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Our Reference: UE.SU.01

Mr John Pierce
Chairman
Australian Energy Market Commission
P.O. Box A2449
Sydney South NSW 1235

BY EMAIL TO: aemc@aemc.gov.au

(And through the electronic lodgement facility)

Dear Mr Pierce,

Review of distribution reliability outcomes and standards (EPR0031)

Please find enclosed a submission prepared by United Energy in response to the AEMC's draft report on the review of distribution reliability outcomes and standards (national work stream).

If the AEMC has further questions about this submission, then please do not hesitate to contact Jeremy Rothfield, Network Regulation and Compliance Manager, on (03) 8846 9854.

Yours sincerely,

Jeremy Rothfield
Network Regulation and Compliance Manager

AEMC: DRAFT REPORT – NATIONAL WORKSTREAM.
Review of distribution reliability outcomes and standards.
Submission to the draft report by United Energy.

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Revision Log

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A	Preliminary	25th January 2013	Dr Jeremy Rothfield		
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1. Key features and impacts of the proposed nationally consistent framework

1.1 Key features of the proposed framework

An outputs-based approach

The AEMC has noted that its proposed framework would remove all input planning standards and would base the measurement of performance on the achievement of output reliability targets.

A nationally consistent economic assessment process

The AEMC has stated that[1]:

> The most efficient means of determining the appropriate level of output reliability in the network is to employ an economic assessment process that incorporates a comparison of the estimated value placed on reliability by customers against the estimated costs of undertaking investments.

Response by United Energy:

The reliability standards are going to be set on an *ex ante* basis. However, the costs of undertaking improvements cannot be forecast with precision. The AER shouldn't attempt to micro-manage both the setting of reliability standards, and the costs associated with projects aimed at achieving reliability improvements.

The AEMC should also understand that there isn't a simple linear relationship between capital expenditure on reliability upgrades, and improvements in reliability performance. This is because there is a high degree of randomness associated with electricity network performance. For many types of electricity network, reliability gains are hard to achieve, and can sometimes only be attained through the implementation of very costly programmes to retrospectively place electricity cables underground. Furthermore, while there may be scope to reduce outages and to enhance the performance of specific feeder lines through targeted upgrades, the impact on the aggregate outcomes for an entire network may be muted.

The AER's role in the setting of reliability targets worked satisfactorily in Victoria because the targets were calculated as a simple function of historical average performance.

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[1] AEMC (2012), Review of distribution reliability outcomes and standards, Draft Report – National Work Stream, 28th November 2012, Australian Energy Market Commission, Sydney; page 11.

An ability to transfer responsibility to the AER for the setting of reliability targets

Response by United Energy:

UE believes that, as a matter of principle, the AER is not the most appropriate agency to be charged with responsibility for the setting of reliability targets. There should really be a separation of the process of reliability target setting from the process of assessing the costs that might be incurred to meet the targets.

1.2   Guidelines for the proposed framework

To streamline the establishment and implementation of a nationally consistent framework, the AEMC has proposed that a set of guidelines should be developed to provide the necessary detail for the delivery of reliability outcomes. The guidelines would outline the processes and methodologies to be followed in the application of the framework. The development of the guidelines would be a precursor to the establishment of the nationally consistent framework and would act as the primary tool through which national consistency would be achieved.

The guidelines would also outline the methodology to be used in undertaking economic assessments. The AEMC has proposed that the level of output reliability targets would be set in accordance with a nationally consistent economic assessment process that compares the costs of investments with the value placed on reliability by consumers.

Question 1   Customer consultation and development of guidelines

What should be included in nationally consistent guidelines and which body should be responsible for their development?

Response by United Energy:

The guidelines should explain how cost-benefit analysis is going to be undertaken, and should also attempt to categorise (without prescribing) the range of costs and benefits that will be considered. It is likely that the definition of costs and benefits will be reasonably broad.

Under a system of probabilistic planning, such as that applied by UE, the benefits of a reliability enhancement project can be assessed in terms of a reduction in expected energy not supplied. Simulation exercises can be undertaken so as to show the value of the predicted, unserved energy before the improvements, and the predicted, unserved energy after the reliability improvements. The known failure rates of components and equipment are applied to the before and after scenarios in the exercise.

There are other business-specific costs that are avoided or eliminated as a result of a reliability project. The affected groups of costs, and the expected impacts on these costs, can be described as:

- Avoided penalties under the STPIS. UE has used the current rural and urban incentive rates under the STPIS to work out the value of an unplanned interruption (measured in dollars per 0.01 interruptions) and the value of unplanned minutes off-supply (measured in dollars per minute).

- Reductions in the number of customer complaints to be handled, with an attendant fall in administration costs.

- A decline in the value of customer claims to be settled. UE incurs costs both in terms of settling customer claims, and in the management of the customer claims process.

- A reduction in payments arising under the Victorian Guaranteed Service Level (GSL) payments scheme. In its final decision for the Victorian electricity distribution price review, 2011 to 2015, the AER provided UE with a limited operating expenditure allowance to cover the anticipated level of GSL payments over the regulatory period[2].

- A lessening of activity resulting from the administration of faults. There will be fewer telephone calls to the fault call centre, fewer operations to be conducted at UE's co-ordination centre, and a diminution in fault and emergency activity.

The process of developing reliability guidelines will, in and of itself, impose significant costs upon regulated businesses, and UE expects to be able to recover the costs that it incurs or is expected to incur.

When assessing the value that customers place on the reliability of electricity supply, UE recommends the adoption of a choice modelling method (to be used in conjunction with other approaches). UE further recommends that the VCR should, where feasible, be calculated with some level of granularity. At present, UE is obliged to prepare its own estimates of VCRs at separate network locations, drawing upon the known customer mix at the particular points.

1.3   Impacts of the proposed framework

The AEMC has asserted that the "benefits of a consistent and more efficient approach to distribution reliability are likely to outweigh the costs"[3].

Response by United Energy:

Has the AEMC obtained any empirical evidence to support its contention that the benefits of a national approach to the assessment of distribution reliability will surpass the costs?

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[2] AER (2010), Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015, Australian Energy Regulator, October 2010; page 734

[3] AEMC (2012), Review of distribution reliability outcomes and standards, Draft Report – National Work Stream, 28th November 2012, Australian Energy Market Commission, Sydney; page 20.

2. Consultation on and selection of reliability outcomes

2.1 Customer consultation

> Question 2   Customer consultation
>
> What are the important elements of customer consultation and what types of issues should customers be consulted on as part of the process of setting output reliability targets? Should customer consultation consider whether additional measures are warranted to inform customers of planned and unplanned interruptions?

Response by United Energy:

The Essential Services Commission, Victoria, (ESCV), engaged in an extensive dialogue with customers when it was refining its existing GSL scheme in the lead-up to the electricity distribution price review for the 2006 to 2010 regulatory period. For information about the consultations, the AEMC should examine the following documents:

- Electricity Distribution Price Review, 2006, Service Incentive Arrangements, Consultation Paper No. 2, ESCV, April 2004.

- Electricity Distribution Price Review, 2006, Final Framework and Approach: Volume 1, Guidance Paper, ESCV, June 2004.

- Electricity Distribution Price Review, 2006-10, Final Decision Volume 1, Statement of Purpose and Reasons, ESCV, October 2005.

The ESCV has been reluctant to rescind its Victorian GSL scheme in part because of the extensive consultations which were undertaken as part of the EDPR, 2006 to 2010.

2.2 Merits of the proposed approach

The AEMC has expressed a view that[4]:

> Allowing the jurisdictional target setter to determine the output reliability targets, in consultation with customers and the DNSPs, is consistent with the views expressed in the submission from the AER which supports measures that empower consumers to express their preferences with regard to cost and reliability, and allows the community to also express its views on social and economic objectives.

Response by United Energy:

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[4]   AEMC (2012), Review of distribution reliability outcomes and standards, Draft Report – National Work Stream, 28th November 2012, Australian Energy Market Commission, Sydney; page 24.

The AEMC may have sought, but does not appear to have obtained the opinions of the jurisdictional target-setters. How can the AEMC ensure that the jurisdictional target-setters will participate in the process in the manner that is currently envisaged by the AEMC?

3. Setting and approving reliability targets

3.1 Setting and approving targets

According to the AEMC[5]:

> As previously noted.....the output reliability targets would include unplanned SAIDI and SAIFI measures as a minimum. This would ensure that reliability performance can be compared and benchmarked across the NEM.

> Targets based on other measures such as MAIFI or planned SAIDI and SAIFI may also be included by the jurisdictional target setter. However, the target setter would be required to justify the use of these additional targets through reference to the customer consultation process outlined in section 4.1.

Response by United Energy:

The AEMC should note that the AER's current targets for the Victorian electricity distributors incorporate a MAIFI-E measure rather than MAIFI. Further details of MAIFI-E are provided in Appendix A of this submission.

The AEMC has further stated that[6]:

> The DNSPs' process for evaluating the reliability output options and the jurisdictional target setter's approach to selecting an individual option would be publicly disclosed. The jurisdictional target setter would undertake an independent review of the information provided by the DNSPs.

The AEMC may have unrealistic expectations of the jurisdictional target-setters over which it is unable to exert control. Will the jurisdictional target-setters conform to the arrangements proposed by the AEMC?

3.2 Merits of the proposed approach

In pricing reviews undertaken to-date, the AER has set reliability targets on the basis of historical network performance. The AER hasn't given consideration to the value of customer reliability (measured in $ per MWh) when assessing performance targets. In practice, the VCR may not be especially helpful to the determination of an absolute level of reliability which prevails across a network. The VCR would simply be one

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[5] Ibid. page 24.

[6] Ibid. page 26.

amongst a number of inputs that would be used in the formulation of a performance target which prevails along a segment of a network, or across an entire network.

The VCR is indicative of the trade-offs that are reported by customers and typically represents the marginal costs to customers of a supply interruption. It is not clear how an individual's marginal perceptions of reliability will translate into an actual performance measure that should be attained across a number of feeders.

UE believes that a mismatch arises between the application of the VCR in reliability assessment projects and the application of the VCR in the context of the STPIS. The AEMC should consider the ways in which it might remedy the mismatch.

The main variable calculated in a reliability assessment is the amount of expected energy that will not be supplied (EENS, recorded in MWh). The results for reliability evaluations tend to be heavily influenced by the prevalence and consumption patterns of large commercial or industrial users in a particular region. In contrast, outcomes under the STPIS are driven by the preponderance of residential customers. The STPIS is arguably biased towards residential customers because the volume of the historic and forecast energy usage of individual customers does not matter. The results in terms of revenue adjustments are influenced by the number of customers that might be off-supply, as well as by the duration for which those customers are without power.

Question 3   Economic assessment process

What are the relevant considerations for the development of a nationally consistent economic assessment process?

A genuine economic assessment would consider the broader societal costs and benefits associated with programmes aimed at enhancing reliability. A more extensive economic analysis would consider the effects on agents other than the parties immediately involved in the transaction. However, the economy-wide benefits of enhancements to the continuity of electricity supply are likely to be marginal, unless pre-existing levels of supply are particularly poor. It seems unlikely that the AEMC would want to consider broader economic ramifications.

Question 4   Worst served customers

Should the jurisdictional target setter have flexibility in setting additional obligations for worst served customers?

Are there any other considerations that should be taken into account in addressing worst served customers?

What are the costs and benefits of imposing a nationally consistent GSL scheme?

From UE's perspective, there would be no advantages to be gained from a transition to a national GSL scheme. The Victorian scheme was developed after an extensive review was undertaken by the ESCV. As has been mentioned, the ESCV has been reluctant to repeal the scheme.

Although the AER engaged in consultations on the STPIS during 2008 and 2009, less emphasis appears to have been placed on the GSL component of the scheme than

on the service target incentive mechanism itself. The AER's final decision, which was released in June 2008, shows that there were comparatively few responses on the operation of the GSL scheme.

In its final decision on the Victorian electricity distribution price review (2011 to 2015), the AER stated that it would maintain the existing Victorian scheme of Guaranteed Service Level payments. The current scheme is set out in section 6 of the Electricity Distribution Code[7] (EDC) and in section 2.5 of the Public Lighting Code[8] (PLC). It was subject to amendment during the Electricity Distribution Price Review for 2006 to 2010[9].

The AER had sought to apply a national GSL scheme, using the definitions and payments categories which are set out in section 6 of the STPIS (Service Target Performance Incentive Scheme) guideline[10]. However, the AER was unable to apply the national scheme because, as has been noted, the Essential Services Commission, Victoria, (ESCV) declined to repeal the Victorian scheme, and to make the relevant amendments to the Electricity Distribution Code. Under clause 6.6.2(b)(2) of the National Electricity Rules (NER), and clauses 2.1(c) and 6.1 of the STPIS, the AER is obliged to give precedence to jurisdictional electricity legislation.

At present, UE is accustomed to operating in the context of two different exclusion regimes. The exemption scheme for GSL payments is determined according to the thresholds and criteria set out in the EDPR 2006 to 2010. Under the ESCV regime, major event days are identified according to an unplanned SAIFI threshold of 0.1[11], which was formulated for United Energy. If the unplanned interruption frequency within a 24-hour period is equal to, or else exceeds 0.1, then the day's actual values of unplanned SAIDI, SAIFI and MAIFI are excluded from consideration across both the rural and urban segments of the UED network. However, mean values of the key variables must be substituted in place of the actual values. The mean values are listed in Table 2.1 of the Volume 2 Price Determination, EDPR 2006 to 2010.

As at August 2010, an unplanned SAIFI threshold of 0.1 implied that 63,261 customers would be interrupted across the network (equivalent to 10% of the customer base).

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7 Electricity Distribution Code, August 2009. Essential Services Commission, Victoria.

8 Public Lighting Code, April 2005. Essential Services Commission, Victoria.

9 Electricity Distribution Price Review 2006-10. Final Decision Volume 1. Statement of Purpose and Reasons. October 2005, Essential Services Commission, Victoria. See pages 102-115.

10 Electricity Distribution Network Service Providers. Service Target Performance Incentive Scheme. Australian Energy Regulator, November 2009. Version 01.2, 24th November 2009.

11 Electricity Distribution Price Review, 2006-10. October 2005 Determination as amended in accordance with a decision of the Appeal Panel dated 17th February 2006. Final Decision Volume 2 Price Determination. See Table 2.1, page 20.

The national GSL payments scheme uses the same exclusion criteria, for major event days, as the STPIS. Under the STPIS, the determination of a major event day is done using the 2.5 beta method which requires data on SAIDI. The AER calculated a major event day threshold for United Energy of 4.75 minutes, a value which is applicable to the STPIS, and which would also be used for the national GSL scheme, if it were in operation[12]. Under the STPIS, if unplanned SAIDI is equal to, or surpasses 4.75 minutes on any given day, then the day should be exempted from the calculation of monthly (and annual) totals for unplanned SAIDI, SAIFI and MAIFI.

UE currently has systems in place to deal with two different methods for assessing an excluded day. Accordingly, a shift to a national scheme would result in only a modest easing of the administrative burden.

There is some overlap between the categories of service level payment required under the national scheme, as devised by the AER, and the types of GSL payment mandated under the Victorian scheme. The categories of GSL payment that are unique to the national scheme, and which are not being applied over the current regulatory period are summarised below in Table 3.1. The particular service levels are specified in the STPIS guideline. At present, UED is not obliged to provide compensation for the specific events described in Table 3.1.

Table 3.1: GSL payment types which are not being applied over the 2011 to 2015 period.

GSL parameter from AER STPIS document	Data availability
Number of customers experiencing more than 9 sustained interruptions (CBD, Urban).	A similar variable was previously part of the ORG scheme[A].
Number of customers experiencing more than 15 sustained interruptions (Rural).	A similar variable was previously part of the ORG scheme[A].
Number of customers experiencing more than 12 hours for a single interruption (CBD/Urban)	A similar variable was previously part of the ORG scheme[A].
Number of customers experiencing more than 18 hours for a single interruption (Rural).	No data has been collected.
No. of payments for failure to give 4 days' notice for planned interruptions.	No data has been collected.
No. of payments for failure to repair streetlights within 5 days	No data has been collected.

Source: AER STPIS Guideline, November 2009. Note (A): Electricity Distribution Price Determination 2001-05. Volume I, Statement of Purpose and Reasons; Office of the Regulator-General, Victoria. See details on page 241.

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[12] AER (2010), Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015, Australian Energy Regulator, October 2010; page 687

The transition to a national GSL scheme would cause short-term difficulties for UE because data has not been collected for some of the variables that have been reported in Table 3.1 above. The absence of historical data would mean that there is no basis upon which to formulate projections of the particular type of GSL payment. The forecasts needed are of payment volumes and values.

4. Enforcement and incentives

4.1 Performance incentives

The AEMC has reported that[13]:

> The proposed framework would continue the implementation of the STPIS in each NEM jurisdiction. However, in the proposed framework the AER would base the STPIS on the targets set by the jurisdictional target setter that were developed through the nationally consistent economic assessment process. The proposed framework will thereby replace the existing process of using the previous five years of reliability performance as the basis for setting reliability targets.

Response by United Energy:

The Victorian electricity distributors essentially entered into a regulatory compact with the AER regarding the manner in which performance targets would be set over the 2011 to 2015 and 2016 to 2020 periods. The regulatory compact stems from the proposition, advanced by the AER that a distribution network service provider, (DNSP), and its customers will share in the revenue gains and losses resulting from the STPIS[14].

> The AER considers that maintaining the revenue increment for a set period ensures that customers do not indefinitely pay for service improvements made in the past. The STPIS provides that a DNSP will retain a reward or incur a penalty for a 5 year period. This results in an approximate 70:30 sharing ratio of the reward/penalty between customers and DNSPs respectively and aligns the scheme with the EBSS. The AER considers this approach to be appropriate.

Certain aspects of the algebra and the mechanics of the STPIS were amended after the final decision in June 2008, but no indication was ever given by the AER that it was planning to revoke the benefit sharing principle.

The principle that there ought to be an apportionment of the gains (or, alternatively, the losses) between customers and a DNSP has also been set out under the

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[13] AEMC (2012), Review of distribution reliability outcomes and standards, Draft Report – National Work Stream, 28th November 2012, Australian Energy Market Commission, Sydney; page 45.

[14] AER (2008a), Final decision, Electricity distribution network service providers, Service target performance incentive scheme, Australian Energy Regulator, June 2008; page 22.

efficiency benefits sharing scheme (EBSS). The documentation prepared for the EBSS reports that[15]:

> The duration of the carryover period, in conjunction with the appropriate discount rate, influences the sharing ratio of gains and losses between distribution network users and the DNSP. A five regulatory year carryover period results in a benefit-sharing ratio of approximately 30:70 between the DNSP and distribution network users respectively. A ten regulatory year carryover period results in a ratio of approximately 50:50.

The AER did not provide a numerical example to show how it might have arrived at a benefit apportionment ratio of approximately 70:30 as between customers and the DNSP. However, UE has prepared an illustrative example to demonstrate how the fractional allocation was derived. The calculations are summarised in Table 4.1 and Table 4.2 which are presented below. Note that the DNSP being described should not be interpreted as being United Energy.

In the particular example, the DNSP performs below target in year 0, with the result that customers are inconvenienced and incur a cost (shown to be $1 million). The DNSP in turn incurs a one-off penalty under the STPIS in year 2. In all other years of the first regulatory period, reliability performance is assumed to be satisfactory. During the second regulatory period, the performance targets are reset to a less exacting level, reflecting the comparatively weak out-turn performance in year 0.

Table 4.1: Numerical example to show the benefit sharing ratio under the STPIS.

	YEAR			0	1	2	3	4	5
		NPV (%)	***NPV***	$ million	$ million	$ million	$ million	$ million	$ million
C	Reliability cost		**$1.00**	$1.00	$0.00	$0.00	$0.00	$0.00	$0.00
D	Relative DUOS charge		**-$0.29**	$0.00	$0.00	-$1.00	$0.00	$0.00	$0.00
=C+D	Net customer cost	**71%**	**$0.71**	$1.00	$0.00	-$1.00	$0.00	$0.00	$0.00
=D	Net cost to DNSP	**29%**	**$0.29**	$0.00	$0.00	$1.00	$0.00	$0.00	$0.00
	Total	100%	**$1.00**						

Notes: (a) The term "reliability cost" should be taken to mean the costs imposed upon customers by interruptions to electricity supply. Reliability is measured in relation to a performance target. If reliability is below a target level, then customers will incur costs. Conversely, if the performance on reliability measures surpasses the relevant targets, then a benefit (or negative cost) will be conferred on consumers. The costs of supply interruptions are a function of the value of customer reliability (VCR). (b) Relative DUOS charge refers to a change in the dollar amount raised from tariffs by comparison with revenues in the absence of the STPIS. A positive figure means that more revenue is raised from distribution use of system tariffs. (c) The net present values of future cash flows are measured as at the base year. (d) An implicit assumption in the example is that there is no growth in energy sales over time, and that X-factors are zero. There is also assumed to be no change to incentive rates under the STPIS. The targets for reliability performance in the second regulatory period are calculated in proportion to the average out-turn performance in the first regulatory period.

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[15] AER (2008b), Electricity distribution network service providers, Efficiency benefit sharing scheme, Australian Energy Regulator, 26th June 2008; page 7.

Table 4.2: Outcomes under the STPIS from years 6 to 10.

	YEAR				6	7	8	9	10
C	Reliability cost				$0.00	$0.00	$0.00	$0.00	$0.00
D	Relative DUOS charge				$0.20	$0.20	$0.20	$0.20	$0.20
=C+D	Net customer cost				$0.20	$0.20	$0.20	$0.20	$0.20
=D	Net DB cost				-$0.20	-$0.20	-$0.20	-$0.20	-$0.20

It should be noted that the example can be re-worked so that "year 0" does not feature in the calculations. The reliability disruption can instead be presumed to take place in year 1, with consumers incurring the costs of the disruption in that year. Under the foregoing scenario, the conclusions of the analysis do not alter in any material way, although the benefit sharing ratio will shift closer to 75:25 (customers to DNSP).

Hence, an intrinsic property of the STPIS is that if a DNSP performs poorly, and fails to meet its reliability targets, on average, over the first regulatory period (say, from 2011 to 2015), then it will incur penalties. However, during the second regulatory period (from 2016 to 2020), the performance targets will be set at a less stringent level.

Conversely, if a DNSP surpasses performance expectations, on average, over the first regulatory period, then it will earn rewards. During the second regulatory period, the reliability targets will be adjusted to correspond to more stringent levels of performance.

The AER's discussion about benefit sharing ratios in the final decision for the STPIS (June 2008) suggests that it has made a commitment to applying the STPIS to Victorian DNSPs for a period of at least 10-years. The AER signalled its intent to adjust performance targets for the 2016 to 2020 regulatory period according to out-turn reliability performance from 2011 to 2015.

The AEMC has now indicated that it plans to set performance targets differently in future. The AEMC's proposal will undermine the capacity of the AER to fulfil an implicit regulatory bargain that is intrinsic to the STPIS. The changes to be implemented by the AEMC amount to a form of retrospective regulation. To avoid any violation of the long-term arrangements that are intrinsic to the STPIS, the AEMC should give consideration to appropriate transitional arrangements and/or compensation for DNSPs.

Appendix A: The distinction between MAIFI-E and MAIFI

Under the regulatory framework which prevailed up until the end of 2010, the Victorian distributors reported a Momentary Average Interruption Frequency Index (MAIFI) to the Essential Services Commission (ESCV), following a definition which is set out in the service performance, information specification guidelines[16]. MAIFI is said to be the total number of momentary interruptions divided by the total number of distribution customers (where the distribution customers are network or per feeder based, as appropriate).

In addition, momentary feeder section outages are explained in the following terms[17]:

" The number of feeder section outages of less than or equal to 1 minute, but greater than 0.5 seconds, in duration.

Includes outages of a feeder section that result in an interruption; feeder outages are not included.

Each sequence of auto-reclose attempts resulting in a successful auto re-close is counted as one momentary outage if the sequence is completed in no more than one minute.

Re-closes that are followed by lockout are to be excluded from the momentary outage indicator."

The measurement convention adopted by the ESCV is closely aligned with the standards promulgated by the Institute of Electrical and Electronics Engineers, Inc. Paragraph 3.15 of the IEEE 1366-2003 standard (IEEE, 2004) defines a momentary interruption event as follows:

" Momentary interruption event: An interruption of duration limited to the period required to restore service by an interrupting device. Note: Such switching operations must be completed within a specified time of 5 minutes or less. This definition includes all reclosing operations that occur within five minutes of the first interruption. For example, if a re-closer or circuit breaker operates two, three, or four times and then holds (within 5 minutes of the first operation), those momentary interruptions shall be considered one momentary interruption event."

The Victorian convention for MAIFI can be identified as MAIFI-E. The IEEE refers, in its 1366-2003 standard, to a momentary average interruption event frequency index, $MAIFI_E$. It should be noted that MAIFI-E and $MAIFI_E$ are entirely consistent.

The approach put forward in the AER STPIS Paper differs from that applied currently (and formerly) in Victoria[18]. Appendix A of the STPIS document defines a Momentary Average Interruption Frequency Index (MAIFI) in the following terms:

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[16] Information Specification (Service Performance) for Victorian Electricity Distributors. Essential Services Commission, Victoria, Issued December 2008, Effective: January 2009.

[17] Ibid, page 30.

[18] Electricity Distribution Network Service Providers. Service Target Performance Incentive Scheme. Australian Energy Regulator, November 2009. Version 01.2, dated 24th November 2009; page 22.

" MAIFI (Momentary Average Interruption Frequency Index): The total number of customer interruptions of one minute or less, divided by the total number of distribution customers. Note (4): In calculating MAIFI, each operation of an automatic reclose device is counted as a separate interruption. Sustained interruptions which occur when a re-closer locks out after several attempts to reclose should be deleted from MAIFI calculations."

The difference between MAIFI and MAIFI-E is best explained by reference to two hypothetical but entirely plausible scenarios of a temporary fault.

In scenario one, a fault occurs on the network at time-point A, which results in a feeder circuit breaker operating to remove supply. After a period of a few seconds, the feeder circuit breaker attempts to restore supply at time-point B, but finds that the original fault remains and therefore operates again. Finally, the feeder circuit breaker attempts to restore supply again at time point C and finds that the original fault has gone from the network. It is therefore able to restore supply permanently. The duration of the entire sequence of events is less than one minute.

For scenario one, under the status quo approach, MAIFI-E would count as a single event. However, under the definition proposed by the AER as part of the STPIS, a DNSP would be forced to report a MAIFI of two incidents, because supply was lost twice within a few seconds[19].

In contrast, under scenario two, if the feeder circuit breaker unsuccessfully attempted to restore supply at time-point B and then went into lock-out mode, the customer would still experience a loss of supply on two occasions, but there would only be one SAIFI event, consistent with the number of MAIFI-E events recorded in the example above.

United Energy, in conjunction with the other Victorian distributors, reported MAIFI-E to the ESCV and, therefore, the historical performance upon which the 2011 to 2015 performance targets were set did not reflect (and, in fact, under-stated) the MAIFI figures that would have resulted had the AER definition of MAIFI been applied.

Setting targets based on one metric (MAIFI-E) and then measuring actual performance for the STPIS using a different metric (MAIFI) would have resulted in a perceived degradation of performance, because many incidents which were previously only reported as one event would subsequently be reported as two or more events.

Industry experience to-date has indicated that the success of reclose operations is higher when multi-shot reclose functions are implemented. Safety considerations are, of course, paramount, and successive reclose operations are not attempted in rural areas during the bushfire season. The use of MAIFI (as opposed to MAIFI-E) would potentially discourage a DNSP from implementing multi-shot reclose functions, resulting in a lower reliability of supply to customers.

The only data currently available for setting MAIFI targets is the MAIFI-E series. UE did not believe that the historical data on momentary interruptions could be

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[19] Electricity Distribution Network Service Providers. Service Target Performance Incentive Scheme. Australian Energy Regulator, November 2009. Version 01.2, dated 24th November 2009; page 22.

reconstructed in a sensible way so as to give a series which conformed to the AER definition. The measurement of MAIFI-E was closely aligned with the actual experience of an interruption by customers. This was an important reason as to why MAIFI-E was applied in Victoria. UE explained to the AER that the adoption of MAIFI-E by the AER would help to ensure continuity and comparability in terms of the measurement of reliability performance from the beginning of calendar year 2000. However, UE would now like to re-state its position that it opposes the use of MAIFI as a reliability of supply measure altogether.

A further drawback to the use of MAIFI in place of MAIFI-E is that distributors which deploy smart network technologies would be placed at a disadvantage. Smarter networks make greater use of automation and self-healing devices which are designed to achieve a rapid restoration of supply. These devices operate by setting off sequences of re-closer operations. Hence, a DNSP which invests in and implements automation could be penalised for reporting higher levels of MAIFI. The MAIFI measure would not provide an appropriate signal, and would imply deteriorating network performance, when in fact the reverse would be the case.

UE is planning to further develop its network technologies. The company therefore strongly advocates the retention of the terminology used to explain MAIFI-E. UE has previously argued that the definition of MAIFI in the STPIS Paper should be amended so as to be consistent with the current definition of MAIFI-E.