Certification of the Distribution Loss Factors (DLFs) proposed by the Victorian electricity distributors for the financial year 2012-13

8March 2012

Victorian Electricity Distribution Businesses

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Revision	Details	Date	Amended By
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Approved by: P. Walshe

Signed:

Date: 8 March 2012

Distribution: Jemena Electricity Networks (Vic) Ltd, CitiPower Pty, Powercor Australia Ltd, SP AusNet and United Energy Distribution

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Certification of the DLFs for the Victorian Distribution Business 2012-13

Parsons Brinckerhoffre viewed the proposed DLFs prepared by Powercor Australia Ltd to determine whether they have been prepared in accordance with the requirements of the National Electricity Rules.

Consistent with the reviews undertaken previously by the Essential Services Commission of Victoria, PB has assessed whether the proposed DLFs:

- are based on appropriate data
- accord with the prescribed methodology, and
- are a fair statement of the applicable loss factors for the DNSP.

The review involved:

- determining the approved calculation methodology that applies and a desk top review of the businesses proposed submission to AER against this methodology
- a meeting with each DNSP to assess data integrity and to clarify any aspects of the DLF calculation.

In our opinion, the proposed DLFs comply with the published calculation methodology and are consistent with the requirements of clause 3.6.3 of the National Electricity Rules.

Yours sincerely

Peter Walshe
Principal Consultant
Parsons Brinckerhoff Australia Pty Limited

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1. Introduction

1.1 Purpose of this report

The Victorian DNSPs – Jemena Electricity Networks (Vic) Ltd, CitiPower Pty, Powercor Australia Ltd, SPI Electricity (referred to as SP AusNet) and United Energy Distribution – are required to submit their proposed distribution loss factors (DLFs) for the financial year 2012-13 to the Australian Energy Regulator (AER) for approval.

The DLFs must be calculated in accordance with a published methodology. In accordance with the National Electricity Rules (NER) 3.6.3(g), the methodology must be either published by the Australian Energy Regulator (AER) or by the Distribution Network Service Provider and adherence to that methodology must be independently certified.

The methodology used by all Victorian businesses is the *Calculation Methodology for Distribution Loss Factors (DLFs) for the Victorian Jurisdiction(14 February 2007)* which was published by the Essential Services Commission (ESC). In addition, CitiPower and Powercor published a methodology for embedded generators in November 2010 that has been applied since the 2011-12 financial year. For all other DLFs they have applied the ESC methodology.

This report outlines Parsons Brinkerhoff's (PB's) findings from our review of the proposed DLFs.

1.2 Confidentiality

Due to the commercially sensitive nature of the data contained within, this report is to be treated as confidential to the AER and AEMO and is not to be published or made publically available.

1.3 Background

DLFs are used to adjust customer's metered electricity consumption data to allow for energy losses in the electricity distribution network.

The National Electricity Rules require that DLFs should be allocated to:

- each large customer consuming more than 40 GWh per annum or with a peak demand of 10MW or more – individual site specific DLFs are to be determined according to the customers' actual location on the network
- each embedded generator of actual generation of more than 10MW – individual site-specific DLFs are to be determined according to the generator's actual location within the network
- any embedded generator or customer who do not meet the above thresholds but requests a site specific DLF from the distribution business, provided they meet reasonable costs incurred by the distribution business
- all other customers and embedded generators. For this category of customer / generator network average DLFs are to be allocated according to the type of connection points within the distribution network.

The distributors' proposals are summarised in part 2 of this report.

1.4 PB's review methodology

The proposed DLFs must be independently certified that they have been prepared in accordance with the requirements of the AER. Consistent with the reviews undertaken by ESC, PB has also assessed whether the proposed DLFs are based on appropriate data, the correct methodology and that the results are a fair statement of the applicable loss factors for each DNSP.

The Victorian distributors have engaged PB to undertake this independent certification. This report contains PB's analysis of the proposed DLFs.

PB has undertaken a common assessment of all five DNSPs submissions to determine whether the methodology results in a fair statement of applicable loss factors in the Victorian region.

The methodology adopted by PB for this review included:

- determining the approved calculation methodology that applies
- receiving each DNSP's proposed submission to the AER
- a desktop review of the DNSPs proposed submissions against the published methodology
- a telephone discussion or meeting with each DNSP to assess data integrity and to clarify any aspects of the DLF calculation
- assessment of any clarifying information provided.

1.5 Structure of this report

The remainder of this report is structure as follows:

- Part 2 provides the details of the DLFs proposed by the DNSPs for the 2012-13 financial year
- Part3 provides the details of PB's assessment of the proposed DLFs
- Appendix A provides PB's terms of reference.

2. Proposed DLFs for the 2012-13 financial year

The distributors' proposed DLFs for the 2012-13 financial year are shown in Tables 2.1, 2.2 and 2.3.

2.1 Proposed site-specific DLFs for large customers

The proposed DLFs for large load customers are given in Table2.1.No customers with an annual consumption of less than 40 GWh or peak consumption of less than 10 MW applied for a site specific DLF as provided for under Clause 3.6.3(b1) of the NER.

Table2.1 Proposed site-specific DLFs for large load customers for the 2012-13financial year

Distributor	National Metering Identifier	DLF for 2012-13
CitiPower	[redacted]	[redacted]
Powercor	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	VCCCBF0010	(Note 1)
	[redacted]	[redacted]
UED	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	1.0218 (Note 2)
Jemena	[redacted]	[redacted]
	[redacted]	[redacted]

	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
SP AusNet	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]

Note 1: This customer's annual energy consumption has decreased below 40GWh and is forecast to remain below the threshold for the 2012-13 financial year so it has moved to the Long DLF-C category

Note 2: This customer's annual energy consumption has increased above the 40 GWh threshold during the 2011-12 financial year and is forecast to remain above the threshold for the next financial year.

2.2 Proposed site-specific DLFs for embedded generators

The proposed DLFs for large embedded generators exporting more than 10MW for the 2012-13financialyear are shown inTable2.2.No embedded generators with an export of less than 10MW applied for a site specific DLF as provided for under Clause 3.6.3(b1) of the NER.

Table2.2 Proposed site-specific DLFs for large embedded generators for the 2012-13 financial year

Distributor	Generator	National Metering Identifier	DLF for 2012-13
CitiPower	none		
Powercor	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
UED	[redacted]	[redacted]	[redacted]
Jemena	[redacted]	[redacted]	[redacted]
SP AusNet	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]

Note 1: [redacted]

2.3 Proposed network average DLFs for other customers and embedded generators with less than 10MW output

The proposed DLFs for network average customers and embedded generators exporting less than 10 MW are given in Table2.3.

Table2.3 Proposed network average DLFs for the 2012-13 financial year

Distributor	Distribution Loss factors					
	Type	DLF-A	DLF-B	DLF-C	DLF-D	DLF-E
CitiPower	Short sub-transmission	1.0040	1.0122	1.0152	1.0370	1.0418
	Long sub-transmission	N/A	N/A	N/A	N/A	N/A
Powercor	Short sub-transmission	1.0044	1.0108	1.0372	1.0633	1.0715
	Long sub-transmission	1.0323	1.0387	1.0651	1.0912	1.0994
UED	Short sub-transmission	1.0055	1.0120	1.0193	1.0403	1.0549
	Long sub-transmission	1.0222	1.0287	1.0360	1.0570	1.0716
Jemena	Short sub-transmission	1.0058	1.0113	1.0260	1.0382	1.0448
	Long sub-transmission	1.0247	1.0302	1.0449	1.0571	1.0637
SP AusNet	Short sub-transmission	1.0050	1.0137	1.0364	1.0619	1.0690
	Long sub-transmission	1.0287	1.0374	1.0602	1.0856	1.0927

Notes:
- DLF-A is the distribution loss factor to be applied to a second tier customer or market customer connected to a sub-transmission line at 66 kV or 22 kV.
- DLF-B is the distribution loss factor to be applied to a second tier customer or market customer connected to the lower voltage side of a zone substation at 22 kV, 11 kV or 6.6 kV.
- DLF-C is the distribution loss factor to be applied to a second tier customer or market customer connected to a distribution line from a zone substation at voltage of 22 kV, 11 kV or 6.6 kV.
- DLF-D is the distribution loss factor to be applied to a second tier customer or market customer connected to the lower voltage terminals of a distribution transformer at 240/415 V .
- DLF-E is the distribution loss factor to be applied to a second tier customer or market customer connected to a low voltage line at 240/415 V.
- Separate DLFs are also calculated for each DLF category A to E depending on whether the length of the sub-transmission line supplying the customer upstream of the customer's connection point is 'short' or 'long'.

A short sub-transmission line is defined as:
- a radial sub-transmission line where the route length of the line is less than 20 km, or
- a sub-transmission line in a loop where the total route length of all lines in the loop is less than 40 km.

All other sub-transmission lines are defined as 'long sub-transmission'

3. Parsons Brinckerhoff's findings

This section sets out PB's analysis and findings.

3.1 Assessment of the proposed DLFs

Consistent with previous assessments of DNSP's proposed DLFs undertaken by the ESC, PB has adopted the following approach when assessing whether the proposed DLFs are a fair statement of the applicable loss factors for each DNSP:

- For load customers — that the price impact on customers due to changes in DLFs represents no greater than a one per cent increase in energy cost. The ESC stated that increases in site-specific DLF of more than one per cent for some large customers may be appropriate if the change would better reflect their share of network losses.
- For embedded generators — that the calculated DLFs are based on sound assumptions about the operations of the generators.
- That distributors have taken into consideration their previous forecast errors in overall loss levels by examining the trend of reconciliation errors over time.
- That the overall levels of network losses of each distributor are reasonable.

In undertaking its review PB had regard to these considerations and also reviewed the following topics:

Calculation methodology

The Rules state that DLFs must be "*derived, in accordance with the methodology determined by the AER or the Distribution Network Service Provider*"[1]. As the AER has not established its own methodology, Jemena, UED and SP AusNet have adopted the calculation methodology that was developed by the ESC in 2007[2].

CitiPower and Powercor have also adopted the ESC's calculation methodology for average demand customers and large site specific customers, but since 2011 have applied their own published methodology, in place of section 2.1 of the ESC Methodology, to the calculation method used for large embedded generators. The new methodology was reviewed by the AER and published by the distribution businesses in accordance with the NER requirements under clause 3.6.3. CitiPower and Powercor have accepted all other sections of the ESC methodology.

All DNSPs stated that the proposed DLFs have been calculated in accordance with the calculation methodology approved by the ESC in previous years or their published amendments. PB discussed how each DNSP calculates the DLFs with respect to the three category types – large embedded generators, large site specific customers and average demand customers. PB confirms that each of the DNSPs undertook the appropriate level of calculation for each customer type.

[1] National Electricity Rules Clause3.6.3

[2] Essential Services Commission of Victoria, 14 February 2007, Calculation Methodology for Distribution Loss Factors (DLFs) for the Victorian Jurisdiction

Sales forecasts

PB notes that the Australian Energy Market Operator's (AEMO) forecast energy growth for Victoria in the 2012-13 financial year(projected in 2011) shows an expected growth of 3.0% for median growth and 0.43% for low growth[3].

PB examined the DNSPs forecast sales growth, using the 2011-12 and 2012-13 forecast data, to check for consistency with the AEMO forecasts. Overall, PB found that the distributors are showing a small net decrease in energy consumption for Victoria that is consistent with the AEMO low growth forecast. The two predominantly reasons supplied by the distribution business are:

1. the economic downturn due to the global financial crisis and the ongoing sovereign debt issues in Europe

2. increased penetration of domestic solar PV generation and energy efficiency measures (such as increased use of compact fluorescent globes) which effectively reduces the energy demand from domestic customers

For all distribution businesses, the sales forecasts were determined by the commercial groups within the distribution businesses which are also responsible for setting network tariffs. Therefore PB considers the forecasts to be reasonable and based on appropriate data.

3.2 Price impact on load customers

A high price impact on a local customer may indicate a failure of the DLF calculation methodology to provide an appropriate loss factor. In past reviews the ESC adopted a threshold that price increases should be less than one per cent. PB considers that this threshold is reasonable and has also adopted it.

Table3.1and Table3.2 present the changes to the DLF values for the 2012-13 financial year compared to the current (2011-12) financial year for large load customers and network average customers respectively. The tables show that the impact on all customers of the proposed DLFs for 2012-13 does not result in price increases of greater than one per cent.

The largest changes to DLF's were investigated by PB with the following explanations provided by the distribution businesses:

- The Long Sub Transmission category decreased by an average of 0.7% and the Short Sub Transmission category increased by an average of 0.3% due to the decreased load forecast and reconfiguration of the network.

- The Jemena Long DLF-E category DLF decreased by 0.244% due to the reduced sales forecast for that category.

- The UED Long Sub Transmission category DLFs decreased by 0.5% due to re-conductoring the TBTS-DMA No.1 and No.2 sub transmission lines with larger, lower resistance conductors.

[3] Australian Energy Market Operator 2010, Electricity Statement of Opportunities, Table 3-13

These changes do not result in a significant change to the cost of energy to customers and are therefore acceptable under the ESC methodology.

Table3.1 Changes in proposed DLFs for large load customers

Distributor	National Metering identifier	Current year DLF 2011-12	Proposed DLF 2012-13	Change
CitiPower	[redacted]	[redacted]	[redacted]	[redacted]
Powercor	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]		Note 1
	[redacted]	[redacted]	[redacted]	[redacted]
UED	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]		[redacted]	Note 2
Jemena	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
SP AusNet	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]

Note 1:This customer's annual energy consumption has decreased below 40GWh and is forecast to remain below the threshold for the 2012-13 financial year so it has moved to the Long DLF-C category

Note 2: This customer's annual energy consumptions has increased above the 40 GWh threshold and demand is forecast to remain above the threshold for the next financial year.

Table3.2 Changes in proposed network average DLFs

Distributor	Change in DLF					
	Type	DLF-A	DLF-B	DLF-C	DLF-D	DLF-E
CitiPower	Short sub-transmission	0.050%	0.089%	-0.079%	-0.164%	-0.192%
	Long sub-transmission	N/A	N/A	N/A	N/A	N/A
Powercor	Short sub-transmission	-0.030%	-0.040%	0.116%	0.198%	0.187%
	Long sub-transmission	-0.087%	-0.096%	0.056%	0.138%	0.128%
UED	Short sub-transmission	0.040%	0.049%	0.059%	-0.067%	0.009%
	Long sub-transmission	-0.506%	-0.493%	-0.480%	-0.592%	-0.511%
Jemena	Short sub-transmission	0.020%	0.030%	-0.049%	-0.067%	-0.057%
	Long sub-transmission	-0.185%	-0.165%	-0.239%	-0.255%	-0.244%
SP AusNet	Short sub-transmission	0.060%	0.148%	0.222%	0.606%	0.546%
	Long sub-transmission	-0.991%	-0.907%	-0.795%	-0.422%	-0.474%

3.3 DLFs for embedded generators

For the 2012-13 financial year, the DNSPs have taken different approaches to the calculation of DLFs for embedded generators. Jemena, UED and SP AusNet have retained the methodology published by the ESC in 2007, whereas CitiPower and Powercor have applied an alternate methodology which specifically targets the calculation of DLFs for embedded generators. The following two sections discuss application of the methodologies.

3.3.1 ESC Methodology

Jemena, UED and SP AusNet have retained the ESC methodology as their own for calculating the DLFs associated with large embedded generators. The methodology states that the DNSPs must adhere to the following steps:

- model the operations of the generator based on historical record or other relevant information available
- determine the relevant forecast network losses by modelling the distribution network between the generator's connection point and the transmission network connection point and the transmission network connection point for each modelled operating period of the generator

- calculate the annual overall DLF utilising a volume weighted factor based on the forecast average electrical energy loss for each modelled operating period of the generator in the financial year in which the DLF is to apply.

The DLF is then calculated using the following equation:

$$DLF = 1 + \frac{Losses}{Magnitude\ of\ sales\ less\ generation}$$

PB has analysed the information provided by the DNSPs and confirms that in each case these steps have been adhered to.

As a change in DLF may indicate an issue with the underlying methodology, PB assessed the changes and found them all to be less than 1 per cent. PB therefore concludes that there are no emerging issues with the methodology or assumptions adopted for applying DLFs to large embedded generators.

3.3.2 Methodology for generators

CitiPower and Powercor have jointly published a methodology addressing the calculation of DLFs for large embedded generators, entitled *CitiPower and Powercor Distribution Loss Factor (DLF) Calculation Methodology for Large Embedded Generators November 2010*.

The methodology calculates the DLF using the difference in the network losses without the generator present and the network losses including the generator, which is then volume weighted by the generator's annual production. The new approach uses the following four steps:

- establish loss characteristics of the distribution network
- calculate distribution losses without embedded generation
- calculate distribution losses with embedded generation
- calculate the DLF using the revised approach, using the equation:

$$DLF = 1 + \frac{Network\ losses\ without\ generator - Network\ losses\ with\ generator}{Annual\ generation\ volume}$$

3.3.3 Changes to embedded generator DLF's

The DLFs for embedded generators will change depending on the generation profiles. Table3.3presents the changes to the DLF values for the 2012-13 financial year compared to the current (2011-12) financial year for embedded generators.

The following points were noted during the certification process:

- When certifying the DLFs for the 2011-12 financial year, PB noted that the [redacted][4].

[4] *PB understands that Powercor could not apply the previously used calculation methodology to a new generation site as the resulting DLF was not consistent with the actual losses in the network. Hence, a change in methodology to remove the inconsistency seems appropriate .PB notes that it is not required*

[redacted] and indicates a reliable application of the calculation methodology

- The generation profile for the [redacted] (which is comprised of two generating units) has changed for the 2012-13 financial year compared to the 2011-12 financial year. Since both the [redacted] generators are connected at the same point, the new operating schedule has resulted in an increase to the DLFs for [redacted].

[redacted]

Although CitiPower has also adopted a new methodology, it currently does not have any embedded generation that meets the 10MW export threshold needed for a site specific DLF.

Table3.3 Proposed DLFs for large embedded generators for the 2012-13 financial year

Distributor	Generator	National Metering Identifier	Proposed DLF for 2012-13	Current DLF 2011-12	Change
CitiPower	none				
Powercor	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
UED	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Jemena	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
SP AusNet	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

to review the calculation methodology when certifying that DLFs have been prepared in accordance with the published methodology.

3.3.4 Domestic solar PV generation

There has been increasing penetration of domestic photo-voltaic (PV) solar generation throughout Victoria, but the extent varies between the networks. Each of the distribution businesses track the number of units and installed capacity on their networks, as requested by the AER.

All of the businesses have treated the generation by domestic solar PV in a similar manner. Until the full implementation of Advanced Metering Infrastructure (AMI) to support the collection of appropriate metering data, the businesses cannot efficiently monitor the energy expor tfrom domestic solar PV. The net effect is therefore seen as a decrease in forecast sales on the LV residential networks. Since there is high variability of generation output (caused by weather, solar cell positioning and cleanliness of cells), the total solar generation output is estimated based on the installed capacity.

The businesses consider that since each unit is small, the majority of power is consumed by the owner or nearby properties, therefore the impact on network losses is considered to be negligible. The businesses will continue to track the market penetration and revise their treatment of domestic solar generation if appropriate.

PB considers that given the variability in generation due to the factors listed above and the limitations to accurately monitoring generation at each residence, the distribution business have given appropriate consideration to the effect of domestic solar PV generation in calculating the network average DLF's.

3.4 Reconciliation of the previous forecast losses against actual

Clause 3.6.3 (h)(2) of the NER states that DNSPs must reconcile the losses that were forecast using the DLF methodology in previous years with the actual level of losses which transpired in that year.

In determining the DLFs for the next financial year, the DNSPs advised that they have undertaken reconciliation with the actual losses incurred in the previous financial year (2010-11). The results of the reconciliation process are shown in Table3.4.

Table3.4 shows that the magnitude of the DNSPs forecast errors for the previous five financial years have been generally less than 0.8% in terms of total energy distributed. The level of forecast errors fluctuates both in size and, with the exception of CitiPower, in over and under recovery.

CitiPower implements a method of averaging losses over the past five years as part of a top down-bottom up reconciliation process to account for, and diminish, errors. Since 2006-07 CitiPower demonstrated a decreasing trend in the reconciliation error, but in 2010-11 the over recovery increased. PB examined the information provided to see if the calculation methodology may have a systemic bias to over recovery.

- CitiPower stated that the increase in reconciliation error is likely to be a result of actual sales falling below forecast sales due to worsening economic conditions and the effect on businesses predominately located in or near the CBD, therefore impacting CitiPower more than the other distribution businesses.

- CitiPower is aware of the potential for an over recovery bias. It intends to wait until data is available next year to assess if the 2010-11 result is a one off anomaly or if their calculation methodology requires correction.

PB considers CitiPower's approach to be prudent as any modification to the calculation methodology without sufficient data may result in a higher degree of inaccuracy in the calculation of losses.

All other distribution businesses reduced the reconciliation error.

PB discussed the reconciliation undertaken with each DNSP and confirmed that appropriate consideration had been given to the reconciliation error and adjustments had been incorporated into the models used to forecast losses for the 2012-13 period if required. PB considers that the DNSPs have demonstrated that they have taken into account the reconciliation required by clause 3.6.3(h)(2) of the NER in calculating the proposed DLFs.

Table3.4 Reconciliation between actual and losses recovered through the application of DLFs in 2010-11 (shown as a percentage)

Distributor	2010-11				2009-10	2008-09	2007-08	2006-07
	Total losses recovered through application of DLFs (MWh)	Actual value of losses (MWh)	Difference Forecast vs. actual losses (MWh)	Forecast error as a percentage of sales	Forecast error as a percentage of sales	Forecast error as a percentage of sales	Forecast error as a percentage of sales	Forecast error as a percentage of sales
CitiPower	252,427	210,467	41,960	0.68	0.37	0.35	0.82	0.97
Powercor	750,313	786,248	-35,935	-0.34	0.48	0.40	0.53	-0.28
UED	375,563	374,560	1,003	0.01	0.46	0.01	-0.27	-0.47
Jemena	175,847	171,659	4,188	0.09	0.28	-0.17	1.14	0.12
SP AusNet	573,759	554,892	18,867	0.25	0.38	0.64	0.79	-0.22

Note: a positive number indicates over-recovery.

3.5 Forecast overall losses for the 2012-13 financial year

When it undertook the approval of the DLFs, the ESC considered that the economic levels of losses for Victorian DNSPs should be in the range of 3 to 5 per cent of sales for urban based networks and could be as high as 10 percent of sales for distributors with predominantly rural networks.

PB believes these ranges are useful when examining network losses. PB has examined the forecast loss levels for the DNSPs and concludes that:

- the forecast losses for the urban based DNSPs CitiPower and Jemena are within the expected range
- the forecast losses for the DNSPs with rural networks UED, Powercor and SP AusNet are within the expected range.[5]

This analysis is shown in Table3.5and shown graphically in Figure 3.1below.

[5] PB notes that UED has a predominately urban network with some rural sections. Its forecast losses are appropriately at the lower end of the expected range.

Table3.5 Overall loss levels

Distributor	Overall loss as a percentage of total sales							
	2005-06 actual	2006-07 actual	2007-08 actual	2008-09 actual	2009-10 actual	2010-11 actual	2011-12 forecast	2012-13 forecast
CitiPower	4.29	3.92	3.74	4.11	3.81	3.40	3.97	3.79
Powercor	6.64	7.27	6.22	6.74	6.73	7.34	6.84	6.94
UED	4.66	4.65	5.01	5.64	4.73	4.65	4.68	4.63
Jemena	5.05	3.67	4.02	3.92	3.92	3.87	3.78	3.72
SP AusNet	7.87	7.96	6.59	7.44	7.13	7.48	7.35	7.34

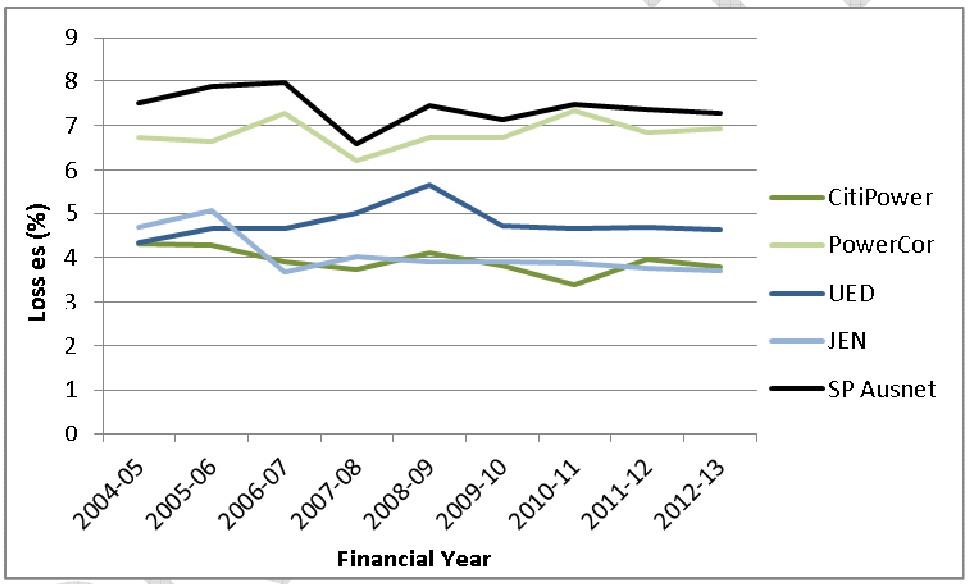

Figure 3.1 Trend of overall loss levels for Victorian DNSPs

3.6 Conclusion

Having assessed the proposed DLFs submitted by the Victorian DNSPs, PB found that:

- Jemena, UED and SP AusNet have calculated the DLFs based on the correct methodology; that is the DLF Calculation Methodology published by the ESC.
- CitiPower and Powercor have calculated the DLFs based on the correct methodology; that is the DLF Calculation Methodology published by the ESC for Qualified Customers and network average DLFs and their published methodology *CitiPower and Powercor Distribution Loss Factor (DLF) Calculation Methodology for Large Embedded Generators November 2010* for large embedded generators.
- All Victorian DNSPs have used appropriate data for the calculation of the Distribution Loss Factors.

- The distributors have given appropriate consideration to increased market penetration of embedded solar PV generation at domestic residences.

- The price impact on all load customers due to the proposed DLFs for 2012-13 represents no greater than one per cent increase in energy cost, indicating consistency in application of the DLF calculation methodology.

- The distributors have taken into consideration their previous forecast errors in overall loss levels as verified by the trend of reconciliation errors over time and that the levels of errors are acceptable.

- The overall levels of network losses of each distributor are within acceptable limits.

PB is satisfied that the proposed DLFs meet the requirements of clause 3.6.3 of the National Electricity Rules and are consistent with the published methodologies.

Appendix A

Terms of reference

Amendments to the 2010/11 Terms of Reference

The Terms of Reference (ToR) for the 2012/13 Distribution Loss Factor (DLF) Certification report shall be based on the attached ToR which were agreed to for the 2010/11 DLF certification report.

The following amendments have been applied to make the ToR suitable for2012/13:

1. The DLF Certification shall be completed for the 2012/13 DLFs.

2. For CitiPower and Powercor, the certification for calculating DLFs for embedded generators shall be according to their published methodology, for Qualified Customers and network average DLFs the certification shall be according to the methodology published by the ESC.

3. The following timetable shall supersede the dates contained within Section 11 of the ToR:

Project task	Completion date
DNSPs provide PB with required information	25February 2012
Draft certification report issued to DNSPs	6March 2012
Final certification report issued to DNSPs	9March 2012

TERMS OF REFERENCE FOR CERTIFICATION OF VICTORIAN DISTRIBUTION BUSINESSES'

DISTRIBUTION LOSS FACTOR 2010/11

Document History

REV	REVISION STATUS	DATE	PREPARED
A	DRAFT	9 Dec 09	Gabriel Wan
B	Final	19 Jan 10	Gabriel Wan

4. Background

Each year, Distribution Network Service Providers(DNSPs) must determine the distribution loss factors (DLFs) to apply for their network in the next financial year in accordance with clause 3.6.3(g) of the National Electricity Rules (NER) and provide these to AEMO for publication by 1 April in that year. The NER requires DLFs to be determined in accordance with a methodology published either by the AER or the DNSP (where the AER has not published a methodology). Before providing the distribution loss factors to AEMO for publication, DNSPs must obtain the approval of the AER for the distribution loss factors it has determined for the next financial year.

5. DLF METHODOLOGY

The AER has not published a calculation methodology for determining DLFs. The AER has also advised that as it will not be publishing a methodology for determining DLFs to apply in 2010-11, DNSPs will continue to determine DLFs in accordance with their own published methodology or, where appropriate, the relevant published methodology operating in their jurisdiction as at 31 December 2007. Methodologies may be amended where necessary to better reflect the principles set out in the NER so long as the revised methodology is published by the DNSP in an accessible form and provided to the AER.

Accordingly, Victorian DNSPs will continue to determine the DLFs in accordance with the methodology published by the Essential Services Commission, Victoria (ESC)[6]. Refer to Appendix 1 for methodology paper.

6. AER APPROVAL OF DLF

The AER has written to the Victorian DNSPs about the approval process for the 2010-11 DLFs. For approval by the AER, the DNSP is to provide to the AER:

- the DLFs in a format fit for publication by AEMO;
- a copy of the methodology (in electronic form) and
- an independent assurance/certification that the DLFs have been calculated by the application of the relevant published methodology.

7. ASSURANCE / CERTIFICATION OF DLF

In previous years, the ESC has certified the DLFs prepared by Victorian DNSPs. However, with the transition from the ESC to the AER of a number of regulatory functions, the ESC is no longer able to perform this service for Victorian DNSPs. In light of this, the AER has advised that it considers that an assurance or certification provided by an auditor or a technical consultant is an acceptable alternative. The AER has also indicated that as with previous year approval process, it does not intend certification to be unduly burdensome but set at a standard sufficient for the certifying party to be confident that the appropriate data has been used, the correct methodology applied and that the results are a fair statement of the applicable loss factors for that firm.

[6] *In 2007 when the ESC was responsible for approving the DLFs prior to publication by NEMMCO, the ESC published a methodology in accordance with the NER and the Victorian DNSPs have been determining DLFs in accordance with this published methodology.*

8. Scope of Work

There are five Distribution Network Service Providers(DNSPs) in Victoria, list below, and all five DNSPs have agreed to jointly engage an auditor/consultant to certify the DLFs.

- Jemena Electricity Networks (Vic) Ltd
- CitiPower Pty
- Powercor Australia
- United Energy Distribution
- SPI Electricity

The auditor/consultant is to review the DLFs proposed by the five DNSPs in accordance with the principles set out above and provide a report to each of the DNSPs certifying whether the DNSP's proposed DLF shave been calculated in accordance with the Calculation Methodology for Distribution Loss Factors (DLFs) for the Victorian Jurisdiction (14 February 2007) published by the ESC, appropriate data has been used and that the results are a fair statement of the applicable loss factors for that firm.

9. Information from VICTORIAN dnsp

Documents provided:

- Guidance Paper: Calculation Methodology for Distribution Loss Factors (DLFs) for the Victorian Jurisdiction (14 February 2007)
- Victorian DNSPs' DLF 2009-10 submission to ESC.
- Review Findings Of The Distribution Loss Factors (DLFs) Proposed By The Victorian Electricity Distributors For The 2009-10 Financial Year
- Victorian DNSPs' proposed DLFs for the 2010-11 financial year.

10. Deliverables

At the completion of its review the auditor/consultant will provide an independent certification report which:

- is of a professional standard capable of being submitted to the AER;
- includes a bibliography outlining all reference sources;
- summarises the expert's experience and qualifications and attach its curriculum vitae;
- identifies any person and their qualifications, who assists you in preparing the report or in carrying out any research or test for the purposes of the report;
- summarises the instructions and attaches these term of reference; and

- (without limiting the points above) carefully and clearly sets out the facts that the auditor/consultant has assumed in putting together his or her report and the basis for those assumptions.

In light of the acceptance by AER of Certification Report prepared by the ESC for the past two years, the Victorian DNSPs are of the view that a report similar to the ESC's report should be acceptable to the AER.

11. Timetable

AER requires DNSPs DLF calculations and independent certification report of these calculations be submitted in electronic form by COB Friday 12 March 2010. Accordingly, the proposed timeline is as follows:

- Friday 26 February 2010 — DNSPs provide auditor/consultant with DLF calculation for certification. The information will be in the same format as those provided to the ESC in previous years.
- Friday 5 March 2010 — Auditor/consultant provides draft certification report to DNSPs.
- Wednesday 10 March 2010 — Auditor/consultant provides final certification report to DNSPs.

Please note that all information submitted to the AER including the certification report will be published on the AER's website unless confidential.