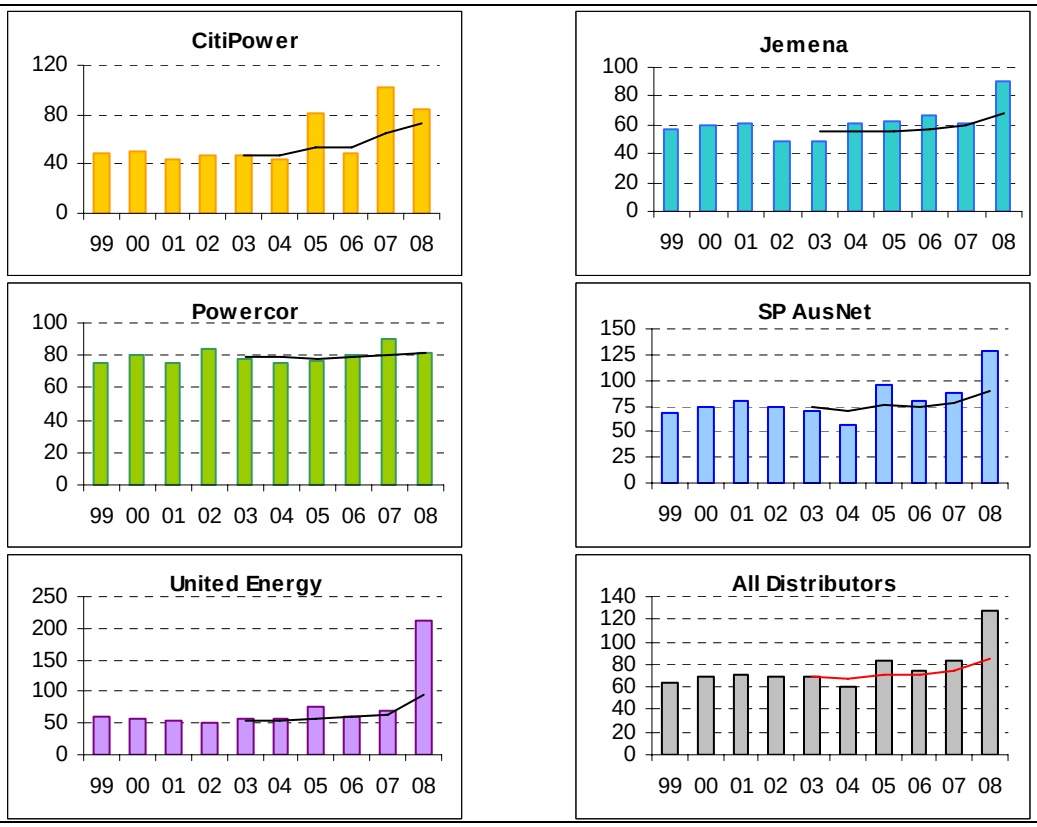
- **Jemena's** average unplanned outage duration increased in 2008 to its highest level since 1999. The increase was 46 per cent from 61 minutes in 2007 to 90 minutes on average per outage in 2008.

- **Powercor's** average outage duration fell from 90 minutes in 2007 to 82 minutes in 2008, a decrease of 10 per cent.

- **SP AusNet's** average unplanned outage duration in 2008 increased to its highest level in 10 years. The increase from 2007 to 2008 was 47 per cent from 87 minutes to 128 minutes-off-supply on average for each unplanned supply interruption. The average duration of each unplanned interruption includes the 2 April storm and other excluded events. After exclusion of exempted events, average duration of each unplanned supply interruption for 2008 was 66 minutes which was 24 per cent less than 2007.

- **United Energy's** average unplanned minutes-off-supply increased by an unprecedented amount, likely as a result of the 2 April storms. It was an increase of 200 per cent, from 71 minutes on average to 213 minutes on average.

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



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 customers' equipment. As of 1 January 2006, distributors 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 distributors' revenue will also depend 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, however, appears to be downwards, perhaps in response to the introduction of financial incentives and penalties.

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

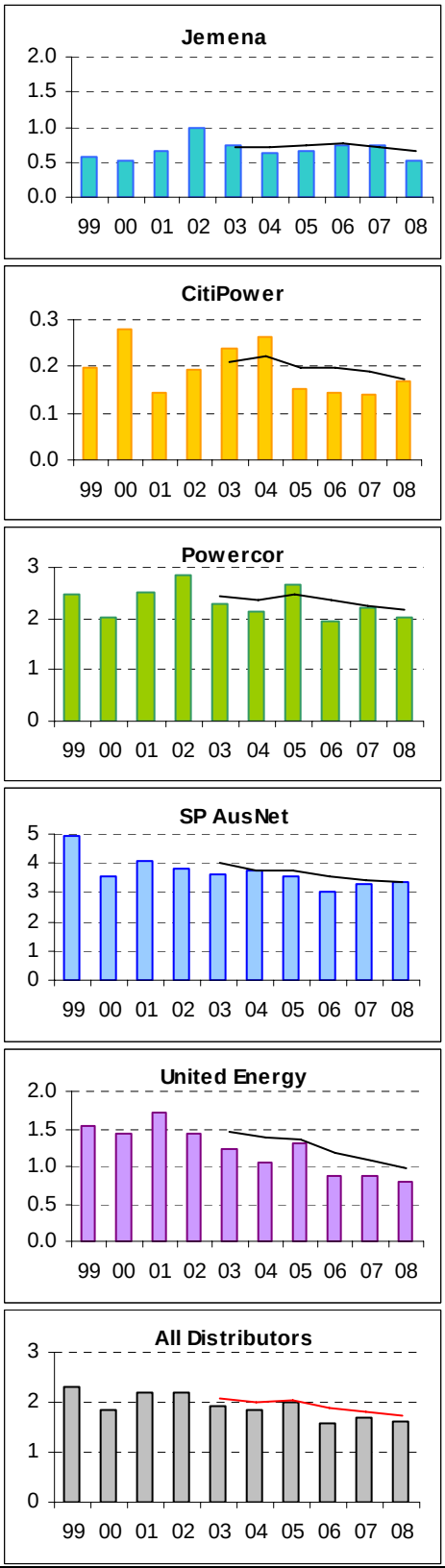
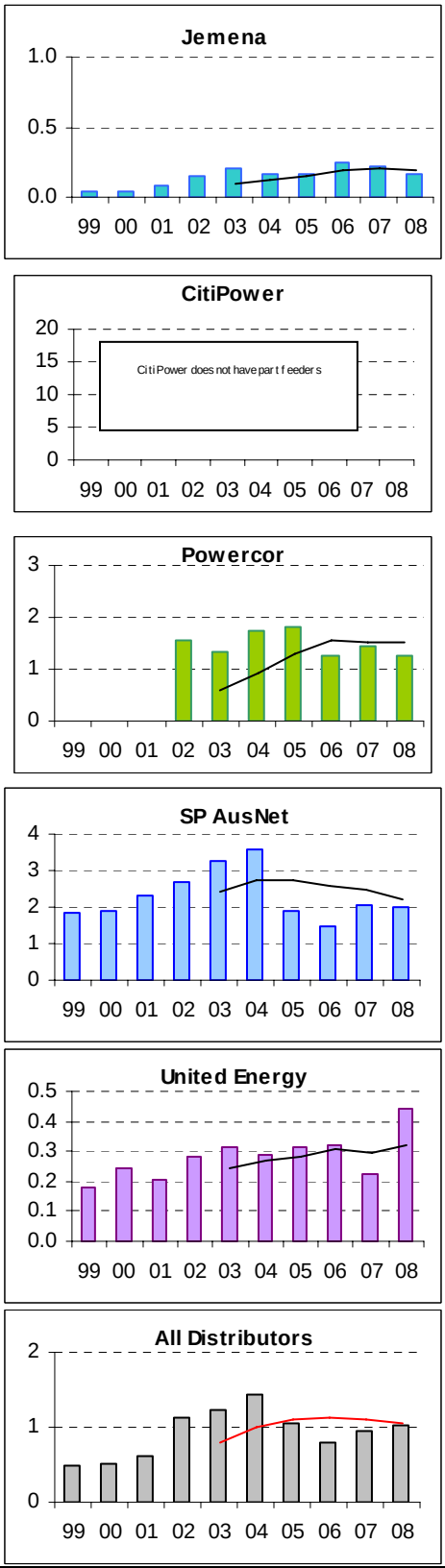


Figure 3.10 Number of momentary interruptions per customer (part feeder) [a]



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

3.3 Supply areas

There are approximately 240 zone substations and supply areas across Victoria. Appendix D shows maps of the areas that are the responsibility of the distributors, 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 2009, to allow comparison of distributors across the state.

3.3.1 Worst performing supply areas — all distributors

Table 3.2 shows the three supply areas with the highest average minutes-off-supply of each distributor — that is, those supply areas that performed worst in 2008.

Table 3.2 Supply reliability for each distributor for unplanned minutes of supply in 2008

Each distributor's three lowest performing areas

	Supply areas	Average minutes-off-supply per customer			
		Customers	2007 (minutes)	2008 (minutes)	Per cent change
CitiPower	Flemington	403	186.1	415	123%
	West Doncaster	8924	54.6	188	244%
	Riversdale	12,271	53.1	164	209%
Jemena	Watsonia	134	57.2	406	610%
	Heidelberg	7969	49.7	239	381%
	Footscray West	11,779	248	232	(6.5)%
Powercor	Wemen	165	901.63	1,188.2	24%
	Electricity Trust SA	355	901.9	950.8	5%
	Charam	1,595	679.6	938.8	28%
SP AusNet	Marysville	1352	1235.5	1432	16%
	Upwey	1065	1293.9	1420	9.7%
	Doreen	4583	288.9	1352	368%
United Energy	Dromana	14,108	193.3	1036	436%
	East Malvern	13,635	85.2	817	859%
	Frankston South	32,054	104.0	804	673%

Distributors advised that:

- All three supply areas for CitiPower were heavily hit by the storm of 2 April, which was excluded from the service incentive scheme. Without the effect of the 2 April storm, the results become Flemington–98 minutes, West Doncaster–19 minutes and Riversdale–25 minutes.

- For Powercor, the majority of the total minutes off supply for Wemen were due to planned outages compared to the previous year where the radial 66 kV line was the issue. Electricity Trust SA's total minutes off supply was due to a supply issue from South Australia. Charam's results were due to the radial 66KV line, and weather related outages were the major cause.

- For SP AusNet, 17 per cent of total minutes off supply for Maryville, 79 per cent of total minutes of supply for Upway, and 92 per cent of total minutes of supply for Doreen were contributed by the 2 April storm.

- Jemena advised that the Watsonia area received a major single outage on April 2 (approved for exclusion from the calculation of the S factor), which accounted for 86 per cent of the 2008 total. Without this outage, Watsonia's 2008 result would be 57.8 minutes, a variance of 1 per cent to the 2007 result. Major events (approved for exclusion from the calculation of the S factor) contributed to 58 per cent of Heidelberg's 2008 result. With exclusions, the 2008 result is 98.9 minutes, a 99 per cent increase from the 2007 result and below the low reliability feeder target. Similarly, events approved for exclusion from the S factor scheme contributed to 57 per cent of North Heidelberg's 2008 result. With exclusions, the 2008 result is 97.0 minutes, a 2 per cent decrease from the 2007 result.

- United Energy advised that a total of 87 per cent of the minutes off supply for Dromana in 2008 occurred as a result of the 2 April storm. The 2 April storm also resulted in a total of 99 per cent of the total minutes-off-supply for East Malvern, and 88 per cent for Frankston South.

3.3.2 Comparison of central business district, urban and rural networks

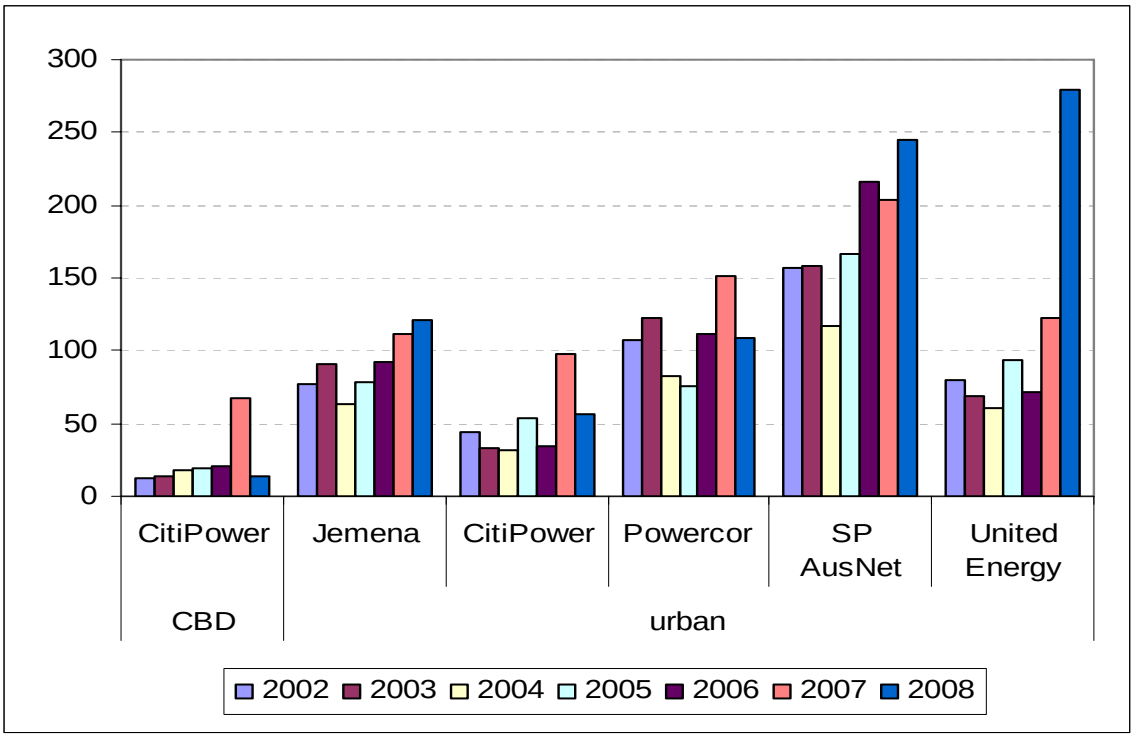
There are approximately 1860 active distribution feeders in Victoria categorised as CBD, urban, short rural and long rural. Potentially, feeders in the same category may perform to a similar level of reliability: CBD feeders should be more reliable than urban ones, which should be more reliable than rural feeders. These classifications, however, are somewhat general; reliability within a category varies from one distributor to another, given differences in terrain, weather, asset condition and management performance.

Figures 3.11–3.14 demonstrate how supply reliability varies with the types of distribution feeder, and how the performance of feeders varies across the distributors. The figures show the total minutes-off-supply due to both planned and unplanned interruptions, and 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 the state-wide load shedding caused by bushfires on 16 January 2007 and the April 2 storm.

Central business district

Only CitiPower has CBD feeders. CitiPower's CBD feeders performed much better in 2008 than in 2007. In 2008, the average customer experienced 13 minutes-off-supply. In 2007, the average-minutes-off supply was 67 per customer.

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

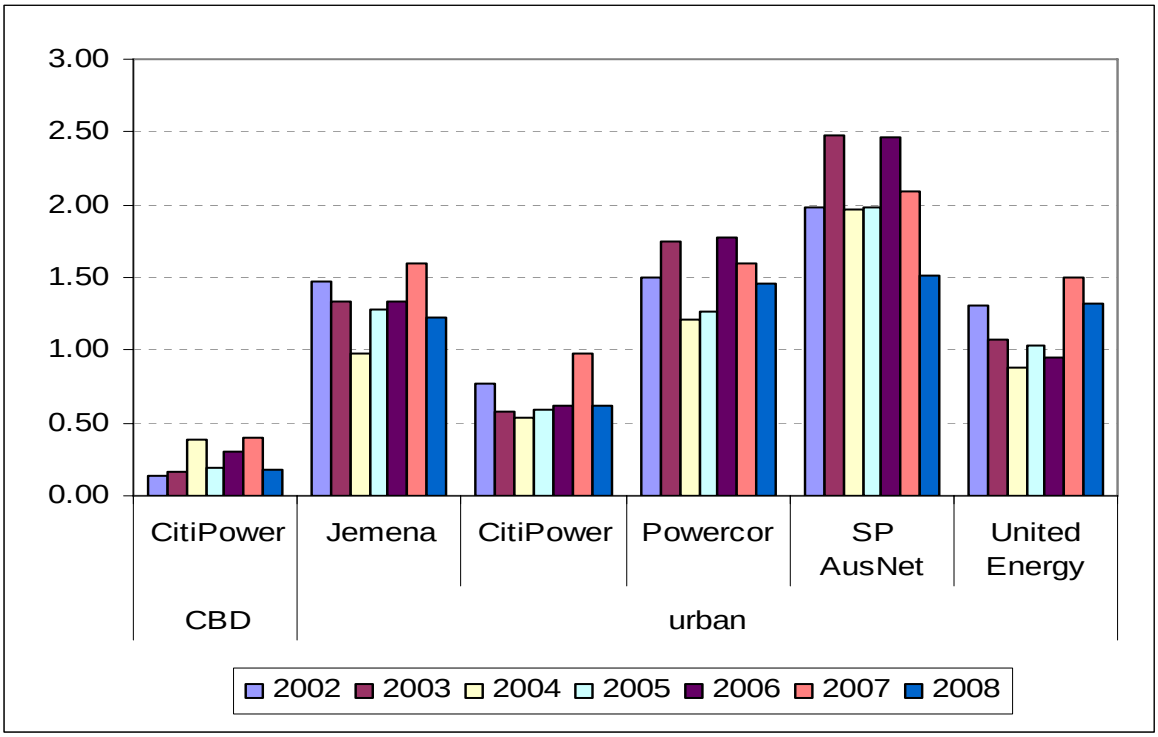


In 2008, the average number of sustained interruptions fell to 0.18 per customer. In 2007 it was 0.40, of which 0.18 was due to the excluded load shedding and DA incidents and 0.09 was due to the VM water damage incident. Without these three incidents the average number of interruptions in 2007 would have been 0.136 which was comparable to the 2006 figure.

CitiPower's 2008 CBD results returned to figures comparable to previous years except 2007. It advised that CitiPower's CBD network was adversely impacted by load shed and water damage to VM Zone Substation in 2007. The major event in 2008 was the storm of 2 April, which had little impact on the CBD area because the majority of the HV feeders in the CBD are underground, therefore not exposure to the weather.

Figure 3.12 Average sustained interruption frequency

CBD and urban areas



Urban

In CitiPower's network in 2008 the average number of minutes-off-supply per customer fell after it increased in 2007. CitiPower's customers experienced an average of 56 minutes-off-supply in 2008 down from 98 in 2007. Likewise the average number of interruptions per customer fell from 0.97 in 2007 to 0.63 in 2008.

Urban customers in Jemena's network on average experienced more minutes-off-supply than in 2007. The average minutes-off-supply for urban customers in 2008 was 121 minutes, up from 111 minutes in 2007. However, the number of interruptions per customer fell from 1.6 in 2007 to 1.22 in 2008.

Powercor reduced both the number of outages per customer and the average minutes-off-supply per customer for its urban customers in 2008. Average minutes-off-supply per customer fell from 151 minutes in 2007 to 108 minutes in 2008. The number of sustained interruptions for each urban customer fell from 1.60 per customer in 2007 to 1.46 per customer in 2008.

The average number of sustained interruptions for each urban customer in SP AusNet's network fell to 2.97, which is its best result in six years. In 2007 the average number of interruptions per customer was 3.5. The average minutes-off-supply per customer in SP AusNet's urban network increased from 204 minutes in 2007 to 245 minutes in 2008. This figure includes the impact of the 2 April storm.

In United Energy's urban network the average unplanned minutes-off-supply increased by 127 per cent in 2008. In 2007, minutes-off-supply in United Energy's urban network was 123. In 2008 the average customer in United Energy's urban network experienced 279 minutes-off-supply. The average number of unplanned sustained interruptions in United Energy's urban network decreased from 1.5 in 2007 to 1.32 in 2008.

Rural

Figure 3.13 Average minutes-off-supply per customer

Rural areas

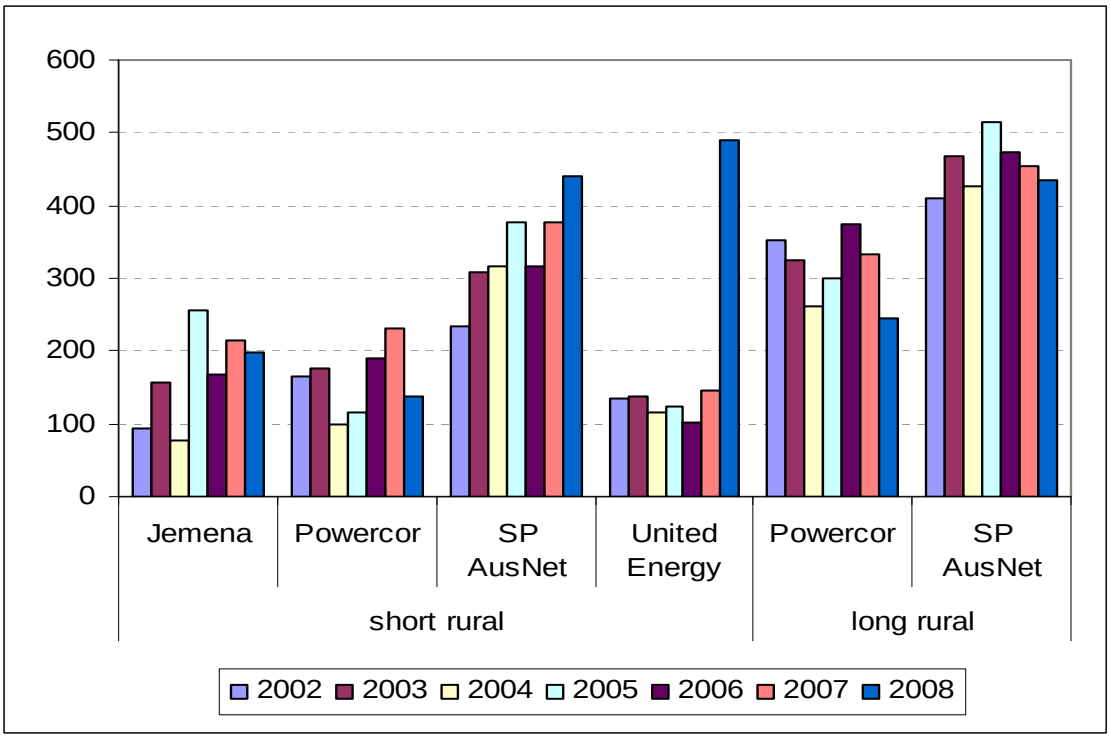
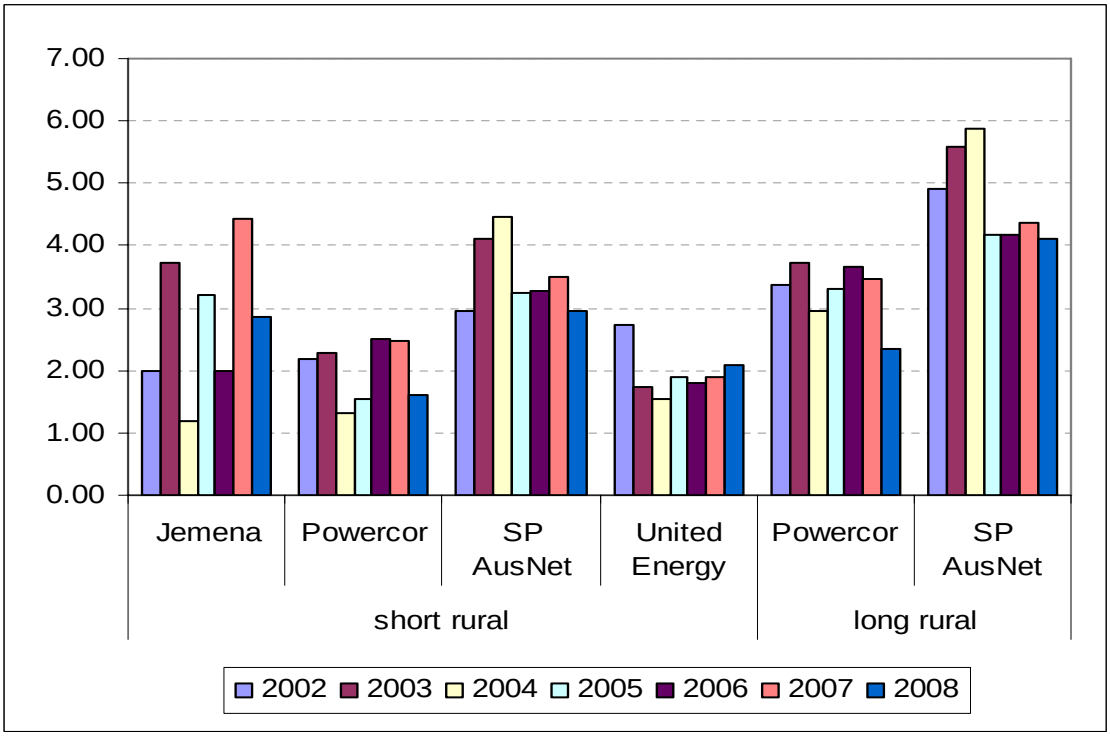


Figure 3.14 Average sustained interruption frequency

Rural areas



Jemena's performance improved both in terms of the number of interruptions per rural customer and the average minutes-off-supply per customer. The average minutes-off-supply for rural customers fell from 216 minutes in 2007 to 199 minutes in 2008. The number of sustained interruptions per rural customer also decreased between 2007 and 2008, falling from 4.44 per customer in 2007 to 2.87 per customer in 2008. Despite the improvement from 2007, the 2008 results are above average.

Short rural customers in Powercor's network experienced less minutes-off-supply and less interruptions to supply on average in 2008. Average minutes-off-supply per rural customer fell from 230 minutes in 2007 to 136 minutes in 2008, which is less than the average for the last five years. The number of supply interruptions per rural customer also fell from 2.49 to 1.59 which is also less than the five year average.

Supply reliability in the long rural areas of Powercor's network also improved in 2008. Average minutes-off-supply for rural customers improved from 332 minutes in 2007 to 244 minutes in 2008. This is the best result in the six years reported. The number of supply interruptions was also the best result in the six years reported, falling to 2.36 in 2008 from 3.46 in 2007.

In SP AusNet's short rural network, average minutes-off-supply per customer increased from 376 minutes in 2007 to 440 minutes in 2008. The 2008 result is the highest minutes-off-supply on average per customer in the six years reported. The average number of interruptions per short rural customer declined from 3.5 in 2007 to 2.97 in 2008. This is close to the average for the last five years.

Average minutes-off-supply per customer for the long rural network of SP AusNet fell from 455 minutes in 2008 to 434 minutes in 2007. This is about 30 minutes less than the average for the last five years. The number of interruptions on average for long-rural customers in SP AusNet's network also decreased in 2008 falling from 4.38 in 2007 to 4.11 in 2008. This is lowest number of interruptions on average for long rural customers in the last six years.

SP AusNet advised that 50 per cent of the total minutes-off-supply of its short rural feeders and 33 per cent of the total minutes-off-supply of its long rural feeders were contributed by the 2 April storm and other excluded events.

The number of minutes-off-supply for an average United Energy rural customer increased dramatically in 2008. In 2007 average minutes-off-supply for rural customers in United Energy's network was 146 minutes. This increased to 490 minutes in 2008. The 2008 result is more than twice the average for the last five years. The average number of interruptions for rural customers in United Energy's network also increased from 1.91 in 2007 to 2.10 in 2008.

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, and the ESCV requires distributors to provide comments on their plans for each low-reliability feeder.

In revising the thresholds, the ESCV took account of a factor relevant only to CitiPower's CBD network, which 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 more than one interruption has occurred. The ESCV also introduced a threshold for the average number of momentary interruptions in all distributors' 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]	na
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 2008. The table details the performance of these feeders in 2008 (and in earlier years of the 2001–05 regulatory period if the feeders appeared in previous reports).

Figures 3.15–3.18 compare low-reliability feeders for each feeder type and for each distributor. The performance shown in these figures represents the total average minutes-off-supply experienced by customers connected to these feeders. The interruptions include those caused by abnormal events such as the state-wide load shedding caused by bushfires on 16 January 2007 and the storm on 2 April 2008.

3.3.4 Low-reliability central business district feeders

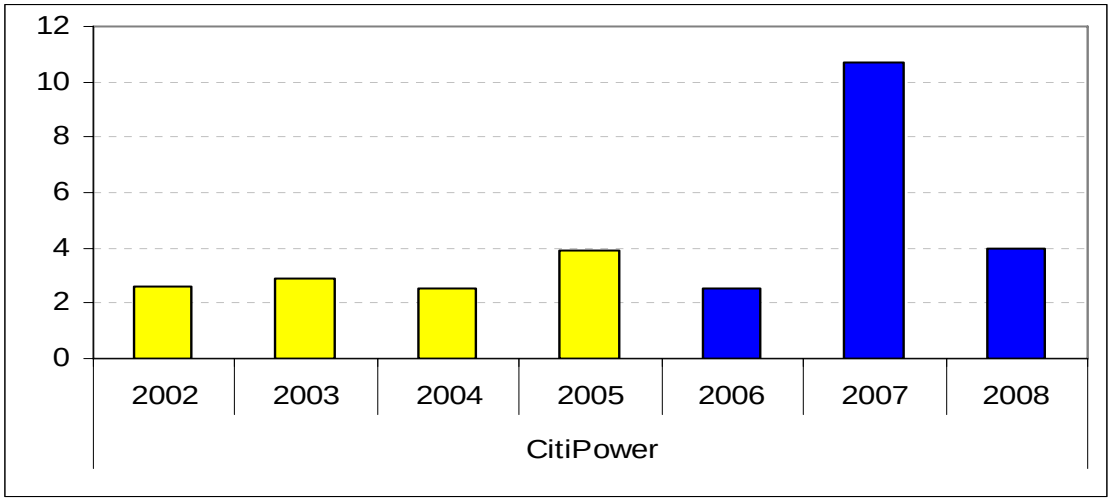
Figure 3.15 shows the percentage of CitiPower's CBD feeders performing below the low-reliability threshold (no other distributor has CBD feeders.) In 2008 CitiPower had 4 per cent of feeders above the 2006 reliability thresholds. This is an improvement on 2007 when around 10 per cent of feeders were above the reliability threshold. However, the 2008 figure is still higher than the long term average.

CitiPower advised that the 2 April storm had little impact on the CBD area as the majority of the HV feeders are underground and not exposured to the weather. Its CBD network was adversely impacted in 2007 by water damage to HV switchgear at Zone Substation VM affecting 26 feeders and to the load shedding event on 16 January 2007.

Table C.18 in Appendix C contains information on CitiPower's three worst performing CBD feeders in 2008.

Figure 3.15 Central business district feeders

Percentage of feeders in the category exceeding low-reliability threshold.

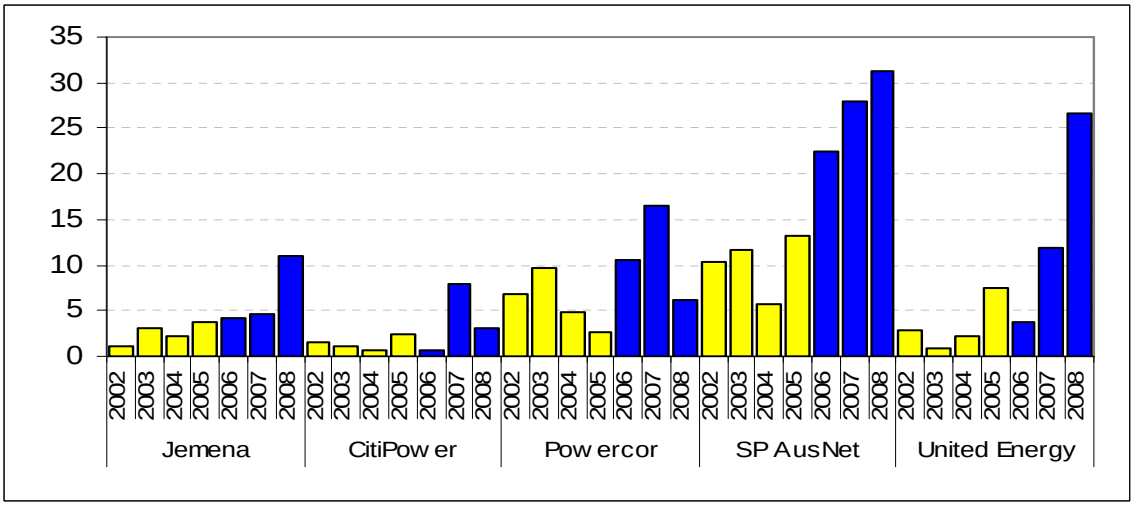


Low-reliability urban feeders

Figure 3.16 indicates a continuing increasing upward trend for all distributors in the percentage of their urban feeders that exceed the established threshold and are classified as being of low reliability. Jemena, SP AusNet and United Energy all had an increase in the percentage of unreliable feeders in 2008. CitiPower and Powercor reduced the number of their low reliability urban feeders.

Figure 3.16 Urban feeders

Percentage of feeders in the category exceeding low-reliability threshold



CitiPower's urban results are slightly higher than the longer term average due to the impact of the 2 April storm, however the number of feeders listed is significantly lower than those listed in 2007.

Powercor commented that all of its feeder groups (Urban, Short Rural and Long Rural) were impacted by wide scale incidents such as 2 April and adverse weather incidents in February, March and July. However there was a reduction in the number of feeders exceeding the threshold in each of the feeder categories compared to the 2007 results.

Jemena commented that, allowing for exclusions, the number of low reliability feeders for 2008 is 5 of 206 feeders which is 2.5 per cent improvement on the past 3 years.

SP AusNet advised that the number of its urban feeders that fall in the low reliability feeder category is 49 per cent. This figure has been significantly affected by the 2 April storm. Excluding the 2 April storm, total low reliability urban feeders would be 16 per cent, which is a decrease from 2007. Despite this decrease from its 2007 figure, SP AusNet's results for low reliability feeders in 2008 remain high even after the effects of the 2 April storm are excluded, and continue to be higher than the long term average.

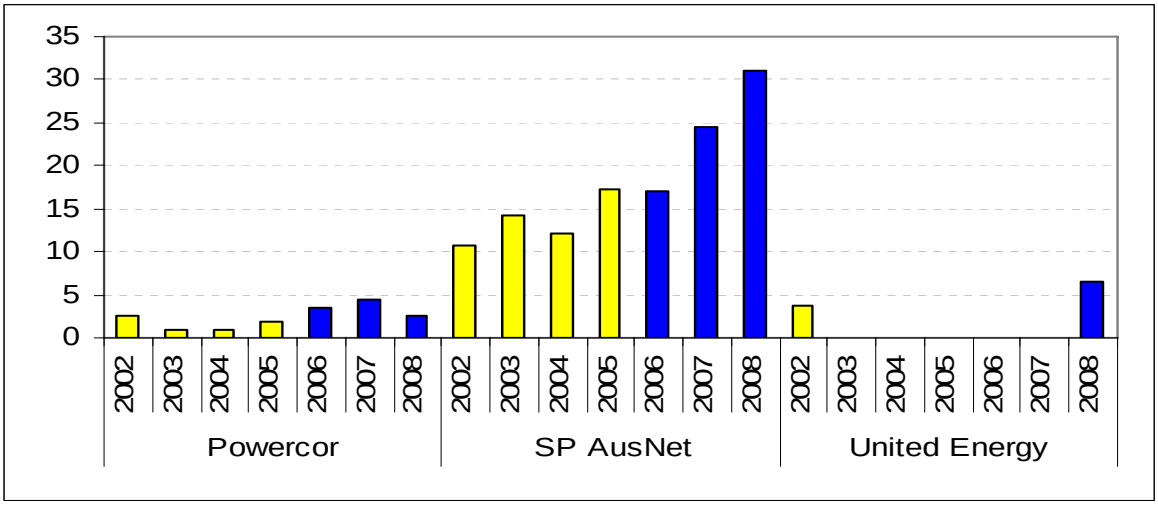
United Energy also commented that its urban feeders were significantly affected by the 2 April storm, which was excluded from the S factor scheme. Allowing for this, the number of low-reliability feeders would be reduced from 102 to 16, and the percentage of feeders exceeding the threshold would be only 4 per cent.

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

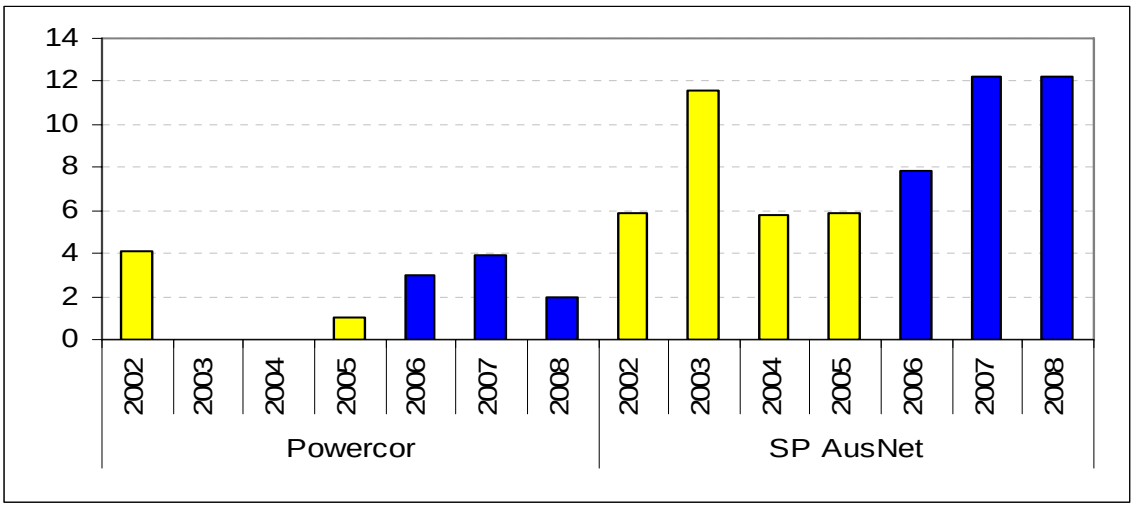


For the first time since 2003, and for the first time under the new feeder reliability criteria, United Energy had feeders above the reliability threshold. In 2008, 6.5 per cent of United Energy's feeders were above the reliability threshold.

The number of low reliability feeders within SP AusNet's network in 2008 remained high, increasing for the second year running and rising to above 30 per cent. Only 2.7 per cent of Powercor's feeders were above the reliability threshold in 2008, which is an improvement on the 2007 and 2006 results.

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. Powercor reduced the number of low reliable long rural feeders since the new classifications were introduced in 2006. In 2008, only 2 per cent were classified as low-reliability feeders. SP AusNet's result was very close to its 2007 figure, and continued to remain high with more than 12 per cent of the long rural feeders above the reliability threshold.

Overall, pockets of lower supply reliability continued to persist in rural areas, mainly in SP AusNet's network. The AER will continue to monitor the service levels to the worse-served customers.

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. Distribution companies 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 sustained unplanned 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, electricity distributors 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 penalty rate was increased 5-fold in 2006.

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 distributors for delivering electricity to the customers.

3.4.1 Excluded events

The high penalty rate represents a very high risk that could make the distribution companies unviable. Therefore, supply interruption events, which are outside the control of distributors, or outside the expected capacity of the distributors to manage, are excluded from the S factor scheme. 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 2008, 13 applications for excluded events were approved, of which:

- Five relate to the 2 April storms
- Seven relate to transmission asset failures, and
- One relates to weather conditions in February that were conducive to pole-top fires.

Table 3.4 summarises the effects on customer minutes-off-supply of the excluded events since 2002. The vast majority of excluded events were caused by the rare events. Though the failure of transmission assets was a common cause of excluded events, their affect has not been significant in terms of minutes-off-supply per customer.

Table 3.4 Average minutes-off-supply per customer

Due to excluded events

Type of event	2002	2003	2004	2005	2006	2007	2008
Load shedding						33.3	0
Failure of transmission connections		0.8	0.5	0.2	7.9	2.0	0.4
Rare events	1.7	13.4		40.5	8.0	8.2	117.2
Total	1.7	14.2	0.5	40.7	15.8	43.6	117.5

3.4.2 Targets for minutes-off-supply

Table 3.5 outlines the service performance targets for total minutes-off-supply for each distributor's 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
CitiPower	55.8	51.2	46.5	41.8	40.6	40.5	40.6
Jemena	90	87	85	83	83.1	83.1	82.2
Powercor	250.0	237.0	225.0	212.0	201.9	201.4	200.2
SP AusNet	246.0	237.0	227.0	218.0	209.0	211.5	213.7
United Energy	102.0	94.0	87.0	79.0	83.9	83.9	83.9

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

Less excluded events

Performance measure, by distributor	2008 reported result (less excluded events)	2008 targets	Better/(worse) than target (%)
CitiPower			
Planned minutes-off-supply	4	9.2	57%
Unplanned minutes-off-supply	22	31.4	31%
Total minutes-off-supply	26	40.6	37%
Jemena			
Planned minutes-off-supply	10	6.5	(53)%
Unplanned minutes-off-supply	64	75.7	15%
Total minutes-off-supply	74	82.2	10%
Powercor			
Planned minutes-off-supply	23	37.7	39%
Unplanned minutes-off-supply	119	162.5	27%
Total minutes-off-supply	142	200.2	29%
SP AusNet			
Planned minutes-off-supply	64	34.7	(84)%
Unplanned minutes-off-supply	129	178.9	28%
Total minutes-off-supply	193	213.7	10%
United Energy			
Planned minutes-off-supply	18	19.0	5%
Unplanned minutes-off-supply	62	64.9	4%
Total minutes-off-supply	80	83.9	4%

Figure 3.19 compares each distributor's 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 figure starts at 2001 when the service incentive scheme was introduced.

When a distributor's performance in figure 3.19 is below the 100 per cent line, it represents that the distributor performed better than its target. CitiPower, SP AusNet and United Energy all had an upward — that is, deteriorating — trend. In particular, SP AusNet's trend line has exceeded the target since 2002.

The orange line on the charts represents the trend for each of the distribution businesses in relation to their performance targets since 2000. Though the trend line for most distribution businesses is below the target rate, for all distributors apart from Jemena the trend has been increasing. SP AusNet is the only distribution business that has an increasing trend line which is above the target rate.

The figure shows the following:

- CitiPower outperformed its target minutes-off-supply per customer in 2008 by 37 per cent. CitiPower has performed better than its target minutes-off-supply per customer since 2005.

- Jemena recorded actual minutes-off-supply per customer of 10 per cent better than its target in 2008. Jemena also beat its target for minutes-off-supply per customer in 2005 and 2007. However, in 2006 it recorded a result of 19 per cent worse than target. Jemena's planned minutes- off-supply in 2008 was 10.3 minutes, which exceeded the target by 3.8 minutes. This was mainly due to increased network upgrade projects and customer initiated projects, at locations where alternative supplies to customers were limited.

- Powercor continued to perform better than its targets for total minutes-off-supply cent in 2008. It outperformed the target by 29 per cent. This was a further improvement from 2006 and 2007 where Powercor managed to beat its target by 20 per cent.

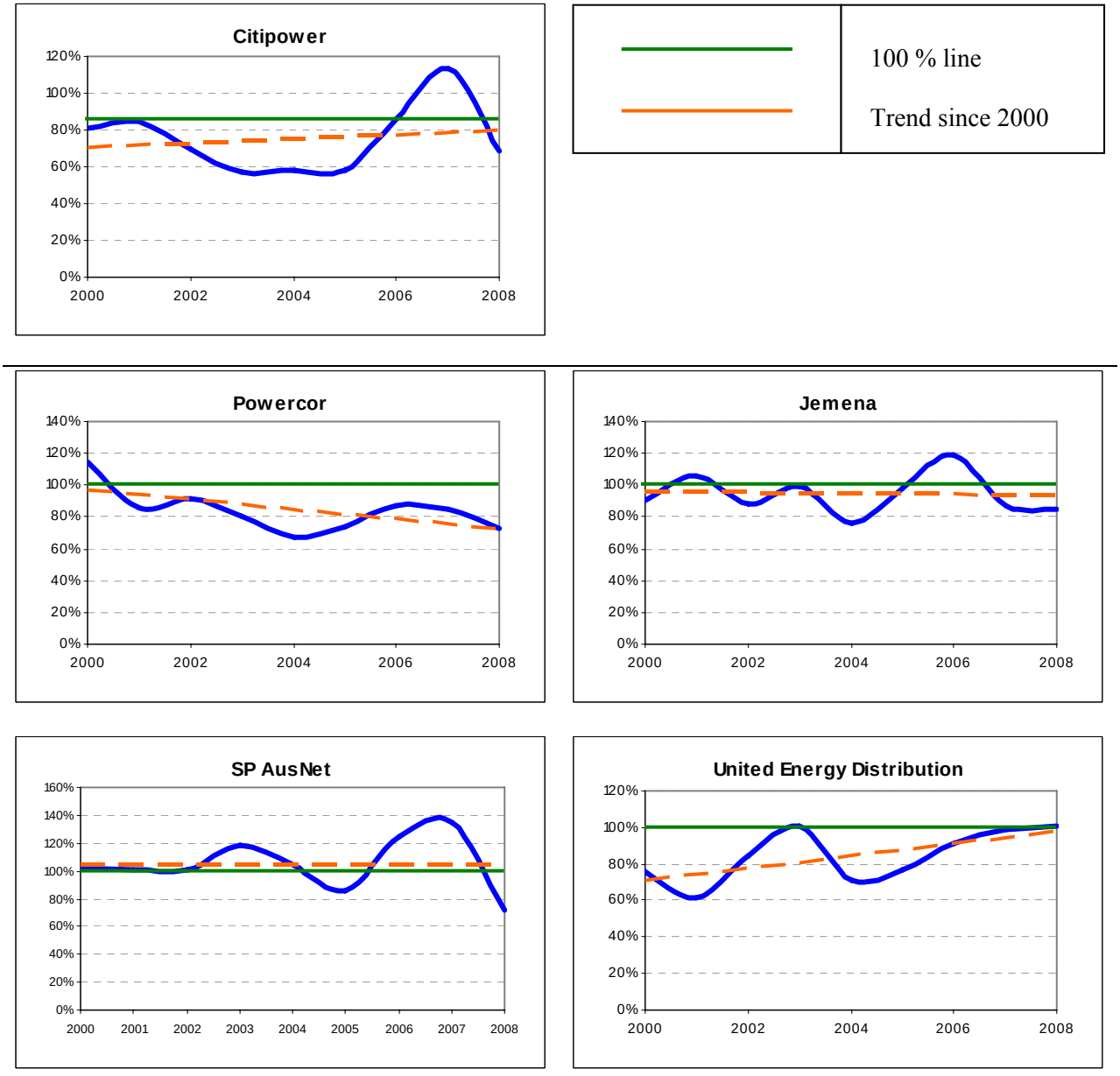
- SP AusNet beat its target for minutes-off-supply in 2008 for the first time since 2006. It had 10 per cent fewer minutes-off-supply per customer than its targeted amount.

- United Energy outperformed its target for minutes-off-supply per customer by 1 per cent in 2008. As illustrated in figure 3.19 United Energy's minutes-off-supply per customer is increasing in relation to its targets.

  United Energy noted that its performance was impacted by the remnants of the 2 April storm, which caused substantial supply interruptions on 3 April accounting for 7 minutes of unplanned outages. Its capacity to restore supply on 3 April was also constrained due to the concentration of field resources on restoring supply to customers there were without power from 2 April.

Figure 3.19 Distributors' unplanned minutes-off-supply

Percentage of annual targets



3.4.3 Targets for number and duration of interruptions

Table 3.7 shows that all distributors performed better than their targets for the average number of unplanned interruptions per customer. CitiPower and Powercor were the best performers, beating their targets for total interruptions per customer by 94 per cent and 50 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. The majority of distribution businesses exceeded their targeted average duration of interruptions. SP AusNet was the only distributor to beat its target, for the average duration of unplanned interruptions, which it beat by 1 per cent.

Table 3.7 Comparison of frequency and duration targets with reported reliability

Less excluded events

	Average number of interruptions per customer			Average duration of interruptions		
	2008 reported result	2008 targets	Better/(worse) than target (%)	2008 reported result	2008 targets	Better/(worse) than target (%)
CitiPower						
unplanned interruptions	0.36	0.71	94%	59.2	44.8	(32)%
Jemena						
unplanned interruptions	0.93	1.34	44%	69.3	56.7	(22)%
Powercor						
unplanned interruptions	1.50	2.24	50%	79.4	75	(6)%
SP AusNet						
unplanned interruptions	1.95	2.67	37%	66.1	66.8	1%
United Energy						
unplanned interruptions	1.03	1.21	17%	60.8	53.4	(14)%

3.4.4 Targets for momentary interruptions

Table 3.8 shows that all the distribution businesses exceeded their targeted momentary interruptions per customer in 2008, continuing the trend from 2007.

Table 3.8 Comparison of total momentary interruption targets with reported reliability

All momentary interruptions

	2008 reported result (less excluded events)	2008 targets	Better/(worse) than target (%)
CitiPower	0.13	0.25	46%
Jemena	0.66	0.92	29%
Powercor	3.13	3.98	21%
SP AusNet	5.33	6.61	19%
United Energy	1.13	1.72	34%

3.5 Quality of supply

As well as the reliability or availability of supply, customers can also be negatively impacted by poor quality of electricity supply — namely, the technical characteristics of electrical energy as 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

Currently, quality of electricity supply in Victoria is monitored through two key sources:

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

Both information sources indicated that low supply voltage was the most significant power quality problem experienced by customers.

Distributors 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 distributors, 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 distributors to address their supply quality issues.

Three distributors — Powercor, SP AusNet and United Energy–have been funded to improve the quality of their supply to customers. These distributors 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 distributor, so direct comparison of each distributor's recorded voltage variation events is not appropriate. The AER therefore monitors the trend of changes in the distributors' reported information. However, the AER notes that the Victorian Government will mandate 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.

Tables C.7 to C.9 in Appendix C contain distributors' reported information on over-voltage events. The performance indicators show that the number of voltage variation events in 2008 was similar to that in 2007, with a few exceptions:

- Jemena reported 46 over-voltage events due to poor voltage regulation in 2008 (with 3971 customers affected), down from such 102 events affecting 2000 customers in 2007.

- Powercor reported 9 voltage regulation events and 9 customers affected in 2008, the second non-zero report made by Powercor.

- SP AusNet reported 9 over-voltage events due to surges in 2008 down from the previous year's figure of 28. SP AusNet reported 85 over-voltage events due to lightning in 2007 and 34 such events in 2008, the number of customers affected was lower in 2008 with the amount of customers affected being 61.

- United Energy had 51 over-voltage events due to voltage surges in 2008 up from 35 from 2007 and impacting 400 more customers than the previous year.

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 distributors in the price review. The table shows that Powercor has met its target and that SP AusNet has performed better than its target by a wide margin.

The table also shows the number of steady-state voltage variation events that the distributors recorded in 2008. Jemena was the only distribution business to report less voltage variation events for both zone substations and distribution feeders in 2008. Powercor, and SP AusNet reported significant increases in the number of voltage fluctuation events in both its zone substations and distribution feeders since 2007.

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

Table 3.9 Number of recorded steady-state voltage variation events, 2008

	Number of customers who received improved quality of supply		Number of events (over- and under-voltage)			
	2008 target	2008 actual	Zone substations		Distribution feeders	
			2007	2008	2007	2008
CitiPower	na	na	104	42	4,573	4,808
Jemena	na	na	318	214	21,514	14,587
Powercor	35400	36,528	139	215	8,950	8,353
SP AusNet	43,837	73,469	5,099	6,040	25,780	42,922[a]
United Energy	600–1200	9,349[b]	56	32	1,184	1,435

[a] SP AusNet advised that, of the 42,922 steady state voltage variations events recorded at the end of high voltage feeders, four out of the 43 sites monitored accounted for almost 89 per cent of the total variations recorded. These four monitors (smart billing meters) are currently installed at commercial/industrial customers (such as major hotels, ski resort and water station) where loads are erratic and voltages above nominal are preferred in order to maintain acceptable voltages at the farthest end of their LV distribution network. In future, SP AusNet intends to establish new monitoring sites at the distribution substation level (secondary side) in order to capture variations from a broader customer base. This strategy is expected to improve the accuracy of the measurement.

[b] United Energy advised that it installed a netural earth resistor at Caulfield Zone substation (CFD) in September 2008 to improve quality of supply.

4 Customer service

The performance levels of customer service that distributors achieved in 2008 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 2008 to encourage good customer service. The same GSLs applied to these categories of service in the previous 2001–05 regulation 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 [a b]
Connections	Failure to connect a customer by the date agreed	$50 per day (to a maximum of $250) [b]
Streetlights	Failure to repair a streetlight within two business days or by date agreed	$10 [a b c]

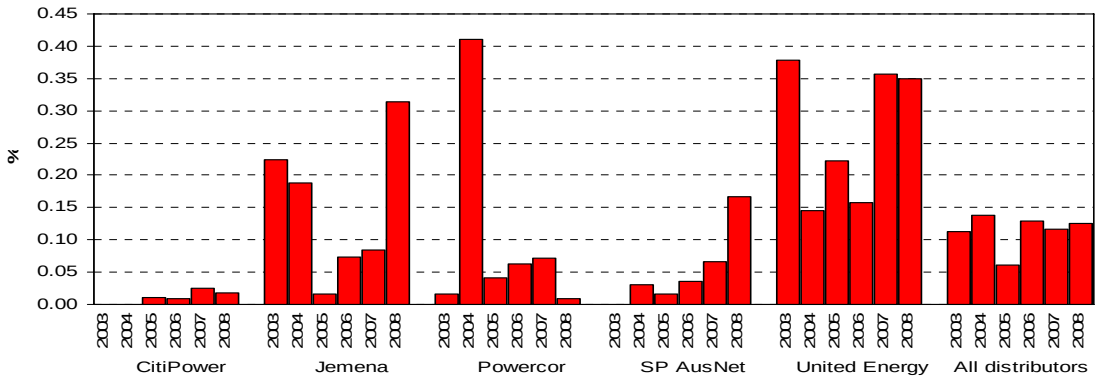
[a] Jemena chooses to pay twice this amount. [b] CitiPower and Powercor choose to pay twice this amount for appointments and connections, and four times this amount for streetlights. [c] Paid only to the first customer reporting from the immediately neighbouring residence or business.

Figures 4.1 and 4.2 show the number of occasions 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. Figure 4.3 shows the percentage of broken streetlights that were not repaired by the 'fix by' date, which is normally within seven business days of a fault report.

Meeting appointments on time

The trend for arriving late for appointments has been steady over 2003–08, representing a good level of performance over the period. In 2008, distributors made 46 appointments which were not commenced within 15 minutes of the arranged time. Of these, United Energy had 29 late appointments out of the 8279 booked with its customers.

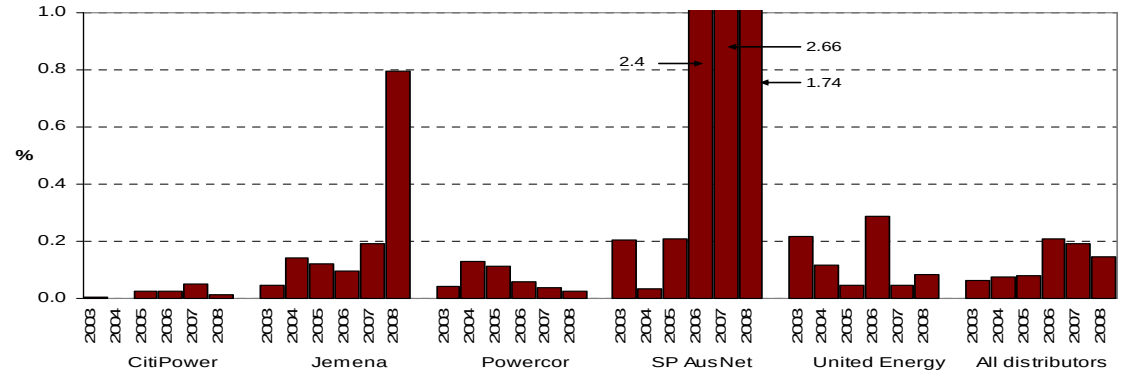
Figure 4.1 **Appointments not met on time**
Percentage of appointments made



Making new connections by the agreed date

Figure 4.2 shows that, in 2008, SP AusNet reported making more than 13 000 connections, including 234 instances (1.74 per cent of connections) where the distributor did not complete the connection by the required date. The numbers were similar in 2006 and 2007, but do represent an improvement on those years, despite the 2 April 2008 which lead to increased delays in connections for that month. Jemena, who reported 11 late connections in 2007, increased to 55 late connections in 2008. The proportion of connections that were made later than the agreed date decreased from 19 in every 10 000 appointments in 2007 to 15 in every 10 000 appointments in 2008, continuing the steady decline in late appointments since 2006.

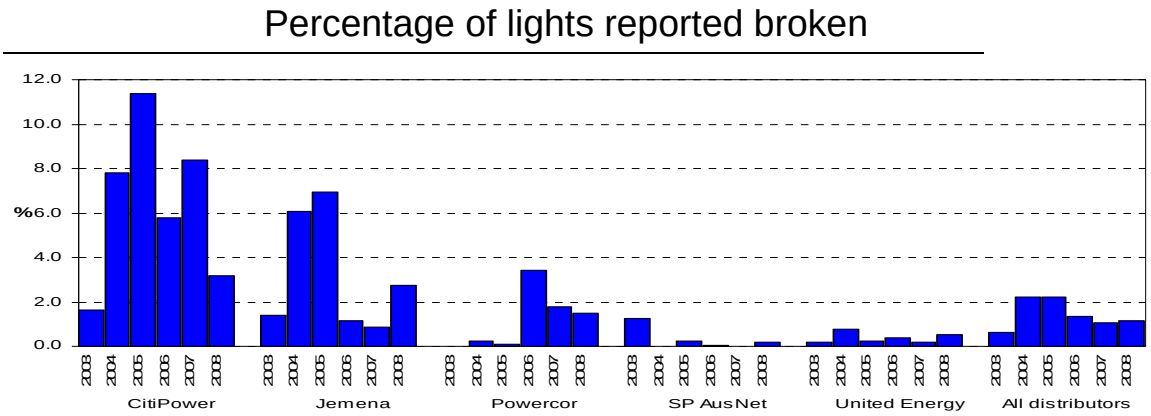
Figure 4.2 Connections not made by agreed date
Percentage of new connections



Repairing streetlights within the agreed time

Figure 4.3 reports the performance of the distributors in repairing streetlights within the seven business days prescribed by the Public Lighting Code.[15]

Figure 4.3 **Streetlights not fixed by required time**



Only Jemena reported a significant increase in the number of streetlights that were not repaired by that deadline for 2008. United Energy experienced a slight increase in the measure; however, its figures remain comparatively low. CitiPower reported a significant decrease in the number of streetlights not fixed by the required time, representing a fall of 91 in number.

Overall, the number of GSL payments increased by 56 per cent, from 88 in 2007 to 137 in 2008. Jemena reported the highest number (52 payments, up from 17 in 2007), SP AusNet reported making only 2 payments and United Energy reported an increase in payments from 4 in 2007 to 32 in 2008. The average time for a distributor to repair a streetlight varied from 1 day for SP AusNet and United Energy to 4 days for CitiPower.

4.2 Guaranteed service levels — reliability payments

The price review requires the distributors 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 4.2 provides the details of the new GSL scheme for 2006–10, compared to the previous scheme (for 2001–05).

[15] Available from the Commission's website at www.esc.vic.gov.au/public/Energy/Regulation+and+Compliance/Codes+and+Guidelines/

Table 4.2 **Guaranteed service level payments to customers for poor reliability**

Thresholds and payments for the 2001–05 and 2006–10 regulatory 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	12 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 4.3 summarises payments that the distributors made in 2007 and 2008 for not meeting the supply reliability thresholds for the duration and number of supply interruptions. This table shows that customers of the two distributors with extended rural networks experienced very different outcomes in 2008:

- Payments made by SP AusNet for long restoration times fell by more than 67 per cent in number and total value and were made to 1.2 per cent of SP AusNet's customers. Payments for low reliability also decreased, by 77 per cent in number and 73 per cent in total value, and were made to more than 0.6 per cent of customers.

- Payments made by Powercor for long restoration times remained relatively constant in number and total value, but payments for low reliability fell by 73 per cent in number and in value.

- Payments for frequent momentary interruptions decreased by almost 80 per cent in number and total value for Powercor, but increased by 32 per cent for SP AusNet.

Table 4.3 **Guaranteed service level payments for supply reliability**

Long supply restoration time

	Number		Number per 1000 customers		Amount paid ($)	
	2007	*2008*	*2007*	*2008*	*2007*	*2008*
Payments due to long duration of supply interruption						
CitiPower	-	411	-	1.4	-	$41,100
Jemena	5	12	-	-	$500	$1550
Powercor	4,420	4,358	6.6	6.4	$422,200	$452,200
SP AusNet	21,994	7,311	37.1	12.1	$2,708,600	$845,000
United Energy	53	620	0.1	1.0	$5,950	$90,800
All distributors	**26,472**	**12,708**	**10.7**	**5.1**	**$3,137,250**	**$1,429,900**
Payments due to low supply reliability, by distributor						
CitiPower	-	-	-	-	-	-
Jemena	-	-	-	-	-	-
Powercor	3,203	730	4.8	1.1	$318,200	$73,000
SP AusNet	14,265	3920	24.1	6.5	$1,489,750	$401,400
United Energy	-	2	-	-	-	$200
All distributors	**17 468**	**4652**	**7.0**	**1.9**	**$1,807,950**	**$474,600**
Payments due to frequent momentary interruptions, by distributor						
CitiPower	-	-	-	-	-	-
Jemena	-	-	-	-	-	-
Powercor	5,889	1251	8.8	1.8	$163,960	$32,695
SP AusNet	8,407	11344	14.2	18.8	$236,545	$299,290
United Energy	-	-	-	-	-	-
All distributors	**14 296**	**12595**	**5.8**	**5.0**	**$400,505**	**$331,985**
Total supply reliability related GSL payments to customers						
CitiPower					**-**	**$49,200**
Jemena					**$500**	**$1,550**
Powercor					**$904,360**	**$557,895**
SP AusNet					**$4,434,895**	**$1,545,690**
United Energy					**$5,950**	**$91,000**
All distributors					$5,345,705	$2,245,335

4.3 Customer complaints

4.3.1 Complaints to distributors

Figure 4.4 shows that all distributors reported a steady or improving performance from 2007 to 2008, in terms of complaints per thousand customer.

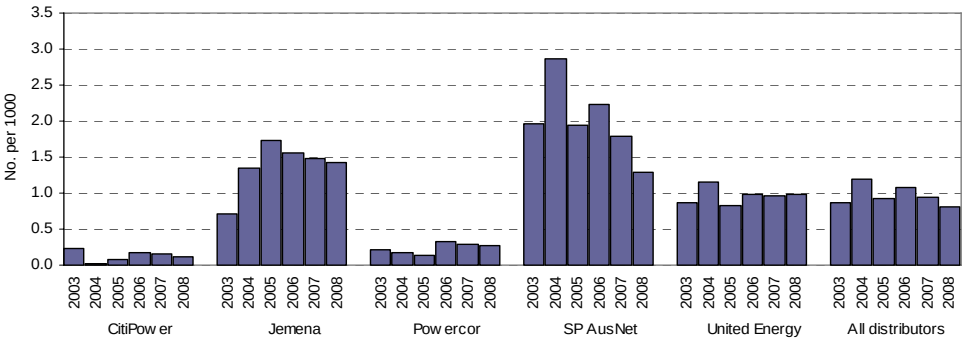
CitiPower and Powercor have consistently reported low numbers of complaints per thousand customers. Although they recorded small increases in 2006, both improved again in 2008. Over the 2003–08 period, United Energy has reported the next lowest rate of complaints per thousand customers and its performance has remained steady at that level.

Jemena reported a small improvement from 2007 to 2008 which continued its gradual improvement. SP AusNet reported a significant improvement, corresponding to a reduction of 277 in the total number of complaints over the year. However, SP AusNet

customers complain proportionately 5 times more than Powercor, a similar urban/rural mix business.

Figure 4.4 Normalised number of complaints to distributors

Per 1000 customers

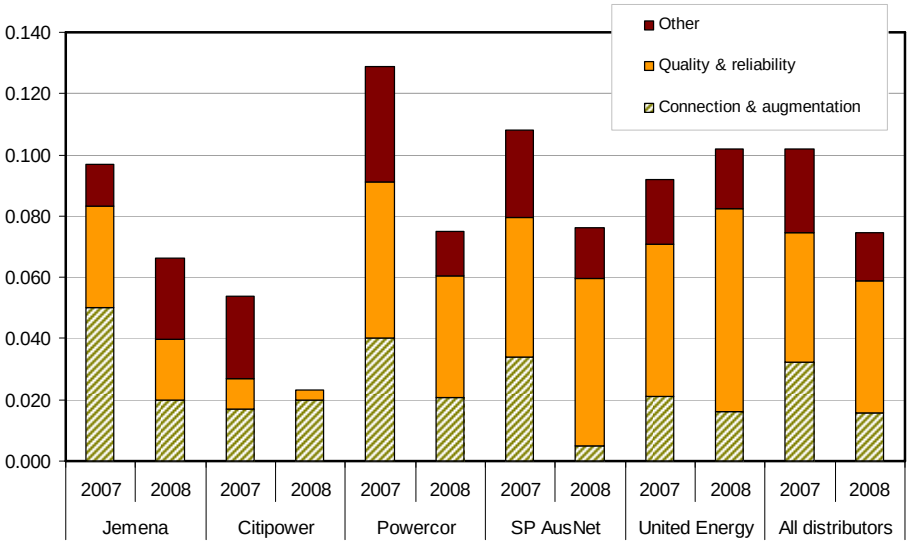


4.3.2 Complaints to Energy and Water Ombudsman (Victoria)

Figure 4.5 shows the number of complaints against the distributors that the Energy and Water Ombudsman (Victoria) (EWOV) received for full investigation in 2008 (see box 4.1 for explanation).

Figure 4.5 **Normalised number of complaints received by EWOV for full investigation**

Per 1000 customers



Data source: EWOV

Jemena and Powercor more than halved their complaints in respect to connection and augmentation. SP Ausnet significantly drop their amount of complaints received for connection and augmentation from 0.034 per 1000 customers to 0.005 per 1000 customers. Jemena however performed worse in receiving other complaints with SP AusNet and United performing marginally worse in the quality and reliability complaints area.

Overall the companies performed a lot better from the previous years with the aggregate amount of complaints halving for both connection and augmentation and other.

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 that is a participant in the EWOV scheme, where a response or resolution is explicitly or implicitly expected.

The material above shows only 'complaints received for full investigation'. EWOV's normal process is to fully investigate complaints that remain unresolved following two or more contacts between the customer and the provider. In 2008, EWOV received 187 electricity distribution complaints for full investigation.

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

1. 'complaints referred to company': 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. In the 2008 / 09, 429 electricity distribution complaints were referred to providers.
2. 'complaints referred to higher-level contact': 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 2008 / 09, EWOV referred 680 electricity distribution complaints to higher-level contacts in the electricity distribution businesses.

From mid-June 2007, EWOV had in place an interim case receipt process – offering customers who had had two or more contacts with their company a final opportunity to resolve their complaint by referral to a higher-level representative at the company, if they agree. This interim process was introduced in response to rising complaint volumes in the energy retail sector. Without this interim process, EWOV would have received an additional 321 electricity distribution complaints for investigation (that is, in addition to the 187 shown above).

5 Long Term Health Assessment

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

The health card consists of measures to indicate whether a distributor 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 business, which may be due to an increase in the underlying risks assumed by the distributor. The criteria therefore include comparisons of each distributor's 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 distributors. Overall, the distributors have a reasonably robust long-term business management strategy. The number of red and orange lights was reduced from seven to five. However, the AER noted the following potential issues:

- Jemena's assessment included one 'orange' rating in the area of network planning, reflecting an increased level of customer load at risk due to late completion of projects.

- CitiPower's assessment included two 'orange' ratings: (1) the number of electrical incidents was rated 'orange', reflecting an increase from 70 incidents in 2007 to 97 incidents in 2008; and (2) there were two incidents that the connection offers to customers were revised following contact by the ESCV.

- Powercor reported one incident of connection offer to a customer was revised following contact by the ESCV (orange light).

- The quality of supply measures for SP AusNet was highlighted 'red' rating because its reported number of voltage variation events was 59 per cent higher than that of the previous year.

Table 5.1 **Health card status, electricity distributors, 2008**[16]

Key  **= Red**  **= Orange**  **= Green**

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

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

6 Appendix 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.

A.1 Sources of information

The analysis of the distributors' performances is based on:

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

A.2 Accuracy of reporting

A.2.1 Financial information

All financial results are inflation adjusted — the distribution price controls permit distributors 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.[17]

A.2.2 Reliability of supply and customer service information

Each distributor undertook a regulatory compliance audit for in 2009 as required by its distribution licence. The scope of the audit included the accuracy of selected performance information reported by the distributors to the AER. The audits were conducted by independent auditors nominated by the distributors and approved by the Commission. The audit findings indicated that distributors generally maintained a satisfactory level of accuracy in reporting key performance indicators. Errors were typically less than 2 per cent.

A.3 Health card measures

A 'health card' summary of leading indicators has been developed to identify changes in distributors' performance which may lead to deterioration of network services over time. The health card is presented in table 6.1 in the body of the report. The following defines the measures that are included in the health card.

[17] 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 [b]	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 75 per cent or less, 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		
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. [b] Each compliance item is to be rated on a scale of 1 to 5 for compliance

and a scale of 1 to 5 for the impact of non-compliance. Score for each compliance item is the product of the compliance rating and the impact rating.

A.4 Characteristics of the distribution businesses

Jemena

Jemena supplies electricity to 302,000 customers (about 88 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 6 000 km of powerline (about 80 per cent through the urban area) on 92 000 poles — although around 21 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.

CitiPower

CitiPower Pty supplies just over 300 000 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 52,000 poles. About 17 per cent (by length) is classed as 'CBD'; nearly 89 per cent of CBD lines is underground. It has common ownership and a common management structure with Powercor.

Powercor

Powercor Australia Ltd supplies nearly 680,000 customers (85 per cent residential) in 150 000 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 83 000 km of powerline (65 per cent classified as 'rural') on 484,000 poles, and just over less than 5 per cent of its length runs underground.

SP AusNet

SPI Electricity Pty Ltd trades as SP AusNet. The business supplies 602,000 customers (88 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 46 000 km of powerlines (89 per cent rural and 83 per cent above ground) and 320 200 poles. Its related companies also operate the electricity transmission network and one of three gas distribution networks in Victoria.

United Energy

United Energy Distribution Pty Ltd supplies 617,000 customers (90 per cent residential) in a 1 500 km^2 area from the south-eastern suburbs, southwards down the Nepean peninsula. Powerlines on the network are more than 13 000 km long (25 per cent rural, 80 per cent above ground) on 208 000 poles.

7 Appendix B: Financial information tables

Table B.1 **Aggregate financial information – 2004 dollars (see notes)**
Jemena

Jemena	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	136.7	129.7	131.2	132.3	133.0	137.7	137.5	137.6
Actual revenue	143.5	128.7	134.0	138.9	146.3	143.3	155.0	150.7
Forecast O & M expenditure	47.6	48.4	47.1	47.9	47.7	54.3	55.2	56.6
Reported O & M expenditure	49.0	49.2	49.8	47.8	49.0	51.6	54.0	46.8
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
Reported capital expenditure	35.8	28.1	30.9	32.1	36.8	49.1	67.1	53.6
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
Actual customer contributions	8.2	6.6	7.0	4.6	4.9	7.4	9.2	9.8
Forecast average asset value	561.7	597.3	608.1	618.8	630.8	587.7	601.5	610.7
Reported average asset value	555.6	572.8	562.8	554.3	547.6	550.9	570.9	590.4
Adjusted average asset value	-	582.6	572.7	564.1	-	-	-	-

Notes to whole of table B.1:

- Before 2001 Meter Data Services and Public Lighting were prescribed services. From 2001 they have been reported as excluded services. Therefore costs relating to these services are included in the data in Appendix A for the years up to and including 2000. For 2001 and subsequent years costs relating to Meter Data Services and Public Lighting are excluded from the data.
- Adjusted operational and maintenance (O & M) expenditure values were calculated for the 2000–04 period in the 2006–10 Price Review. The amounts presented here are in real 1999 dollar value and therefore differ from those reported in volume 2 of the 2006-10 Price Review which are in real 2004 dollar value.
- The asset values of the distributors are still subject to final review. An adjustment, if needed, will not have significant impact on the performance indicators contained in this report.

Table B.1 **(continued)**
CitiPower and Powercor

CitiPower	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	191.5	184.7	187.5	190.0	192.7	179.6	178.9	178.5
Actual revenue	194.3	184.3	187.5	199.9	199.9	194.5	196.2	190.1
Forecast O & M expenditure	69.8	55.3	55.4	56.1	56.7	37.8	39.3	39.7
Reported O & M expenditure	41.6	33.6	29.4	47.3	25.3	30.9	34.7	35.5
Adjusted O & M expenditure	-	20.5	25.0	31.7	-	-	-	-
Forecast capital expenditure	58.4	72.7	77.9	72.1	61.2	103.0	105.9	101.4
Reported capital expenditure	59.3	65.5	62.3	66.9	71.7	83.3	66.8	75.9
Adjusted capital expenditure	-	73.7	65.7	78.6	-	-	-	-
Forecast customer contributions	8.0	7.7	7.7	7.7	7.7	5.7	5.6	5.5
Actual customer contributions	5.6	8.1	8.9	10.1	11.7	7.4	12.3	26.3
Forecast average asset value	862.9	917.8	948.8	977.7	997.0	1010.0	1048.9	1085.7
Reported average asset value	836.4	926.4	945.4	964.0	985.8	1006.7	1016.0	1020.2
Adjusted average asset value	-	924.9	941.5	957.8	-	-	-	

Powercor	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	378.4	368.5	373.4	379.1	383.6	353.5	354.4	355.9
Actual revenue	398.5	372.8	399.1	408.8	420.4	383.9	374.8	385.9
Forecast O & M expenditure	121.8	118.7	120.5	118.9	120.4	127.1	130.5	133.4
Reported O & M expenditure	114.3	90.4	100.0	110.2	120.3	120.6	107.0	115.7
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
Reported capital expenditure	128.0	108.1	120.7	126.7	136.9	166.0	159.2	167.1
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
Actual customer contributions	30.6	32.0	38.8	37.1	35.3	31.0	60.4	48.8
Forecast average asset value	1526.5	1598.1	1607.5	1628.0	1660.1	1654.5	1723.9	1809.4
Reported average asset value	1501.3	1610.5	1605.9	1611.1	1627.4	1671.4	1728.0	1779.7
Adjusted average asset value	-	1599.4	1589.5	1588.8	-	-	-	-

Table B.1 **(continued)**
SP AusNet and United Energy

SP AusNet	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	297.8	288.9	290.0	293.3	297.2	309.2	312.9	316.1
Actual revenue	306.0	289.6	308.9	300.1	311.4	297.9	318.7	329.0
Forecast O & M expenditure	107.2	102.8	106.4	105.5	105.3	123.3	126.2	131.0
Reported O & M expenditure	97.0	98.5	102.3	94.1	86.9	89.4	112.4	121.6
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
Reported capital expenditure	78.6	57.2	79.7	100.8	162.9	121.0	128.2	185.6
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
Actual customer contributions	19.5	23.0	29.9	27.6	19.6	24.3	18.8	17.8
Forecast average asset value	1214.5	1306.3	1343.3	1371.0	1402.5	1341.2	1400.1	1455.3
Reported average asset value	1167.6	1229.1	1219.8	1235.5	1294.7	1364.4	1412.8	1484.9
Adjusted average asset value	-	1225.7	1215.1	1230.1	-	-	-	-

United Energy	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	268.0	265.6	267.4	268.6	270.7	267.0	266.6	265.9
Actual revenue	284.2	284.5	303.2	306.5	297.8	278.5	280.4	279.5
Forecast O & M expenditure	95.9	87.9	85.7	86.0	85.4	87.6	89.5	92.3
Reported O & M expenditure	94.6	78.4	84.7	85.6	82.9	85.6	81.6	83.9
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
Reported capital expenditure	66.9	78.4	79.3	77.3	71.6	91.4	80.8	100.3
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
Actual customer contributions	14.7	11.7	7.7	5.9	12.3	11.4	17.1	12.4
Forecast average asset value	1194.5	1255.8	1291.4	1316.4	1339.0	1229.2	1243.8	1257.5
Reported average asset value	1177.6	1204.1	1206.2	1201.5	1187.2	1177.2	1170.2	1166.1
Adjusted average asset value	-	1197.2	1198.9	1194.2	-	-	-	-

Table B.1 **(continued)**
All distributors

All Distributors	*Year ending 31 December*							
Revenue, expenditure, customer contributions and asset value ($m)	*1996–2001 av'ge*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Forecast revenue	1526.9	1237	1250	1263	1277	1247	1250	1254.0
Actual revenue	1591.8	1260	1333	1354	1376	1298	1325	1335.2
Forecast O & M expenditure	530.7	413	415	414	416	430	441	453.0
Reported O & M expenditure	475.7	350	366	385	364	378	390	403.5
Adjusted O & M expenditure	-	315	337	352	-	-	-	-
Forecast capital expenditure	439.4	482	470	475	487	563	576	612.3
Reported capital expenditure	442.1	337	373	404	480	511	502	582.4
Adjusted capital expenditure	-	416	449	490	-	-	-	-
Forecast customer contributions	102.9	35	36	37	38	53	54	53.5
Actual customer contributions	94.3	81	92	85	84	82	118	115.1
Forecast average asset value	6432.1	5675	5799	5912	6029	5823	6018	6218.6
Reported average asset value	6288.6	5540	5537	5562	5638	5765	5893	6034.2
Adjusted average asset value	-	5530	5518	5535	-	-	-	1254.0

Table B.2 **Forecast return on distribution assets**
Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	10.2	7.5	7.4	7.0	6.8	8.0	7.2	6.5
CitiPower	10.6	9.4	9.2	8.9	8.9	7.6	7.0	6.6
Powercor	11.1	8.3	8.4	8.8	9.1	7.5	6.9	6.3
SP AusNet	11.3	8.3	8.0	8.4	8.5	8.5	7.6	6.7
United Energy	10.3	7.5	7.4	7.0	6.8	8.0	6.8	6.0

Table B.3 **Average reported return on distribution assets**
Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	11.9	7.5	8.0	9.0	10.0	10.0	10.7	10.8
CitiPower	14.4	11.6	11.9	11.0	12.9	9.8	9.4	8.5
Powercor	14.4	10.3	11.3	11.3	11.6	9.6	9.4	9.0
SP AusNet	14.3	9.2	10.7	10.8	11.7	10.0	8.9	8.0
United Energy	11.5	11.0	11.6	11.3	10.6	8.8	9.1	8.4

Table B.4 **Energy distributed**
Difference between forecast and actual – Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	4.1	-4.6	-4.8	-5.4	-7.3	1.5	2.7	4.3
CitiPower	6.9	1.8	0.6	4.1	3.2	4.8	4.8	3.4
Powercor	4.6	2.0	-0.1	-0.4	-2.1	1.2	0.7	0.9
SP AusNet	5.5	-0.2	8.0	4.6	4.8	0.3	-1.2	1.3
United Energy	-2.2	1.8	3.6	4.1	3.6	2.7	1.0	-0.6

Table B.5 **Distribution revenue**
Difference between forecast and actual – Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	4.98	-0.8	2.1	5.0	10.0	4.1	12.7	9.57
CitiPower	1.42	-0.2	0.0	5.2	3.7	8.3	9.6	6.51
Powercor	5.20	1.2	6.9	7.8	9.6	8.6	5.8	8.40
SP AusNet	2.73	0.2	6.5	2.3	4.8	-3.7	1.9	4.07
United Energy	6.02	7.1	13.4	14.1	10.0	4.3	5.2	5.11

Table B.6 **Operating & maintenance expenditure**
Difference between forecast and actual – Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	2.9	1.7	5.8	-0.2	2.8	-5.0	-2.1	-17.4
CitiPower	-40.4	-39.2	-46.8	-15.7	-55.4	-18.1	-11.8	-10.6
Powercor	-6.2	-23.8	-17.0	-7.4	0.0	-5.1	-18.0	-13.3
SP AusNet	-9.6	-4.2	-3.8	-10.8	-17.5	-27.5	-11.0	-7.2
United Energy	-1.3	-10.7	-1.2	-0.5	-2.9	-2.2	-8.9	-9.1

Table B.7 **Capital expenditure**
Difference between forecast and actual – Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	14.9	-40.0	-38.8	-36.6	-35.3	-11.0	38.7	6.8
CitiPower	0.4	-9.8	-20.1	-7.2	17.1	-19.1	-36.9	-25.2
Powercor	12.5	-15.0	-4.2	-15.2	-4.3	4.9	-15.3	-15.9
SP AusNet	-9.7	-52.7	-25.4	3.4	47.3	-13.5	-1.7	24.9
United Energy	-1.8	-31.2	-27.2	-26.4	-38.0	-14.6	-22.2	-11.6

Table B.8 **Customer contributions to capital expenditure**
Difference between forecast and actual – Percent

	1996–2001 average	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	32.3	290.4	296.9	155.5	164.5	67.6	105.5	131.4
CitiPower	-26.4	5.1	14.8	31.8	53.4	29.1	121.8	377.0
Powercor	14.9	101.8	140.0	120.7	100.6	20.0	131.2	88.0
SP AusNet	-1.1	188.5	242.8	197.2	99.6	88.9	39.4	28.5
United Energy	89.6	654.7	476.0	415.8	992.9	171.4	312.6	214.0

Table B.9 **Network revenue per MWh distributed**
2004 dollar values

	1996–2001 av'ge	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2006–08 av'ge*
Jemena	37.7	32.3	32.7	33.3	35.0	33.5	35.4	33.6	34.2
CitiPower	39.9	34.5	34.7	35.0	34.4	32.6	32.3	31.2	32.0
Powercor	47.9	39.8	42.4	42.4	43.2	37.8	36.4	36.7	37.0
SP AusNet	52.0	44.8	43.7	42.9	43.6	40.3	42.5	41.7	41.5
United Energy	43.1	40.0	41.2	40.8	39.0	35.4	35.5	35.4	35.3

Table B.10 **Network revenue per customer**
2004 dollar values

	1996–2001 av'ge	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2006–08 av'ge*
Jemena	576.1	483.7	491.4	497.6	511.2	488.2	517.2	503.6	503.0
CitiPower	785.9	696.7	694.6	720.3	698.5	663.6	659.1	630.6	651.1
Powercor	705.5	623.0	651.3	649.3	652.6	584.4	560.5	561.0	568.6
SP AusNet	613.2	534.1	556.8	531.4	542.7	511.0	538.1	546.6	531.9
United Energy	515.1	489.0	510.4	508.6	488.5	451.9	452.5	452.8	452.4

Table B.11 **Asset value per MWh distributed**
Reported average asset value - 2004 dollar values

	1996–2001 av'ge	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2006–08 av'ge*
Jemena	146.2	142.9	136.7	132.0	130.0	127.6	129.2	130.4	129.1
CitiPower	171.5	173.6	175.0	168.6	169.8	168.5	167.1	167.2	167.6
Powercor	180.2	171.8	170.5	166.9	167.2	164.7	167.8	169.3	167.2
SP AusNet	197.9	190.0	172.4	176.8	181.2	184.4	188.4	188.3	187.0
United Energy	178.5	169.4	163.9	159.8	155.5	149.5	146.8	147.7	148.0

Table B.12 **Electricity distributed**
Gigawatt hours (GWh)

	1996–2001 av'ge	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	3817	3 988	4 093	4 165	4 173	4 278	4 379	4489
CitiPower	4879	5 336	5 404	5 718	5 805	5 975	6 079	6100
Powercor	8338	9 376	9 417	9 652	9 736	10 148	10 299	10 510
SP AusNet	5908	6 469	7 076	6 987	7 147	7 398	7 500	7886
United Energy	6611	7 108	7 361	7 520	7 636	7 873	7 891	7896
All distributors	**29 553**	**32 277**	**33 351**	**34 042**	**34 497**	**35 672**	**36 148**	**36 880**

Table B.13 **Maintenance expenditure**
As a percentage of asset value – Percent

	2003	*2004*	*2005*	*2006*	*2007*	*2008*	*% change 2007–08*
Jemena	2.3	2.4	2.5	3.3	2.6	2.0	-21.9
CitiPower	1.1	1.7	1.3	1.1	1.3	1.3	3.8
Powercor	3.0	3.1	3.6	3.7	3.6	3.4	-4.2
SP AusNet	3.0	3.0	2.7	2.5	2.6	3.1	21.3
United Energy	2.2	2.3	2.2	2.1	2.0	2.1	7.7

Table B.14 **Capital expenditure**
As a percentage of asset value – Percent

	2003	*2004*	*2005*	*2006*	*2007*	*2008*	*% change 2007–08*
Jemena	5.5	5.8	6.7	8.9	11.8	9.1	-22.7
CitiPower	6.6	6.9	7.3	8.3	6.6	7.4	13.2
Powercor	7.5	7.9	8.4	9.9	9.2	9.4	2.0
SP AusNet	6.5	8.2	12.6	8.9	9.1	12.5	37.7
United Energy	6.6	6.4	6.0	7.8	6.9	8.6	24.7

8 Appendix 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. ***SAIDI** is calculated as the sum of the duration of each customer interruption (in minutes), divided by the total number of connected customers averaged over the year.*
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** [a]

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 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*	
	2008	*Increase from 2007*	*2008*	*Increase from 2007*	*2008*	*Increase from 2007*
Jemena	268,848	1.9%	33,859	-5.3%	302,707	1.0%
CitiPower	249,012	0.7%	51,730	2.8%	300,741	1.1%
Powercor	574,763	1.8%	104,513	0.5%	679,275	1.6%
SP AusNet	530,563	1.8%	71,608	0.5%	602,171	1.7%
United Energy	555,245	-0.3%	62,147	-0.5%	617,391	-0.4%
All distributors	**2,178,430**	**1.1%**	**323,856**	**0.0%**	**2,502,285**	**1.0%**

Table C.4 **Supply reliability by distribution business**

Actual results, no abnormal events excluded – All distributors and Jemena

All Distributors	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	17.8	26.4	26.8	30.0	31.1	27.8	-11%
Unplanned	143.6	105.8	138.4	135.5	165.8	200.4	0.2
Total	**161.4**	***132.3***	**165.2**	**165.4**	**196.9**	**228.3**	**16%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.08	0.13	0.12	0.13	0.13	0.12	-2%
Unplanned	2.10	1.75	1.68	1.81	2.00	1.57	-0.2
Total	**2.18**	***1.88***	**1.80**	**1.94**	**2.12**	**1.70**	**-20%**
Average Interruption Duration (CAIDI)							
Planned	211.1	203.1	220.0	229.0	244.7	222.7	-9%
Unplanned	68.5	60.6	82.5	75.0	83.0	127.6	0.5
Total	**74.0**	***70.5***	**91.9**	**85.4**	**92.7**	**134.6**	**45%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	1.90	1.84	1.99	1.56	1.70	1.62	-5%
Part Feeder	1.24	1.42	1.04	0.80	0.96	1.04	8%
Number of outages							
Planned	6,579	6,663	7,333	8,653	8,583	9,494	11%
Unplanned	18,389	17,001	19,020	18,541	19,185	19,374	0.0
Momentary	2,171	2,116	2,313	1,912	2,154	2,017	-6%
Total	**27,139**	***25,780***	**28,666**	**29,106**	**29,922**	**30,885**	**3%**

Jemena	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	6.2	6.7	6.7	7.7	9.5	10.3	9%
Unplanned	95.2	59.3	95.0	91.0	111.5	115.6	4%
Total	**101.4**	***66.0***	**101.7**	**98.8**	121.0	**125.9**	**4%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.03	0.03	0.03	0.03	0.03	0.04	20%
Unplanned	1.65	0.98	1.51	1.37	1.82	1.29	-29%
Total	**1.68**	***1.01***	**1.54**	**1.40**	1.85	**1.33**	**-28%**
Average Interruption Duration (CAIDI)							
Planned	199.8	220.6	246.8	260.6	271.3	247.1	-9%
Unplanned	57.7	60.5	63.0	66.5	61.3	89.7	46%
Total	**60.3**	***65.3***	**66.2**	**70.6**	**65.2**	**94.6**	**45%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	0.74	0.62	0.66	0.75	0.74	0.53	-28%
Part Feeder	0.21	0.17	0.16	0.24	0.22	0.17	-22%
Number of outages							
Planned	345	282	397	498	437	470	8%
Unplanned	922	768	912	1,031	949	982	3%
Momentary	93	104	100	114	102	106	4%
Total	**1,360**	***1,154***	**1,409**	**1,643**	**1,488**	**1,558**	**5%**

Table C.4 **(continued)**

Actual results, no abnormal events excluded – CitiPower and Powercor

CitiPower	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	6.6	7.8	6.5	5.1	4.2	4.3	4%
Unplanned	23.8	21.4	41.5	27.0	88.1	44.7	-49%
Total	**30.5**	***29.2***	**48.0**	**32.2**	**92.3**	**49.0**	**-47%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.02	0.03	0.02	0.02	0.02	0.02	8%
Unplanned	0.50	0.48	0.51	0.55	0.86	0.53	-38%
Total	**0.53**	***0.51***	**0.53**	**0.57**	**0.87**	**0.55**	**-37%**
Average Interruption Duration (CAIDI)							
Planned	301.1	289.9	289.3	247.9	255.0	245.4	-4%
Unplanned	47.2	44.2	81.7	49.3	102.9	84.1	-18%
Total	**57.8**	***57.1***	**90.6**	**56.5**	**105.7**	**89.3**	**-16%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	0.19	0.24	0.26	0.15	0.14	0.14	0.13
Part Feeder							
Number of outages							
Planned	219	216	259	261	205	216	5%
Unplanned	538	522	545	675	837	617	-26%
Momentary	62	67	34	42	38	49	29%
Total	**819**	***805***	**838**	**978**	**1,080**	**882**	**-18%**

Powercor	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	11.7	18.3	16.7	18.7	22.3	23.2	4%
Unplanned	194.4	124.5	141.3	198.5	209.9	133.5	-36%
Total	**206.1**	***142.8***	**158.0**	**217.2**	**232.2**	**156.7**	**-33%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.07	0.13	0.15	0.12	0.13	0.13	-2%
Unplanned	2.49	1.65	1.84	2.47	2.32	1.64	-30%
Total	**2.56**	***1.78***	**1.99**	**2.59**	**2.46**	**1.77**	**-28%**
Average Interruption Duration (CAIDI)							
Planned	166.9	141.5	111.2	160.6	165.7	176.8	7%
Unplanned	77.9	75.5	76.7	80.3	90.4	81.6	-10%
Total	**80.4**	***80.3***	**79.3**	**83.9**	**94.5**	**88.7**	**-6%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	2.29	2.12	2.66	1.95	2.22	2.01	-10%
Part Feeder	1.35	1.75	1.83	1.25	1.45	1.26	-13%
Number of outages							
Planned	2,352	3,004	3,197	3,817	3,282	3,264	-1%
Unplanned	6,760	6,191	6,778	6,430	6,153	7,681	25%
Momentary	758	705	894	662	768	661	-14%
Total	**9,870**	***9,900***	**10,869**	**10,909**	**10,203**	**11,606**	**14%**

Table C.4 **(continued)**

Actual results, no abnormal events excluded – SP AusNet and United Energy

SP AusNet	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	36.0	62.9	71.1	83.6	77.4	64.3	-17%
Unplanned	253.5	206.2	261.0	220.9	245.4	300.8	23%
Total	**289.5**	**269.1**	**332.1**	**304.4**	**322.8**	**365.1**	**13%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.18	0.30	0.27	0.35	0.29	0.29	0%
Unplanned	3.66	3.71	2.73	2.77	2.82	2.36	-17%
Total	**3.84**	***4.01***	**3.00**	**3.11**	**3.11**	**2.64**	**-15%**
Average Interruption Duration (CAIDI)							
Planned	198.7	208.6	268.4	241.7	270.1	224.0	-17%
Unplanned	69.3	55.6	95.6	79.8	87.0	127.7	47%
Total	**75.4**	***67.1***	**110.9**	**97.8**	**103.8**	**138.2**	**33%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	3.60	3.74	3.54	3.00	3.26	3.34	2%
Part Feeder	3.25	3.59	1.89	1.50	2.04	1.99	-2%
Number of outages							
Planned	1,966	2,066	2,407	3,089	3,398	4,534	33%
Unplanned	8,462	8,056	9,170	8,441	8,843	7,899	-11%
Momentary	885	950	951	832	949	939	-1%
Total	**11,313**	***11,072***	**12,528**	**12,362**	**13,190**	**13,372**	**1%**

United Energy	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Average Minutes off Supply per Customer (SAIDI)							
Planned	17.6	18.1	14.3	14.1	20.3	17.7	-13%
Unplanned	64.3	51.8	84.4	60.7	106.3	295.1	178%
Total	**81.9**	***69.9***	**98.6**	**74.8**	**126.5**	**312.8**	**147%**
Average Number of Interruptions per Customer (SAIFI)							
Planned	0.06	0.06	0.05	0.05	0.07	0.05	-17%
Unplanned	1.15	0.93	1.12	1.00	1.50	1.39	-8%
Total	**1.21**	***0.99***	**1.17**	**1.04**	**1.57**	**1.44**	**-8%**
Average Interruption Duration (CAIDI)							
Planned	284.6	291.1	303.4	310.9	305.6	323.8	6%
Unplanned	56.1	55.9	75.0	60.8	70.8	212.6	200%
Total	**67.8**	***70.8***	**84.2**	**71.7**	**80.7**	**216.8**	**169%**
Average Number of Momentary Interruptions per Customer (MAIFI)							
Whole Feeder	1.24	1.04	1.32	0.86	0.88	0.80	-9%
Part Feeder	0.31	0.29	0.31	0.32	0.23	0.44	95%
Number of outages							
Planned	1,697	1095	1,073	988	1,261	1,010	-20%
Unplanned	1,707	1464	1,615	1,964	2,328	2,161	-7%
Momentary	373	290	334	262	278	258	-7%
Total	**3,777**	2,849	**3,022**	**3,214**	**3,867**	**3,429**	**-11%**

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	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
	2004	60.57	21.92	17.37	0.14	0.00
	2003	52.30	14.54	27.13	6.03	0.00
	2002	52.04	22.86	24.89	0.21	0.00
	2001	44.77	25.45	26.76	1.43	1.59
CitiPower	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
	2004	83.31	10.77	5.84	0.08	0.00
	2003	84.90	9.36	5.39	0.34	0.01
	2002	78.89	13.24	6.83	1.04	0.01
	2001	63.15	24.45	12.37	0.03	0.00
Powercor	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
	2004	31.32	29.02	27.25	10.45	1.95
	2003	19.69	17.69	37.33	21.81	3.48
	2002	24.68	18.49	34.05	18.91	3.88
	2001	22.74	21.53	34.33	16.27	5.13
SP AusNet	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
	2004	16.40	15.28	35.18	22.62	10.52
	2003	12.12	15.23	40.79	21.72	10.15
	2002	20.87	12.89	36.77	21.01	8.47
	2001	16.03	19.91	37.61	17.16	9.28
United Energy	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
	2004	58.53	21.25	18.95	1.25	0.01
	2003	50.76	31.10	15.82	2.33	0.00
	2002	44.99	28.82	23.67	2.39	0.12
	2001	60.31	21.32	15.80	2.56	0.00
All Distributors	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
	2004	44.31	20.72	23.33	8.58	3.06
	2003	37.49	19.18	27.63	12.34	3.36
	2002	38.84	19.68	27.63	10.77	3.08
	2001	38.32	21.91	26.78	9.23	3.77

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	*Distributor*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
CBD	CitiPower	13.5	17.4	18.8	20.7	67.2	13.16	0.16	0.38	0.19	0.30	0.4	0.2	82.1	46.0	97.2	69.9	166.0	74.5
Urban	Jemena	90.3	63.7	78.3	92.0	111.5	120.64	1.34	0.97	1.27	1.34	1.6	1.2	67.5	65.4	61.5	68.6	69.7	98.9
	CitiPower	33.0	31.1	53.0	34.5	97.6	56.35	0.58	0.53	0.59	0.62	1.0	0.6	56.7	58.6	89.8	55.2	100.4	90.2
	Powercor	122.9	82.5	76.4	111.5	151.4	108.17	1.75	1.21	1.27	1.78	1.6	1.5	70.0	68.3	60.1	62.7	94.8	73.9
	SP AusNet	158.7	116.8	166.4	216.1	203.7	245.30	2.47	1.96	1.99	2.46	2.1	1.5	64.2	59.4	83.8	87.7	97.5	162.3
	United Energy	69.3	61.2	94.1	71.3	122.8	279.27	1.07	0.88	1.04	0.95	1.5	1.3	64.8	69.3	90.7	75.4	81.7	211.9
Short rural	Jemena	156.4	77.0	256.1	168.5	215.8	198.99	3.72	1.20	3.22	2.00	4.4	2.9	42.1	64.3	79.6	84.1	48.6	69.4
	Powercor	175.2	98.4	114.4	190.1	230.5	136.45	2.26	1.33	1.54	2.50	2.5	1.6	77.4	74.0	74.5	76.1	92.7	85.6
	SP AusNet	308.9	315.3	377.8	315.6	375.9	439.98	4.11	4.46	3.23	3.29	3.5	3.0	75.1	70.7	116.8	96.0	107.5	148.2
	United Energy	138.0	115.1	123.4	103.0	146.2	489.78	1.74	1.53	1.91	1.78	1.9	2.1	79.2	75.2	64.7	57.8	76.7	233.3
Long rural	Powercor	323.7	262.0	298.8	374.6	332.4	243.86	3.72	2.95	3.31	3.65	3.5	2.4	87.1	88.9	90.3	102.7	95.9	103.4
	SP AusNet	467.1	426.4	513.8	472.9	455.1	434.32	5.58	5.87	4.18	4.18	4.4	4.1	83.7	72.7	122.8	113.0	103.9	105.7

Table C.7 **Quality of supply - Over-voltage events due to voltage surge**

Number of events [and number of customers affected]

	2003	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	15 [249]	8 [429]	56 [104]	11 [225]	12 [136]	11 [69]
CitiPower a	8 [102]	5 [9]	0 [0]	0 [0]	0 [0]	0 [0]
Powercor	23 [530]	44 [233]	2 [2]	1 [1]	3 [3]	0 [0]
SP AusNet	32 [133]	35 [95]	31 [115]	16 [89]	28 [86]	9 [27]
United Energy	56 [989]	39 [365]	40 [584]	46 [664]	35 [528]	51 [907]

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]

	2003	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena b	na [na]	na [na]	na [na]	na [na]	na [na]	na [na]
CitiPower	43 [57]	12 [38]	0 [0]	0 [0]	0 [0]	0 [0]
Powercor b	na [na]	na [na]	0 [0]	6 [6]	6 [6]	0 [0]
SP AusNet	54 [182]	41 [115]	87 [102]	34 [164]	85 [111]	34 [61]
United Energy	3 [101]	1 [31]	1 [12]	1 [7]	6 [49]	2 [10]

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]

	2003	*2004*	*2005*	*2006*	*2007*	*2008*
Jemena	23 [23]	42 [2838]	31 [2025]	57 [4056]	102 [6173]	46 [3971]
CitiPower	6 [6]	14 [14]	0 [0]	0 [0]	1 [1]	0 [0]
Powercor c	0 [0]	0 [0]	na [6]	0 [0]	11 [11]	9 [9]
SP AusNet	22 [26]	30 [33]	30 [30]	20 [24]	24 [25]	22 [70]
United Energy	0 [888]	0 [0]	1 [1]	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: 2007 to 2008*	*Proportion of appointments made (%)*		*Change: 2007 to 2008*	*Amount paid ($)*
	2008	*2007*	*2008*	*(%)*	*2007*	*2008*	*(%)*	*2008*
Jemena	3 832	1.20	1.27	5%	0.08	0.31	275%	480
CitiPower	11 605	4.00	3.86	-3%	0.03	0.02	-32%	80
Powercor	11 617	1.67	1.71	3%	0.07	0.01	-88%	40
SP AusNet	1 198	0.76	0.20	-74%	0.07	0.17	149%	40
United Energy	8 279	1.31	1.34	2%	0.36	0.35	-2%	660
All distributors	**36 531**	**1.58**	**1.46**	**-8%**	**0.12**	**0.13**	**7%**	**1 300**

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: 2007 to 2008*	*Proportion of connections made (%)*		*Change: 2007 to 2008*	*Amount paid ($)*
	2008	*2007*	*2008*	*(%)*	*2007*	*2008*	*(%)*	*2008*
Jemena	6 912	1.91	2.28	20%	0.19	0.80	313%	6 400
CitiPower	74 121*	26.98	24.65	-9%	0.05	0.01	-79%	1 200
Powercor	120 403**	17.95	17.73	-1%	0.04	0.02	-41%	4 100
SP AusNet	13 470	2.12	2.24	5%	2.66	1.74	-35%	25 400
United Energy	11 046	1.69	1.79	6%	0.05	0.08	71%	17 320
All distributors	**225 952**	**9.24**	**9.03**	**-2%**	**0.19**	**0.15**	**-23%**	**54 420**

* CitiPower figures include new connections and fuse insertions (energisations)
** Powercor figures include new connections and fuse insertions (energisations)

Table C.12 **Guaranteed Service Level**

Payments for late streetlight repair

Distributor	*All streetlights reported broken*				*Streetlights not fixed within 2 days*			
	Average No 2008	*Proportion of all streetlights (%)*		*Change: 2007 to 2008 (%)*	*Proportion of lights reported (%)*		*Change: 2007 to 2008 (%)*	*Amount paid ($) 2008*
		2007	*2008*		*2007*	*2008*		
Jemena	64 442	5.27	5.10	-3%	0.5%	1.6%	215%	1 040
CitiPower	51 904	3.77	4.45	18%	33.4%	26.1%	-22%	720
Powercor	135 297	3.42	3.66	7%	4.5%	3.8%	-17%	1 360
SP AusNet	113 744	6.27	5.03	-20%	0.1%	0.0%	-41%	20
United Energy	115 100	9.89	7.82	-21%	14.4%	0.4%	-98%	320
All distributors	**480 485**	**5.94**	**5.26**	**-12%**	**9.0%**	**3.5%**	**-61%**	**3 460**

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 2008	*Number out 2008*	*Average days to repair 2008*	*Number not fixed in 7 days*		*Proportion of lights reported (%)*		*Change: 2007 to 2008 (%)*
				2007	2008	*2007*	*2008*	
Jemena	64 442	3,285	2.9	30	90	0.89	2.74	209%
CitiPower	51 904	2,310	3.8	164	73	8.39	3.16	-62%
Powercor	135 297	4,949	2.0	81	74	1.80	1.50	-17%
SP AusNet	113 744	5,716	1.0	1	11	0.01	0.19	1206%
United Energy	115 100	9,001	1.0	21	47	0.18	0.52	182%
All distributors	**480 485**	**25,261**	**1.7**	297	295	**1.06**	**1.17**	**10%**

Table C.14 **Complaints**

Connection and augmentation – Quality and reliability

	Connection and Augmentation				*Quality and Reliability*			
	Number	*% of complaints to distributor*		*Change in number: 2007 to 2008*	*Number*	*% of complaints to distributor*		*Change in number: 2007 to 2008*
	2008	*2007*	*2008*	*(%)*	*2008*	*2007*	*2008*	*(%)*
Jemena	81	11	19	69%	221	61	51	-17%
CitiPower	14	39	39	-18%	3	2	8	200%
Powercor	69	27	38	33%	40	21	22	-2%
SP Ausnet	81	14	10	-44%	203	33	26	-41%
United Energy	141	8	23	194%	162	35	27	-24%
All distributors	**386**	**13**	**19**	**25%**	**629**	**40**	**31**	**-27%**

Table C.15 **Complaints**

Other complaints – Total of all complaints

	Other complaints				*Total of all complaints*		
	Number	*% of complaints to distributor*		*Change in number: 2007 to 2008*	*Number*		*Change in number: 2007 to 2008*
	2008	*2007*	*2008*	*(%)*	*2007*	*2008*	*(%)*
Jemena	129	29	30	2%	441	431	-2%
CitiPower	19	59	53	-10%	44	36	-18%
Powercor	75	51	41	-20%	191	184	-4%
SP AusNet	494	53	63	-12%	1,055	778	-26%
United Energy	300	57	50	-12%	601	603	0%
All distributors	**1 017**	**50**	**50**	**-12%**	**2,332**	**2,032**	**-13%**

Table C.16 **Annual number of complaints**

Total of all complaints recorded per 1000 customers

	2002	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*Change: 2007 to 2008 (%)*
Jemena	0.96	0.71	1.34	1.73	1.55	1.47	1.42	-3%
CitiPower	0.44	0.23	0.10	0.08	0.18	0.15	0.12	-19%
Powercor	0.25	0.22	0.17	0.13	0.33	0.29	0.27	-5%
SP AusNet	1.29	1.96	2.86	1.94	2.23	1.78	1.29	-27%
United Energy	1.13	0.87	1.15	0.83	0.98	0.97	0.98	1%
All distributors	**0.83**	**0.86**	**1.19**	**0.93**	**1.08**	**0.94**	**0.81**	**-14%**

Table C.17 **Energy and Water Ombudsman (EWOV) Complaints in 2008**

Level 1-3 complaints received by EWOV for full investigation

	Connection & augmentation		*Quality & reliability*		*Other*	
	Number	*Proportion per 1 000 customers*	*Number*	*Proportion per 1 000 customers*	*Number*	*Proportion per 1 000 customers*
Jemena	6	0.020	6	0.020	8	0.026
CitiPower	6	0.020	1	0.003	0	0.000
Powercor	14	0.021	27	0.040	10	0.015
SP AusNet	3	0.005	33	0.055	10	0.017
United Energy	10	0.016	41	0.066	12	0.019
All distributors	**39**	**0.016**	**108**	**0.043**	**40**	**0.016**

Table C.18 **Three worst-performing CBD feeders**

Total duration and number of sustained outages per customers

Distributor	*Feeder*	*Supply areas*	*Minutes-off-supply per customer*	*Total sustained outages*
CitiPower	LS025	Laurens Street	133	3
	MP028	McIlwraith Place	122	2
	FR016	Flinders-Ramsden	103	1

Table C.19 **Three worst-performing urban feeders**

Total duration and number of sustained outages per customers

Distributor	*Feeder*	*Supply areas*	*Minutes-off-supply per customer*	*Total sustained outages*
Jemena	P 60	Preston	678	1
	YTS03	Yarraville Terminal Station	605	2
	CN 08	Coburg North	562	4
CitiPower	FB014	Fisherman's Bend ('FB feeders')	717	1
	FT009	Flemington	716	2
	RD009	Riversdale	607	3
Powercor	LV006	Laverton	526	4
	LVN033	Merbein	526	1
	AC032	Altona Chemicals	493	1
SP AusNet	MWE1	Morwell Open Cut	68,288	40
	TT12	Thomastown	1,863	7
	WT11	Watsonia	1,058	1
United Energy	EM006	East Malvern	4,548	1
	EB031	East Burwood	2,260	2
	CRM13	Carrum	2,150	4

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

Distributor	*Feeder*	*Supply areas*	*Minutes-off-supply per customer*	*Total sustained outages*
Powercor	RVL008	St Albans	1,961	10
	WMN001	Woodend	1,188	7
	WIN013	Woodend	557	6
SP AusNet	MBY14	Mount Beauty	173,080	313
	DRN13	Doreen	3,852	6
	KLK3	Kinglake	1,752	8
United Energy	DMA13	Dromana	4,605	9
	FSH21	Frankston South	3,552	3

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

Distributor	*Feeder*	*Supply areas*	*Minutes-off-supply per customer*	*Total sustained outages*
Powercor	ETSA001	Electricity Trust SA	1,099	9
	CHM011	Colac	939	4
SP AusNet	FTR21	Foster	1,607	12
	PHM33	Pakenham	1,556	6
	LGA2	Leongatha	1,132	9

Table C.22 **Low-reliability distribution feeders, 2006-8**

By distributor – 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 distributors*
Jemena - Urban									
2008	BY 11	Braybrook	9.48	2579	437.65	445.59	2.52	2.54	No plan - 2 sustained feeder outages: 1 x crossarm fire on 20 Feb, 1 x unknown object contacted O/H conductors. Total SAIDI 81.18 minutes excl 2 Apr storm & 20 Feb crossarm fire.
2008	CN 06	Coburg North	11.49	1973.	339.48	356.96	2.95	3.02	Pole top fire mitigation works to be completed by Mar 09. - 2 sustained feeder outages: 2 x crossarm fire (1 on 20 Feb). Total SAIDI 264.4 minutes excl 2 Apr storm & 20 Feb crossarm fire.
2008	CN 08	Coburg North	9.35	1737	520.37	561.95	4.00	4.11	Pole fire mitigation project to be completed by Mar 09 - 4 sustained feeder outages: 2 x crossarm fire (1 on 20 Feb), 2 x equipment failure; 3 planned outages where alternate supply not available. Total SAIDI 503.3 minutes excl 2 Apr storm & 20 Feb crossarm fire.
2008	CS 03	Coburg South	8.10	1489.	310.56	311.37	1.99	2.00	In the pole top fire mitigation program - 2 sustained feeder outages: 1 x crossarm fire, 1 x equipment failure. Total SAIDI 128.86 minutes excl 2 Apr storm
2008	CS 05	Coburg South	12.30	4588	265.27	277.55	4.17	4.22	Project to mitigate bat strikes completed by the end of 2008. - 4 sustained feeder outages: 2 x bat, 1 x crossarm fire, 1 x cause not found. Reliability improvement project contributed to 99% of the planned SAIDI.
2008	FF 96	Fairfield	6.26	1151	433.12	433.12	1.10	1.10	No plan - Total SAIDI 10.79 minutes excl 2 Apr storm
2008	FW 06	Footscray West	8.14	831	421.74	421.77	4.65	4.65	In the pole top fire mitigation program - 3 sustained feeder outages: 2 x truck, 1 x pole fire; Total SAIDI 352.89 minutes excl 2 Apr storm
2007	FW06	Footscray West	8.05	820	281.09	282.65	3.59	3.60	Review the pole fire mitigation plan in the FW supply area - 2 sustained feeder outages: 1 pole fire, 1 cause not found. Load shed on 16 Jan contributed 161 mins.
2008	FW 08	Footscray West	9.83	2880.	271.38	290.07	1.66	1.70	No plan - 1 sustained feeder outage: Initial cause not found but severe secondary damage. Total SAIDI 148.78 minutes excl 2 Apr storm
2007	FW08	Footscray West	9.69	2866.	318.14	318.14	2.12	2.12	Review the pole fire mitigation plan in the FW supply area - 1 sustained feeder outage due to U/G cable failure. Load shed on 16 Jan contributed 141.89 mins.
2008	FW 13	Footscray West	5.85	456	317.11	330.28	1.13	1.18	No plan - 1 sustained feeder outage: pole fire. Total SAIDI 84.38 minutes excl 2 Apr storm
2008	FW 16	Footscray West	4.11	620	423.09	423.09	0.26	0.26	No plan - Total SAIDI 7.4 minutes excl 2 Apr storm
2008	HB 06	Heidelberg	5.57	1445	457.89	457.89	2.12	2.12	No Plan - Two sustained feeder outage: 1 x wind & tree (on 2 Apr), 1 x equipment failure. Total SAIDI

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 distributors
									104.35 excl 2 Apr storm.
2008	HB 10	Heidelberg	6.05	865	509.60	514.34	2.19	2.21	No Plan - Two sustained feeder outage: 1 x wind & tree (on 2 Apr), 1 x bat. Total SAIDI 122.21 excl 2 Apr storm.
2008	HB 13	Heidelberg	2.50	399	287.16	287.16	1.26	1.26	No Plan - Total SAIDI 17.24 minutes excl 2 Apr storm
2008	NH 02	North Heidelberg	21.33	4452	281.87	292.50	3.57	3.60	Installed remote controllable ACR at open point to improvement supply restoration time at the end of 2008. - 3 sustained feeder & 2 sustained ACR outages: 4 x wind & tree (2 on 2 Apr), 1 x possum. Total SAIDI 107.13 minutes excl 20 Feb & 2 Apr.
2008	NH 05	North Heidelberg	13.75	3401	318.31	321.59	3.62	3.64	Install two ACRs & fault indicators in 2009 - 4 sustained feeder outages: 2 x wind & tree (on 2 Apr), 1 x possum, 1 x restoration switching. Total SAIDI 100.9 minutes excl 20 Feb & 2 Apr.
2008	NH 12	North Heidelberg	7.93	1142	463.01	463.01	3.66	3.66	Never been a low reliability feeder, monitor performance - 3 sustained feeder outages: 1 x wind & tree (on 2 Apr), 1 x possum, 1 x vehicle hit pole with severe secondary damage. Total SAIDI 317.44 minutes excl 2 Apr storm.
2008	NT 17	Newport	14.43	5396	299.35	299.44	1.60	1.60	Project to lower probability of secondary damage to be completed in mid 2009 - 2 sustained feeder outages: 1 x equipment failure, 1 x cause not found with severe secondary damage
2008	P 60	Preston	4.38	1284	677.64	677.64	1.15	1.15	No plan - Total SAIDI 24.87 minutes excl 2 Apr storm
2008	ST 33	Somerton	16.84	3266	274.41	281.61	2.04	2.08	Install one ACR in 2009 - 2 sustained feeder outage: 1 x U/G cable failure (on 2 Apr), 1 x cause not found but failure of shared transmission assets (31 Jul). Total SAIDI 16.92 minutes excl 2 Apr & 31 Jul events
2008	WT 04	Watsonia	3.96	134	405.54	405.54	1.57	1.57	No plan - 1 sustained feeder outage: Wind & tree (on 2 Apr). Total SAIDI 57.75 minutes excl 2 Apr storm
2008	YTS03	Yarraville Terminal Station	7.14	467	601.75	605.19	1.56	1.61	No plan - 1 sustained feeder outage: equipment failure. Total SAIDI 117.16 minutes excl 2 Apr storm
2008	YTS06	Yarraville Terminal Station	9.40	785.	277.24	302.90	1.19	1.28	No plan - 1 sustained feeder outage: Truck contacted Optus cable and damaged pole. Total SAIDI 143.05 minutes excl 2 Apr storm
2007	YTS06	Yarraville Terminal Station	9.17	820	287.63	290.51	2.02	2.04	Never been a low reliability feeder. No plan at this stage. Will monitor the feeder performance. - 2 sustained feeder outages: 1 vehicle contacted conductor, 1 equipment failure
CitiPower - CBD									
2008	FR007	Flinders-Ramsden	1.07	146.5	51.49	70.40	1.13	1.24	Faulted cable replaced and tested before being returned to service -
2008	FR016	Flinders-Ramsden	7.34	434.5	99.45	102.75	1.16	1.17	Faulted cable replaced and tested before being returned to service -

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 distributors
2008	LS016	Laurens Street	2.20	341	81.38	81.38	1.15	1.15	Faulted HV cable replaced and tested before being returned to service -
2008	LS025	Laurens Street	1.61	208.5	132.82	132.82	3.02	3.02	Faulted HV cable replaced and tested before being returned to service. - At time of cable failure the feeder was twice the normal number of customers.
2008	MP028	McIlwraith Place	1.34	1	122.00	122.00	2.00	2.00	After previous fault in HV customers embedded network all customer load connected to only one feeder. This feeder overloaded resulting in supply outage. - Customer reduced load and arranged full repairs to their failed embedded network. Supply restored t
2008	SK010	St Kilda	2.68	7.5	96.80	96.80	1.47	1.47	Upstream outage no improvement plan applicable. - Helium balloon hit sub transmission HV line resulting in outage of zone substation and all feeder supplied out of zone substation. Part of sub transmission line re-built to decrease a repeat outage.
2008	SK020	St Kilda	3.89	418.5	72.86	73.84	1.30	1.30	Upstream outage no improvement plan applicable. - Helium balloon hit sub transmission HV line resulting in outage of zone substation and all feeder supplied out of zone substation. Part of sub transmission line re-built to decrease a repeat outage.
2008	SO010	South Melbourne	2.98	931	89.30	89.30	1.10	1.10	Faulted HV cable replaced and tested before being returned to service -
2007	SO010	South Melbourne	2.90	925	196.85	196.85	1.00	1.00	Upstream outage no improvement plan applicable. - Load Shed
CitiPower - Urban									
2008	AR003	Armadale	5.48	1008.	264.25	271.47	1.03	1.06	During wild storm on 2 April tree branch hit HV line. - Branch removed and feeder restored
2008	FB011	Fisherman's Bend ('FB feeders')	1.96	3.5	278.00	513.71	5.43	6.29	Faulty circuit breaker replaced. - Faulty circuit breaker resulted in multiple outages during year.
2008	FB014	Fisherman's Bend ('FB feeders')	0.00	11.5	0.00	716.96	0.00	1.48	One planned outage on part of feeder. - Feeder has small number of customers connected, figures distorted by one planned outage.
2008	FT009	Flemington	0.88	183	716.20	716.20	2.01	2.01	During wild storm on 2 April tree branch hit HV line. - HV part of feeder owned and controlled by Agility.
2008	L001	Balwyn	6.61	1143.5	491.72	497.88	1.29	1.32	During wild storm on 2 April trees hit HV line. - Trees cleared form line and feeder restored.
2008	NC002	Northcote	8.21	3166.5	335.46	338.78	3.29	3.30	Trees cleared away from HV line and animal mitigation measures installed at key points of feeder. - One tree branch and two animal incidents interfered with HV line resulting in three feeder outages. Mitigation plans implemented on HV lines.
2007	NC002	Northcote	8.30	3168	316.94	317.12	2.22	2.22	Upstream outage no improvement plan applicable. - Load Shed and one feeder outage due to possum on HV line.
2008	PR019	Prahran	3.22	1259	453.52	453.52	4.87	4.87	During wild storm on 2 April trees hit HV line. - Also Faulted HV cable replaced and tested before

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 distributors
									being returned to service.
2008	RD004	Riversdale	6.40	253.5	520.37	520.37	0.99	0.99	During wild storm on 2 April trees hit LV line resulting in extended outages to part of feeder. - Damaged area repaired and returned to service.
2008	RD009	Riversdale	6.30	1403.5	606.54	606.88	3.36	3.36	During wild storm on 2 April trees hit HV line. - Feeder was abnormal at time due to previous outage on an adjacent line during the storm and was supplying twice the normal number of customers.
2008	RD013	Riversdale	5.44	1629.5	359.52	359.52	2.09	2.09	During wild storm on 2 April trees hit HV line resulting in two feeder outages.
2008	WB009	Brunswick ('WB feeders')	4.29	808	343.82	343.82	2.01	2.01	During wild storm on 2 April tree branch hit HV line -
Powercor - Urban									
2008	AC032	Altona Chemicals	1.22	4	493.00	493.00	1.00	1.00	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to major outage on 26/01/08 due to a Pole Fire.
2008	BAS013	Ballarat South	26.86	2893	60.90	74.16	1.08	1.15	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to multiple feeder recloses.
2008	BLT022	Brooklyn	17.07	1142	272.56	275.19	2.14	2.17	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to two major outages, 20/01/08 & 31/01/08 due to Pole Fires.
2007	BLT022	Brooklyn	16.58	1123	537.98	539.69	3.01	3.02	Feeder will be monitored and performance reviewed in 2008 - Threshold exceeded due to major outage on 14/10/07 from a vehicle impact. Load Shedding on 16/1/07 - Exemption granted.
2008	GL013	Geelong	7.93	1795	223.17	270.17	1.24	1.38	None required. - Threshold exceeded due to Storms on 2/4/2008. Exemption granted.
2008	LV006	Laverton	18.80	2159	504.30	526.36	4.24	4.30	None required. - Threshold exceeded due to Storms on 2/4/2008. Exemption granted.
2008	LV007	Laverton	22.41	3904	294.25	295.41	4.46	4.46	None required. - Threshold exceeded due to Storms on 2/4/2008. Exemption granted.
2008	LV008	Laverton	42.20	4776	455.38	460.94	5.85	5.87	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to major outages, from equipment failures.
2008	LVN033	Merbein	11.06	133	14.41	526.08	0.10	1.26	None required. - Threshold exceeded due to planned works on feeder.
2008	SHL007	Shepparton North	19.86	2415	287.55	314.86	4.13	4.26	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to two major outages, from animals and storms.
2008	WPD033	Waurn Ponds	19.40	3775	420.86	471.71	6.32	6.55	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to major outages, from equipment failures.
2007	WPD033	Waurn Ponds	19.21	3742	339.79	350.74	4.25	4.28	None required - Threshold exceeded due to Load Shedding on 16/1/07. Exemption granted.
Powercor - Short rural * no data									

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 distributors
Powercor - Long rural									
2008	CHM011	Colac	808.32	1595	901.71	938.77	3.92	4.13	None required. - Threshold exceeded due to major outage on radial 66KV line supplying area on 13/11/08 due to lightning storm.
2008	ETSA001	Electricity Trust SA	17.56	296	1028.40	1099.44	8.06	8.50	None required. - Threshold exceeded due to several supply outages from ETSA (South Australia).
2007	ETSA001	Electricity Trust SA	17.49	294	1065.94	1076.49	6.15	6.32	None required - Threshold exceeded due to failure of supply from South Australia - ETSA.
2006	ETSA001	Electricity Trust SA	17.49	291	1319.49	1327.62	8.00	12.00	Threshold exceeded due to a distribution transformer failure. Remote location contributed to repair time.
2008	RVL008	St Albans	76.02	268	192.19	1961.43	5.47	9.50	None required. - Threshold exceeded due to planned works on feeder for construction of BBD Zone Substation.
2007	RVL008	Robinvale	238.99	369	762.14	919.18	8.16	9.92	None required - Threshold exceeded due to Load Shedding on 16/1/07. Exemption granted.
2008	WMN001	Woodend	167.40	165	37.31	1188.18	1.79	6.52	None required. - Threshold exceeded due to planned works on feeder and multiple feeder section recloses.
2007	WMN001	Wemen	166.12	230.	345.97	705.69	2.93	6.03	None required - Threshold exceeded due to Load Shedding on 16/1/07. Exemption granted. Large planned outage component of 362 minutes SAIDI
2006	WMN001	Wemen	152.50	232	726.24	781.93	10.00	14.00	Supplied by a radial transmission & distribution network. Additional automation installed mid 2006.
2008	WPD032	Waurn Ponds	102.57	2579	136.96	188.13	2.29	2.53	Feeder will be monitored and performance reviewed in 2009 - Threshold exceeded due to multiple feeder section recloses.
2007	WPD032	Waurn Ponds	88.63	2506	605.92	694.10	6.12	6.38	None required - Threshold exceeded due to Load Shedding on 16/1/07. Exemption granted.
SP AusNet - Urban									
2008	BN4	Benalla	19.23	3240	15.57	34.91	0.12	0.18	
2008	BRA13	Boronia	12.34	1468.	225.97	291.61	0.60	0.77	
2008	BRA24	Boronia	10.00	1427	550.63	611.06	0.69	0.86	
2008	BRA33	Boronia	21.25	3652	58.67	102.80	0.92	1.13	
2008	BWR12	Bayswater	6.95	718.5	293.08	615.31	1.15	1.91	
2008	BWR22	Bayswater	10.14	1039.5	327.69	329.49	1.15	1.16	
2008	CLN11	Clyde North	21.09	3270.5	562.48	710.39	0.54	0.94	
2008	CYN11	Croydon	8.53	1365.5	50.56	381.81	1.34	2.02	
2008	CYN13	Croydon	11.94	1003	37.27	195.23	1.14	1.61	
2008	CYN14	Croydon	15.16	3291	813.78	822.68	2.33	2.36	

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 distributors*
2008	CYN22	Croydon	21.40	3229.5	95.33	162.06	2.34	2.54	
2008	CYN24	Croydon	14.87	1344.5	135.39	313.42	2.12	2.57	
2008	CYN32	Croydon	20.37	3799	70.11	84.46	2.38	2.45	
2008	ELM11	Eltham	14.82	2697	937.55	975.77	3.03	3.13	
2008	ELM31	Eltham	25.15	4278	376.67	395.19	1.32	1.40	
2008	EPG11	Epping	19.96	4267	413.06	433.17	4.81	4.88	
2008	EPG33	Epping	43.55	5521.5	270.08	311.13	2.43	2.57	
2008	FGY31	Ferntree Gully	16.03	1136.5	454.14	465.10	1.28	1.29	
2008	FGY34	Ferntree Gully	25.83	3530	744.32	779.71	2.42	2.56	
2008	MFA14	Maffra	0.97	23	0.00	286.96	0.00	0.96	
2008	MWE1	Morwell Open Cut	1.39	1	680.00	68288.00	4.00	40.00	
2008	RWN24	Ringwood North	19.46	2692.5	890.04	914.92	2.20	2.30	
2008	RWN33	Ringwood North	42.88	3874.5	479.12	529.41	3.36	3.51	
2008	RWT15	Ringwood Terminal	14.05	2740.5	145.94	171.29	1.47	1.61	
2008	RWT22	Ringwood Terminal	15.81	3581.5	291.09	305.89	2.49	2.58	
2008	RWT25	Ringwood Terminal	10.78	1490	356.75	356.75	2.71	2.71	
2008	RWT26	Ringwood Terminal	9.58	1072	86.58	159.56	1.24	1.28	
2008	TT1	Thomastown	5.60	187.5	500.13	531.52	2.55	2.66	
2008	TT12	Thomastown	9.01	300	1858.24	1862.84	7.40	7.41	
2008	TT5	Thomastown	8.73	1451.5	720.48	809.10	4.06	4.31	
2008	TT9	Thomastown	17.65	3409.5	426.06	439.60	1.02	1.07	
2008	WT10	Watsonia	4.82	1054	29.86	34.76	0.17	0.20	
2008	WT11	Watsonia	14.55	2862	987.97	1057.64	1.27	1.50	
2008	WT12	Watsonia	11.99	1834.5	284.37	330.48	0.17	0.37	
2008	WT15	Watsonia	5.40	1471	951.40	965.98	1.91	1.96	
2008	WT5	Watsonia	7.27	1446	239.07	245.61	0.57	0.61	

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2008	WT9	Watsonia	13.45	2301	1052.79	1052.79	1.11	1.11	
2008	YN31	Yallourn Open Cut	6.21	17.5	728.69	881.83	2.06	2.51	
2008	YN35	Yallourn Open Cut	0.35	1.5	325.33	325.33	2.67	2.67	
SP AusNet - Short rural									
2008	BGE11	Belgrave	72.53	3731.5	927.53	981.97	5.64	5.87	
2008	BGE12	Belgrave	104.37	2235	965.25	1109.02	6.56	7.14	
2008	BGE22	Belgrave	93.28	2313	1465.10	1535.62	6.60	6.95	
2008	BGE24	Belgrave	45.24	1531.5	1359.52	1477.81	5.31	5.83	
2008	CNR1	Cann River	11.11	161.5	760.20	796.02	8.22	16.64	
2008	CNR2	Cann River	143.96	1106	854.09	1023.43	11.05	11.60	
2008	CNR3	Cann River	79.63	69	761.54	899.36	8.32	8.77	
2008	CYN33	Croydon	32.32	3978.5	642.48	719.19	2.56	2.79	
2008	DRN13	Doreen	68.47	1443.5	3834.50	3851.81	6.27	6.37	
2008	ELM13	Eltham	78.41	3861	664.96	669.39	4.11	4.14	
2008	FGY21	Ferntree Gully	33.99	2445.5	704.52	767.28	1.21	1.36	
2008	KLK1	Kinglake	188.43	1446.5	399.44	665.69	5.30	6.10	
2008	KLK3	Kinglake	60.00	170	260.31	1751.81	3.28	7.65	
2008	LDL13	Lilydale	132.52	3752.5	1294.65	1392.58	6.37	6.96	
2008	LDL21	Lilydale	39.88	2294	814.22	827.85	2.65	2.69	
2008	LGA3	Leongatha	182.94	890.5	538.00	930.78	3.77	5.08	
2008	LLG11	Lang Lang	155.87	958	1196.34	1524.71	3.26	4.70	
2008	LLG13	Lang Lang	102.55	1108.5	1215.70	1232.97	4.07	4.77	
2008	MBY14	Mount Beauty	8.90	2	173080.00	173080.00	312.50	312.50	
2008	MDG1	Mount Dandenong	12.19	767.5	555.13	1212.42	3.05	5.36	
2007	MDG001	Mount Dandenong	12.19	763	2347.21	2762.67	6.41	7.88	18% of CMOS caused by Planned works. A high 77% (1,629,676 minutes from 44 jobs) of CMOS caused by falling trees from outside the clearance zones. Major review completed 2007/08. Installed

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 distributors
2006	MDG001	Mount Dandenong	12.18	762.	873.15	1092.42	8.00	10.00	1 Sectionaliser. - 0
2008	MFA23	Maffra	126.71	447	50.41	1219.45	5.31	9.84	
2008	MOE21	Moe	185.79	669	1050.49	1055.37	8.37	8.40	
2008	MVE01	Rubicon A	169.65	1351.5	1425.75	1432.37	9.89	9.92	
2007	MVE01	Rubicon A	169.63	1334.5	1229.61	1235.52	11.65	11.68	CMOS spread fairly evenly over roughly 10 jobs. Planned work did not contribute to CMOS. Human Vandalism (loss of tts-klk -ruba-smr-kms loop, Crane into 66KV at South Morang) on 13th Feb caused 286,290 CMOS (19%). Two conductor breakages caused by falling
2008	MWE2	Morwell Open Cut	2.81	8	277.25	728.25	4.25	5.25	
2008	MWE6	Morwell Open Cut	5.94	26	1575.81	1575.81	3.96	3.96	
2008	MWTS31	Morwell Terminal Station	125.77	685.5	355.36	625.60	3.64	4.53	
2008	MWTS32	Morwell Terminal Station	57.18	468.5	447.68	531.31	2.75	3.18	
2008	MYT1	Myrtleford	53.28	346	484.58	871.01	4.50	5.64	
2008	PHI11	Phillip Island	17.85	978.5	195.15	346.82	1.78	4.93	
2008	PHI12	Phillip Island	70.64	3754.5	45.18	121.31	0.91	1.32	
2008	PHI13	Phillip Island	35.08	4045	568.10	604.15	1.77	2.00	
2008	PHM34	Pakenham	61.64	2889	553.70	620.28	3.13	3.32	
2008	RWN26	Ringwood North	54.02	2892.5	1104.62	1133.11	5.18	5.32	
2008	SFS1	Sassafras	20.29	1069	1094.89	1239.49	5.98	7.00	
2008	TGN23	Traralgon	172.58	2262	402.17	474.87	4.18	4.48	
2008	UWY1	Upwey	19.76	1065	1346.02	1420.23	3.06	3.31	
2008	WGI23	Wonthaggi	130.99	2099.5	149.50	667.78	1.40	3.04	
2008	WGI33	Wonthaggi	47.49	2503	792.28	902.76	3.47	3.92	
2008	WGI34	Wonthaggi	183.24	5833	1253.45	1375.57	3.62	4.56	
2008	WYK23	Woori Yallock	128.64	3447.5	893.97	946.25	2.24	2.43	

SP AusNet - Long rural

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 distributors
2008	FTR12	Foster	466.76	1620	926.87	971.90	5.90	6.06	
2008	FTR21	Foster	391.31	2317	1328.50	1606.72	9.61	11.64	
2008	LGA1	Leongatha	258.92	2572.5	598.76	871.68	10.28	11.23	
2008	LGA2	Leongatha	251.89	1599.5	871.86	1132.00	7.50	9.06	
2008	PHM14	Pakenham	211.29	2249	735.84	953.39	1.60	2.54	
2008	PHM33	Pakenham	256.29	3963.5	1519.56	1556.27	5.41	5.53	
United Energy - Urban									
2008	AR012	Armadale	1.60	229	4.91	470.35	0.10	1.17	No plan - 2 planned outages contributed 765 minutes. Shared feeder with CitiPower
2008	BH012	Box Hill	5.60	1716	555.77	555.77	1.56	1.56	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 537.7 minutes
2008	BH021	Box Hill	12.30	2807	344.54	361.91	1.21	1.27	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 270.8 minutes
2008	BR001	Beaumaris	6.20	1432	1158.33	1178.17	2.46	2.50	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1015.5 minutes
2007	BR001	Beaumaris	6.23	1432.5	292.52	387.41	3.29	3.57	Largest contribution caused by vegetation. 150 min attributed by load shedding -
2008	BR006	Beaumaris	7.80	1217	323.84	331.61	1.60	1.63	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 242.4 minutes
2007	BR006	Beaumaris	9.82	1057	277.80	285.49	2.58	2.61	120 min attributed by load shedding. Largest contribution caused by lightning. -
2008	BR009	Beaumaris	5.50	1374	379.79	400.84	1.15	1.20	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 361.9 minutes
2007	BR009	Beaumaris	5.49	1370	217.66	279.03	2.15	2.32	153 min attributed by load shedding. -
2008	BR013	Beaumaris	4.20	1535	341.99	381.53	1.53	1.62	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 312.3 minutes
2008	BR015	Beaumaris	3.80	1552	320.08	329.55	0.13	0.17	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 314.7 minutes
2008	BRA32	Boronia	3.40	264	548.19	548.19	0.12	0.12	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 546.7 minutes. Shared feeder with SP AusNet
2008	BU002	Bulleen	10.90	1492	835.07	863.61	2.04	2.11	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 721.6 minutes

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 distributors*
2008	BU009	Bulleen	9.70	1546	1983.40	1996.27	1.15	1.21	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1972.4 minutes
2008	BU010	Bulleen	8.00	1549	392.22	392.22	0.20	0.20	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 387.2 minutes
2008	BU014	Bulleen	10.70	1308	294.39	356.40	1.75	1.92	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 236.7 minutes
2008	BW006	Burwood	8.20	1502	696.86	705.92	2.01	2.05	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 656.2 minutes
2008	CDA22	Clarinda	14.60	1996	454.11	464.11	0.63	0.68	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 449.6 minutes
2008	CFD13	Caulfield T/CFD	3.70	818	330.58	375.63	1.35	1.48	Monitored within the vegetation management program - Contribution of 322 minutes from a single vegetation related outage.
2008	CFD16	Caulfield T/CFD	4.30	610	1559.71	1563.44	2.29	2.31	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1551.4 minutes
2008	CM012	Cheltenham	2.60	170	1123.69	1123.69	1.24	1.24	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1121.2 minutes
2008	CRM11	Carrum	3.00	3	290.33	290.33	2.00	2.00	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 165.8 minutes
2007	CRM11	Carrum	3.02	3	967.44	967.44	1.67	1.67	Outage due to 66 kV pole fire incident on 31/7/07. Audit of CBTS-CRM line arranged to identify future issues -
2008	CRM13	Carrum	9.70	1197	2065.85	2150.01	3.46	3.67	A plan is being developed for condition based replacement of an overhead conductor. Contribution of 1873.9 minutes from the excluded April storm and 126 minutes from an overhead conductor failure.
2008	DC001	Doncaster	24.40	2488	300.53	312.95	2.63	2.68	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 216.8 minutes
2008	DC002	Doncaster	24.40	3951	1804.69	1818.89	3.68	3.75	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1720.2 minutes
2008	DC003	Doncaster	24.60	3671	1454.93	1458.29	2.89	2.91	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1352.2 minutes
2008	DC004	Doncaster	13.40	2529	477.38	480.58	3.08	3.09	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 374 minutes

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 distributors*
2008	DC005	Doncaster	16.10	4198	445.78	504.33	1.76	1.92	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 428.9 minutes
2008	DC006	Doncaster	12.30	2822	511.11	511.80	1.08	1.08	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 507.7 minutes
2008	DC010	Doncaster	18.50	3755	905.88	913.60	1.36	1.39	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 874.7 minutes
2008	DN013	Dandenong	24.70	4191	280.98	302.19	0.78	0.85	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 217.5 minutes
2008	DVY24	Dandenong Valley	24.10	4054	752.13	770.33	2.12	2.17	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 703.3 minutes
2008	DVY31	Dandenong Valley	5.90	349	499.91	499.91	1.24	1.24	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 457.3 minutes
2008	EB011	East Burwood	6.20	555	519.46	523.38	0.71	0.72	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 517.6 minutes
2008	EB012	East Burwood	6.20	670	397.68	397.68	1.99	1.99	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 395.3 minutes
2008	EB013	East Burwood	5.30	234	1026.68	1247.19	0.39	0.76	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1012 minutes
2008	EB014	East Burwood	7.10	891	483.15	483.56	0.83	0.84	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 477.2 minutes
2008	EB021	East Burwood	6.10	532	475.23	477.93	3.92	3.93	No plan - Contribution of 201 minutes from an Animal related fault, 166 minutes from a fault caused by a truck impacting a pole and 107.8 minutes from the excluded April storm
2008	EB022	East Burwood	10.90	1173	410.43	476.11	2.67	2.82	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 254.1 minutes
2008	EB023	East Burwood	5.50	270	1835.11	1842.66	4.00	4.01	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1747.8 minutes
2008	EB024	East Burwood	3.80	507	971.95	998.75	4.51	4.59	No plan - Contribution of 653.2 minutes from the excluded April storm and 317 minutes from an Animal related fault.
2008	EB031	East Burwood	9.80	967	2247.09	2259.65	1.89	1.91	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 2194

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									minutes
2008	EL006	Elsternwick	4.80	2146	608.99	631.95	1.99	2.06	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 525.3 minutes
2008	EM006	East Malvern	4.40	1807	4542.53	4547.77	1.08	1.10	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 4538.9 minutes
2008	EM007	East Malvern	8.10	1762	823.91	825.60	2.43	2.44	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 779.3 minutes
2008	EM008	East Malvern	4.80	1246	643.28	644.56	1.01	1.02	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 641.6 minutes
2008	FSH11	Frankston South	13.50	2318	899.15	899.26	4.08	4.08	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 773.9 minutes
2008	FSH13	Frankston South	27.40	3163	555.47	563.82	2.66	2.69	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 526.6 minutes
2008	FTN12	Frankston	14.30	2025	405.07	434.78	1.07	1.17	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 396.4 minutes
2008	FTN14	Frankston	7.70	1482	297.18	297.18	2.27	2.27	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 184.6 minutes
2007	FTN14	Frankston	7.27	1409.5	376.92	376.92	3.28	3.28	Pole fire 7/1/07. Feeder exit cable failure 21/4/07. Survey feeder for brown & grey fog insulators for pole fire mitigation -
2008	FTN23	Frankston	14.90	967	1637.94	1639.83	3.62	3.62	No plan - Contribution of 64.9 minutes from the excluded April storm and 1439.2 minutes from April 3 post-storm
2008	GW001	Glen Waverley	4.20	759	521.83	521.83	1.02	1.02	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 508.6 minutes
2008	GW002	Glen Waverley	21.50	3850	307.96	308.36	1.00	1.00	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 303.7 minutes
2008	GW005	Glen Waverley	9.50	1397	448.65	448.65	1.04	1.04	No plan - Contribution of 341 minutes from an outage caused by lighting and 104.9 minutes from the excluded April storm
2008	GW008	Glen Waverley	7.90	2607	478.43	530.88	1.25	1.38	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 468.5 minutes
2007	GW008	Glen Waverley	13.55	3116	309.98	349.73	3.16	3.28	Tree on overhead lines. Vegetation clearing to be investigated -

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 distributors
2008	GW011	Glen Waverley	12.00	2703	571.26	571.26	2.63	2.63	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 543.2 minutes
2008	HT006	Heatherton	3.50	158	385.04	387.70	2.53	2.54	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 382.8 minutes
2008	HT009	Heatherton	8.50	286	330.49	333.85	0.98	0.99	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 302.3 minutes
2007	HT009	Heatherton	8.39	273	340.15	352.11	4.78	4.81	Mainly attributable to multiple lightning events in March 2007. -
2008	K006	Gardiner	9.00	1991	655.03	671.72	2.00	2.05	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 647 minutes
2008	K007	Gardiner	5.10	1072.	658.00	872.00	2.04	2.53	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 645.3 minutes
2007	K007	Gardiner	5.24	1088.5	272.14	274.62	3.01	3.02	153 minutes attribute to load shedding. Tree branch also contributed further 120min investigating possible tree clearing -
2008	K008	Gardiner	6.00	1259	999.79	999.79	1.91	1.91	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 992.9 minutes
2008	K010	Gardiner	5.20	2254	626.08	626.21	2.93	2.93	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 558.9 minutes
2007	K010	Gardiner	7.31	2413.5	320.26	330.44	4.60	4.64	Large proportion attribute to load shedding -
2008	K012	Gardiner	4.20	1211	277.94	282.46	0.15	0.16	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 277.6 minutes
2008	K013	Gardiner	4.80	1253	941.31	1031.17	1.02	1.41	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 836 minutes
2008	LD005	Lyndale	7.80	978	670.02	676.61	3.12	3.14	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 596.4 minutes
2008	M018	Mentone	5.30	1406	547.16	547.16	1.53	1.53	No plan - Contribution of 545.8 minutes from April 3 post-storm
2008	MC001	Mordialloc	8.10	1789	271.52	292.77	5.38	5.43	MC feeder improvement project planned for 2009 - Contribution of 187 minutes from Plant Failures.
2007	MC001	Mordialloc	8.16	1734.5	319.11	345.68	4.86	4.97	Large proportion attributed to load shedding. Feeder survey being undertaken as part of insulator failure. -
2008	MC003	Mordialloc	12.60	3299	243.76	302.62	2.18	2.31	MC feeder improvement project planned for 2009 - Contribution of 131 minutes from an overhead conductor failure and 76 minutes from Plant Failures.
2008	MC005	Mordialloc	6.20	326	1314.02	1318.34	0.35	0.36	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1312.9 minutes

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 distributors
2008	MC006	Mordialloc	10.30	2656	309.16	324.00	2.28	2.33	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 213.8 minutes
2008	MC007	Mordialloc	15.70	808	392.10	392.63	2.58	2.59	MC feeder improvement project planned for 2009 - Contribution of 390 minutes from 2 faults due to underground cable failure.
2008	MGE14	Mulgrave	7.00	362	430.03	439.15	0.10	0.13	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 429.8 minutes
2008	NB013	North Brighton	6.10	1476	248.37	285.03	1.16	1.25	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 157 minutes
2008	NB025	North Brighton	6.20	1554	257.13	285.65	1.08	1.19	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 247.2 minutes
2008	NO006	Notting Hill	4.10	543	520.94	520.94	1.01	1.01	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 518.2 minutes
2007	NO006	Notting Hill	4.09	539	323.98	323.98	3.12	3.12	Tree on overhead lines. Vegetation clearing to be investigated. Also customers HV cable damaged causing feeder outage -
2008	NO007	Notting Hill	10.00	2546	267.93	274.72	0.12	0.14	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 245.5 minutes
2008	NP005	Noble Park	13.80	2117	441.01	441.01	1.97	1.97	Pole Fire Mitigation project approved for 2009 - Contribution of 421.8 minutes from February 20 pole fires
2008	NP011	Noble Park	14.00	2212	305.19	346.58	3.94	4.05	Pole Fire Mitigation project approved for 2009 - Contribution of 27.1 minutes from the excluded April storm and 144.2 minutes from February 20 pole fires
2008	NP014	Noble Park	12.60	1903	581.01	597.32	4.20	4.24	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 360.2 minutes
2008	NW011	Nunawading	6.60	1433	365.70	395.96	1.13	1.21	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 354.4 minutes
2008	NW013	Nunawading	24.00	2913	677.08	677.25	7.24	7.24	Pole Fire Mitigation project approved for 2009. Monitoring within the vegetation management program - Contribution of 265.9 minutes from the excluded April storm and 197 minutes for vegetation related faults outside the April 2 event.
2007	NW013	Nunawading	23.05	2822.5	249.33	277.04	2.64	2.73	Large proportion attribute to load shedding. Other major contributor was possum on strain pole. -
2006	NW013	Nunawading	23.00	1409	342.48	354.61	9.00	14.00	Caused by Possum across ACR and conductor clashing. Survey being undertaken.
2008	NW014	Nunawading	13.30	2453	521.72	522.04	2.12	2.12	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 449.5 minutes

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 distributors
2008	NW021	Nunawading	14.30	2979	948.46	952.78	2.67	2.70	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 843.3 minutes
2007	NW021	Nunawading	14.36	2961.5	272.33	282.65	3.07	3.11	Large proportion attribute to load shedding. Furthermore tree on overhead lines. Vegetation clearing to be investigated -
2008	NW031	Nunawading	10.80	3515	504.94	507.30	2.70	2.70	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 460.9 minutes
2008	NW033	Nunawading	11.20	2356	736.20	738.64	3.05	3.06	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 468.7 minutes on April 2 and 428.2 minutes on April 3.
2008	OAK21	Oakleigh	11.40	2819	636.22	644.91	0.68	0.71	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 618.4 minutes
2008	OAK23	Oakleigh	5.90	1948	363.68	379.65	0.16	0.20	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 352.6 minutes
2008	OE009	Oakleigh East	2.50	533	373.87	388.56	1.17	1.23	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 286 minutes
2008	OR012	Ormond	6.90	2092	452.33	454.81	1.17	1.18	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 448.9 minutes
2008	OR013	Ormond	6.10	1176	397.75	426.23	2.45	2.53	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 376.6 minutes
2008	SH070	Surrey Hills	4.00	943	500.73	505.16	1.70	1.72	No plan - Contribution of 417.7 minutes from April 3 post-storm
2008	SH075	Surrey Hills	5.20	1222	821.66	821.66	0.86	0.86	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 816 minutes
2008	SH080	Surrey Hills	3.20	1073	710.57	728.42	1.38	1.43	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 700.4 minutes
2008	SR011	Sandringham	4.10	987	679.00	709.00	2.02	2.10	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 676.9 minutes
2008	SR013	Sandringham	4.20	1687	550.80	563.02	1.18	1.22	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 532.4 minutes
2008	SR014	Sandringham	2.00	736	417.46	417.46	0.15	0.15	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 417.5 minutes
2008	SR024	Sandringham	5.80	1086	569.54	575.51	2.65	2.68	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 483.3 minutes

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 distributors*
2008	SS012	Springvale South	9.70	1078	0.76	1.14	0.01	0.01	-
2008	SS023	Springvale South	18.70	3504	311.64	312.85	0.31	0.31	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 228.6 minutes
2008	SV014	Springvale	2.70	19	66.21	814.63	0.16	0.32	No plan - Single planned outage contributed 748 minutes.
2008	SV031	Springvale	4.50	109	550.70	554.00	1.01	1.04	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 549.6 minutes
2008	T071	Caulfield T/CFD	0.00	471	561.49	561.49	0.14	0.14	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 561 minutes
2008	WD001	West Doncaster	5.40	774	726.16	762.14	1.70	1.85	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 642.4 minutes
2008	WD003	West Doncaster	4.40	588	863.42	863.42	1.02	1.02	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 859.4 minutes
2008	WD013	West Doncaster	5.20	1082	1384.35	1384.35	2.01	2.01	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 1295.3 minutes
2008	WD015	West Doncaster	11.60	1446	915.38	915.38	1.03	1.03	No plan - Feeder Performance largely attributed to the excluded April storm, contributing 911.8 minutes

9 Appendix D: Supply areas (zone substations) reliability information, 2003-8

This section provides, for each distribution business:

- one or more maps of the area served by its network, showing the location of each area supplied by a zone substation
- a key to the abbreviated names of the areas
- details of the reliability of supply over the past five years to the customers in each area.

CitiPower

Figure D.1 **CitiPower supply area map**

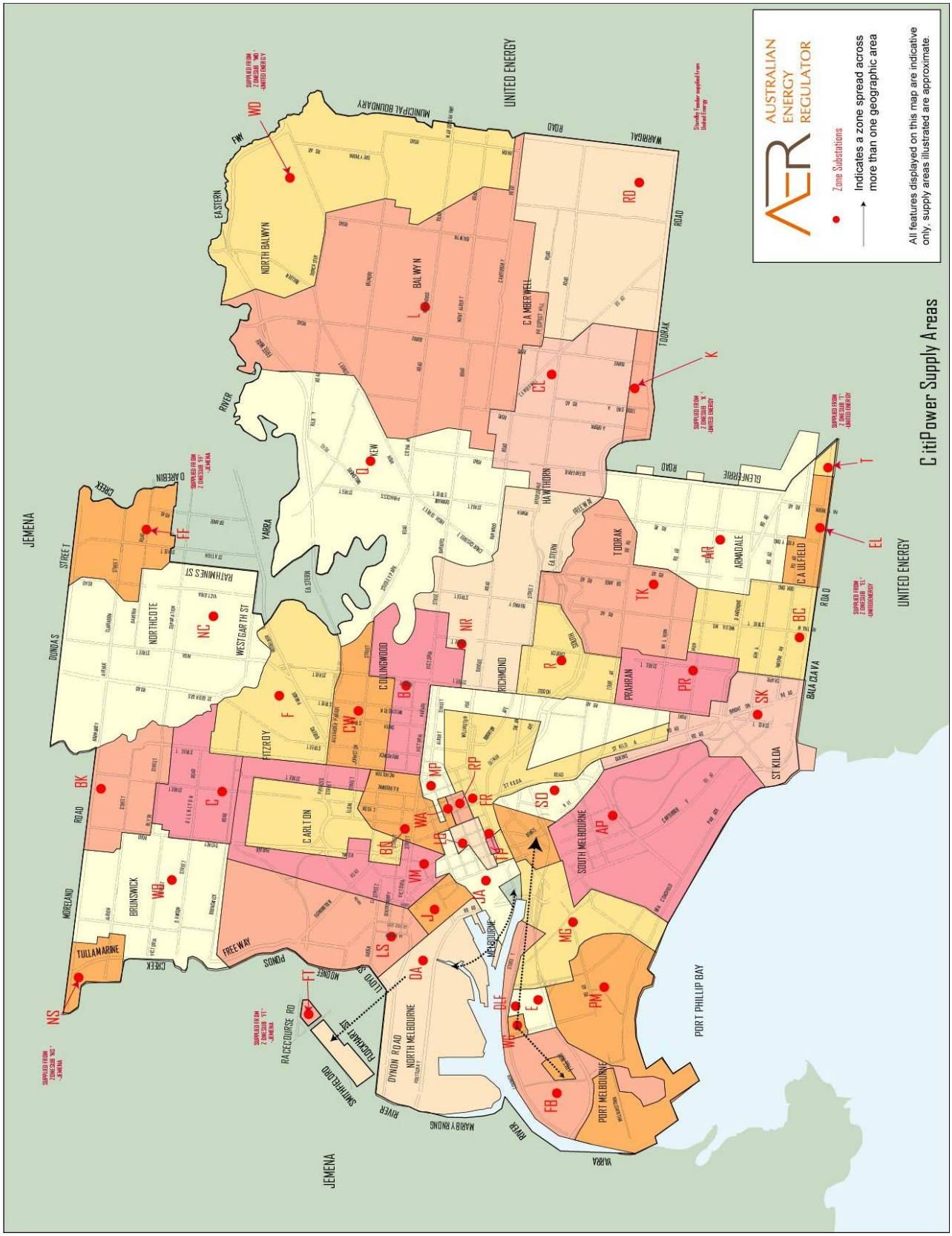


Table D.1 **CitiPower substation abbreviations**

AP	Albert Park	MP	McIlwraith Place
AR	Armadale	NC	Northcote
B	Collingwood ('B feeders')	NR	North Richmond
BC	Balaclava	NS	North Essendon
BK	Brunswick ('BK feeders')	PM	Port Melbourne
BQ	Bouverie/Queensberry St	PR	Prahran
BTS-RUS	Fitzroy	Q	Kew
BTS-VP	Collingwood	R	Richmond
BW	Burwood	R-CRE	Richmond
C	Brunswick ('C feeders')	RD	Riversdale
CL	Camberwell	RP	Russell Place
CW	Collingwood ('CW feeders')	RTS-BUR	North Richmond
DA	Dock Area	RTS-CIT	Richmond
DLF	Dockland ('DLF feeders')	RUS-VP	Collingwood ('CW feeders')
E	Fisherman's Bend ('E feeders')	SK	St Kilda
EL	Elsternwick	SM	South Melbourne, SM
F	Fitzroy	SM-CIT	South Melbourne, SM
FB	Fisherman's Bend ('FB feeders')	SO	South Melbourne ('SO/SM
FF	Fairfield	T	Caulfield
FR	Flinders-Ramsden	TK	Toorak
FT	Flemington	TP	Tavistock Place
J	Spencer Street	VM	Victoria Market
JA	Little Bourke Street	WA	Waratah Place
K	Gardiner	WB	Brunswick ('WB feeders')
L	Balwyn	WD	West Doncaster
LQ	Little Queen	WG	Westgate
LS	Laurens Street	WMTS-NM	Laurens Street
MG	Montague		

Table D.2 **CitiPower supply area performance**

		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	2008	16370	13.04	23.62	0.23	0.26
		2007	15473	17.36	20.71	0.38	0.40
		2006	14661	14.25	16.26	0.25	0.25
		2005	14374	19.19	25.23	0.44	0.45
		2004	13560	14.66	18.23	1.49	1.50
		2003	13276	14.73	30.65	0.30	0.34
Armadale	AR	2008	12544	34.70	42.54	0.28	0.31
		2007	12528.5	82.48	88.58	0.73	0.76
		2006	12432	13.17	28.71	0.26	0.31
		2005	12297	8.35	18.84	0.17	0.21
		2004	12101	23.04	47.93	0.37	0.44

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2003	11961	13.76	23.06	0.28	0.31
Collingwood ('B feeders')	B	2008	5010	3.47	3.99	0.05	0.05
		2007	5007	10.18	13.80	0.34	0.35
		2006	4986	6.44	7.53	0.23	0.23
		2005	4430	29.90	30.49	0.67	0.67
		2004	3873	1.39	1.39	0.03	0.03
		2003	3854	21.95	28.18	0.37	0.40
Balaclava	BC	2008	10829	2.66	7.43	0.04	0.06
		2007	10676.5	62.57	68.42	0.90	0.92
		2006	10744	32.08	39.44	1.48	1.51
		2005	10363	60.46	67.66	0.47	0.49
		2004	10335	15.64	24.17	0.26	0.28
		2003	10360	28.63	37.68	0.50	0.53
Brunswick ('BK feeders')	BK	2008	6536.5	24.11	24.68	0.36	0.36
		2007	6498.5	28.52	30.03	0.39	0.39
		2006	6419	11.91	21.61	0.26	0.29
		2005	6339	68.62	72.97	0.96	0.97
		2004	6226	12.55	17.46	0.22	0.24
		2003	6192	48.51	55.06	1.12	1.14
Bouverie/Queensberry St	BQ	2008	7423	8.44	8.49	0.10	0.10
		2007	7382	75.30	76.99	0.31	0.31
		2006	7395	15.96	38.23	0.21	0.29
		2005	7651	6.21	6.93	0.09	0.09
		2004	7924	32.98	33.95	0.54	0.55
		2003	6978	0.76	1.99	0.02	0.02
Fitzroy	BTS-RUS	2008	1	0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	0	0.00	0.00	0.00	0.00
Collingwood	BTS-VP	2008	1.5	158.67	158.67	1.33	1.33
		2007	2	0.00	0.00	0.00	0.00
		2006	2	0.00	0.00	0.00	0.00
Burwood	BW	2008	0	0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	0	0.00	0.00	0.00	0.00
		2005	0	0.00	0.00	0.00	0.00
		2004	0	0.00	0.00	0.00	0.00
		2003	0	0.00	0.00	0.00	0.00
Brunswick ('C feeders')	C	2008	4983	26.45	27.77	0.28	0.29
		2007	4932	17.15	21.28	0.31	0.33
		2006	4874	2.58	5.87	0.04	0.05
		2005	4802	115.62	123.16	0.77	0.80
		2004	4688	2.58	4.71	0.05	0.06
		2003	4644	1.71	5.10	0.03	0.04
Camberwell	CL	2008	11331.5	41.60	45.09	0.41	0.42
		2007	11205	197.11	200.81	1.41	1.43
		2006	11031	14.26	24.89	0.30	0.34
		2005	10990	52.59	67.66	0.68	0.73
		2004	12257	11.68	15.15	0.30	0.31
		2003	10558	64.22	96.62	1.62	1.72
Collingwood ('CW feeders')	CW	2008	9573.5	22.80	29.22	0.41	0.44
		2007	9477.5	14.61	16.71	0.22	0.23
		2006	9419	16.96	17.79	0.36	0.36
		2005	9559	7.93	9.12	0.22	0.23
		2004	9523	11.83	19.56	0.20	0.23
		2003	9362	29.42	34.35	0.46	0.48
Dock Area	DA	2008	3309.5	8.23	11.17	0.20	0.21
		2007	3239	225.54	225.67	2.10	2.10
		2006	3113	2.63	5.52	0.05	0.06
		2005	2762	13.22	13.30	0.23	0.23
		2004	2565	4.12	7.75	0.12	0.13
		2003	2396	2.74	2.79	0.18	0.18
Dockland ('DLF feeders')	DLF	2008	3.5	0.00	0.00	0.00	0.00
		2007	1	0.00	0.00	0.00	0.00
Fisherman's Bend ('E feeders')	E	2008	20.5	0.00	0.00	0.00	0.00
		2007	11	229.09	240.91	0.91	1.00

		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	8	0.00	0.00	0.00	0.00
		2005	6	0.00	30.00	0.00	0.17
		2004	5	22.40	120.80	0.20	1.60
		2003	34	1.59	147.62	0.06	1.59
Elsternwick	EL	2008	1161	15.89	49.63	0.28	0.39
		2007	1327.5	4.46	6.03	0.05	0.06
		2006	1304	64.36	64.36	1.13	1.13
		2005	1248	39.26	43.22	1.05	1.06
		2004	1230	1.14	1.14	0.03	0.03
		2003	1233	64.34	64.34	1.07	1.07
Fitzroy	F	2008	7939	8.99	9.41	0.22	0.22
		2007	7834.5	19.18	27.57	0.28	0.31
		2006	7696	28.83	28.88	0.45	0.45
		2005	7716	34.58	35.59	0.32	0.33
		2004	7666	9.58	15.58	0.38	0.41
		2003	7692	68.39	69.22	1.38	1.38
Fisherman's Bend ('FB feeders')	FB	2008	239	8.74	54.00	0.15	0.26
		2007	214.5	239.08	251.20	1.07	1.13
		2006	207	10.71	10.71	0.31	0.31
		2005	192	6.04	53.82	0.08	0.26
		2004	152	2.49	19.07	0.01	0.13
		2003	148	203.40	288.13	2.05	2.20
Fairfield	FF	2008	3043	19.36	20.84	0.16	0.17
		2007	3029	107.80	108.42	0.89	0.90
		2006	3014	6.69	8.19	0.14	0.14
		2005	2994	47.94	50.53	0.76	0.77
		2004	2948	62.55	64.38	1.12	1.13
		2003	2938	28.79	32.24	0.29	0.30
Flinders-Ramsden	FR	2008	4605.5	11.48	15.02	0.15	0.18
		2007	4602.5	8.12	14.09	0.20	0.22
		2006	4433	4.17	10.63	0.04	0.07
		2005	4196	39.07	39.43	0.42	0.43
		2004	4094	31.38	42.54	0.48	0.52
		2003	4077	15.02	18.23	0.20	0.21
Flemington	FT	2008	403	414.56	414.56	1.47	1.47
		2007	403	184.39	186.07	2.00	2.01
		2006	403	100.13	100.13	1.53	1.53
		2005	405	129.49	129.49	1.47	1.47
		2004	403	109.72	203.68	1.02	1.50
		2003	397	1.93	1.93	0.03	0.03
Spencer Street	J	2008	1425	1.74	13.81	0.02	0.10
		2007	1430.5	2.75	3.04	0.02	0.03
		2006	1315	0.72	2.83	0.01	0.04
		2005	1158	0.34	49.00	0.01	0.11
		2004	1051	1.63	3.25	0.02	0.03
		2003	1049	0.81	0.83	0.02	0.02
Little Bourke Street	JA	2008	5506	4.05	7.67	0.05	0.05
		2007	4936.5	9.23	10.30	0.08	0.09
		2006	4527	1.64	1.90	0.04	0.04
		2005	4315	2.04	3.39	0.04	0.05
		2004	4058	4.99	4.99	0.14	0.14
		2003	4107	10.13	11.61	0.21	0.22
Gardiner	K	2008	1126	115.85	122.46	0.72	0.74
		2007	1118.5	137.11	140.67	0.95	0.97
		2006	1131	7.62	7.62	0.24	0.24
		2005	1151	36.28	49.17	1.16	1.20
		2004	1136	12.99	13.36	0.40	0.41
		2003	1150	1.23	11.43	0.04	0.07
Balwyn	L	2008	14086	95.25	100.63	0.73	0.75
		2007	14329	56.86	59.51	0.98	0.98
		2006	14604	26.33	28.76	0.51	0.52
		2005	14901	87.87	92.40	1.21	1.23
		2004	15101	16.92	35.57	0.26	0.32
		2003	15100	8.39	12.09	0.35	0.36
Little Queen	LQ	2008	4936.5	0.22	0.58	0.00	0.00
		2007	5085.5	0.67	0.67	0.01	0.01
		2006	5034	12.82	17.14	0.17	0.20
		2005	4649	1.14	1.65	0.02	0.02
		2004	4492	5.89	9.12	0.11	0.12
		2003	4484	3.62	4.18	0.05	0.05

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Laurens Street	LS	2008	4885.5	37.17	37.46	0.70	0.70
		2007	4814.5	4.97	10.07	0.10	0.13
		2006	4738	35.08	35.92	0.31	0.31
		2005	4598	15.01	33.66	0.29	0.35
		2004	4370	6.86	17.83	0.30	0.34
		2003	4315	6.81	7.63	0.09	0.09
Montague	MG	2008	6823	9.34	21.86	0.46	0.54
		2007	6418	11.11	17.69	0.25	0.27
		2006	5905	64.23	68.29	0.93	0.94
		2005	6004	11.15	21.23	0.34	0.37
		2004	5899	86.05	88.45	1.44	1.45
		2003	5579	55.87	67.75	1.21	1.25
McIlwraith Place	MP	2008	9356	2.92	5.39	0.06	0.06
		2007	9444.5	17.64	18.49	0.47	0.47
		2006	9401	12.11	14.85	0.40	0.43
		2005	9001	30.94	31.99	0.22	0.23
		2004	8333	22.43	29.68	0.59	0.62
		2003	8176	13.67	17.26	0.25	0.26
Northcote	NC	2008	17275.5	95.67	99.05	1.07	1.08
		2007	17210	307.52	309.38	2.60	2.61
		2006	17121	79.88	82.80	0.97	0.99
		2005	16999	43.86	43.97	0.70	0.70
		2004	16693	26.55	35.09	0.57	0.60
		2003	16646	29.73	33.14	0.48	0.49
North Richmond	NR	2008	14246.5	33.88	42.49	0.60	0.62
		2007	14244	17.68	22.28	0.41	0.43
		2006	14036	23.20	26.13	0.54	0.56
		2005	13792	66.54	80.75	0.57	0.61
		2004	13509	31.84	36.32	0.55	0.57
		2003	13324	28.99	33.00	0.57	0.58
North Essendon	NS	2008	1518.5	5.59	5.59	0.09	0.09
		2007	1499	63.37	63.37	1.05	1.05
		2006	1470	13.52	13.52	0.52	0.52
		2005	1456	0.54	3.36	0.01	0.02
		2004	1437	4.54	8.43	0.06	0.08
		2003	1425	0.81	0.81	0.02	0.02
Port Melbourne	PM	2008	2924.5	15.81	20.47	0.37	0.42
		2007	2861	274.51	278.53	1.37	1.38
		2006	2723	2.83	26.47	0.06	0.14
		2005	2549	24.33	24.33	0.60	0.60
		2004	2431	7.95	25.42	0.22	0.27
		2003	2407	5.39	5.39	0.15	0.15
Prahran	PR	2008	8010	98.37	99.92	1.23	1.24
		2007	7149	167.81	176.14	1.01	1.03
		2006	6424	3.59	5.15	0.06	0.07
		2005	6194	26.48	37.12	0.31	0.34
		2004	6077	10.26	10.55	0.09	0.09
		2003	6025	121.61	124.42	2.33	2.34
Kew	Q	2008	13797.5	70.75	72.97	1.44	1.45
		2007	14365.5	36.04	44.41	1.50	1.54
		2006	13336	33.02	35.50	0.82	0.83
		2005	13249	81.57	86.53	0.65	0.66
		2004	13094	1.14	5.87	0.01	0.03
		2003	13045	16.88	18.57	0.29	0.29
Richmond	R	2008	6433.5	3.21	10.61	0.07	0.09
		2007	6199.5	209.64	215.58	1.05	1.06
		2006	6220	45.81	55.51	0.94	0.98
		2005	6136	5.71	11.98	0.09	0.12
		2004	5774	6.84	14.45	0.18	0.21
		2003	5642	15.52	26.98	0.38	0.42
Richmond	R-CRE	2008	2	0.00	0.00	0.00	0.00
		2007	2	0.00	0.00	0.00	0.00
		2006	2	0.00	0.00	0.00	0.00
Riversdale	RD	2008	12271	155.84	163.51	1.04	1.06
		2007	11787.5	52.55	53.14	0.74	0.74
		2006	11368	26.38	31.00	0.45	0.46
		2005	11517	116.85	122.30	1.20	1.22
		2004	9871	27.88	38.70	0.71	0.74
		2003	9487	37.92	50.82	0.60	0.64
Russell Place	RP	2008	963	0.35	0.35	0.00	0.00
		2007	949	0.99	0.99	0.02	0.02
		2006	963	0.69	0.69	0.01	0.01

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2005	976	0.82	0.82	0.01	0.01
		2004	935	0.70	0.70	0.01	0.01
		2003	925	0.39	0.39	0.01	0.01
North Richmond	RTS-BUR	2008	3	0.00	0.00	0.00	0.00
		2007	2	2.00	2.00	1.00	1.00
		2006	2	0.00	0.00	0.00	0.00
Richmond	RTS-CIT	2008	1	0.00	0.00	0.00	0.00
		2007	1	0.00	0.00	0.00	0.00
		2006	1	0.00	0.00	0.00	0.00
Collingwood ('CW feeders')	RUS-VP	2008	0	0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	1	0.00	0.00	0.00	0.00
St Kilda	SK	2008	12623.5	74.97	78.72	1.34	1.35
		2007	13686.5	50.28	55.14	0.90	0.91
		2006	13315	11.58	15.59	0.32	0.34
		2005	13234	10.64	17.24	0.33	0.35
		2004	12860	23.09	29.05	0.92	0.94
		2003	12674	7.41	15.96	0.09	0.12
South Melbourne, SM	SM	2008		0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	2773	25.71	35.94	0.87	0.94
		2005	2025	0.24	0.24	0.00	0.00
		2004	1469	0.26	0.26	0.00	0.00
		2003	1143	0.75	1.77	0.02	0.02
South Melbourne, SM	SM-CIT	2008		0.00	0.00	0.00	0.00
		2007	1	0.00	0.00	0.00	0.00
		2006	1	0.00	0.00	0.00	0.00
South Melbourne	SO	2008	6145.5	15.81	16.07	0.19	0.19
		2006	6322	0.44	1.81	0.01	0.01
		2005	6242	20.07	20.39	0.54	0.54
		2004	5639	6.36	6.65	0.35	0.36
		2003	5217	9.70	10.44	0.17	0.17
South Melbourne ('SO/SM feeders')	SO	2007	9175	206.78	207.18	1.07	1.07
Caulfield	T	2008	267.5	0.07	0.07	0.00	0.00
		2007	70.5	1.09	1.09	0.01	0.01
		2006	70	1.74	1.74	0.03	0.03
		2005	72	1.82	35.46	0.03	0.22
		2004	68	0.00	0.00	0.00	0.00
		2003	71	0.00	0.00	0.00	0.00
Toorak	TK	2008	12799	25.94	29.25	0.24	0.26
		2007	12871	14.51	27.43	1.27	1.33
		2006	12446	36.60	47.76	1.55	1.59
		2005	12309	52.44	59.70	0.68	0.70
		2004	12024	9.03	33.44	0.20	0.27
		2003	11968	10.99	16.44	0.26	0.28
Tavistock Place	TP	2008	655	0.39	0.82	0.01	0.02
		2007	659.5	0.31	0.31	0.01	0.01
		2006	664	7.77	7.77	0.06	0.06
		2005	673	5.79	5.79	0.07	0.07
		2004	651	1.36	1.36	0.02	0.02
		2003	662	0.98	28.04	0.02	0.23
Victoria Market	VM	2008	10532	5.65	9.47	0.07	0.08
		2007	10450	264.91	269.38	0.99	1.00
		2006	9646	14.34	18.55	0.14	0.16
		2005	9130	14.80	26.35	0.10	0.14
		2004	9145	37.69	42.23	0.60	0.63
		2003	8719	2.23	5.53	0.04	0.06
Waratah Place	WA	2008	5723.5	3.33	3.83	0.07	0.07
		2007	5715.5	6.31	6.31	0.09	0.09
		2006	5696	16.69	19.69	0.35	0.36
		2005	5238	1.91	2.90	0.02	0.02
		2004	4648	6.43	9.50	0.15	0.18
		2003	4509	1.33	14.82	0.02	0.08
Brunswick ('WB feeders')	WB	2008	12752	47.68	48.05	0.60	0.60
		2007	11023	229.99	230.85	1.33	1.34
		2006	10855	118.63	121.64	1.61	1.62
		2005	10752	19.41	31.14	0.42	0.46
		2004	10493	26.61	35.50	0.36	0.38

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2003	10365	17.24	20.49	1.24	1.25
West Doncaster	WD	2008	8924	184.06	188.00	1.72	1.73
		2007	9034	53.04	54.62	0.83	0.84
		2006	9016	16.13	21.34	0.73	0.74
		2005	9117	93.83	108.20	0.78	0.83
		2004	9407	87.31	87.95	1.47	1.47
		2003	9661	22.99	25.27	0.36	0.37
Westgate	WG	2008	1181	14.63	16.44	0.26	0.27
		2007	1011	35.38	117.35	0.20	0.46
		2006	124	3.40	5.17	0.04	0.05
		2005	130	0.89	100.20	0.02	0.34
		2004	94	11.15	11.15	0.35	0.35
		2003	39	0.00	0.00	0.00	0.00
Laurens Street	WMT S-NM	2008	2	0.00	0.00	0.00	0.00
		2007	2	108.00	108.00	1.00	1.00
		2006	2	0.00	0.00	0.00	0.00

Jemena

Figure D.2 **Jemena supply area map**

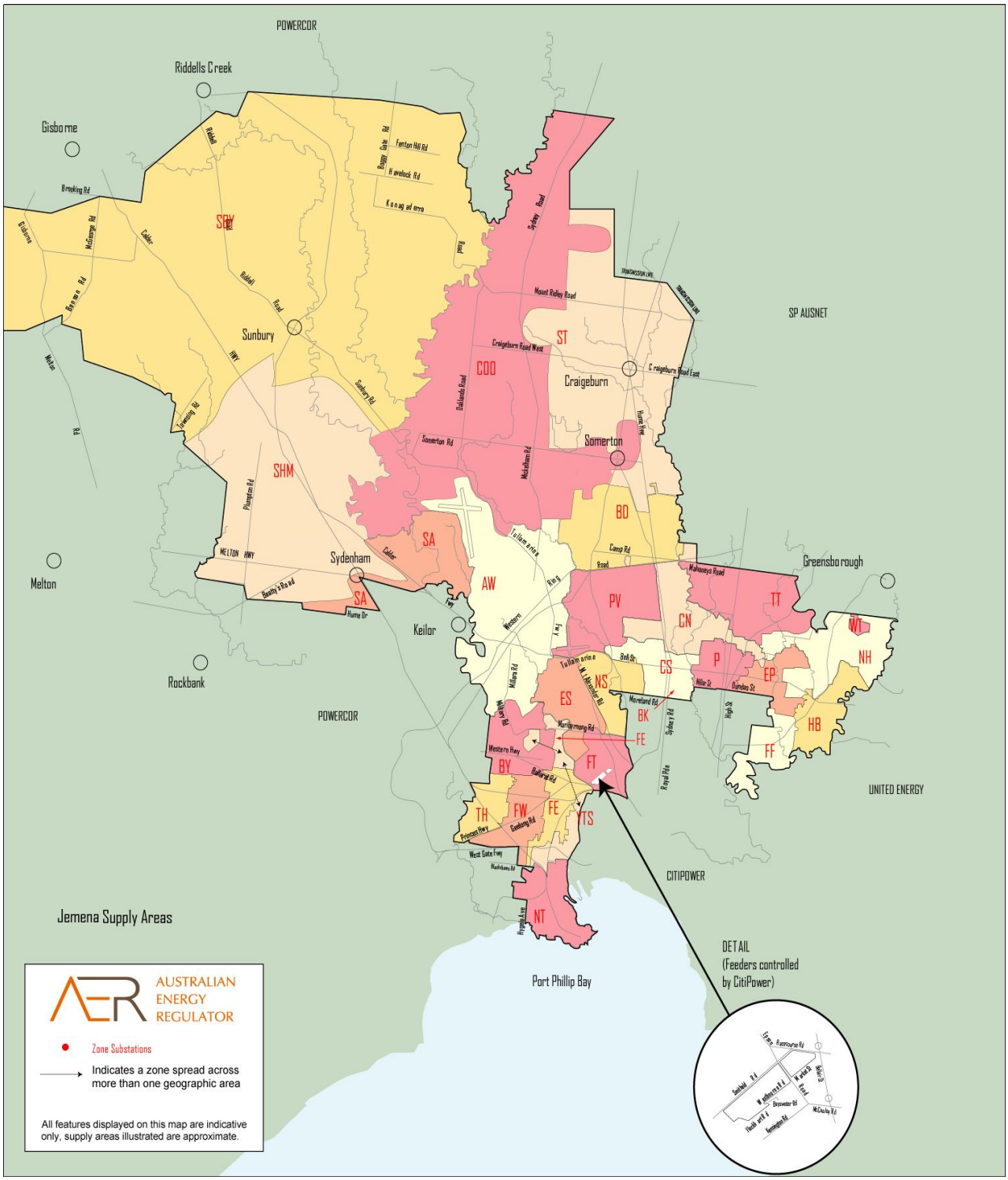


Table D.3 **Jemena substation abbreviations**

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

Table D.4 **Jemena supply area performance**

		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	2008	24768	40.75	57.07	0.66	0.73
		2007	23799	138.81	153.18	2.34	2.38
		2006	22826	130.44	134.94	1.79	1.81
		2005	23047	82.79	92.54	1.13	1.16
		2004	21841	83.26	88.61	1.18	1.20
		2003	27992	71.91	75.46	1.04	1.06
Broadmeadows	BD	2008	16150	48.47	54.31	0.57	0.60
		2007	19206	198.15	202.32	2.63	2.65
		2006	18576	159.38	163.19	2.46	2.48
		2005	18241	42.55	43.60	1.07	1.08
		2004	18245	132.30	135.11	2.89	2.91
Brunswick ('BK feeders')	BK	2008		0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	2	0.00	0.00	0.00	0.00
		2005	2	0.00	0.00	0.00	0.00
		2004	2	0.00	0.00	0.00	0.00
		2003	1	40.00	40.00	1.00	1.00
Braybrook	BY	2008	8549	149.55	154.53	1.22	1.25
		2007	8862	43.55	56.77	0.87	0.92
		2006	8130	105.37	110.73	1.57	1.59
		2005	8626	30.78	33.95	0.73	0.74
		2004	7723	7.22	8.32	0.26	0.28
		2003	7681	35.07	36.97	0.58	0.58
Broadmeadows	BY	2003	16639	96.76	104.55	1.75	1.79
		2008	21108	176.41	182.82	2.17	2.19
		2007	20014	80.73	83.91	1.13	1.16
		2006	18847	127.45	129.33	2.01	2.01
		2005	18715	84.72	85.57	2.37	2.38
		2004	18178	30.47	32.35	0.41	0.42
		2003	23139	171.69	172.11	1.96	1.96
Coburg North	COO	2008	10009	73.86	79.63	0.45	0.48
		2008	16606	148.23	163.88	2.15	2.20
		2007	17046	90.40	97.95	1.16	1.20
		2006	16352	189.49	193.52	2.48	2.51
		2005	15499	55.61	63.96	1.34	1.36
		2004	14233	37.91	46.18	0.75	0.80

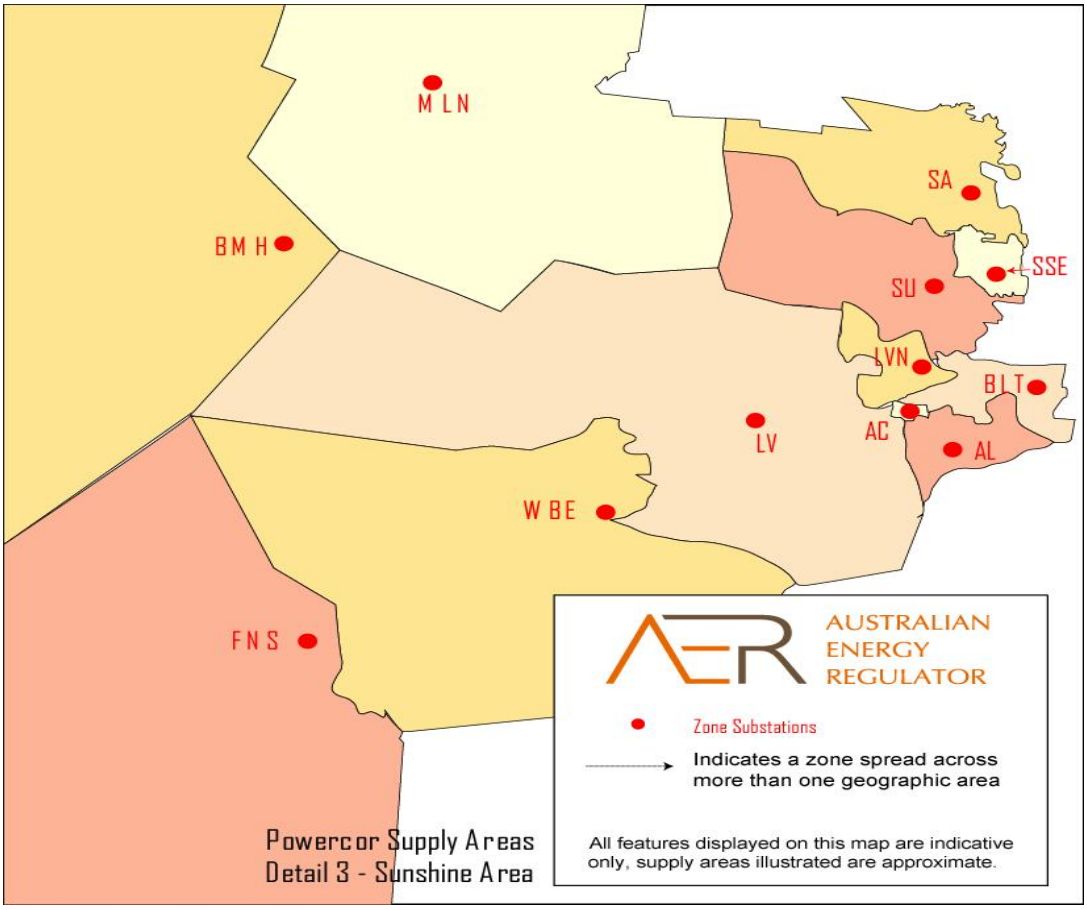
		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2003	13695	74.12	77.55	1.01	1.04
East Preston	EP	2008	6918	63.60	82.41	0.84	1.07
		2007	6767	57.70	60.05	0.92	0.95
		2006	6450	39.70	46.53	1.42	1.44
		2005	6376	20.82	25.50	0.49	0.51
		2004	6782	3.63	22.93	0.04	0.10
		2003	6774	9.15	13.19	0.12	0.20
Essendon	ES	2008	13596	17.09	25.37	0.16	0.20
		2007	14265	48.14	55.95	0.72	0.75
		2006	15470	39.82	42.57	0.53	0.54
		2005	13284	18.66	22.60	0.26	0.28
		2004	16242	18.33	19.11	1.08	1.09
		2003	13332	9.91	10.38	0.19	0.19
Footscray East	FE	2008	13070	70.86	75.51	0.40	0.41
		2007	13542	146.11	149.50	1.97	1.99
		2006	11682	22.96	26.49	0.41	0.42
		2005	12098	29.78	33.39	1.37	1.40
		2004	11254	27.51	28.78	0.48	0.49
		2003	11160	24.24	30.81	0.51	0.52
Fairfield	FF	2008	6492	152.93	153.31	0.68	0.68
		2007	7360	55.04	64.51	0.88	0.93
		2006	7402	74.63	89.29	0.92	0.96
		2005	7132	26.04	41.55	0.37	0.43
		2004	8347	51.88	57.61	0.60	0.63
		2003	6973	72.78	73.88	0.79	0.80
Flemington	FT	2008	14699	76.26	79.92	0.66	0.67
		2007	13836	206.65	210.48	2.89	2.91
		2006	15675	98.29	102.34	1.69	1.71
		2005	15439	105.23	112.53	1.35	1.38
		2004	13482	114.15	114.76	1.75	1.76
		2003	12517	49.46	51.32	0.82	0.83
Footscray West	FW	2008	11779	222.49	232.11	1.76	1.79
		2007	12061	260.16	284.02	2.97	3.03
		2006	13222	35.38	36.27	0.63	0.63
		2005	11508	77.48	80.59	1.64	1.66
		2004	11272	34.67	40.56	0.64	0.67
		2003	11120	100.05	109.24	1.85	1.87
Heidelberg	HB	2008	7969	233.18	239.20	1.62	1.65
		2007	8012	48.19	49.73	0.46	0.47
		2006	7217	66.67	71.81	0.90	0.92
		2005	7183	119.53	122.47	1.38	1.39
		2004	7196	56.45	62.74	0.89	0.92
		2003	7162	58.02	64.48	0.88	0.91
North Heidelberg	NH	2008	19940	227.16	232.02	2.89	2.91
		2007	17785	96.03	100.25	1.47	1.49
		2006	17106	92.47	103.53	1.15	1.18
		2005	17919	114.70	119.07	1.49	1.50
		2004	14415	57.43	85.32	0.75	0.84
		2003	14054	129.99	152.13	2.25	2.35
North Essendon	NS	2008	10039	32.21	54.09	0.16	0.25
		2007	10728	56.22	61.08	1.07	1.08
		2006	10312	70.96	88.77	1.11	1.24
		2005	10833	28.37	32.92	0.26	0.31
		2004	11605	8.25	17.76	0.13	0.22
		2003	13088	29.75	40.25	0.43	0.51
Newport	NT	2008	14046	172.59	173.93	1.22	1.22
		2007	11892	85.95	90.44	1.32	1.35
		2006	11868	91.50	99.44	1.34	1.38
		2005	11659	267.66	274.11	3.33	3.35
		2004	11176	56.06	63.63	1.03	1.06
		2003	11108	213.97	216.23	4.10	4.12
Preston	P	2008	9491	138.71	145.57	0.37	0.39
		2007	9885	32.32	39.63	0.35	0.39
		2006	9291	48.30	54.01	0.75	0.76
		2005	9149	44.67	46.70	0.47	0.48
		2004	8987	9.58	12.36	0.11	0.12
		2003	9083	16.94	21.33	0.39	0.41
Pascoe Vale	PV	2008	16159	31.24	37.84	0.46	0.49
		2007	17241	72.52	76.34	1.69	1.71
		2006	16990	47.36	51.71	0.37	0.39
		2005	15368	40.24	41.20	0.70	0.70
		2004	15127	24.79	35.66	0.47	0.52
		2003	15156	74.59	76.18	0.87	0.88

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
St Albans	SA	2008	5212	96.30	101.23	1.70	1.73
		2007	8158	46.88	65.85	1.23	1.30
		2006	7772	26.34	34.84	2.45	2.49
		2005	8765	146.27	163.34	3.72	3.80
		2004	7048	23.70	24.45	1.02	1.02
		2003	6576	127.62	138.04	5.59	5.64
Sunbury	SBY	2008	18843	100.88	121.03	2.29	2.36
		2007	18819	134.66	143.03	3.53	3.56
		2006	18280	137.28	159.31	1.31	1.38
		2005	18196	261.17	280.87	3.12	3.18
		2004	16700	72.79	81.96	0.92	0.97
		2003	16181	246.91	266.65	5.97	6.06
Sunbury	SHM	2008	9478	19.71	24.24	0.17	0.19
Somerton	ST	2008	14461	181.99	225.03	2.34	2.47
		2007	19802	188.90	219.26	3.96	4.04
		2006	17287	51.68	77.75	1.42	1.48
		2005	18974	136.88	147.97	1.36	1.41
		2004	18308	111.36	116.89	1.59	1.62
		2003	14724	28.98	37.40	0.38	0.42
Tottenham	TH	2008	1070	50.05	64.27	0.65	0.71
		2007	1126	15.97	19.64	0.18	0.20
		2006	1041	105.61	107.30	1.75	1.76
		2005	1070	82.67	93.76	1.01	1.06
		2004	944	61.55	64.93	0.84	0.85
		2003	1466	241.74	246.99	1.35	1.37
Thomastown	TT	2008	14040	161.75	165.90	2.48	2.50
		2007	14396	33.31	35.13	0.41	0.42
		2006	16886	90.69	92.53	1.23	1.23
		2005	16284	120.07	125.68	2.15	2.17
		2004	17805	98.68	107.17	1.07	1.10
		2003	15517	117.26	119.62	1.70	1.71
Watsonia	WT	2008	134	405.54	405.54	1.57	1.57
		2007	132	48.45	52.71	0.63	0.66
		2006	128	182.48	182.48	5.02	5.02
		2005	490	16.27	16.27	0.25	0.25
		2004	123	52.00	52.00	1.00	1.00
		2003	134	99.49	99.49	1.27	1.27
Yarraville Terminal Station	YTS	2008	5140	178.91	184.86	1.12	1.15
		2007	5229	139.91	187.34	2.03	2.14
		2006	5066	59.90	70.02	0.62	0.65
		2005	5155	45.18	50.40	0.75	0.77
		2004	4967	104.29	107.24	1.24	1.25
		2003	4661	118.66	122.63	1.82	1.83

Powercor

Figure D.3a **Powercor supply area map**

Figure D.3b **Powercor supply area maps**



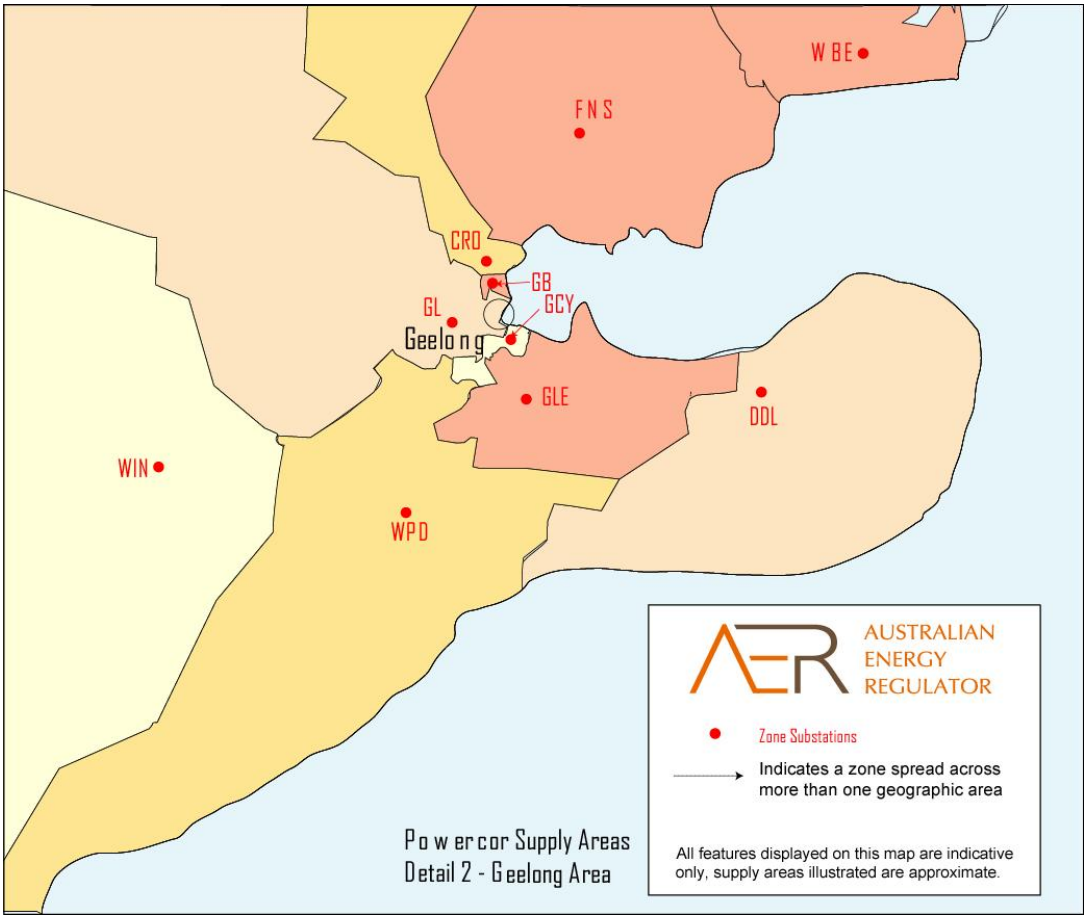


Table D.5 **Powercor substation abbreviations**

Powercor substation abbreviations

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

Table D.5 **Powercor supply area performance**

		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 Chemicals	AC	2007	10	0.00	0.00	0.00	0.00
		2006	10	11.40	11.40	0.10	0.10
		2005	9	0.00	0.00	0.00	0.00
		2004	9	0.00	27.22	0.00	0.11
		2003	11	5.45	99.55	0.09	0.18
Altona	AL	2008	6242	40.67	47.48	0.68	0.70
		2007	6230	91.62	115.12	0.91	1.01
		2006	6173	65.92	73.18	1.31	1.34
		2005	6132	96.51	98.65	1.06	1.08
		2004	6084	62.93	63.87	0.73	0.73
		2003	6008	30.24	31.18	0.18	0.19
Ararat	ART	2008	6321	140.20	172.72	0.75	0.90

		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	6296	62.06	122.32	1.47	1.81
		2006	6282	475.16	502.76	3.99	4.17
		2005	6262	81.74	100.71	0.72	0.87
		2004	6202	23.68	28.18	0.33	0.41
		2003	6131	167.95	176.97	2.11	2.20
Ballarat North	BAN	2008	32037	108.49	132.28	1.38	1.52
		2007	31559	155.98	167.50	2.28	2.36
		2006	31000	182.25	187.64	4.96	5.01
		2005	30563	228.40	236.47	2.49	2.54
		2004	30033	111.02	124.12	1.49	1.58
		2003	29308	276.71	283.35	2.87	2.90
Ballarat South	BAS	2008	28568	121.85	132.12	1.39	1.50
		2007	28182	85.92	98.60	1.79	1.84
		2006	27684	149.72	162.72	2.92	3.00
		2005	27118	122.72	138.52	1.51	1.65
		2004	26489	200.05	213.36	2.82	2.90
		2003	25917	157.90	165.27	1.60	1.67
Bendigo Terminal	BET	2008	11370	54.37	70.73	0.69	0.76
		2007	15817	283.04	302.59	3.42	3.50
		2006	16848	328.38	338.34	3.35	3.45
		2005	12272	157.58	173.78	2.17	2.26
		2004	10901	26.62	39.73	0.38	0.45
		2003	9977	86.22	109.13	1.04	1.15
Bendigo	BGO	2008	17889	68.77	83.08	0.95	1.07
		2007	15920	306.85	363.98	2.65	3.26
		2006	16829	209.49	230.36	0.97	1.06
		2005	17617	128.30	144.34	1.65	1.74
		2004	17662	54.79	85.26	0.98	1.14
		2003	17546	77.76	94.63	1.24	1.31
Brooklyn	BLT	2008	5836	130.73	137.90	1.80	1.86
		2007	6130	234.95	243.30	2.07	2.10
		2006	6063	146.17	160.46	1.82	1.86
		2005	6000	182.02	184.63	1.78	1.79
		2004	5893	86.77	88.30	1.11	1.13
		2003	5786	135.16	135.54	1.50	1.50
Bacchus Marsh	BMH	2008	8251	154.22	159.94	1.10	1.13
		2007	8939	275.45	288.38	3.10	3.18
		2006	8728	149.58	177.13	1.66	1.96
		2005	8500	238.63	255.83	2.40	2.49
		2004	8288	231.51	259.52	2.47	2.74
		2003	8045	189.49	195.25	2.14	2.17
Camperdown	CDN	2008	8159	267.39	307.83	1.70	1.91
		2007	5711	405.66	436.81	3.35	3.46
		2006	5714	267.16	290.64	3.29	3.43
		2005	5686	173.73	180.70	2.54	2.60
		2004	5635	92.36	97.98	1.40	1.45
		2003	5608	188.12	198.65	2.09	2.17
Cohuna	CHA	2008	3090	182.55	221.91	2.37	3.00
		2007	4285	134.50	181.09	0.96	1.22
		2006	4159	130.92	137.51	0.88	0.91
		2005	4138	183.73	236.07	2.01	2.80
		2004	4109	263.17	269.09	3.28	3.38
		2003	4087	154.65	165.05	1.94	2.16
Charam	CHM	2008	1235	201.85	216.18	0.99	2.01
		2007	1594	597.58	679.63	1.98	2.57
		2006	1599	729.21	736.02	6.51	6.57
		2005	1607	188.86	191.34	2.04	3.01
Colac	CLC	2008	13504	204.70	229.92	1.49	1.78
		2007	15739	131.56	178.86	1.83	2.05
		2006	15550	175.89	217.02	2.98	3.30
		2005	15338	390.40	426.31	6.07	6.25
		2004	15134	336.62	357.88	4.57	4.70
		2003	14896	229.44	247.59	4.11	4.19
Cobram East	CME	2008	11496	264.02	318.85	3.98	4.27
		2007	7838	70.52	86.73	1.32	1.41
		2006	7683	64.02	88.24	1.93	2.15
		2005	7493	125.36	138.92	1.84	1.90
		2004	7255	88.83	127.87	1.41	1.65
		2003	7017	93.24	107.52	2.58	2.67
Castlemaine	CMN	2008	9619	100.31	124.40	1.24	1.34
		2007	9714	433.34	467.22	4.74	4.90
		2006	9614	373.32	402.31	1.93	2.11
		2005	9521	99.06	133.19	1.36	1.72

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2004	9382	163.99	180.28	3.02	3.11
		2003	9202	307.29	325.17	2.64	2.85
Cobden	COB	2008	3234	112.28	121.39	1.01	1.04
		2007	781	406.55	424.23	4.66	4.72
		2006	782	380.51	394.07	3.65	3.77
		2005	779	405.46	441.34	4.25	4.34
		2004	778	381.76	690.54	5.49	6.93
		2003	776	297.78	300.66	5.32	5.34
Corio	CRO	2008	9001	44.74	60.48	0.22	0.29
		2007	10062	192.82	226.89	0.77	0.89
		2006	10106	200.81	215.07	1.18	1.25
		2005	10059	75.78	78.88	0.35	0.36
		2004	9983	111.97	115.86	0.79	0.81
		2003	9859	190.37	191.48	1.01	1.01
Charlton	CTN	2008	6495	126.09	157.87	1.20	1.47
		2007	8157	498.55	504.14	5.03	5.08
		2006	8186	609.11	617.51	5.85	5.91
		2005	8198	516.96	570.85	4.66	8.58
		2004	8181	484.07	521.22	3.28	4.60
		2003	8139	530.15	545.41	5.56	5.67
Drysdale	DDL	2008	20924	133.37	164.53	1.57	1.77
		2007	23637	309.46	338.10	2.77	2.90
		2006	23314	105.69	130.21	1.20	1.29
		2005	23035	131.07	156.49	1.36	1.46
		2004	22563	78.25	93.86	0.86	0.95
		2003	22040	168.17	186.33	2.07	2.19
Dockland ('DLF feeders')	DLF	2008	5940	83.47	122.25	1.11	1.23
		2007	769	0.19	0.19	0.00	0.00
		2006	765	0.42	0.42	0.00	0.00
		2005	746	1.58	1.58	0.01	0.01
		2004	620	1.94	1.94	0.00	0.00
		2003	420	0.67	0.67	0.00	0.00
Echuca	ECA	2008	6475	35.22	55.33	0.25	0.33
		2007	8632	34.57	46.68	0.45	0.57
		2006	8484	162.62	181.40	3.75	3.81
		2005	8302	146.70	163.79	2.78	2.86
		2004	8111	83.05	96.79	0.78	0.86
		2003	7926	202.41	215.38	2.27	2.33
Eaglehawk	EHK	2008	16645	63.15	78.22	0.66	0.74
		2007	16648	311.92	335.47	4.49	4.63
		2006	16410	330.45	353.13	2.14	2.30
		2005	16790	176.95	204.82	1.83	1.93
		2004	17126	147.60	159.82	2.70	2.76
		2003	17083	362.70	373.52	3.24	3.29
Electricity Trust SA	ETSA	2008	3583	89.16	105.21	0.73	0.80
		2007	353	893.12	901.90	5.18	5.32
		2006	349	1221.04	1227.82	2.84	2.91
		2005	344	573.80	598.48	2.56	3.58
		2004	339	480.96	480.96	5.25	5.25
		2003	331	343.15	368.52	2.90	3.05
Ford North Shore	FNS	2008	9075	161.05	191.21	1.65	1.76
		2007	9144	248.30	350.45	2.79	3.36
		2006	9003	136.74	148.77	1.80	1.85
		2005	8927	90.23	100.98	0.41	0.47
		2004	8827	71.76	77.38	0.73	0.79
		2003	8649	198.50	210.83	2.68	2.73
Geelong B	GB	2008	713	82.95	88.12	0.80	0.82
		2007	995	143.23	174.09	1.28	1.37
		2006	632	69.96	311.39	1.43	2.61
		2005	276	3.84	20.48	0.03	0.11
		2004	274	89.76	91.26	0.93	0.94
		2003	272	62.18	72.33	0.45	0.51
Geelong City	GCY	2008	4034	19.03	73.04	0.20	0.41
		2007	8485	171.05	189.17	1.53	1.56
		2006	8461	56.87	74.96	0.78	0.84
		2005	7626	37.46	43.81	0.50	0.53
		2004	6732	92.79	104.94	1.73	1.80
		2003	6591	37.43	47.12	0.91	0.96
Geelong	GL	2008	22658	82.39	112.87	0.79	0.89
		2007	22769	252.04	283.30	2.17	2.31
		2006	22773	130.94	149.02	1.29	1.43

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2005	22772	167.21	185.09	1.99	2.11
		2004	22436	126.37	157.05	1.25	1.45
		2003	22019	130.13	137.71	1.52	1.56
Geelong East	GLE	2008	19770	196.41	233.80	1.73	1.92
		2007	17359	370.38	387.29	2.85	2.92
		2006	17133	87.06	111.39	1.70	1.80
		2005	16827	61.29	70.45	0.85	0.89
		2004	16542	44.27	50.35	0.29	0.33
		2003	15504	58.61	66.06	0.75	0.79
Horsham	HSM	2008	14941	129.10	146.73	1.63	1.70
		2007	17137	124.87	138.08	1.19	1.24
		2006	17012	225.63	246.73	2.11	2.21
		2005	17667	140.13	160.31	1.33	1.46
		2004	18266	80.60	102.36	1.36	1.64
		2003	18060	397.06	403.86	5.33	5.37
Hamilton	HTN	2008	13493	148.82	169.81	1.43	1.56
		2007	13434	266.30	274.97	3.08	3.14
		2006	13406	542.41	561.28	4.49	4.59
		2005	13335	197.35	208.88	2.45	2.52
		2004	13190	151.39	163.80	1.66	1.75
		2003	13092	137.91	139.69	1.62	1.64
Kerang Terminal Station	KGT	2008	7591	190.42	208.61	1.95	2.11
		2007	4142	163.13	207.82	0.92	1.16
		2006	4138	323.78	367.28	2.15	2.35
		2005	4126	124.35	140.48	1.87	1.93
		2004	4092	134.97	165.44	2.18	2.30
		2003	4068	155.55	192.57	1.45	1.64
Koroit	KRT	2008	7700	197.56	210.72	2.66	2.75
		2007	7283	334.21	342.45	4.12	4.18
		2006	7414	452.83	465.99	5.25	5.31
		2005	7305	116.21	132.46	2.48	2.56
		2004	7162	190.52	208.38	3.39	3.76
		2003	6981	276.16	280.34	3.74	3.79
Kyabram	KYM	2008	6538	237.45	295.60	2.59	2.84
		2007	7443	194.21	226.46	2.33	2.44
		2006	7496	212.66	273.36	4.96	5.23
		2005	7408	149.68	173.53	1.92	2.08
		2004	7297	167.21	234.32	1.61	1.94
		2003	7155	205.14	221.43	2.31	2.38
Laverton	LV	2008	26181	241.06	252.54	3.48	3.52
		2007	28900	109.57	116.49	1.47	1.50
		2006	29115	97.79	109.65	2.03	2.08
		2005	29128	102.46	109.38	3.14	3.18
		2004	27855	42.48	47.40	0.89	0.92
		2003	25771	262.30	267.78	3.87	3.95
Laverton North	LVN	2008	10894	141.72	146.85	1.49	1.51
		2007	4989	22.39	29.92	0.11	0.13
		2006	2782	47.29	50.85	0.36	0.37
		2005	528	438.26	467.81	1.87	1.99
		2004	447	109.93	152.61	1.20	1.33
		2003	410	104.16	118.63	1.97	2.03
Merbein	MBN	2008	4031	133.43	172.56	1.80	1.97
		2007	6919	107.80	135.10	0.82	1.01
		2006	6580	173.97	200.67	2.76	2.89
		2005	6234	257.73	284.96	2.41	2.61
		2004	6038	108.18	154.30	2.27	2.48
		2003	5802	78.05	97.68	0.70	0.81
Mildura	MDA	2008	11558	70.45	83.65	0.71	0.80
		2007	12408	51.67	60.86	0.62	0.69
		2006	12413	199.55	226.36	3.19	3.35
		2005	12322	40.95	79.29	1.62	1.77
		2004	12081	67.01	86.08	1.70	1.80
		2003	11847	41.82	53.90	0.87	0.92
Melton	MLN	2008	15669	81.00	88.96	1.12	1.18
		2007	16645	108.39	125.82	1.46	1.55
		2006	16062	44.28	57.78	0.38	0.45
		2005	15377	63.41	73.41	0.66	0.71
		2004	14646	73.30	81.80	1.13	1.17
		2003	13971	278.32	287.25	2.29	2.33
Mooroopna	MNA	2008	11404	85.40	108.43	1.03	1.15
		2007	8067	91.92	112.49	0.88	0.99
		2006	8006	66.77	96.22	0.84	0.96

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2005	7912	128.31	156.70	1.93	2.07
		2004	7790	131.65	175.35	1.81	2.00
		2003	7702	272.22	298.53	1.62	1.73
Maryborough	MRO	2008	7804	197.76	234.79	2.02	2.47
		2007	9148	515.65	523.89	4.82	4.98
		2006	9105	387.15	399.46	1.64	1.75
		2005	9033	130.79	143.52	2.14	2.20
		2004	8915	45.18	64.89	0.54	0.62
		2003	8800	70.10	88.29	1.82	1.90
Nhill	NHL	2008	5639	89.55	101.26	0.95	1.00
		2007	4567	256.65	292.25	2.50	3.65
		2006	4590	585.71	607.43	4.46	5.12
		2005	4598	286.52	300.90	5.28	5.38
		2004	4563	463.88	471.15	3.66	3.72
		2003	4557	474.51	483.11	6.34	6.40
Numurka	NKA	2008	7815	288.15	324.60	2.13	2.29
		2007	7930	321.99	352.70	2.78	2.98
		2006	7874	105.92	142.45	1.47	1.65
		2005	7784	322.06	351.62	2.73	2.85
		2004	7681	239.22	280.22	2.28	2.50
		2003	7600	212.00	229.22	4.85	4.98
Ouyen	OYN	2008	5682	120.45	131.65	1.42	1.49
		2007	3506	461.48	473.15	4.11	4.17
		2006	3535	461.14	471.19	7.24	8.27
		2005	3559	194.07	226.21	4.11	4.25
		2004	3559	259.40	333.01	3.34	3.60
		2003	3566	152.60	156.93	4.20	4.24
Portland	PLD	2008	5535	176.28	196.92	2.03	2.52
		2007	8903	255.51	312.77	2.82	3.21
		2006	8795	315.10	322.59	1.70	1.83
		2005	8690	165.71	180.00	1.91	2.06
		2004	8567	222.39	261.50	1.97	2.23
		2003	8419	153.25	160.27	1.47	1.57
Redcliffs Terminal	RCT	2008	8633	137.75	162.61	1.61	1.74
		2007	6029	359.23	386.29	2.38	2.54
		2006	6003	174.16	204.29	1.35	1.66
		2005	5978	271.21	321.66	2.06	2.37
		2004	5921	167.63	270.13	1.74	2.17
		2003	5856	155.57	204.81	1.84	2.16
Robinvale	RVL	2008	3755	139.95	202.24	0.75	1.11
		2007	2413	332.22	366.73	4.08	4.38
		2006	2384	89.53	186.56	3.48	3.86
		2005	2352	97.12	191.14	3.76	4.10
		2004	2322	104.87	118.79	2.92	3.02
		2003	2286	74.00	110.59	3.25	3.51
Sunshine ('S feeders')	S	2003	33	0.00	0.00	0.00	0.00
St Albans	SA	2008	31571	87.34	118.42	1.32	1.43
		2007	33146	131.21	136.74	1.64	1.67
		2006	32763	65.94	76.48	2.13	2.18
		2005	35943	70.27	74.31	1.40	1.42
		2004	31911	126.67	134.45	2.32	2.36
		2003	32828	153.85	157.66	2.58	2.61
Swan Hill	SHL	2008	7268	90.71	103.53	0.92	1.01
		2007	9225	121.68	170.36	2.02	2.25
		2006	9144	213.64	254.00	0.78	1.01
		2005	9072	69.14	91.10	0.71	0.81
		2004	8972	155.02	210.90	3.09	3.42
		2003	8859	181.07	199.01	3.90	4.06
Shepparton North	SHN	2008	11947	113.13	147.65	1.82	1.96
		2007	9651	62.73	80.06	0.84	0.91
		2006	9532	66.89	85.43	0.75	0.82
		2005	9423	63.16	69.15	1.75	1.79
		2004	9349	141.16	153.48	1.42	1.47
		2003	9266	135.67	161.72	1.39	1.49
Stanhope	SHP	2008	4798	36.51	43.29	0.54	0.60
		2007	5151	97.95	125.29	0.77	0.89
		2006	4904	253.76	275.20	3.29	3.46
		2005	4881	316.51	336.69	2.62	3.04
		2004	4852	143.56	169.92	2.29	2.44
		2003	4868	417.83	426.11	4.96	5.02
Sunshine East	SSE	2008	5239	94.74	100.01	1.22	1.25
		2007	6713	116.53	128.45	0.89	0.94

		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	6670	45.29	46.48	0.27	0.28
		2005	6593	29.49	32.52	0.58	0.59
		2004	6475	54.35	57.94	1.37	1.39
		2003	3211	2.72	2.72	0.02	0.04
Stawell	STL	2008	7733	49.84	56.70	0.35	0.38
		2007	6044	186.48	208.02	2.05	2.16
		2006	6024	440.14	463.55	1.96	2.13
		2005	5996	179.62	192.78	0.96	1.06
		2004	5941	50.85	60.42	0.32	0.41
		2003	5864	206.22	211.00	4.34	4.37
Shepparton	STN	2008	13675	115.00	135.34	1.45	1.57
		2007	10846	96.76	114.00	1.35	1.44
		2006	10618	52.37	78.33	0.89	0.99
		2005	10404	154.19	183.29	2.27	2.42
		2004	10199	138.68	151.80	2.75	2.81
		2003	9959	204.76	222.57	1.41	1.48
Sunshine ('SU feeders')	SU	2008	22943	95.17	116.55	1.08	1.16
		2007	29239	259.70	265.79	3.05	3.08
		2006	27411	107.45	113.33	1.91	1.93
		2005	25628	50.56	56.81	0.67	0.70
		2004	24413	93.48	101.57	1.11	1.15
		2003	24397	165.99	172.38	1.90	1.94
Terang	TRG	2008	11103	78.18	82.75	1.21	1.24
		2007	6769	306.38	344.66	2.99	3.18
		2006	6777	529.45	545.31	6.04	6.12
		2005	6734	340.79	387.34	2.63	2.87
		2004	6661	265.18	270.72	2.17	2.21
		2003	6617	406.00	417.50	4.06	4.14
Werribee	WBE	2008	15843	179.66	199.12	1.91	1.98
		2007	28203	96.23	104.97	1.60	1.66
		2006	24430	116.52	130.39	2.67	2.74
		2005	23927	17.86	22.96	0.30	0.32
		2004	22814	55.31	57.93	0.63	0.65
		2003	21224	106.73	115.27	1.52	1.55
Warrnambool	WBL	2008	23725	94.45	111.63	2.15	2.22
		2007	14833	111.92	137.21	1.93	2.07
		2006	14335	381.74	388.63	3.74	3.78
		2005	14146	77.72	88.61	0.93	0.99
		2004	13935	54.11	62.81	0.84	1.05
		2003	13649	128.03	136.93	2.25	2.28
Winchelsea	WIN	2008	6509	275.73	279.58	5.76	5.80
		2007	3021	295.04	313.50	2.36	2.44
		2006	2996	256.07	276.23	2.35	2.47
		2005	2944	132.99	171.64	1.38	1.56
		2004	2864	303.54	341.65	3.58	3.82
		2003	2776	236.11	257.35	1.70	1.81
Wemen	WMN	2008	2190	111.54	112.02	4.08	4.08
		2007	230	345.97	705.69	2.93	6.03
		2006	232	726.24	781.93	7.56	7.71
		2005	242	588.32	620.90	8.14	8.34
		2004	241	1139.53	1139.69	4.98	4.99
		2003	241	76.72	103.71	4.13	4.32
Woodend	WND	2008	13972	194.78	227.95	2.09	2.33
		2007	19669	282.95	294.83	3.15	3.35
		2006	19360	161.34	179.10	2.27	2.35
		2005	18989	178.55	198.68	2.23	2.42
		2004	18509	104.14	141.38	1.68	1.87
		2003	17995	285.64	311.35	5.22	5.35
Waurn Ponds	WPD	2008	38340	204.71	247.27	3.30	3.50
		2007	27438	379.02	417.49	4.53	4.70
		2006	27714	225.54	247.32	3.69	3.82
		2005	27687	93.55	100.68	1.40	1.44
		2004	26407	107.74	116.51	1.14	1.18
Waurn Ponds	WPD	2003	26131	180.33	196.86	2.62	2.69

SP AusNet

Figure D.4a **SP AusNet supply area map**

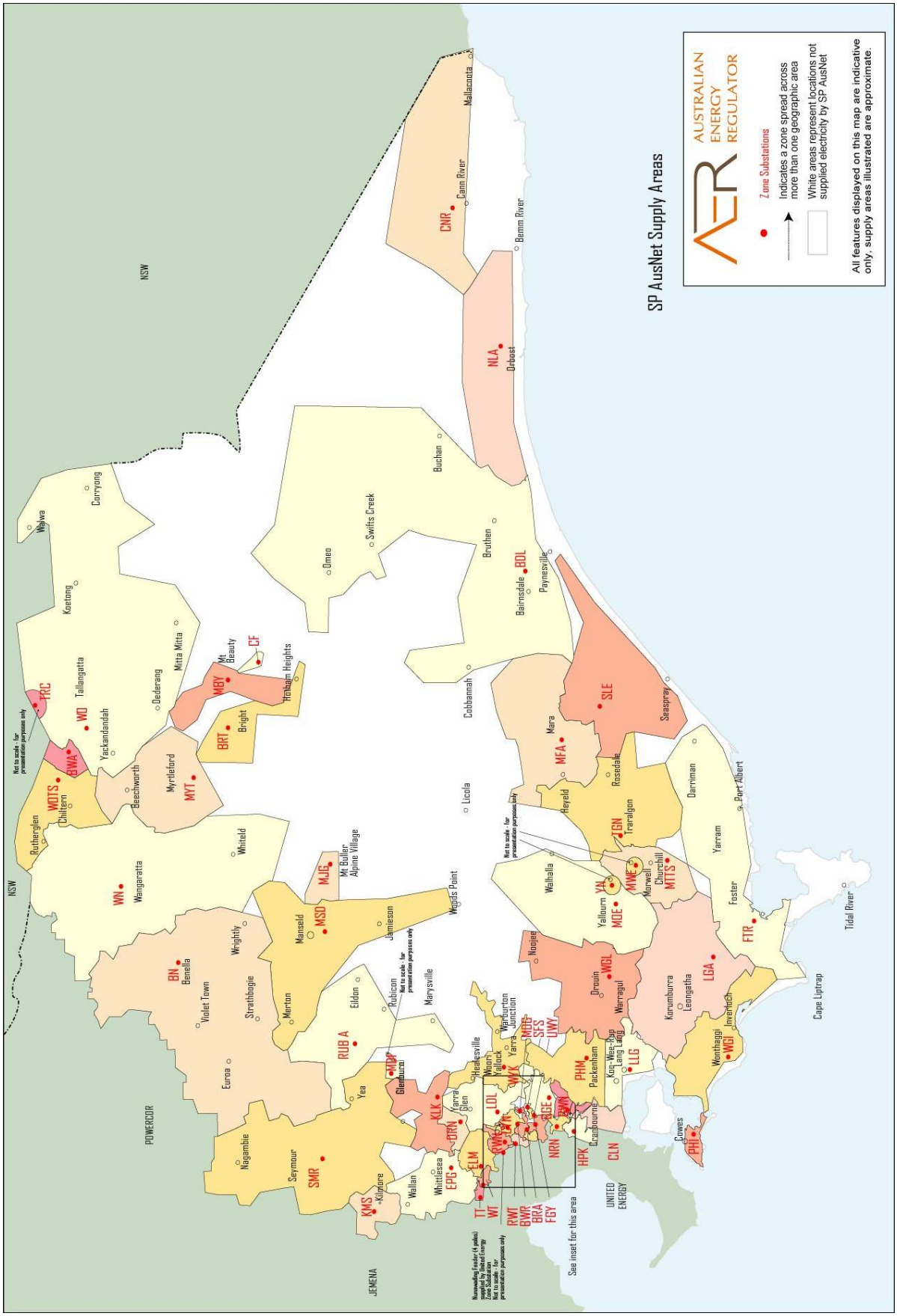


Figure D.4b **SP AusNet supply area map**

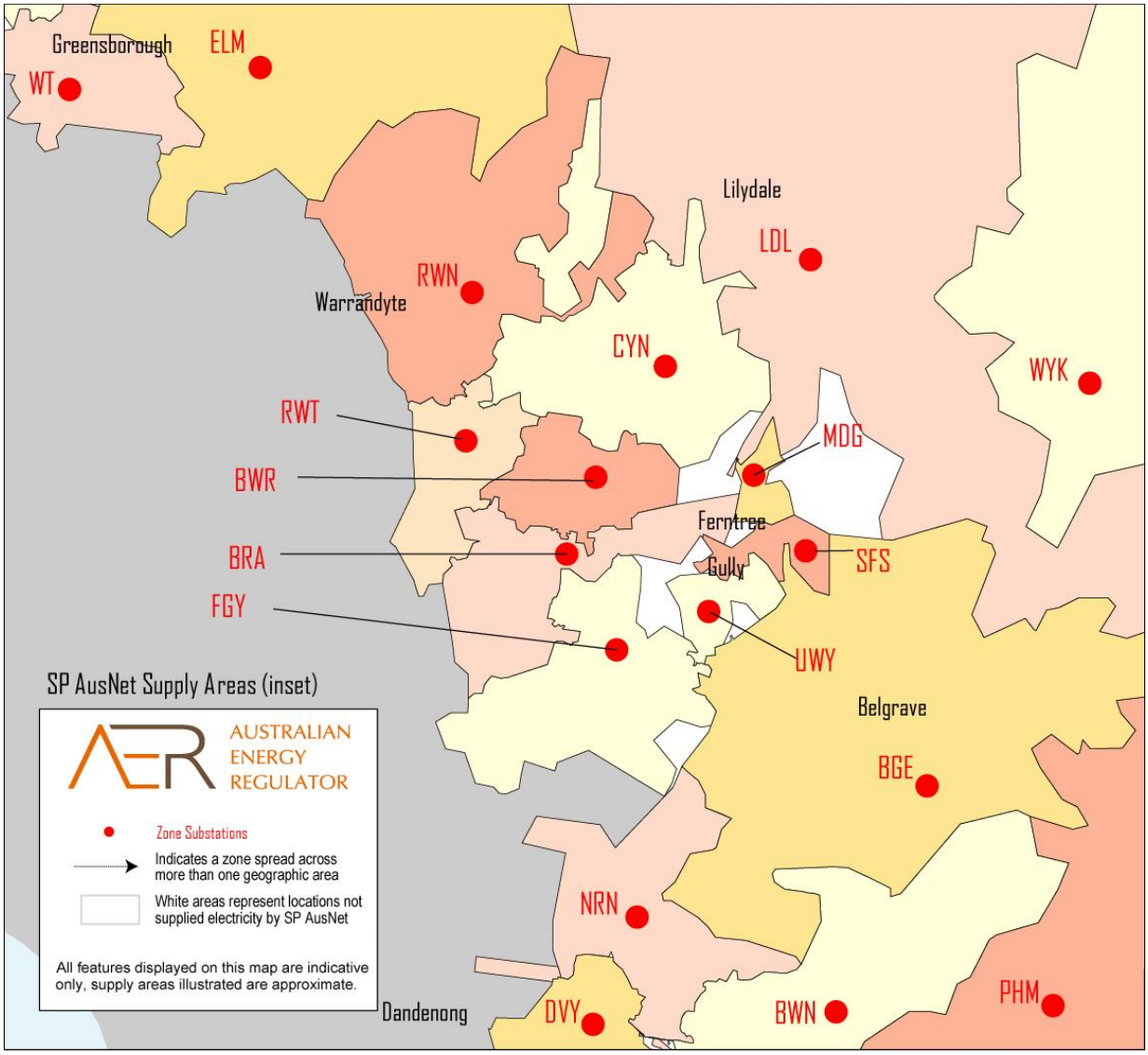


Table D.7 **SP AusNet substation abbreviations**

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

Table D.7 **SP AusNet supply area performance**

		Year	*Customers*	*Average unplanned minutes-off-supply*	*Average total minutes-off-supply*	*Average number of unplanned sustained interruptions*	*Average number of total sustained interruptions*
Rubicon A	ALA	2008	2457.5	810.33	829.41	7.32	7.49
		2006	2400.5	238.03	272.53	3.55	3.68
Bairnsdale	BDL	2008	20149.5	138.43	303.55	1.95	2.62
		2007	19914.5	281.82	352.97	2.56	2.83
		2006	19608	70.17	349.17	1.08	2.01
		2005	19731	97.20	167.25	1.54	1.85
		2004	19303	162.16	437.47	2.96	3.77
		2003	18937	570.44	635.60	5.69	6.00
Belgrave	BGE	2008	11802.5	989.19	1066.16	5.32	5.66
		2007	11189.5	1039.80	1218.03	8.39	9.03
		2006	11369.5	534.38	636.34	7.33	7.84
		2005	12006	600.61	718.41	5.38	5.75
		2004	12120	715.92	812.95	12.22	12.70
		2003	13913	738.50	806.43	10.45	10.85
Benalla	BN	2008	11575.5	76.07	118.28	0.91	1.13
		2007	11511	203.34	256.97	1.41	1.62
		2006	11419.5	221.00	312.62	2.22	2.57
		2005	11632	316.65	381.24	2.38	2.62

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2004	11523	128.23	165.99	1.68	1.85
		2003	11418	299.37	336.65	4.44	4.62
Boronia	BRA	2008	21152	109.02	135.49	0.66	0.75
		2007	21895.5	129.97	161.87	0.99	1.17
		2006	20903	140.56	191.08	1.51	1.73
		2005	20671	137.29	175.69	1.36	1.46
		2004	20515	100.13	105.49	2.07	2.08
		2003	21142	89.41	94.85	1.28	1.29
Bright	BRT	2008	3849.5	240.13	246.27	3.21	3.24
		2007	3816	97.28	115.74	1.72	1.88
		2006	3744	55.28	128.45	0.90	1.15
		2005	3613	668.18	762.85	3.48	3.88
		2004	3431	343.38	407.59	5.57	5.82
		2003	3459	226.05	335.58	3.87	4.23
Barnawatha	BWA	2008	1758.5	49.06	101.08	1.25	1.88
		2007	1745	224.42	274.90	4.27	4.41
		2006	1739.5	117.48	207.46	2.80	3.23
		2005	886	320.11	910.70	4.12	5.47
Berwick North	BWN	2008	10318	187.66	234.71	1.45	1.66
		2007	10352	178.80	210.46	1.63	1.81
		2006	10619	92.36	135.25	1.48	1.74
		2005	10761	116.24	170.11	2.91	3.24
		2004	11237	291.81	354.51	7.15	7.43
		2003	12221	425.63	476.75	8.17	8.41
Bayswater	BWR	2008	14830	105.33	176.88	1.45	1.70
		2007	15290	147.16	203.95	1.92	2.14
		2006	15099.5	370.11	398.02	3.70	3.84
		2005	15107	145.63	155.61	2.67	2.74
		2004	14327	56.32	77.25	0.91	0.99
		2003	14180	172.26	188.18	3.94	4.02
Clover Flat	CF	2008	626	1.38	6.03	0.00	0.02
		2007	605.5	95.67	122.31	2.85	2.95
		2006	599	334.85	353.26	2.94	3.03
		2005	596	435.51	469.41	2.90	3.05
		2004	589	231.03	258.85	2.72	2.83
		2003	592	202.32	204.55	4.12	4.15
Clyde North	CLN	2008	20510.5	167.06	250.81	0.94	1.24
		2007	18327	113.56	134.99	1.70	1.78
		2006	14457	114.58	155.33	2.89	3.51
		2005	6628	113.54	224.39	2.29	2.64
Cann River	CNR	2008	1336.5	837.97	989.55	10.56	12.06
		2007	1333.5	978.79	1012.03	9.27	9.38
		2006	1334	1309.21	1309.32	8.08	8.11
		2005	1372	569.64	757.69	4.98	5.88
		2004	1354	994.48	1002.84	8.26	8.30
		2003	1338	1479.22	1793.44	12.17	13.09
Croydon	CYN	2008	26272	257.07	315.94	2.23	2.40
		2007	25923.5	192.77	256.95	2.57	2.80
		2006	27593.5	192.27	261.81	2.57	2.88
		2005	30707	223.12	257.45	3.42	3.53
		2004	33664	178.80	190.90	2.91	2.95
		2003	34663	158.81	175.80	2.81	2.99
Dandenong	DN	2005	0	0.00	0.00	0.00	0.00
		2004	0	0.00	0.00	0.00	0.00
		2003	0	0.00	0.00	0.00	0.00
Doreen	DRN	2008	4582.5	1300.43	1352.07	2.49	2.70
		2007	3614.5	205.86	288.88	4.15	4.57
		2006	1613.5	36.34	37.26	4.11	4.21
Dandenong Valley	DVY	2008	0	0.00	0.00	0.00	0.00
		2007	0	0.00	0.00	0.00	0.00
		2006	2.5	0.00	0.00	0.00	0.00
		2005	7	0.00	0.00	0.00	0.00
		2004	8	0.00	0.00	0.00	0.00
		2003	9	0.00	0.00	0.00	0.00
Rubicon A	ELD	2008	995.5	442.23	457.13	5.15	5.21
		2007	0	0.00	0.00	0.00	0.00
		2006	984	942.69	961.14	4.48	4.56
Eltham	ELM	2008	28015.5	387.71	431.06	2.19	2.36
		2007	27188.5	230.40	325.91	2.36	2.62
		2006	26957.5	184.92	249.53	1.67	1.94
		2005	27185	378.39	418.24	3.44	3.61
		2004	26946	178.67	219.48	3.68	3.98
		2003	26097	151.02	181.18	1.77	1.97

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Epping	EPG	2008	32799	233.91	268.71	3.37	3.50
		2007	31044.5	167.42	247.37	1.66	1.89
		2006	30740	168.12	222.27	2.28	2.53
		2005	31629	329.38	361.70	3.45	3.62
		2004	31443	206.77	238.35	3.21	3.53
		2003	30662	131.63	155.38	2.03	2.12
Ferntree Gully	FGY	2008	21810.5	343.01	374.86	1.58	1.69
		2007	20426	162.53	180.42	1.94	2.00
		2006	19732	104.56	137.75	2.11	2.23
		2005	19260	64.77	82.09	2.16	2.34
		2004	19026	133.37	147.35	2.53	2.63
		2003	17895	110.40	130.15	1.74	1.82
Foster	FTR	2008	8442	672.41	772.41	5.44	6.13
		2007	8344.5	505.99	655.22	6.21	6.90
		2006	8297.5	248.03	429.00	3.22	4.01
		2005	8463	454.85	727.87	6.79	7.69
		2004	8388	303.56	425.77	7.26	8.18
		2003	8321	221.45	302.71	4.00	4.49
Hastings	HGS	2005	19	938.84	938.84	16.42	16.42
Hampton Park	HPK	2008	29717.5	45.54	105.19	0.81	1.02
		2007	30358.5	125.96	138.34	2.27	2.32
		2006	32570	64.21	91.85	0.82	1.01
		2005	37746	83.99	100.73	1.20	1.27
		2004	40333	81.92	106.29	1.56	1.70
		2003	38841	83.41	126.20	1.37	1.61
Kinglake	KLK	2008	2435.5	336.89	626.94	4.55	5.55
		2007	2421.5	1487.38	1655.72	11.64	12.25
		2006	2397	1176.99	1277.99	7.83	8.21
		2005	2403	1165.96	1246.98	6.86	7.12
		2004	2360	1511.55	1798.49	8.99	10.03
		2003	2334	616.38	698.99	4.32	4.62
Kilmore South	KMS	2008	3078.5	77.84	113.71	3.36	3.60
		2007	2991.5	140.16	198.99	4.26	4.49
		2006	2911.5	334.38	408.89	6.53	7.10
		2005	2843	548.54	630.56	3.88	4.14
		2004	2697	51.63	132.33	1.54	1.79
		2003	2546	58.90	72.27	1.02	1.13
Lilydale	LDL	2008	24819.5	359.91	418.75	2.61	2.86
		2007	23812.5	228.13	323.58	1.77	2.10
		2006	21938.5	179.40	258.27	2.56	2.86
		2005	21162	376.84	424.50	3.57	3.74
		2004	19052	261.58	289.28	5.71	5.84
		2003	17331	265.89	289.45	4.12	4.24
Leongatha	LGA	2008	10704.5	476.11	657.41	6.73	7.52
		2007	11069.5	247.33	382.26	3.43	3.92
		2006	11424	326.79	594.78	6.08	7.05
		2005	11563	299.59	371.83	4.89	5.21
		2004	11436	488.27	564.26	9.40	10.27
		2003	11279	480.44	499.08	6.82	6.90
Lang Lang	LLG	2008	5302.5	741.46	848.04	3.65	4.65
		2007	2610.5	36.75	195.75	0.43	1.07
Loy Yang Switch	LYS	2005	0	0.00	0.00	0.00	0.00
Mount Beauty	MBY	2008	1976.5	288.16	325.96	1.09	1.26
		2007	1966.5	303.29	375.80	3.09	3.39
		2006	1919	687.31	1452.88	2.45	4.00
		2005	2052	139.35	157.39	1.34	1.40
		2004	2134	182.49	205.33	2.02	2.13
		2003	2005	143.86	146.79	1.98	2.02
Mount Dandenong	MDG	2008	767.5	555.13	1212.42	3.05	5.36
		2007	763	2347.21	2762.67	6.41	7.88
		2006	762	873.15	1092.42	3.88	4.42
		2005	777	704.84	705.53	6.23	6.24
		2004	774	812.40	1109.23	6.85	8.20
		2003	765	1172.87	1626.87	5.38	7.56
Murrindindi	MDI	2008	60.5	121.83	289.22	3.02	5.45
		2007	63	699.49	1031.49	5.10	6.11
		2006	62.5	935.68	1238.88	5.70	6.74
		2005	64	1380.42	1380.42	3.20	3.20
		2004	62	1000.82	2822.92	9.37	12.11
		2003	61	441.51	739.26	4.87	6.66
Maffra	MFA	2008	7788	152.98	355.15	1.84	2.63
		2007	7708	184.26	332.98	2.03	2.55
		2006	7602.5	208.50	343.02	2.11	2.63

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2005	7687	252.97	501.52	3.43	4.33
		2004	7599	207.05	357.66	2.70	3.26
		2003	7531	255.19	403.59	6.02	6.49
Merrijig	MJG	2008	1238.5	246.67	254.53	1.48	1.53
		2007	1213	315.44	361.00	4.20	4.71
		2006	1178.5	642.92	716.40	5.19	5.39
		2005	1184	1701.55	2107.18	8.20	9.24
		2004	1167	235.11	666.62	3.89	6.15
		2003	1120	702.48	772.16	3.92	4.13
Moe	MOE	2008	13873.5	214.49	272.11	3.28	3.59
		2007	13786	165.83	201.55	1.32	1.47
		2006	13658	247.20	287.31	2.88	3.05
		2005	13977	117.90	157.18	0.94	1.13
		2004	13887	134.16	183.96	1.86	2.09
		2003	13786	193.72	208.78	2.64	2.74
Mansfield	MSD	2008	5567	89.63	149.62	0.69	1.11
		2007	5502.5	481.86	622.41	5.00	5.51
		2006	5397.5	491.72	598.03	1.24	1.60
		2005	5380	838.58	935.07	2.00	2.42
		2004	5260	509.42	943.01	7.78	9.29
		2003	5143	344.37	365.98	4.71	4.83
Rubicon A	MVE	2008	1351.5	1425.75	1432.37	9.89	9.92
		2007	0	0.00	0.00	0.00	0.00
		2006	1331.5	208.22	225.28	4.07	4.18
Morwell Open Cut	MWE	2008	35	1253.40	3288.14	4.03	5.29
		2007	33.5	198.06	301.94	1.82	2.78
		2006	30.5	71.67	79.97	0.69	1.38
		2005	31	221.68	224.77	2.58	2.84
		2004	31	374.55	386.68	6.58	7.42
		2003	31	156.42	156.42	3.06	3.06
Morwell Terminal Station	MWTS	2008	12214	117.38	178.69	1.43	1.68
		2007	12120.5	227.38	315.79	2.37	2.65
		2006	11961	297.81	351.39	1.94	2.16
		2005	12339	131.11	178.47	0.74	0.98
		2004	12253	75.02	128.65	1.37	1.56
		2003	12184	118.62	125.20	1.26	1.30
Myrtleford	MYT	2008	5554	232.68	295.27	3.25	3.48
		2007	5538.5	82.16	113.00	2.55	2.68
		2006	5509	81.75	112.96	0.86	1.06
		2005	5663	540.45	571.32	4.03	4.20
		2004	5609	201.22	229.54	5.94	6.11
		2003	5560	105.51	148.71	3.43	3.61
Newmerella	NLA	2008	3483.5	274.88	390.13	2.61	3.63
		2007	3455.5	169.84	193.87	2.57	2.65
		2006	3408.5	498.55	582.13	3.31	3.63
		2005	3452	537.02	694.60	5.63	6.09
		2004	3408	380.97	408.25	4.84	4.95
		2003	3358	380.92	718.87	4.04	5.42
Narre Warren	NRN	2008	10995	68.82	88.69	0.11	0.19
		2007	10357	116.57	132.91	1.60	1.68
		2006	9685.5	58.50	103.25	0.81	1.06
		2005	9469	115.31	144.07	0.84	0.96
		2004	9095	63.11	88.79	2.75	2.87
		2003	4470	217.56	239.74	3.73	3.88
Nunawading	NW	2008	18	0.00	0.00	0.00	0.00
		2007	18	0.00	0.00	0.00	0.00
		2006	18	0.00	0.00	0.00	0.00
		2005	18	87.61	87.61	1.11	1.11
		2004	18	987.22	987.22	3.17	3.17
		2003	17	0.00	0.00	0.00	0.00
Phillip Island	PHI	2008	8778	302.86	368.95	1.40	2.04
		2007	8433	318.21	457.84	3.46	3.95
		2006	8067	260.85	431.00	4.43	5.06
		2005	8043	208.12	322.59	3.00	3.53
		2004	7858	206.14	442.90	5.06	5.99
		2003	3881	29.61	56.23	0.94	1.05
Pakenham	PHM	2008	15553	647.18	710.52	2.70	2.96
		2007	15946	252.46	349.56	2.49	2.83
		2006	16435.5	357.12	416.01	4.17	4.42
		2005	17217	263.18	370.06	3.19	3.59
		2004	17632	285.98	327.48	4.61	4.83
		2003	16696	520.06	563.93	5.92	6.14

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
Rubican A	RUBA	2005	4774	739.94	767.45	5.18	5.32
		2004	4715	224.77	235.69	4.00	4.54
		2003	4656	176.26	183.18	4.25	4.28
		2007	4746	820.89	835.65	9.46	9.53
Ringwood North	RWN	2008	18894	447.51	470.74	2.33	2.43
		2007	19207	302.99	422.19	5.26	5.66
		2006	17852	196.51	269.48	2.49	2.79
		2005	16615	263.11	313.07	3.08	3.25
		2004	15670	193.46	217.78	1.85	1.97
		2003	15465	217.15	224.00	3.82	3.86
Ringwood Terminal	RWT	2008	15214	171.46	190.90	1.88	1.95
		2007	15121.5	140.57	223.87	2.09	2.45
		2006	15762.5	304.54	370.10	3.11	3.34
		2005	16022	234.28	257.78	2.40	2.46
		2004	15979	91.25	102.05	0.86	0.91
		2003	16052	257.01	263.79	4.10	4.14
Sassafras	SFS	2008	1069	1094.89	1239.49	5.98	7.00
		2007	1070.5	821.17	875.20	5.91	6.23
		2006	1067.5	858.54	1045.45	8.73	9.29
		2005	1095	1299.31	1477.91	3.61	4.23
		2004	1093	532.67	616.90	6.72	7.17
		2003	1082	470.97	617.52	9.65	10.30
Sale	SLE	2008	11407.5	77.93	160.70	1.32	1.72
		2007	11231.5	579.40	779.57	4.66	5.29
		2006	11083.5	356.27	435.54	2.70	2.98
		2005	11233	139.32	300.43	2.24	2.88
		2004	11103	170.29	294.33	4.25	4.68
		2003	10945	234.76	269.78	3.39	3.52
Seymour	SMR	2008	10760	336.62	381.18	4.86	5.02
		2007	10740	190.14	296.61	5.18	5.46
		2006	10671	263.33	455.27	4.03	4.60
		2005	10886	320.19	366.69	2.76	2.95
		2004	10789	158.20	208.51	4.05	4.27
		2003	10647	101.96	162.39	2.74	2.99
Traralgon	TGN	2008	15466.5	139.96	195.33	1.69	1.91
		2007	15170.5	254.73	312.84	4.36	4.57
		2006	14733.5	126.67	179.85	1.31	1.51
		2005	14939	212.46	253.67	1.80	1.96
		2004	14623	60.90	118.98	1.24	1.49
		2003	14349	290.04	321.92	3.98	4.14
Wodonga-Tumut	TRC	2008	231	216.77	361.00	2.10	5.68
		2007	230	628.81	630.07	7.88	8.89
		2006	228	277.97	392.70	4.03	5.37
		2005	243	628.78	777.42	5.06	7.93
		2004	245	210.64	314.48	3.05	4.42
		2003	245	566.27	652.83	8.56	10.73
Thomastown	TT	2008	13710	314.30	356.17	2.22	2.40
		2007	13979.5	200.68	245.78	2.04	2.21
		2006	13850	191.61	277.32	2.53	2.89
		2005	14056	124.81	134.56	1.30	1.36
		2004	13342	99.55	108.46	2.05	2.11
		2003	12646	265.73	266.57	3.42	3.44
Upwey	UWY	2008	1065	1346.02	1420.23	3.06	3.31
		2007	1062.5	1101.29	1293.87	7.23	7.83
		2006	1062	218.82	240.19	1.97	2.10
		2005	1070	1014.92	1015.58	7.70	7.74
		2004	1062	671.26	701.95	7.17	7.37
		2003	1056	716.65	753.83	4.34	4.45
Wonthaggi	WGI	2008	16895.5	706.19	861.44	3.12	3.83
		2007	17067	338.83	627.68	3.21	4.19
		2006	17165.5	261.02	447.63	4.27	5.07
		2005	17197	88.17	442.41	2.17	3.23
		2004	16787	355.11	587.47	5.34	6.37
		2003	19920	448.61	502.49	6.69	6.94
Warragul	WGL	2008	17838.5	400.22	453.55	5.79	6.21
		2007	17403.5	273.71	328.40	5.64	5.89
		2006	16974	347.35	442.05	4.67	5.05
		2005	16855	207.13	350.68	3.06	3.47
		2004	16254	260.66	313.77	5.43	5.79
		2003	15900	207.03	246.56	4.13	4.35
Wangaratta	WN	2008	16135	59.28	166.52	1.21	1.61
		2007	15973.5	135.05	208.58	2.00	2.23

		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	15803.5	180.36	283.95	2.65	3.03
		2005	16002	202.35	284.95	1.80	2.06
		2004	15815	231.71	293.64	2.59	2.99
		2003	15671	384.69	453.52	4.91	5.17
Wodonga	WO	2008	12459	68.33	96.46	1.59	1.69
		2007	12313.5	43.68	60.74	0.65	0.98
		2006	12196	109.66	118.86	3.04	3.10
		2005	13164	203.65	288.36	2.25	2.49
		2004	13876	89.56	136.10	1.58	1.73
		2003	13620	123.53	131.97	2.13	2.24
Wodonga Terminal Station	WOTS	2008	8904	251.92	287.33	2.78	2.93
		2007	8778	131.02	179.36	2.05	2.31
		2006	8653	207.27	238.74	2.43	2.60
		2005	8765	432.63	511.87	3.40	4.00
		2004	8653	111.36	170.17	2.06	2.40
		2003	8508	429.96	476.06	3.92	4.42
Watsonia	WT	2008	20794	406.57	434.28	1.07	1.18
		2007	21211	40.77	71.86	0.40	0.53
		2006	21153.5	163.42	195.95	3.73	3.88
		2005	20760	171.32	202.88	1.23	1.32
		2004	20053	135.10	154.18	2.54	2.64
		2003	20361	104.81	114.92	1.45	1.49
Woori Yallock	WYK	2008	12182.5	464.61	500.66	2.15	2.27
		2007	12791	625.22	708.87	5.42	5.78
		2006	13379.5	294.04	389.04	3.33	3.68
		2005	13269	645.47	704.29	5.35	5.54
		2004	13164	491.54	596.84	8.53	8.85
		2003	13039	335.73	364.98	4.52	4.62
Yallourn Open Cut	YN	2008	22	602.09	723.91	1.95	2.32
		2007	19.5	0.00	0.00	0.00	0.00
		2006	17.5	261.77	261.77	1.83	1.83
		2005	21	174.48	194.95	0.62	1.29
		2004	20	119.20	119.20	1.20	1.20
		2003	20	409.40	409.40	2.35	2.35
Yallourn Power Station	YPS	2005	0	0.00	0.00	0.00	0.00
		2004	0	0.00	0.00	0.00	0.00
		2003	0	0.00	0.00	0.00	0.00

United Energy

Figure D.5 **United Energy supply area map**

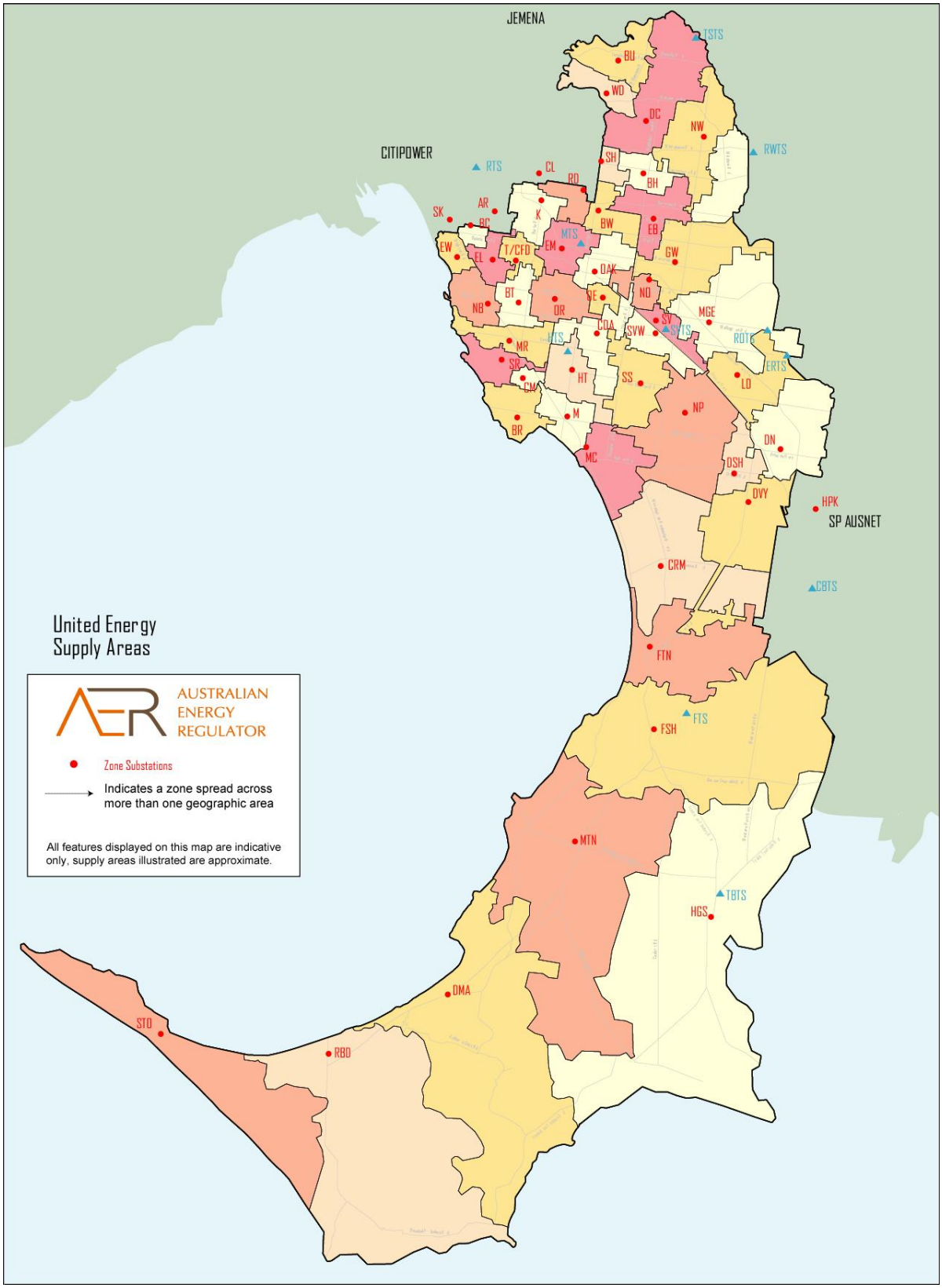


Table D.9 **United Energy substation abbreviations**

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

Table D.10 **United Energy supply area performance**

		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	2008	1042	42.71	145.00	0.11	0.35
		2007	1010.5	15.04	38.92	0.26	0.32
		2006	1018	0.42	0.58	0.00	0.01
		2005	1011	3.03	3.03	0.01	0.01
		2004	994	30.41	30.41	0.21	0.21
		2003	1198	50.93	68.81	0.50	0.54
Balaclava	BC	2008	3121	7.13	15.77	0.05	0.08
		2007	3103.5	22.96	56.39	0.22	0.29
		2006	3130	73.94	84.27	1.87	1.91
		2005	2993	2.14	2.14	0.02	0.02
		2004	2993	17.36	18.34	0.97	0.97
		2003	3066	34.35	44.61	0.52	0.69
Box Hill	BH	2008	10061	270.12	279.53	1.80	1.83
		2007	9984.5	158.41	163.30	2.31	2.33
		2006	9958	143.13	153.76	1.25	1.29
		2005	9501	88.99	114.18	1.54	1.61
		2004	9244	67.98	78.99	1.32	1.34
		2003	9349	95.85	114.59	1.06	1.13
Beaumaris	BR	2008	9175	402.28	426.29	1.23	1.29
		2007	9162.5	192.07	218.45	2.29	2.37

		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	9213	78.33	84.18	1.01	1.03
		2005	9213	148.41	152.50	0.93	0.94
		2004	9185	61.12	77.26	0.89	0.94
		2003	9020	25.22	35.79	0.46	0.53
Boronia	BRA	2008	279	519.18	519.18	0.12	0.12
		2007	293	38.53	38.53	0.96	0.96
		2006	307	17.49	17.49	0.23	0.23
		2005	307	117.18	117.18	1.00	1.00
		2004	307	12.28	12.28	0.10	0.10
		2003	258	32.56	32.56	1.01	1.01
Bentleigh	BT	2008	11316	35.02	70.00	0.38	0.49
		2007	11743	99.25	173.99	1.83	2.04
		2006	13050	32.77	39.16	0.48	0.51
		2005	14333	31.55	32.43	0.43	0.43
		2004	14253	33.01	34.80	0.70	0.71
		2003	14219	29.05	50.22	0.46	0.52
Bulleen	BU	2008	10757	533.63	549.20	1.01	1.06
		2007	10766.5	57.80	72.33	0.88	0.94
		2006	10717	45.34	59.22	0.64	0.69
		2005	10605	75.93	108.74	1.01	1.11
		2004	10507	25.23	46.64	0.45	0.52
		2003	10273	24.02	47.08	1.52	1.60
Burwood	BW	2008	8588	209.69	223.79	0.89	0.95
		2007	8463.5	103.36	109.29	1.41	1.43
		2006	8423	46.57	63.05	0.72	0.78
		2005	8585	26.65	35.88	0.73	0.77
		2004	8570	55.25	72.16	1.08	1.15
		2003	8651	19.95	26.35	0.39	0.42
Clarinda	CDA	2008	10951	199.52	206.41	2.10	2.12
		2007	10914.5	215.47	236.93	5.30	5.33
		2006	10870	104.15	110.94	2.33	2.35
		2005	10717	8.70	15.72	0.06	0.08
		2004	10565	80.59	113.01	1.89	1.99
		2003	10147	77.24	85.54	2.62	2.65
Caulfield T/CFD	CFD	2008	9349	147.32	161.05	0.90	0.94
		2007	0	0.00	0.00	0.00	0.00
Cheltenham	CM	2008	2875	146.67	158.75	1.17	1.21
		2007	2857	227.74	250.31	2.91	2.97
		2006	2839	36.31	63.83	0.93	1.00
		2005	2804	106.40	111.22	2.84	2.85
		2004	2776	7.53	7.89	0.11	0.11
		2003	2784	22.20	38.99	0.36	0.42
Carrum	CRM	2008	20910	180.96	202.90	1.32	1.38
		2007	20195.5	102.25	123.57	1.34	1.42
		2006	21080	22.18	29.13	0.32	0.34
		2005	21944	155.26	198.35	3.27	3.43
		2004	21659	128.93	161.03	1.34	1.46
		2003	21455	56.49	82.73	0.98	1.12
Doncaster	DC	2008	27964	767.18	783.99	2.30	2.36
		2007	28013	31.13	42.75	0.47	0.51
		2006	28315	89.71	101.71	1.24	1.29
		2005	28426	42.95	52.70	0.43	0.46
		2004	28116	45.78	65.33	0.86	0.92
		2003	28221	20.54	41.50	0.41	0.48
Dromana	DMA	2008	14108	1015.27	1036.13	4.32	4.38
		2007	13434.5	148.82	193.29	2.67	2.81
		2006	6409	44.97	111.04	0.72	0.91
Dandenong	DN	2008	18062	115.30	133.05	0.81	0.87
		2007	17422	169.35	194.11	1.69	1.77
		2006	16991	31.66	35.38	0.31	0.32
		2005	17201	23.92	28.84	0.25	0.27
		2004	17450	44.51	48.96	0.88	0.89
		2003	18693	30.52	62.96	0.44	0.58
Dandenong South	DSH	2008	4006	8.12	31.16	0.09	0.16
		2007	4181.5	250.03	255.40	1.70	1.71
		2006	4433	27.25	31.30	0.71	0.72
		2005	4257	30.82	38.75	0.60	0.63
		2004	3743	24.40	34.36	0.76	0.81
		2003	3529	10.17	21.51	0.20	0.26
Dandenong Valley	DVY	2008	5874	555.90	569.39	1.60	1.64
		2007	5980	82.57	104.62	1.64	1.71
		2006	5928	43.73	75.35	0.25	0.34
		2005	5696	12.44	67.81	0.11	0.29

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2004	5282	7.60	15.81	0.18	0.21
		2003	5108	52.03	64.13	0.93	0.96
East Burwood	EB	2008	15863	330.48	346.92	0.88	0.92
		2007	15021	40.60	63.89	0.34	0.40
		2006	14825	64.07	69.60	1.32	1.34
		2005	15415	126.42	134.21	0.54	0.57
		2004	15357	54.44	60.85	0.47	0.49
		2003	15192	110.74	117.39	2.11	2.15
Elsternwick	EL	2008	9583	153.34	167.01	0.64	0.68
		2007	9878.5	73.77	89.70	0.99	1.04
		2006	10002	31.90	35.40	0.32	0.33
		2005	9935	28.52	30.07	0.41	0.42
		2004	9797	34.96	37.66	0.42	0.43
		2003	9756	18.77	27.95	0.23	0.26
East Malvern	EM	2008	13635	797.90	816.87	0.71	0.77
		2007	13884	73.32	85.16	1.38	1.42
		2006	13934	30.49	39.68	0.78	0.80
		2005	13988	34.30	40.26	0.45	0.48
		2004	13949	27.28	39.03	0.38	0.41
		2003	14216	46.89	56.46	0.97	1.02
Elwood	EW	2008	14292	71.77	83.44	1.02	1.06
		2007	14031	117.46	120.55	1.56	1.57
		2006	13935	47.58	70.12	0.71	0.76
		2005	13796	84.03	100.21	0.87	0.92
		2004	13683	60.22	65.87	1.55	1.57
		2003	13778	61.46	71.04	1.04	1.15
Ferntree Gully	FGY	2008	189	0.96	0.96	0.01	0.01
		2007	161.5	0.99	0.99	0.01	0.01
		2006	114	121.43	121.43	3.62	3.62
		2005	190	8.82	8.82	1.07	1.07
		2004	294	19.49	19.49	1.09	1.09
		2003	337	110.39	111.81	1.48	1.49
Frankston South	FSH	2008	32054	781.36	804.39	2.75	2.84
		2007	32593	73.59	104.04	1.20	1.31
		2006	32755	95.06	122.46	1.74	1.82
		2005	34178	102.07	117.96	2.24	2.30
		2004	35081	75.43	118.51	1.58	1.73
		2003	34748	148.26	181.19	2.39	2.51
Frankston	FTN	2008	22192	305.33	317.17	2.43	2.47
		2007	21913	89.25	97.30	1.13	1.16
		2006	20416	82.43	90.43	1.31	1.34
		2005	17992	78.58	99.84	0.62	0.68
		2004	16770	87.63	137.99	1.67	1.85
		2003	16550	39.86	56.12	0.58	0.64
Glen Waverley	GW	2008	20651	281.32	293.74	1.13	1.16
		2007	21737	214.37	235.86	1.90	1.96
		2006	21756	33.40	39.78	0.62	0.65
		2005	21638	48.40	60.23	0.87	0.91
		2004	21490	37.39	67.79	0.63	0.76
		2003	21274	49.89	64.41	1.07	1.12
Hastings	HGS	2008	15865	247.93	263.58	1.45	1.50
		2007	15102.5	114.46	166.54	1.97	2.15
		2006	15166	84.45	124.61	1.53	1.65
		2005	13985	111.33	137.80	1.51	1.61
		2004	12697	173.67	202.08	2.68	2.78
		2003	11972	177.34	215.55	2.46	2.61
Heatherton	HT	2008	7876	81.08	87.82	1.04	1.06
		2007	7757.5	137.19	164.34	3.52	3.59
		2006	7756	68.41	99.73	1.33	1.43
		2005	7643	132.78	144.83	2.28	2.35
		2004	7487	27.75	45.27	0.66	0.72
		2003	7199	88.41	101.50	1.93	1.98
Gardiner	K	2008	13086	502.34	540.79	1.31	1.42
		2007	12790.5	229.58	244.28	2.62	2.67
		2006	12738	27.80	48.66	0.30	0.37
		2005	12687	63.63	73.25	0.63	0.67
		2004	12643	86.64	98.93	1.37	1.41
		2003	12688	27.04	52.46	0.36	0.45
Lyndale	LD	2008	15802	130.12	160.83	1.33	1.41
		2007	14892.5	173.68	195.40	2.67	2.72
		2006	14000	33.78	43.66	0.73	0.77
		2005	13299	52.37	65.09	1.20	1.24
		2004	12746	18.54	29.32	0.33	0.38

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2003	12707	51.72	58.94	1.24	1.27
Mentone	M	2008	13519	115.95	127.27	0.87	0.90
		2007	14105.5	142.42	156.85	1.76	1.80
		2006	14624	31.06	48.07	0.38	0.43
		2005	14624	55.21	65.09	0.54	0.57
		2004	14643	24.53	41.72	0.43	0.48
		2003	14413	42.85	50.25	0.29	0.31
Mordialloc	MC	2008	13435	253.70	274.75	3.07	3.12
		2007	13072.5	219.34	237.60	2.43	2.51
		2006	12355	143.46	150.92	1.71	1.73
		2005	12104	235.90	246.14	2.10	2.15
		2004	11997	102.96	124.54	2.25	2.33
		2003	10975	90.56	109.82	2.14	2.20
Mulgrave	MGE	2008	17929	61.60	75.47	0.24	0.32
		2007	18835.5	71.24	106.58	1.73	1.87
		2006	19812	58.86	74.01	1.47	1.52
		2005	19357	63.98	79.32	1.17	1.21
		2004	18839	31.31	46.69	0.91	0.96
		2003	21141	60.40	69.32	0.91	0.94
Moorabbin	MR	2008	13218	107.24	133.06	0.59	0.66
		2007	13707	96.03	106.64	1.06	1.09
		2006	13978	62.51	70.65	0.77	0.80
		2005	13908	58.77	64.97	0.74	0.76
		2004	13884	58.63	73.78	1.14	1.19
		2003	13680	41.26	59.74	0.56	0.63
Mornington	MTN	2008	18651	134.20	161.77	1.04	1.13
		2007	18918.5	55.00	72.16	1.23	1.29
		2006	19869	65.35	82.59	1.21	1.27
		2005	19984	54.56	79.15	0.91	0.99
		2004	19616	53.51	71.12	0.92	0.97
		2003	18864	48.22	68.25	1.40	1.48
North Brighton	NB	2008	13894	100.15	130.43	1.00	1.08
		2007	13555.5	25.11	41.95	0.37	0.42
		2006	13520	46.36	58.42	0.55	0.58
		2005	13657	66.03	74.77	0.78	0.81
		2004	13591	82.14	96.87	1.12	1.17
		2003	13308	42.66	52.31	0.63	0.69
Notting Hill	NO	2008	4325	223.76	227.98	0.20	0.22
		2007	4257.5	139.05	142.97	1.69	1.70
		2006	4153	26.31	45.34	0.81	0.86
		2005	3993	40.81	63.21	0.29	0.34
		2004	3807	6.56	32.00	0.04	0.11
		2003	4166	126.50	155.52	2.00	2.09
Noble Park	NP	2008	26916	185.11	208.03	1.95	2.01
		2007	26526	78.08	86.76	1.32	1.35
		2006	26223	67.75	84.51	0.87	0.92
		2005	25608	44.04	49.24	0.85	0.87
		2004	25501	16.46	31.03	0.34	0.39
		2003	25371	52.82	65.16	0.74	0.79
	NRN	2008	1	0.00	0.00	0.00	0.00
Nunawading	NW	2008	22045	478.28	482.40	2.52	2.54
		2007	21761.5	174.65	184.08	2.35	2.39
		2006	19214	103.44	107.41	1.59	1.61
		2005	16836	222.29	233.94	1.86	1.90
		2004	16707	58.11	63.07	1.35	1.36
		2003	15912	93.75	103.92	2.02	2.06
Oakleigh	OAK	2008	10783	243.52	258.04	0.24	0.28
		2007	10493	39.44	49.52	0.68	0.70
		2006	10446	13.30	25.79	0.08	0.11
		2005	9429	56.67	66.39	1.06	1.09
		2004	8376	15.54	50.74	0.18	0.29
		2003	8683	44.11	48.18	0.84	0.85
Oakleigh East	OE	2008	3397	71.66	89.02	0.27	0.33
		2007	3416	186.58	189.30	0.96	0.97
		2006	3338	47.40	52.65	0.47	0.48
		2005	4245	27.63	32.50	0.22	0.24
		2004	4666	5.19	19.55	0.07	0.11
		2003	4141	37.83	46.68	0.53	0.56
Ormond	OR	2008	15502	133.43	141.93	0.55	0.58
		2007	16836	82.32	92.75	1.38	1.41
		2006	15975	19.84	24.72	0.19	0.21
		2005	16213	97.18	106.05	1.03	1.06
		2004	16165	22.06	28.35	0.82	0.84

		Year	Customers	Average unplanned minutes-off-supply	Average total minutes-off-supply	Average number of unplanned sustained interruptions	Average number of total sustained interruptions
		2003	15840	42.25	51.97	0.68	0.72
Rosebud	RBD	2008	17726	109.37	135.89	1.53	1.61
		2007	17034.5	164.92	188.06	1.85	1.93
		2006	21784	55.29	66.59	2.23	2.28
		2005	27417	116.19	154.05	2.45	2.57
		2004	27441	59.18	79.97	1.05	1.13
		2003	26308	75.20	91.76	0.98	1.05
Riversdale	RD	2008	3038	126.55	150.61	0.06	0.13
		2007	3039.5	56.52	57.20	0.24	0.24
		2006	3042	80.99	83.21	1.26	1.26
		2005	3049	24.81	33.81	0.68	0.71
		2004	3038	2.37	47.18	0.03	0.31
		2003	2982	9.07	52.90	0.14	0.32
Ringwood Terminal	RWT	2008	13210	133.26	140.29	2.23	2.25
		2007	13819.5	27.20	65.00	0.74	0.85
		2006	15194	128.73	159.90	1.81	1.90
		2005	16474	180.64	194.82	1.97	2.01
		2004	16297	48.24	79.99	1.14	1.23
		2003	15962	158.65	174.94	2.03	2.08
Surrey Hills	SH	2008	4434	516.41	535.02	1.00	1.05
		2007	4644	66.12	83.14	0.87	0.93
		2006	4738	8.96	11.73	0.08	0.09
		2005	4782	284.04	296.97	1.11	1.16
		2004	4679	7.46	7.46	0.03	0.03
		2003	4718	25.26	30.46	0.42	0.50
St Kilda	SK	2008	256	143.47	168.26	2.11	2.17
		2007	303.5	151.86	188.83	2.85	2.93
		2006	351	1.34	1.34	0.01	0.01
		2005	330	0.52	0.52	0.01	0.01
		2004	301	1.43	1.43	0.01	0.01
		2003	190	2.53	2.53	0.23	0.23
Sandringham	SR	2008	11573	276.32	287.81	0.76	0.80
		2007	11580	78.48	101.96	0.92	0.98
		2006	11489	52.23	59.89	1.55	1.58
		2005	11392	120.29	124.41	1.35	1.36
		2004	11235	24.22	33.17	0.27	0.29
		2003	11083	41.20	51.14	0.63	0.67
Springvale South	SS	2008	11241	114.99	122.78	0.34	0.37
		2007	11192.5	57.83	64.61	0.68	0.70
		2006	11188	123.71	129.12	1.37	1.39
		2005	11171	54.27	60.80	0.34	0.37
		2004	10757	37.55	53.07	0.36	0.41
		2003	10751	46.63	53.20	0.96	1.00
Sorrento	STO	2008	16562	106.12	135.22	0.91	1.01
		2007	17053	82.57	109.89	1.06	1.15
		2006	17429	74.50	103.69	0.95	1.05
		2005	17457	61.18	84.56	0.96	1.04
		2004	17427	44.93	62.37	0.57	0.63
		2003	16762	84.06	134.39	1.36	1.50
Springvale	SV	2008	5720	65.68	70.81	0.33	0.34
		2007	8192.5	124.47	149.04	1.75	1.84
		2006	10750	52.06	62.31	0.82	0.86
		2005	10571	77.38	83.67	1.00	1.02
		2004	10717	47.66	60.12	0.69	0.73
		2003	10440	86.10	107.26	2.60	2.65
Springvale West	SVW	2008	5228	47.29	56.88	0.41	0.45
		2007	2546.5	88.37	89.33	0.93	0.93
Caulfield T/CFD	T	2008	2661	112.85	113.31	0.15	0.15
		2007	11014.5	18.40	40.62	0.22	0.30
		2006	10240	23.27	38.08	0.30	0.36
Caulfield	T	2005	8818	25.43	26.53	0.36	0.37
		2004	8801	38.74	39.25	0.56	0.56
		2003	8690	28.78	34.67	0.44	0.46
West Doncaster	WD	2008	6771	599.25	603.96	0.85	0.87
		2007	6595.5	8.18	30.40	0.15	0.22
		2006	6568	34.21	41.23	0.41	0.45
		2005	6563	258.57	262.24	1.46	1.50
		2004	6556	3.11	7.52	0.03	0.05
		2003	6539	22.60	34.87	0.41	0.52

10 Appendix E: Supply areas (zone substations) reliability maps, 2008

This section provides, for each distribution business:

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

Figure E.1 **CitiPower minutes-off-supply**

Average total minutes-off-supply per customer, 2008

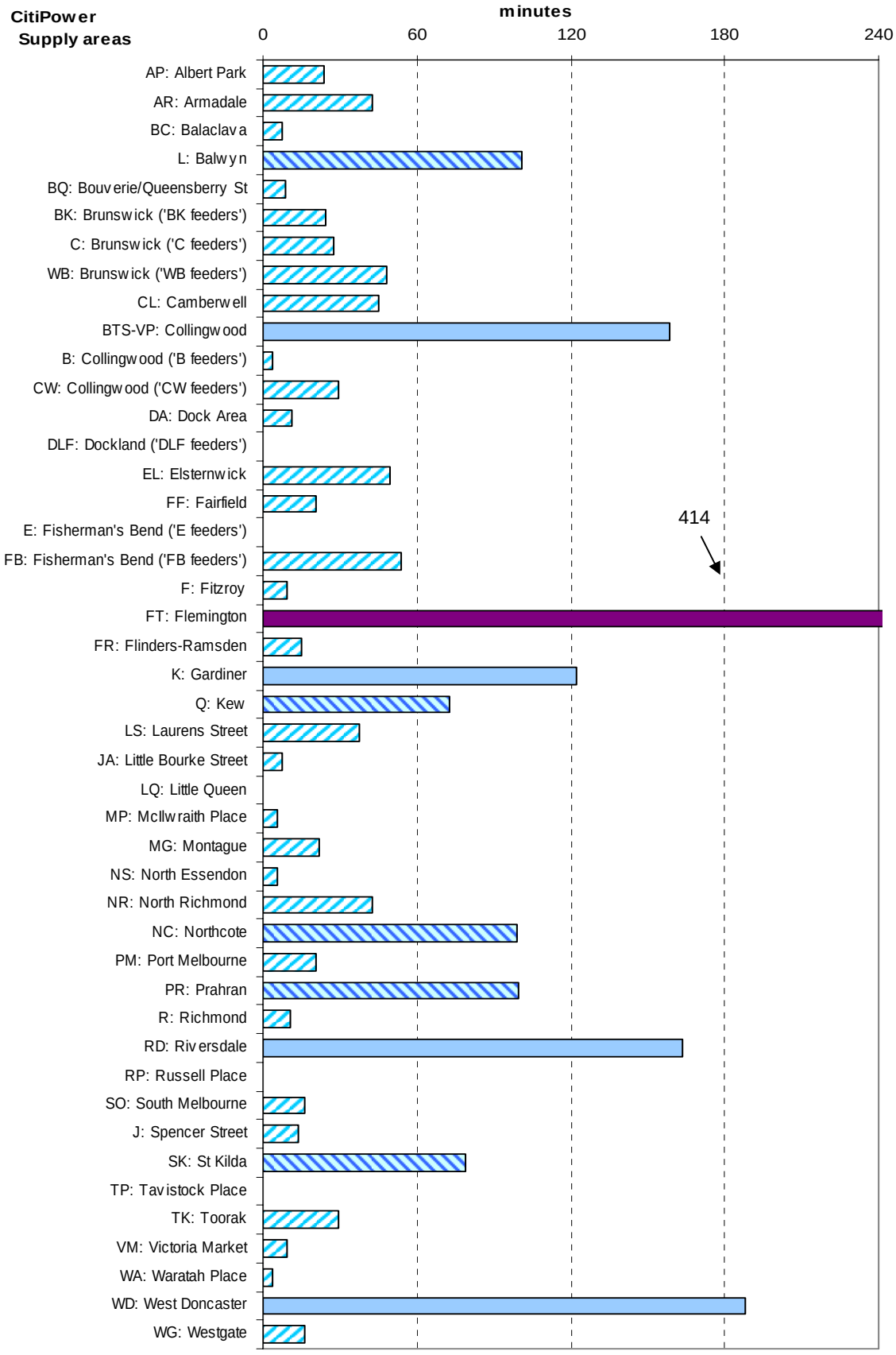


Figure E.2 **CitiPower reliability map**

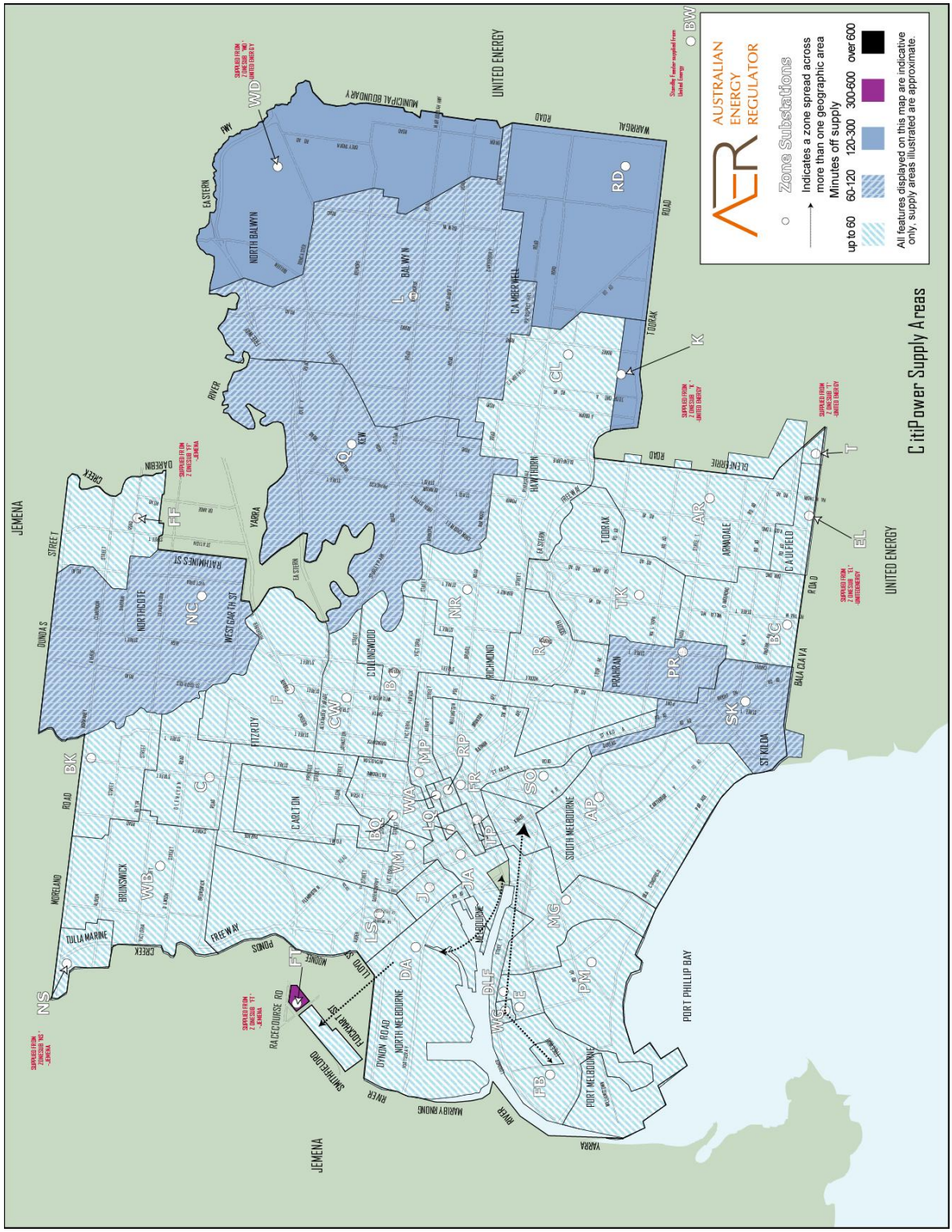


Figure E3 **Jemena minutes-off-supply**

Average total minutes-off-supply per customer, 2008

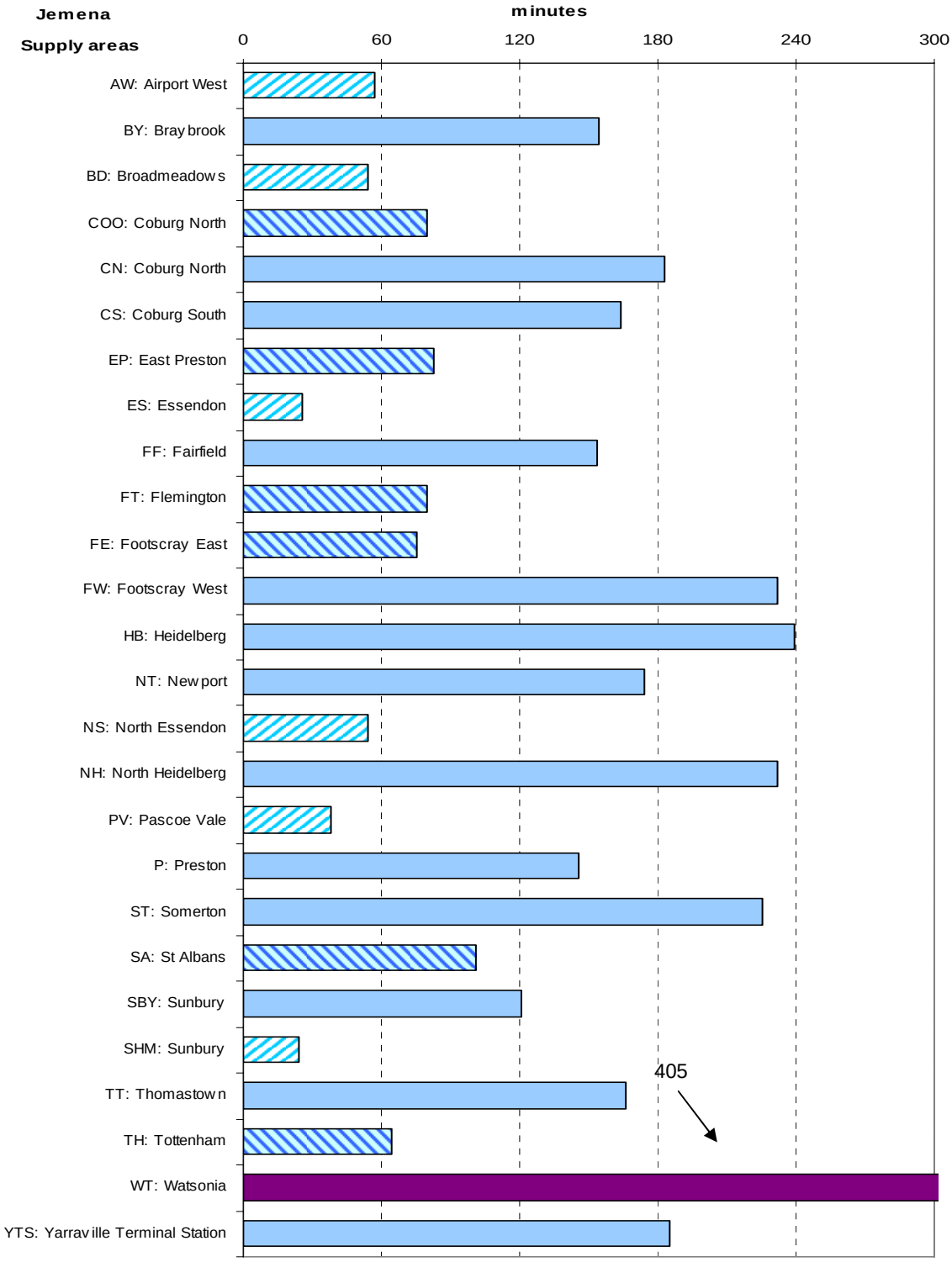


Figure E.4 **Jemena reliability map**

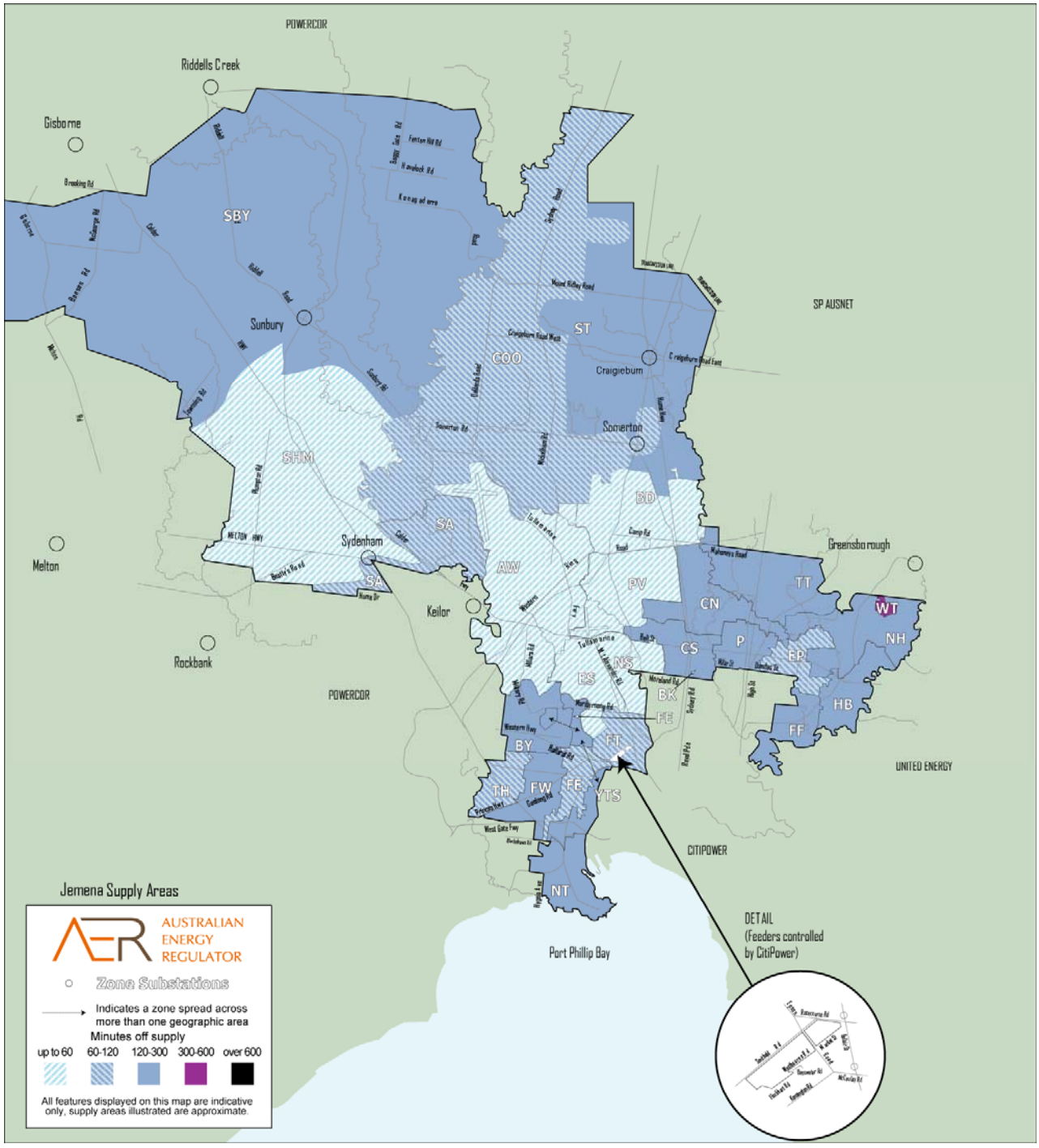


Figure E.5 **Powercor minutes-off-supply**

Average total minutes-off-supply per customer, 2008

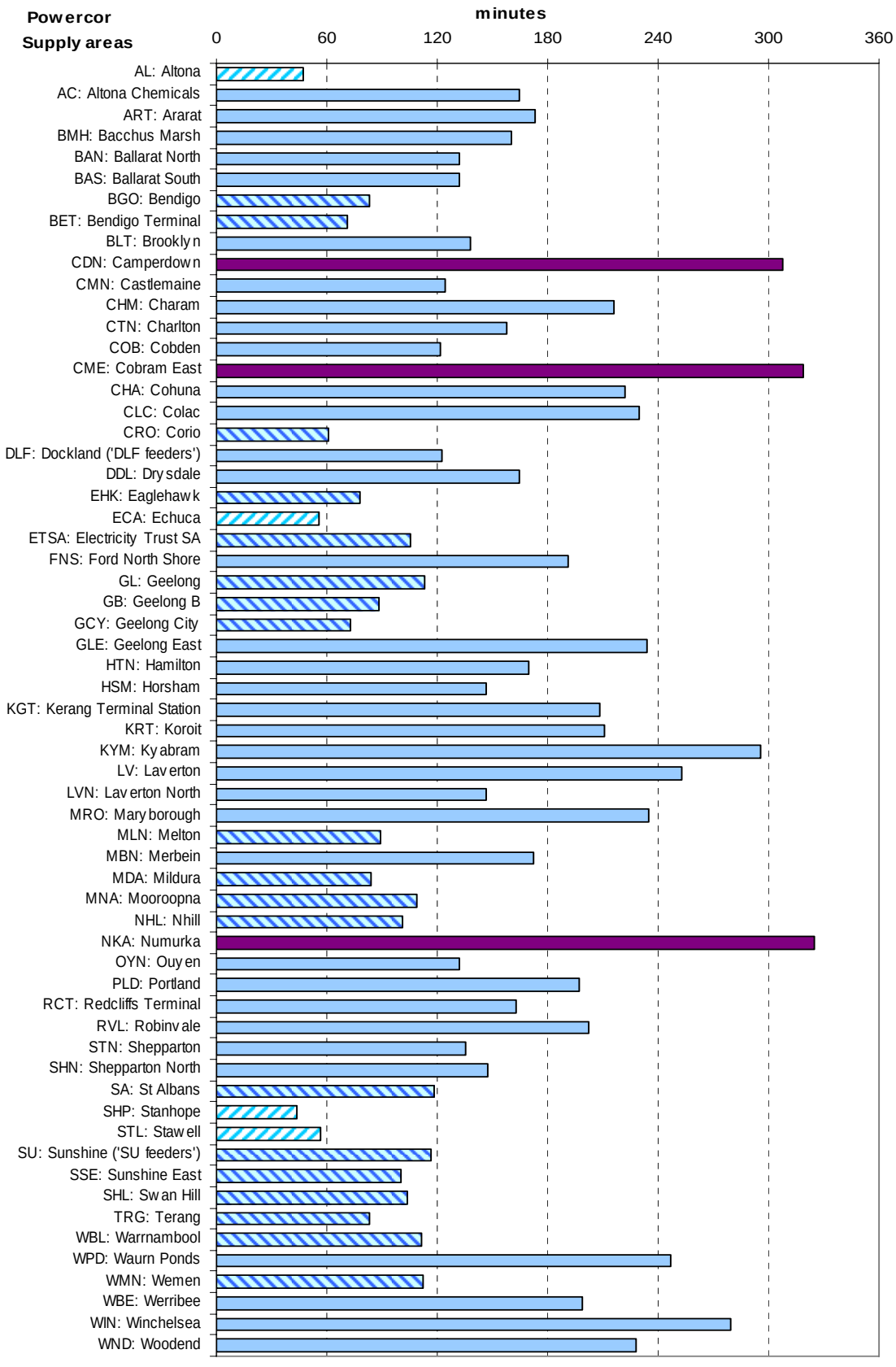


Figure E.6 **Powercor reliability map**

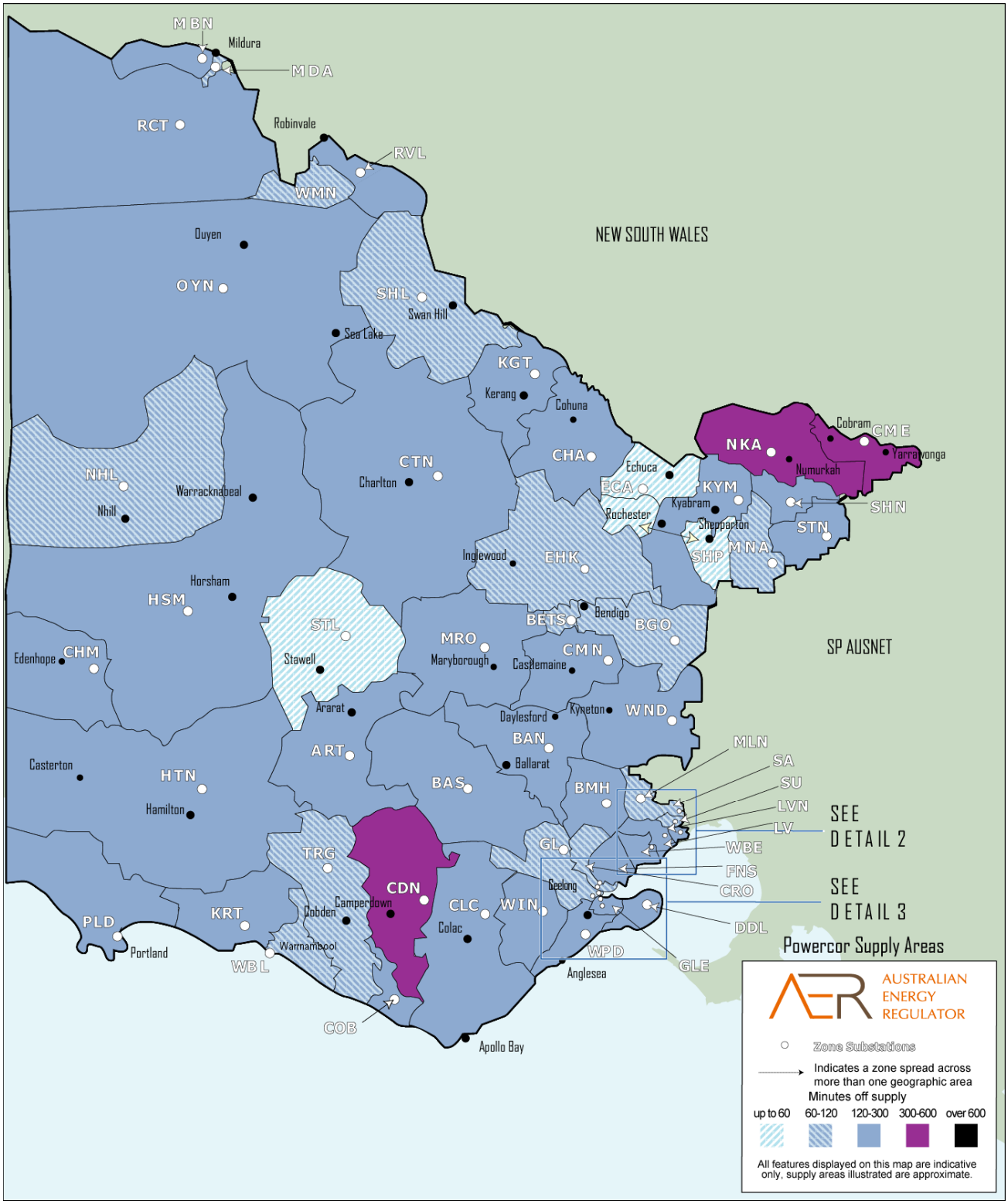
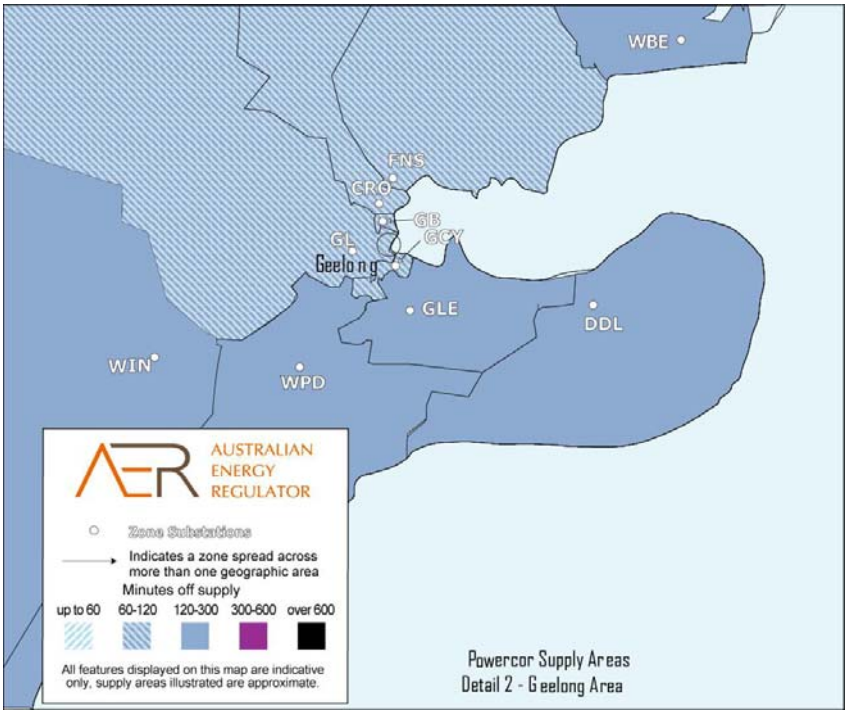


Figure E.6a **Powercor reliability maps**



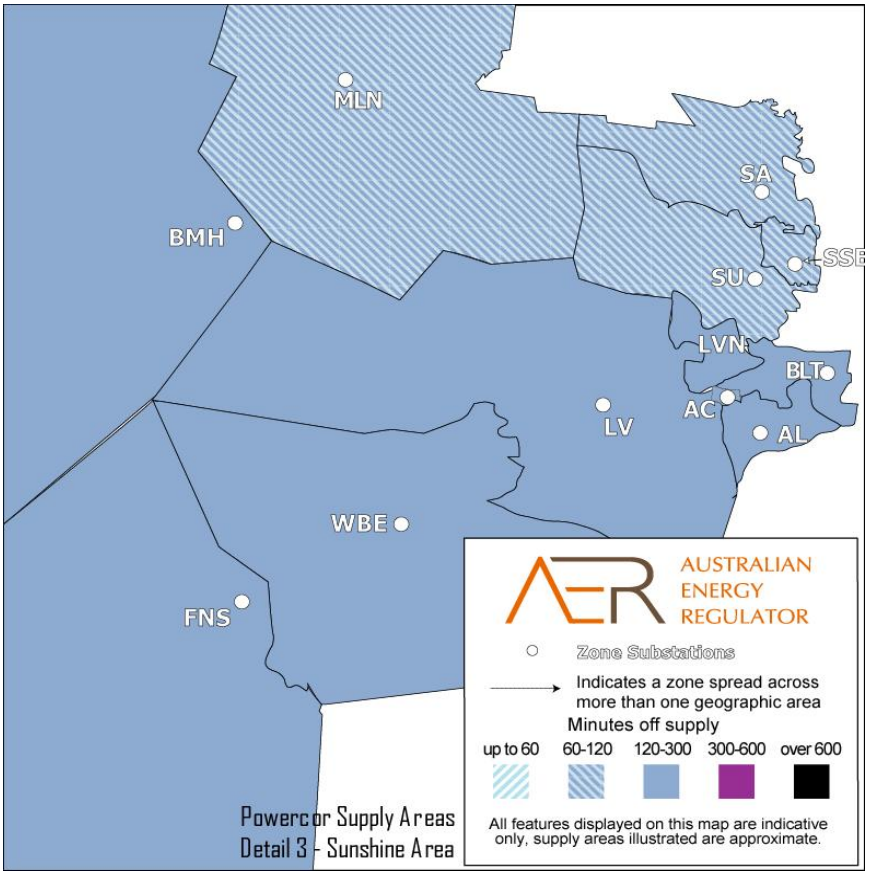


Figure E.7 **SP AusNet minutes-off-supply**

Average total minutes-off-supply per customer, 2008

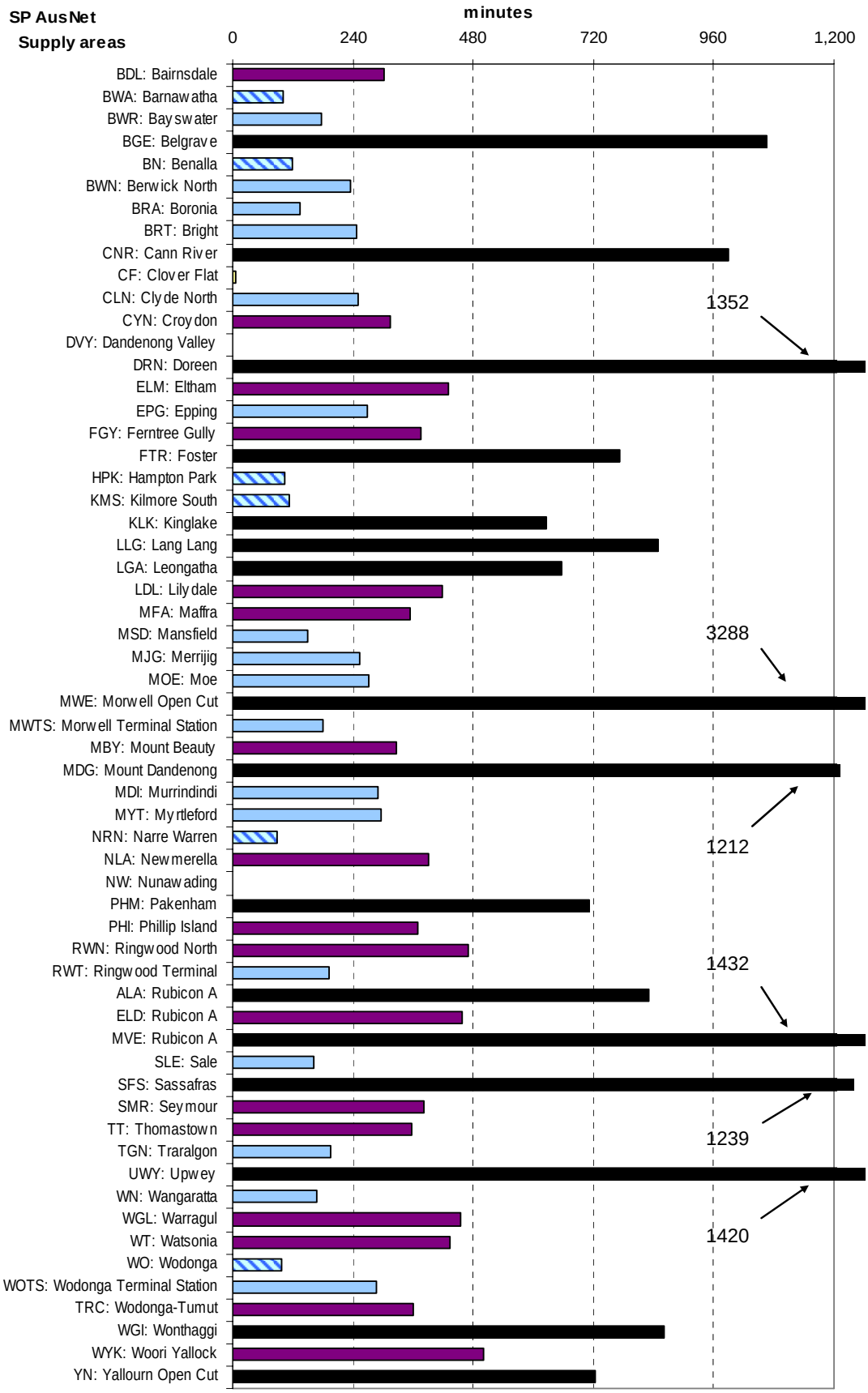
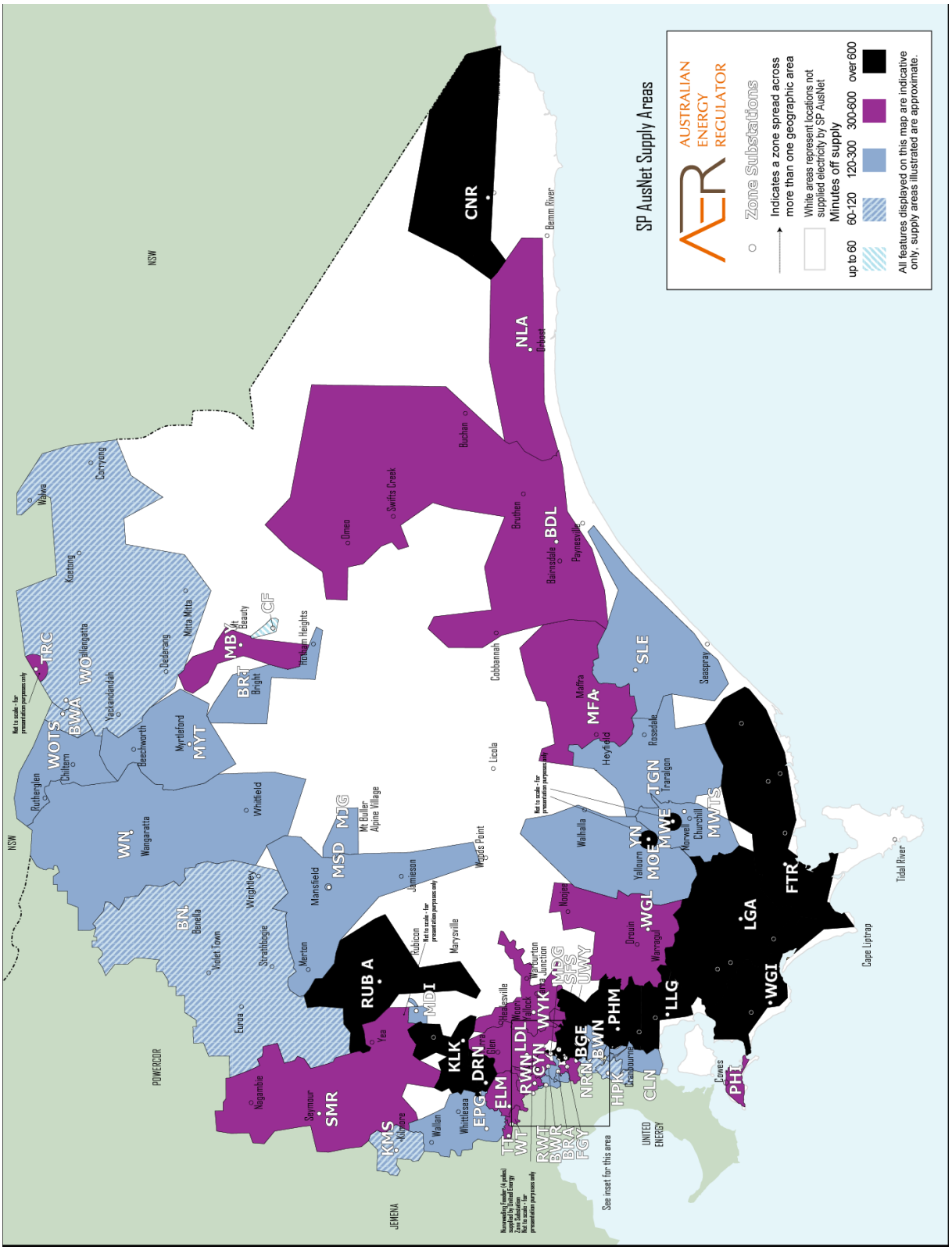


Figure E.8 **SP AusNet reliability map**



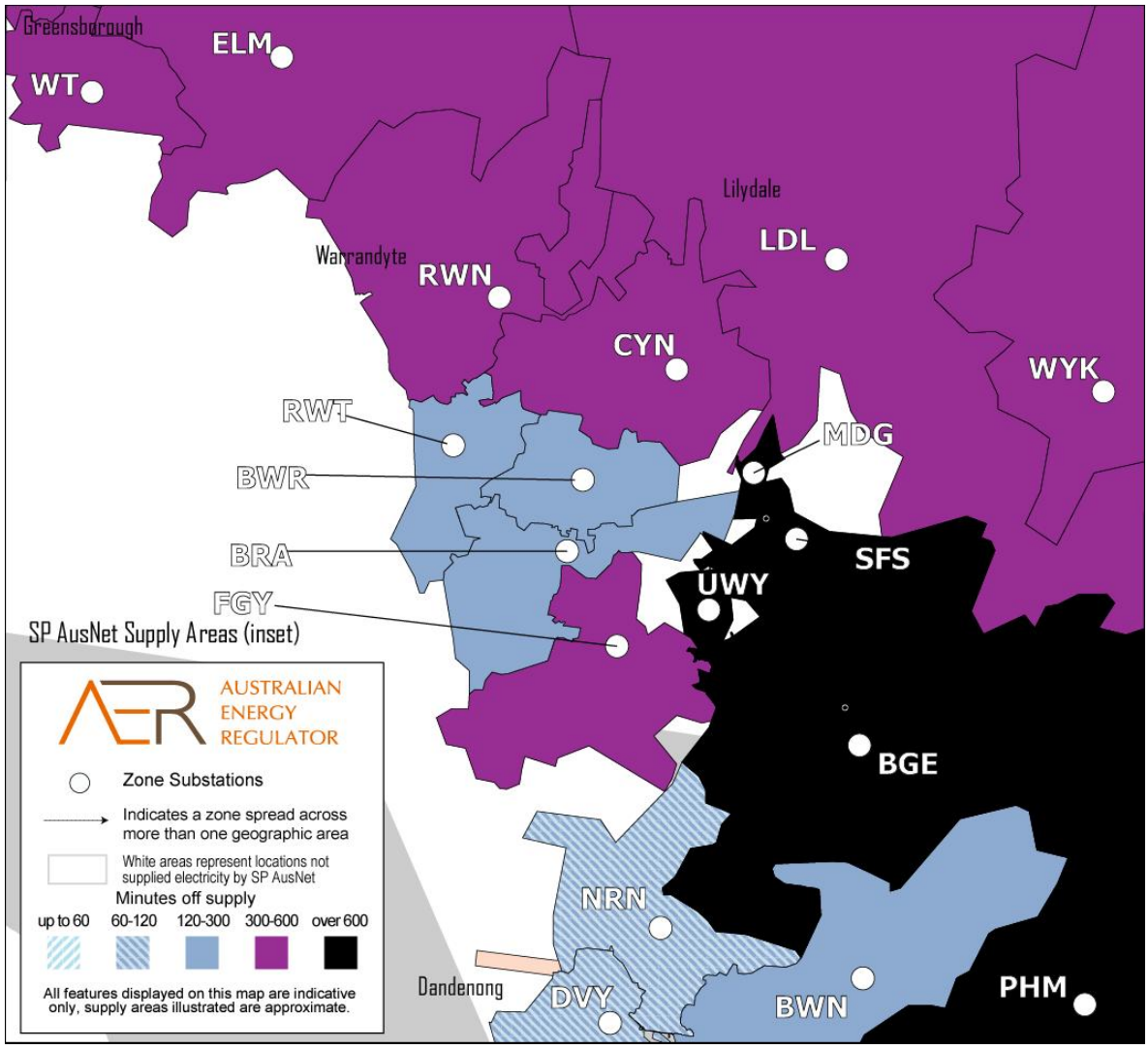

Greensborough
ELM
WT
Lilydale
LDL
Warrandyte
RWN
CYN
WYK
RWT
MDG
BWR
BRA
SFS
UWY
FGY
SP AusNet Supply Areas (inset)
AUSTRALIAN ENERGY REGULATOR
Zone Substations
Indicates a zone spread across more than one geographic area
White areas represent locations not supplied electricity by SP AusNet
Minutes off supply
up to 60
60-120
120-300
300-600
over 600
All features displayed on this map are indicative only, supply areas illustrated are approximate.
BGE
NRN
Dandenong
DVY
BWN
PHM

Figure E.9 **United Energy minutes-off-supply**

Average total minutes-off-supply per customer, 2008

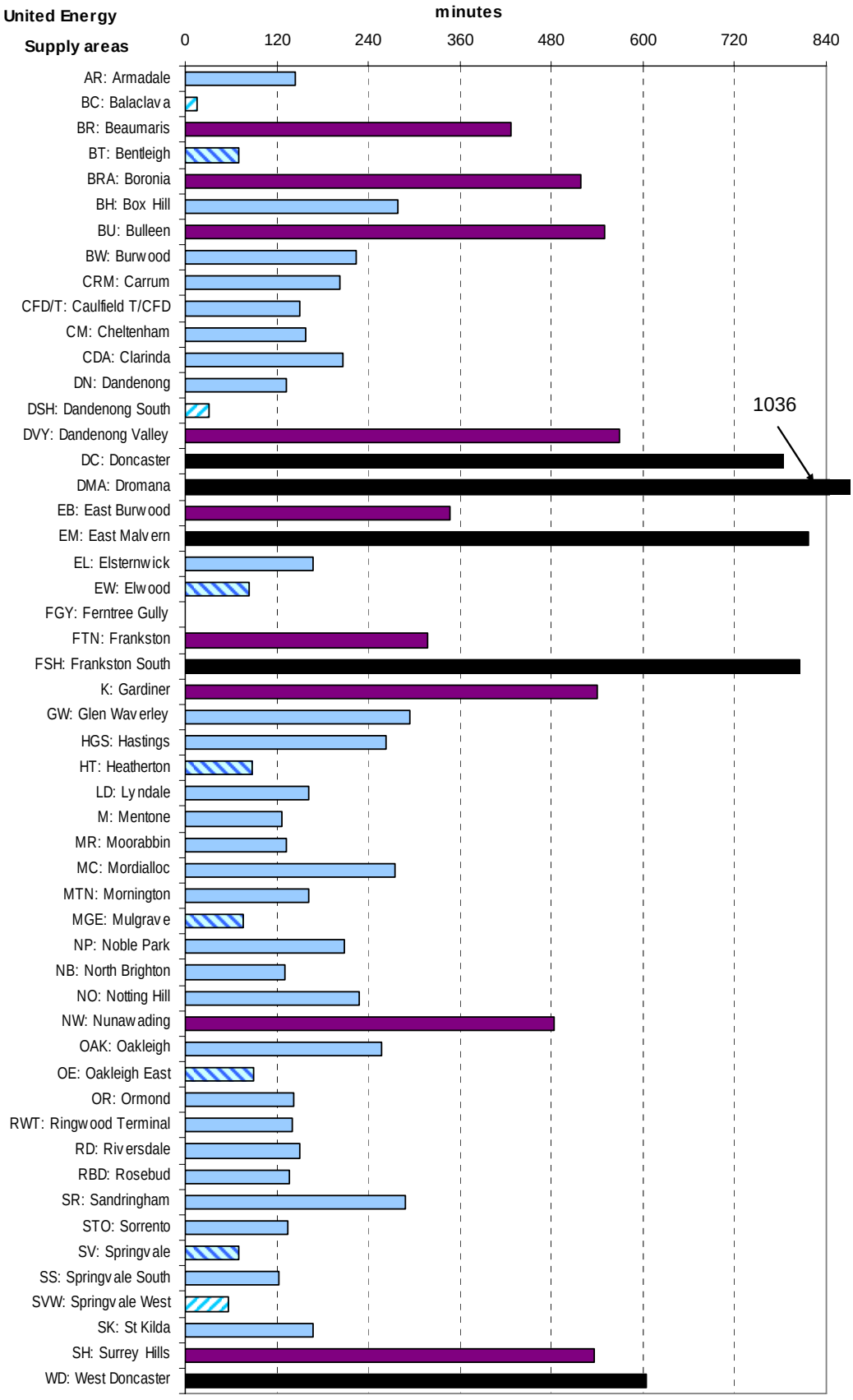


Figure E.10 **United Energy reliability map**