UNITED ENERGY Distribution

ABN 70 064 651 029

14 March 2008

Mr Chris Pattas
General Manager
Australian Energy Regulator
GPO Box 520
MELBOURNE VIC 3001

Dear

Re: Distribution Loss Factors for 2008/09

Clause 3.6.3 of the National Electricity Rules require Distribution Network Service Providers (DNSPs) to determine distribution loss factors (DLFs) to apply in the next financial year and provide these to NEMMCO for publication. Before providing the distribution loss factors to NEMMCO for publication, the DNSP is required to obtain the approval of the Australian Energy Regulator (AER) for the distribution loss factors. Accordingly, United Energy Distribution (UED) submits its DLFs for 2008/2009 for approval.

The average DLFs to apply in the financial year 2008/2009 are as follows:

Average DLFs	A	B	C	D	E
Short sub transmission	1.0059	1.0129	1.0207	1.0443	1.0593
Long sub transmission	1.0265	1.0335	1.0413	1.0649	1.0799

In order to calculate DLFs for the 2008/2009 financial year, UED has adopted the methodology published by the Essential Services Commission of Victoria in February 2007. The methodology is a three-step process. The first step was to calculate total energy loss for the 2006/2007 financial year using the difference between total energy imports and total energy sales (top-down). This amount has not been adjusted for theft[1]. The second stage involved calculating the energy losses for the same period based on engineering models (bottom-up). The total energy loss calculated in the first step was then allocated to each part of the network (A through E) using the results of the engineering models. The final third step was to use energy sales and demand forecasts together with knowledge of recently completed and planned network augmentations to forecast the energy loss and energy sales in each part of the network to determine the DLFs for the 2008/2009 financial period.

[1] Unlike previous years where energy theft was assumed to be 0.20% of low voltage energy sales, for the 2008/2009 financial year no allowance has been made for theft. As a result any energy theft will be treated as an energy loss and included within the distribution loss factors.

Full details of the forward-looking estimates are included in Attachment 1 together with MSATS codes in Attachment 2.

Clause 3.6.3(b) 2 of the National Electricity Rules sets out requirements for calculating site specific DLFs for certain large customers and embedded generators. The Rules specifically requires distributors to calculate a site specific DLF for embedded generating units with actual generation of more than 10MW, and end-users with a load of more than 40GWh per annum or demand of greater than 10MW. The site specific DLFs submitted for approval for these customers and generators are as follows:

NMI	Proposed DLF for 2008/09	Current DLF for 2007/08
VEEE0PD8AD	1.0128	1.0110
VEEE0TF39Q	1.0158	1.0139
VEEE0BG4Q3	1.0218	1.0199
VEEE0NDNEX	1.0220	1.0237
VEEE08KH3V	1.0154	1.0163
VEEE0C8AW1	1.0059	1.0067
6407649172	1.0113	1.0102

The top-down approach of calculating distribution losses established that the overall losses for UED was 4.81% (including adjustment for theft[2]) of annual sales based on financial year 2006/2007. This is 0.15% higher compared to the 4.66% reported for the previous financial year.

The reasons for the changes from year to year are often difficult to discover. Although from the experienced gained over recent years, the following issues have been identified to affect the accuracy of the top down methodology:

- The top down methodology is highly dependent upon the accuracy of metering data. UED is dependent upon its own metering data and that data supplied to UED by other metering service providers. The wholesale market boundary meter data is provided by NEMMCO.
- Not all supply points are metered, (such as public lighting, traffic lights and cable television power supplies) and the energy supplying these customers is estimated.
- Along some sections of UED's distribution boundary, energy is transferred between distributors. Significant energy flows between bordering DNSPs are measured by market boundary meters. Some of the cross boundary energy flows that are used for the calculation of DLFs are determined by DNSPs using their respective customer metering and billing systems to aggregate the energy flows of numerous low voltage customer services across the boundary.
- Accrual errors can cause apparent losses to rise and fall from one year to the next. This is because many energy meters are only read on a 3 month cycle.

[2] For the 2006/2007 financial year it was assumed that theft accounted for 0.20% of low voltage energy sales. If theft is ignored then the apparent energy loss for 2006/2007 would be 4.98%. In accordance with the revised methodology theft is ignored in the calculation of energy loss for the 2008/2009 financial year.

Over recent years the reported energy losses in UED's network have increased as follows:

2006/2007 – 4.81%
2005/2006 – 4.66%
2004/2005 – 4.34%
2003/2004 – 4.16%
2002/2003 – 4.72%

This increase in energy loss calculated from the top down method is not supported by the bottom-up engineering analysis. From the bottom-up approach of calculating distribution system losses, it was found that losses represent just 4.23% of energy sales compared with 4.29% for the previous year. Given the many assumptions made when estimating the losses based on engineering models, the results are within reasonability limits.

Losses on the sub transmission, zone substation and HV feeder network are modelled with greater confidence because UED has SCADA metering on these parts of the network. However many assumptions need to be made on distribution substations and the LV network. Nonetheless network modelling has found that losses have increased on the sub transmission network, distribution substations and the low voltage network. Interestingly the losses have reduced on the zone substations and on HV feeders. The overall loss reduction on zone substations and HV feeders has been the result of network augmentations and a slight change in load profile.

For the 2008/2009 financial year, UED forecasts that the total network energy loss as a percentage of sales will be 5.03%, which is 0.22% higher than the actual top-down energy loss of 4.81% calculated for the 2006/2007 financial year. The forecast is based on:

- In previous years an allowance for theft has been included in the analysis however this year a change to the methodology has been introduced and any theft on the UED network is now treated as an energy loss. As a consequence the reported network losses are expected to increase by 0.17% of total sales in the 2008/2009 financial year compared with the actual losses in the 2006/2007 year.
- Increase in asset utilisation;
- Recent and impending network augmentations;
- The latest distribution loss trends and observation of the reconciliation of the 2006/2007 year losses.

Clause 3.6.3h (2) of the National Electricity Rules requires each distributor to do reconciliation between the total energy losses implied by the DLFs for the previous financial year against the actual energy loss for that period. It is not possible to do this reconciliation for the 2007/2008 year because the necessary metering data is not available until the end of the financial year. Therefore, reconciliation was undertaken for the 2006/2007 financial year.

The results of the 2006/2007 reconciliation are as follows:

$$\sum_{i=1}^{i=N} ME_i \times DLF_i = TAGE = 8{,}158{,}172 MWh \quad \ldots(1)$$

$$\sum_{i=1}^{i=N} ME_i + NEL = TNE = 8{,}196{,}143 MWh \quad \ldots(2)$$

Where:

- ME_i - The Metered Energy flowing out of distribution network connection *i* over the 2005/2006 financial year.[3]
- DLF_i - Forward looking Distribution Loss Factor for distribution connection point *i*.
- $TAGE$ - Total Adjusted Gross Energy.
- NEL - Total Network Energy Loss calculated from a top down approach (ie. purchase minus sales).
- TNE - Total Transmission Network Energy flowing into the distribution network.
- N - The Number of distribution network connection points.

Equation (1) represents the total adjusted gross energy (TAGE) flowing out from distribution connection points. It is the metered energy plus distribution losses recovered through the application of the DLFs.

Equation (2) represents all energy flowing from distribution connection points plus total measured top down energy losses. It is in effect the total energy flowing from transmission connection points into the distribution network (TNE).

Subtracting the results of equation (1) from equation (2) equals +37,971MWh. This means the actual distribution network energy losses were 37,971MWh higher than the amount recovered through the application of the 2006/2007 DLFs.

In February 2006, UED forecast that the energy loss for the 2006/2007 year would be 336,310MWh. The actual loss was higher at 378,925MWh based on the top-down method (or 334,965MWh based on the bottom-up method). It is also worth noting that while energy loss was higher than forecast, energy sales were also slightly higher.

No attempt has been made to increase the DLFs for 2008/2009 to compensate for the under recovery of losses in 2006/2007. UED considers its methods to be unbiased even though over the past two years the actual losses have been higher than the forecast based on the results of the reconciliation. The forecast energy sales and losses for the 2008/2009 year have been determined without adjustment for past forecasting error.

In February 2007, the Essential Services Commission published a methodology for the determination of distribution loss factors in accordance with clause 3.6.3(g) of the National Electricity Rules. This methodology is based on the methodology jointly developed by the Victorian distribution businesses and is consistent with the methodology used for the calculation of DLFs in previous years. UED has used this methodology for the 2008/2009 DLFs and a copy is attached in Attachment 3.

[3] The National Electricity Rules define metered energy as a positive where flow is towards the transmission connection point however this definition results in negative values for metered energy supplying customer loads from distribution connection points. To simplify the analysis United Energy Distribution has defined metered energy out of a distribution connection point as positive.

UED has obtained assurance that the DLFs calculated for the 2008/2009 financial year have been calculated in accordance with the methodology in Attachment 3 from the current Jurisdictional Regulator, the Essential Service Commission of Victoria. The review findings document by the Essential Service Commission is attached in Attachment 4.

This submission has been prepared by Alinta Asset Management Pty Ltd on behalf of United Energy Distribution Pty Ltd. Should you require further information or clarification on the matters discussed in this submission please contact David Wilkinson, Senior Planning Engineer on (03) 8544 9239.

Yours sincerely

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Attachment 1

Summary of UED Distribution Loss Factors and Supporting Information

2008-2009 DLF Submission to the AER - 13 March 2008

Company Name	**United Energy Distribution**

Energy Procured (MWh)

Total annual energy obtained from transmission connections at the boundary	8,619,200
Energy obtained from embedded generation	99,200
plus energy obtained from other distributors into the UED network	-157, 926
Total Energy Procured per annum	8,560,474

Energy Supplied (MWh)

Total annual energy supplied to UED customers including theft	8,150,607
Total Energy Supplied per annum	8,150,607

Net Metered Energy Supplied (MWh)

	DLF A	**DLF B**	**DLF C**	**DLF D**	**DLF E**	**Total**
Short Sub transmission	40,730	0	991,371	2,429,036	4,377,318	7,838,454
Long Sub transmission	0	0	0	48,504	263,648	312,152

Top-Down Calculated Annual Losses (MWh) adjusted for theft

	DLF A	**DLF B**	**DLF C**	**DLF D**	**DLF E**	**Total**
Short Sub transmission	45,698	55,900	62,714	167,805	69,485	409,867
Long Sub transmission	8,265					

Forward-looking average DLF

	DLF A	**DLF B**	**DLF C**	**DLF D**	**DLF E**
Short Sub transmission	1.0059	1.0129	1.0207	1.0443	1.0593
Long Sub transmission	1.0265	1.0335	1.0413	1.0649	1.0799

2008-2009 DLF Submission to the AER
13 March 2008

Site-specific Distribution Loss Factors (DLFs) for large customers/generators

NMI	Class	DLF
VEEE0PD8AD	C	1.0128
VEEE0TF39Q	C	1.0158
VEEE0BG4Q3	C	1.0218
VEEE0NDNEX	C	1.0220
VEEE08KH3V	C	1.0154
VEEE0C8AW1	A	1.0059
6407649172	C	1.0113

Attachment 2

UED Market Settlement and Transfer Solution (MSATS) DLF codes

Region	MSATS Code	DLF	NMI	Description
VIC	MC05	1.0128	VEEE0PD8AD	Site Specific – load
VIC	MC06	1.0158	VEEE0TF39Q	Site Specific – load
VIC	MC02	1.0218	VEEE0BG4Q3	Site Specific – load
VIC	MC04	1.0220	VEEE0NDNEX	Site Specific – load
VIC	MC01	1.0154	VEEE08KH3V	Site Specific – load
VIC	MC03	1.0059	VEEE0C8AW1	Site Specific – load
VIC	MG01	1.0113	6407649172	Site Specific – generation
VIC	MSAL	1.0265	N/A	Sub transmission line – long line
VIC	MSAS	1.0059	N/A	Sub transmission line – short line
VIC	MHBL	1.0335	N/A	Zone substation – long line
VIC	MHBS	1.0129	N/A	Zone substation – short line
VIC	MHCL	1.0413	N/A	HV feeder line – long line
VIC	MHCS	1.0207	N/A	HV feeder line – short line
VIC	MLDL	1.0649	N/A	LV distribution substation – long line
VIC	MLDS	1.0443	N/A	LV distribution substation – short line
VIC	MLEL	1.0799	N/A	LV line – long line
VIC	MLES	1.0593	N/A	LV line – short line

Attachment 3

UED DLF methodology report

To calculate the DLFs for the 2008/2009 financial year, UED has adopted the methodology published by the Essential Services Commission of Victoria in February 2007.

This document is attached as a separate document.

Attachment 4

Independent positive assurance certification

Essential Services Commission, Review Findings of the Distribution Loss Factors (DLFs) Proposed by the Victorian Electricity Distributors for the 2008-09 Financial Year, March 2008.

This document is attached as a separate document.