11 August 2017

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

Dear Chris

Draft Decision – Distribution Reliability Measures Guideline

I refer to the consultation that the AER is undertaking on its Draft Distribution Reliability Measures Guideline (**the Draft Guideline**). SA Power Networks provides the following comments about the Draft Guideline.

Unplanned momentary interruptions

SA Power Networks supports the adoption of the less than three-minute duration threshold for a momentary interruption. As detailed in our submission to the Issues Paper the adoption of the three-minute threshold will maximise the number of customers that can benefit from the implementation of automated restoration e.g. via Fault Detection, Isolation and Recovery (**FDIR**) also known as self-healing networks.

In addition, the adoption of a three minute MAIFI would create alignment with European jurisdictions (eg Ofgem) and provide greater alignment with American practices (which uses a five-minute momentary interruption threshold). This could enable improved international benchmarking of reliability performance.

There was some concern expressed in submissions, that the adoption of the three-minute threshold might result in longer momentary interruptions for customers. SA Power Networks advises that we would not alter the fault clearance times on our distribution system because of the three-minute threshold. This means that momentary interruptions would remain at typically less than 30 seconds in duration. The increase in the threshold will only be of relevance where FDIR is implemented to minimise the number of customers who experience a sustained interruption.

SA Power Networks supports the adoption of momentary interruption event (MAIFIe[1]) which treats several momentary interruptions within a three-minute period as one event. This measure more closely aligns with a customer experience as a single momentary or a few momentary interruptions with a very short time period has a similar impact. Consequently, it is an improved measure over MAIFI, which records all momentary interruptions.

---

1 Momentary Average Interruption Frequency Index event (MAIFIe)

Catastrophic event days

The AER Service Target Performance Incentive Scheme (**STPIS**) Guidelines use the Institute of Electrical and Electronic Engineers (**IEEE**) 2.5 Beta Method as defined in IEEE 1366™ – 2012, to determine what days are excluded from the normalised reliability performance. The days that are excluded are called Major Event Days (**MEDs**) and are excluded on the basis that the SAIDI from interruptions commencing on that day exceed a predetermined SAIDI threshold (T_{MED}).

SA Power Networks can appreciate why the AER has concluded that there is no objective uniform measure of catastrophic events. This finding aligns with the IEEE's investigation into the effects of catastrophic events and how to identify them. The IEEE documented its findings and recommendation about catastrophic events in its IEEE Std 1366™- 2012 which states in section 5.3:

"However, the extremely large daily SAIDI[2] values may tend to skew the distribution of performance toward the right, causing a shift of the average of the data set and an increase in its standard deviation. Large daily SAIDI values caused by catastrophic events will exist in the data set for five years and could cause a relatively minor upward shift in the resulting reliability metric trends"; and

"It is recommended that the identification and processing of catastrophic events for reliability purposes should be determined on an individual company basis by regulators and utilities since no objective method has been devised that can be applied universally to achieve acceptable results."

However, the AER appears to be in danger of de-emphasising the effects of catastrophic days because it cannot determine a uniform method to determine how to define a catastrophic event. It has rejected the 4.15 Beta Method[3] as proposed by some distributors, as this type of event would only happen once in 163 years. SA Power Networks has, using the 4.15 Beta Method, had two Catastrophic Events in the last three years. One of the events had a SAIDI contribution equivalent to the total usual annual normalised SAIDI. SA Power Networks disagrees with the AER's claim that exclusion of these events would have minimal impact on T_{MED} and consequently how many MEDs are excluded from the normalised reliability performance. SA Power Networks has determined using the T_{MED} value for 2017/18 there would have been 34 MEDs over the period 1 July 2005 to 30 June 2017. In comparison, if those two catastrophic events were excluded from the calculation of T_{MED} there would have been 38. SA Power Networks considers that this is a material difference, not a minimal impact as concluded by the AER.

SA Power Networks is concerned that materially different values of T_{MED} can be used when establishing targets for a five-year regulatory control period (**RCP**). Consequently, we have analysed the causes for variations in the value of T_{MED} and concluded that the most salient annual variations are due to:

- the extreme daily SAIDI resulting from catastrophic events;
- the number of and the variation in the daily SAIDI values of MEDs; and
- normal variation in non-MED daily SAIDI values.

To highlight the variation, the value of T_{MED} increased from 5.9 minutes in 2016/17 to 7.0 minutes for 2017/18.

---

2 SAIDI – System Average Interruption Duration Index is a measure of the average time in minutes that customers are without supply in a specified period (eg annually).

3 The 4.15 Beta method determines a SAIDI threshold (Tcat) by taking the LN of daily SAIDI for a five-year period and then determining the average and the standard deviation of that converted five-year data set. It then determines a SAIDI threshold by adding the average to 4.15 times the standard deviation and then taking the exponential of that value. This gives a Tcat of about 60 minutes compared to the SAIDI MED threshold of about 6 minutes.

SA Power Networks has compared the annual normalised distribution SAIDI (**nSAIDI**) STPIS equivalent target that would have been set for the 2015-20 Regulatory Control Period (**RCP**) using different values of T_{MED}. The table below details the total number of MEDs and the resulting average equivalent nSAIDI (ie the equivalent target for the 2015-20 RCP) that results from the different values of T_{MED} calculated for 2016/17 and 2017/18.

T_{MED} value	No of MEDs (total)	Average normalised SAIDI (excls MEDs)
Actual	21	161.1
5.873	22	159.9
6.984	18	164.9

The table above shows that different targets would have been established for the 2015-20 RCP if different values of T_{MED} were used. Depending on the value of T_{MED} used to establish the STPIS targets, and the value of T_{MED} used to measure the performance in a year, a distributor may receive a windfall gain or loss for that year. For example, if the normalised reliability performance for a regulatory year was 162.5 minutes and the target was 159.9 minutes (ie used a lower value of T_{MED}) then a distributor would receive a penalty. However, if the STPIS target was 164.9 minutes (ie using a higher value of T_{MED}) then that same reliability outcome of 162.5 minutes would be rewarded. This demonstrates that depending a the value of T_{MED} a distributor can for the same reliability outcome be rewarded or penalised, due to the variation in the value of T_{MED}.

To remove any windfall gain or loss and to remove the effects of catastrophic events, the value of T_{MED} should be fixed when determining targets for the RCP and that same value should be used when measuring performance in the RCP. The simplified process would be:

- the value of T_{MED} is calculated from the five-year data set that is used to set the STPIS targets;
- the calculated value of T_{MED} is used to determine the performance for each year and which is then used to establish the STPIS targets; and
- the value of T_{MED} used to establish the STPIS targets is then used to determine the reliability performance for the next five-year RCP.

For example, to set the targets for the 2015-20 RCP, the value of T_{MED} would be determined using the daily SAIDI data from the five-year period, 2009-10 to 2013-14. The calculated value of T_{MED} would then be used to normalise the performance for the 2009-10 to 2013-14 period to set the targets for the 2015-20 RCP. The T_{MED} used to set the targets would then be used to normalise the performance for the 2015-20 RCP.

Excluded interruptions

In its Explanatory Statement issued in conjunction with its Draft Guideline the AER stated in Section 4.2.1 that it supports the additional two exclusions as proposed by the AEMC in its Final Report[4] on its Review of Distribution Reliability Measures (**the AEMC's Final Report**). The AEMC proposed seven exclusions (see the AEMC's Final Report Section 4.1 page 22), six of which were a repeat of the AER's STPIS Guideline excluded events as detailed in sub-clause 3.3(a), which is reinforced by the following AEMC statement:

[4] AEMC 2014, Review of Distribution Reliability Measures, Final Report, 5 September 2014, Sydney

"The AER's current STPIS includes the first six exclusions from Box 4.1[46] and the same exclusions are also used by the AER for benchmarking.[47]"

Consequently, the AEMC included not two additional exclusions, but one.

However, in its Final Report the AEMC erroneously reproduced the STPIS Guideline exclusion (ie sub-clause 3.3(a)(7)). The wording from the AER's STPIS Guideline sub-clause 3.3(a)(7) is reproduced below with the word 'or' highlighted. This was incorrectly replaced with the word 'and' by the AEMC.

> (7) load *interruptions* caused by the exercise of any obligation, right or discretion imposed upon or provided for under *jurisdictional electricity legislation* or (emphasis added) *national electricity legislation* applying to a DNSP.

The AEMC error changes the intent of the exclusion by requiring the 'obligation, right or discretion" to be in both jurisdictional and national electricity legislation instead of either. We do not believe that this was intended.

SA Power Networks submits that the AER should retain the wording in the AER's STPIS Guideline sub-clause 3.3(a)(7).

SA Power Networks supports the additional AEMC recommended exclusion of interruptions where a distributor is directed by state or federal emergency services to disconnect power or to extend the duration of an interruption. This exclusion aligns with the STPIS objective which is to only include interruptions where a distributor has a degree of control over the interruption and/or its duration.

Worst served customers

SA Power Networks is concerned that the AER's proposed method will incorrectly identify some customers as worst served who should not be classified as worst served. SA Power Networks' concern is based on the AER using a three-year average to determine if a customer is or is not worst served. Under the AER's proposal a customer is worst served if it is connected to a feeder (**worst performing feeder**) where the three-year average annual SAIDI exceeds four times the distributor-wide average annual SAIDI. Therefore, a feeder with one extreme SAIDI year may result in the feeder being classified as worst performing despite the other two years not having poor performance. In such circumstances, we consider that the feeder should not be classified as a worst performing feeder.

In comparison, the Essential Services Commission of South Australia (ESCoSA) define a feeder as worst performing where the feeder SAIDI exceeds a predetermined SAIDI threshold annually for two consecutive years. The threshold ESCoSA uses is twice the reliability service standard target for that category (eg CDB, Urban, Rural Short and Rural Long) of feeder. The feeder categories' reliability service standard target is based on the average annual SAIDI for five-years.

SA Power Networks has determined that over the last five years that 184 feeders on average annually would be classified as worst performing using the AER's proposed methodology (ie feeder's average three-year normalised SAIDI exceeds four times the average annual distributor wide normalised SAIDI). In comparison, using a slightly modified ESCoSA methodology (ie three consecutive years instead of two years) the number of feeders classified as worst performing was 110. This means that 74 feeders classified as worst performing under the AER's methodology, would have had at least one possibly two years where the SAIDI outcome was less than half the AER's worst performing SAIDI threshold. As such, these feeders should not be identified as worse performing.

SA Power Networks instead proposes that worst performing feeders and the customers they serve should be based on the feeder's normalised SAIDI (ie excluding MEDs) exceeding a predetermined SAIDI threshold in each year over a three consecutive year period. A suitable threshold would be twice the average distributor wide normalised unplanned SAIDI.

The reporting of worst performing feeders creates an expectation among stakeholders that the performance of these feeders requires improvement. Where a feeder's performance has declined due to a specific cause SA Power Networks improves the feeder's reliability to match historic levels. However, some feeders would be classified as worst performing in comparison to other feeders due to the inherent nature of how the feeder is supplied (eg very long radial supply). Additional funding or more targeted incentives are required to improve the reliability outcomes for customers connected to these types of worst performing feeders, as the STPIS incentives are insufficient to fund improvements of this type.

Definition of a customer

SA Power Networks currently defines a customer for reliability reporting as proposed by the AER in its Draft Decision. Consequently, SA Power Networks supports the AER definition of a 'customer' which:

- Includes customers assigned with a NMI;
- Includes energised and unenergised connection points; and
- Excludes unmetered supplies.

Definition of interruption

Currently, SA Power Networks includes single customer interruptions in its reliability reporting, where that interruption is a result of a failure of the distribution system up to and including the point of connection. As such, SA Power Networks supports the inclusion of single customer outages, where that outage is because of a fault on the distribution system. Single customer interruptions that result from a fault in the customer's electrical installation must be excluded for the definition of an interruption for reliability reporting.

SA Power Networks supports the exclusion of meter fault related outages from reliability reporting, on the basis that meter contestability will increase the population of third party meters over which the distributor has no control.

If you have any queries or require further clarification on our submission, please contact Mr Grant Cox on 08 8404 5012 or grant.cox@sapowernetworks.com.au.

Yours sincerely

Grant Cox

Richard Sibly
Acting Head of Regulation