

18 July 2014

Mr John Pierce  
Chairman  
Australian Energy Market Commission  
Level 5, 201 Elizabeth Street  
Sydney NSW 2000

Dear Mr Pierce

**The NSW DNSPs response to the *AEMC Draft Report – Distribution Reliability Measures***

The NSW Distribution Network Service Providers, Ausgrid, Endeavour Energy and Essential Energy (the NSW DNSPs) welcome the opportunity to provide this joint submission in response to the *AEMC Draft Report- Distribution Reliability Measures*.

We understand that the AEMC is proposing a consistent set of non-binding measures of reliability that could be used by standard setters to set distribution reliability targets; provide consistency in reporting on performance against their reliability targets; and assist the AER and other stakeholders to compare the reliability performance of distribution businesses in the NEM.

The NSW DNSPs are supportive of this aim and are generally comfortable with the definitions proposed. However, we also believe that the reliability measures framework should not preclude the use of alternative definitions/methodologies where it will lead to better customer outcomes without excessive additional costs. For example, we propose an alternative methodology for calculating SAIDI and SAIFI which we demonstrate provides better outcomes for customers on Ausgrid's network than the approach advocated in the draft report.

While supportive of the framework, the NSW DNSPs do not support the proposal to use temperature normalised maximum demand to categorise distribution feeders. There is currently no business requirement for the NSW DNSPs to apply temperature normalisation at the distribution feeder level. The proposal of using temperature normalised demand to categorise distribution feeders will have adverse impacts for the NSW DNSPs in terms of resources. More importantly, the proposal does not improve the intuitiveness of the categorisation because lightly loaded feeders in metropolitan areas will still be classified as short rural feeders; we also do not support the proposed alternative criterion for urban feeder classification based on a combination of load and customer density for largely the same reasons.

Due to the complexity of the issues raised above, the NSW DNSPs are not presently in a position to offer a comprehensive alternative feeder classification proposal. However, the NSW DNSPs would like to offer a robust alternative proposal to the AEMC at a later date once the impact on each of the DNSPs has been properly assessed.

If you would like to discuss our submission further or arrange a meeting with NSW DNSP representatives, please contact Mr John Hardwick, Group Executive Network Strategy at Networks NSW on (02) 8569-6667 or via email at [jhardwick@ausgrid.com.au](mailto:jhardwick@ausgrid.com.au).

Yours sincerely



**Vince Graham**  
**Chief Executive Officer**  
**Ausgrid, Endeavour Energy and Essential Energy**

Attachment A – Responses to the issues raised in the Draft Report

## Attachment A – Responses to the issues raised in the Draft Report

### Key distribution reliability measures

#### **SAIDI and SAIFI – definition**

#### **[Box 3.1]**

The AEMC is seeking stakeholders' views on the proposed definitions in Box 3.1. The proposed definitions of SAIDI and SAIFI are not significantly different from the existing definitions contained in the NSW licence conditions or the Australian Energy Regulator's (AER) Service Target Performance Incentive Scheme (STPIS). The NSW DNSPs support the proposed definitions of SAIDI and SAIFI as a minimum standard. The NSW DNSPs also support the inclusion of alternative SAIDI and SAIFI definitions as outlined in the box below.

#### **NSW DNSPs alternative calculation methodology**

The method of calculating SAIDI and SAIFI with the customer base as proposed by the AEMC is not accurate for dynamic customer bases. Inaccuracies occur when this method is used to calculate indices for individual feeders because the number of customers connected to a single feeder is constantly changing due to permanent changes in the configuration of the network. For example, in 2013 Ausgrid made over 3,500 permanent changes to the network. Accordingly, Ausgrid applies a more accurate methodology when calculating reliability metrics. Ausgrid's SAIDI calculation methodology is as follows:

1. Calculate daily SAIDI values by taking the sum of the durations of all the sustained interruptions that have commenced on a single day and divide by the number of distribution customers for that day;
2. Sum all the daily SAIDI values for a relevant period.

In order to demonstrate the value in applying this alternative methodology, the two methodologies were applied to two Ausgrid feeders for the 2012/13 regulatory year. The results are shown in the table below. The results demonstrate that significant over reporting or under reporting can occur with the AEMC's proposed methodology when the number of distribution customers vary significantly within a period.

| Feeder       | Distribution Customers | Distribution Customers | SAIDI                     | SAIDI               | Percentage error |
|--------------|------------------------|------------------------|---------------------------|---------------------|------------------|
|              | 1/7/2012               | 30/6/2013              | AEMC Proposed Methodology | Ausgrid Methodology |                  |
| ZN14891:PA10 | 2150                   | 991                    | 88.7                      | 145.5               | -39%             |
| ZN813:89065  | 152                    | 686                    | 131.2                     | 80.2                | +64%             |

NSW DNSPs are required to investigate individual feeder performance if the feeder does not meet the individual feeder standards in the NSW licence conditions. If poor performance is ongoing, options for improving performance are investigated and the most appropriate option is pursued. If the proposed AEMC methodology is adopted, the following may occur:

- Feeders with poor reliability do not exceed the individual feeder standard due to a large increase in customers across a period;
- Feeders with good reliability exceed the individual feeder standard due to a large decrease in customers across a period.

This is a poor customer outcome because opportunities to improve the reliability of customers receiving poor reliability will be missed. The outcome is also inefficient because resources will be wasted investigating the performance of feeders with good reliability. The preference of the NSW DNSPs is that DNSPs should have the option of applying either the AEMC proposed methodology or our alternative methodology where this will lead to better customer outcomes without excessive additional costs.

### ***Sustained interruption – definition***

We note the AEMC is proposing that the duration of a sustained interruption for the purposes of calculating SAIDI and SAIFI be taken to begin at the start of the sustained interruption and end when electricity supply has been successfully restored and that the duration of a sustained interruption be defined as greater than **three minutes** (previously one minute). The NSW DNSPs support the proposed definition of sustained interruption.

To help inform the AEMC, Ausgrid investigated the impact of the proposed change in minimum duration of sustained interruptions by examining the impact on system SAIDI and SAIFI for the 2012/13 regulatory year. It was found that the proposed change would have a negligible impact on SAIDI; however, SAIFI would be reduced by 3%. We discuss the implications of using the proposed definitions in the proposed implementation plan section of our response below.

### ***Definition and measures for momentary interruptions***

#### **[Box 3.2]**

The AEMC is seeking stakeholders' views on the proposed definitions for momentary interruptions in Box 3.2. In particular, the AEMC is seeking stakeholders' views on how changing the duration of a momentary interruption from 1 minute to 3 minutes could:

- impact consumers in terms of potentially longer momentary interruptions and in terms of a likely reduction in sustained interruptions;
- materially increase the range of distribution automation system alternatives that could be cost effectively implemented, thus increasing the number of systems deployed; and
- whether the impact on customers of multiple momentary interruptions, within a single momentary interruption event, is likely to be materially greater than a single momentary interruption.

The NSW DNSPs support the proposed change in duration of momentary interruptions. The NSW DNSPs believe that there is no significant difference in customer impact for 1 minute or 3 minute interruptions. To help inform the AEMC, Ausgrid investigated the impact of the proposed change in minimum duration of sustained interruptions by examining the impact on MAIFIE for the 2012/13 regulatory year. It was found that the proposed change would increase MAIFIE by 4%. Ausgrid customers currently experience very few interruptions lasting between 1 minute and 3 minutes.

It is not believed that the proposed change in definition would lead to longer momentary interruptions because the duration of momentary outages is dependent upon the existing technology. However, there is potential that the proposed change in definition could encourage more efficient investment in the network.

For example, basic remote control systems have the potential to reduce interruption durations below 3 minutes; however, more expensive fully automated systems are required to reduce interruption durations below 1 minute. While NSW DNSPs have installed some trial distribution automation systems, there are no plans to deploy the technology on a wider scale at this time.

**[Box 3.3]**

The NSW DNSPs support the proposed definitions of MAIFI and MAIFle as a minimum standard. The NSW DNSPs also support the inclusion of alternative MAIFI and MAIFle definitions to enable a more accurate calculation methodology as outlined in our response to the SAIDI and SAIFI definitions.

**[Box 3.4]**

Ausgrid and Endeavour Energy support the use of MAIFle for benchmarking purposes and economic incentive schemes. MAIFle can provide a better indication of a customer's experience than MAIFI. Multiple momentary interruptions in quick succession do not have an appreciably different impact on customers compared to a single momentary event. Customer experience is better measured by considering *momentary interruption events*. It is also suggested that customers attribute a much smaller value to a reduction in MAIFI or MAIFle than a reduction in SAIFI. Ausgrid and Endeavour Energy have recently developed systems to accurately record MAIFle. Essential Energy is currently developing systems to accurately record MAIFI. Essential Energy would need to further develop systems to accurately record MAIFle.

***Other supporting definitions***

**[Box 3.5]**

The AEMC is seeking stakeholders' views on the proposed definitions in Box 3.5. The NSW DNSPs support the proposed definitions for *planned interruption*, *unplanned interruption*, *customer* and *interruption*. However, we note that the AEMC is proposing the following definition of *distribution customer*.

*A connection point between a distribution network and customer that has been assigned a NMI, including energised and de-energised connection points but excluding unmetered connection points.*

The NSW DNSPs believe that the definition of distribution customer should accommodate differing approaches as long as they are consistently applied within each DNSP. Ausgrid and Essential Energy currently calculate reliability metrics in accordance with the proposed definition. Endeavour Energy currently includes unmetered customers in the calculation of reliability metrics as a result of advice from external audits and the AER. A change to either include or exclude unmetered customers would not have a material impact on reliability metrics for the NSW DNSPs but could potentially lead to significant costs to modify data systems.

The NSW DNSPs support the proposed definition of customer base; however, we would also like to point out that the use of the defined customer base in calculating SAIDI, SAIFI, MAIFI and MAIFle is not as accurate as the alternative methodology based on daily calculations that we have proposed above.

## Treatment and exclusion of major event days

### [Box 4.1]

#### *Proposed definition of exclusions*

The NSW DNSPs support the AEMC's proposed definitions for exclusions. We note that the proposed changes will not impact historical data.

We note that the AEMC is currently considering the Expanding Competition in Metering and Related Services Rule Change, in particular the proposed role of the Metering Coordinator (MC). We submit that a DNSP should be able to exclude interruptions caused by the MC, where the DNSP is not the designated MC and where the interruption was not within its control.

#### *Major event days*

### [Box 4.4]

The AEMC is seeking stakeholders' views whether the 2.5 beta method described in IEEE standard 1366 - 2012 is the appropriate default method for identifying major event days. The NSW DNSPs agree that the 2.5 beta method is the appropriate default method for calculating the major event day threshold. We would also like to point out that the method is based on the assumption that the logarithms of the daily SAIDI values are normally distributed. In the case that the logarithms of the daily SAIDI values are not log normally distributed, we would like to have the option to apply an alternative data transformation as permitted in Appendix D of the STPIS.

#### *Catastrophic events*

### [Box 4.5]

The AEMC is seeking stakeholders' views on whether catastrophic events should be excluded from DNSPs data sets when calculating the major event day threshold and whether the 4.15 beta method is the appropriate method for identifying catastrophic events.

To help inform the AEMC, Ausgrid applied the 4.15 beta method to identify catastrophic events that have occurred in the past. The following events were identified:

| Date      | SAIDI | Description  |
|-----------|-------|--|
| 24/8/2003 | 34.7  | Gale force winds cause widespread damage to the overhead distribution network in NSW. Twenty seven local government areas in NSW were subsequently declared natural disaster areas.  |
| 8/6/2007  | 94.3  | An intense east coast low pressure system affected the Hunter and Central Coast regions of NSW. The strong winds and torrential rain caused widespread damage, extensive flooding and loss of life. The flooding led to prolonged interruptions for a large number of customers. |
| 9/6/2007  | 173.9 | As above.  |

We support the 4.15 methodology for identifying catastrophic events because the events identified above were caused by extreme natural disasters and had a widespread affect on the distribution network. When these events were excluded from the calculation of the major event day threshold, the threshold was marginally reduced. However, no additional major event days were identified as a result.

## Feeder classification

### [Box 5.1 and 5.2]

#### *Proposed changes to the current feeder classifications*

The AEMC is requesting stakeholders' views on the proposal to use temperature normalised maximum demand to classify urban and short rural feeders. The NSW DNSPs currently apply temperature normalisation to zone substation loads as part of their spatial demand forecasting processes. This requires the allocation of a significant number of specialist resources. There is currently no business requirement for the NSW DNSPs to apply temperature normalisation at the distribution feeder level. The NSW DNSPs have many more distribution feeders than zone substations; therefore, the proposal of using temperature normalised demand to categorise distribution feeders will have adverse impacts for the NSW DNSPs in terms of resources. The proposal does not improve the intuitiveness of the categorisation because lightly loaded feeders in metropolitan areas will still be classified as short rural feeders. The NSW DNSPs do not support the proposal to use temperature normalised maximum demand to categorise distribution feeders.

### [Box 5.3]

#### *Alternative feeder classifications*

The AEMC is also seeking stakeholders' views on the alternative criterion for urban feeder classification based on a combination of load and customer density. The NSW DNSPs do not support the alternative criterion because it may not result in intuitive classification. Some feeders in urban areas may supply a small number of industrial and commercial customers. The alternative criterion would still classify these feeders as short rural. The alternative criterion also relies on temperature normalisation, placing a significant burden on DNSPs.

The NSW DNSPs agree that the sole use of load density as a criterion results in the inappropriate classification of lightly loaded feeders in urban areas. Ausgrid has undertaken preliminary analysis that considers a distance threshold for feeder categorisation. Ausgrid found that a sole distance criterion can satisfactorily classify the majority of feeders. Endeavour Energy and Essential Energy have a number of short feeders in rural areas that would not be satisfactorily classified by a distance criterion alone and would require additional criteria and or judgement.

The NSW DNSPs suggest there may be merit in the creation of an additional feeder category for feeders with a total feeder route length greater than 600km. For example, Essential Energy has 30 feeders with a total route length exceeding 600km and 8 feeders exceeding 1000km. These feeders are unique to rural DNSPs supplying remote geographical areas. Customers residing in these remote areas have significantly different expectations of network reliability. The classification of these feeders alongside shorter feeders may not be appropriate because investment that is not supported by customer expectations could be triggered by jurisdictional licence conditions.

Due to the complexity of the issues raised above, the NSW DNSPs are not presently in a position to offer a comprehensive alternative feeder classification proposal. The NSW DNSPs would like to offer a robust alternative proposal to the AEMC at a later date once the impact on each of the DNSPs has been properly assessed.

**[Box 5.4]***CBD feeder classification*

The NSW DNSPs support the proposed definition of CBD feeder.

**Principles for considering lowest reliability customers****[Box 6.1]**

The NSW DNSPs would like to provide feedback on the proposed principles for considering lowest reliability customers. The NSW DNSPs agree that:

- The focus should be on customer experiences of reliability, rather than on feeder reliability.(2)
- The approach needs to measure the experience of the lowest reliability customers compared to that of the average customers, on feeders of the same classifications. (3)
- The approach needs to take into account that reliability outcomes may vary year to year. (4)

The AEMC is proposing that the approach should be applied consistently across jurisdictions and DNSPs. The NSW DNSPs do not support this approach. We believe that differing approaches are warranted because each DNSP is subject to a range of unique issues. Each DNSP has access to a unique range of systems and analysis tools. For example, Ausgrid manages the lowest reliability customers by applying an analysis technique that would not be possible for many other DNSPs. A short description of this technique is included below to provide the AEMC with an example of how a DNSP can identify and manage its lowest reliability customers.

**Managing lowest reliability customers – Ausgrid approach**

Ausgrid assesses the performance of distribution feeder sections. A distribution feeder section is defined as a section of distribution feeder downstream from an automatic protection device. If a fault occurs, this device can automatically isolate supply to one or more sections of feeder. Therefore, customers connected to some feeder sections may experience significantly worse reliability than other customers connected upstream of the device. Distribution feeders are screened for investigation if the reliability performance is worse than 95% of feeder sections within the same feeder category. Screening is carried out every three months.

When an investigation indicates that the poor performance is likely to continue and investment is warranted, operational actions and capital project options will be developed. Projects found to be warranted will be funded within an envelope of available funds under this program.

**Proposed Implementation Plan**

The NSW DNSPs support the proposal for the definitions of reliability measures to be maintained in a non-binding guideline. We believe that DNSPs should adopt the definitions of



the guideline unless it can be demonstrated that alternative definitions provide a better customer outcome.

We also support the proposal for the AER to draft, publish and maintain the guideline.

The definitions proposed by the AEMC are significantly different from definitions contained in the both the STPIS and NSW Licence Conditions. The NSW DNSPs would like to raise the following issues that should be addressed when developing an implementation plan:

- Historical reliability metrics for benchmarking purposes will need to be re-cast to enable comparison to new metrics;
- STPIS targets and actuals will need to be calculated with consistent definitions to ensure that DNSPs are not rewarded or penalised for changes to reliability definitions or categorisation;
- The Network Overall Reliability Standards (Schedule 2) and the Individual Feeder Standards (Schedule 3) of the NSW Licence Conditions are based on historical performance;
- The Licence Conditions may need to be reviewed once new definitions are released to ensure that a step change in performance does not trigger over or under investment.

It is recommended that the implementation plan takes into account the regulatory control periods for each jurisdiction and be staged to minimise the impact on DNSPs and their interaction with the STPIS. The optimal time to introduce the proposed change to definitions in NSW is at the beginning of the 2019-24 regulatory control period.

