570 George Street
Sydney NSW 2000
All mail to GPO Box 4009
Sydney NSW 2001
T +61 2 131 525
F +61 2 9269 2830
www.ausgrid.com.au

1 December 2011

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

Dear Mr Pierce,

Review of Distribution Reliability Outcomes and Standards – NSW Workstream (EPR0027)

Ausgrid welcomes the opportunity to provide a submission on the issues paper on the reliability of NSW distribution networks as a part of the above review.

We understand that as a part of the NSW review, the AEMC will provide advice on the costs and benefits of a range of future distribution reliability outcomes for NSW. The NSW government will use this advice to consider whether distribution reliability outcomes in the State's *Design, Reliability and Performance Licence Conditions for NSW DNSPs* should be amended.

- Ausgrid has been subject to the NSW Licence Conditions since 2005 (and as updated and revised in 2007). The reliability standards in the NSW Licence Conditions are general industry measures set by the NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) as a proxy for the customer, and are used as a "safety net" in terms of average performance of customers in the feeder categories.

Ausgrid is working to be compliant as reasonably practicable with the current design planning criteria by 1 July 2014, and be fully compliant by 2019. Currently Ausgrid is between 92% and 99% compliant across its various network elements.

If you have any queries or wish to discuss this matter in further detail please contact Mr Keith Yates, Acting/Executive Manager Regulation and Pricing on (02) 9269 4171.

Yours sincerely

Peter Birk
Executive General Manager System Planning and Regulation

Submission on the Review of Distribution Reliability Outcomes and Standards (Issues Paper – NSW Workstream)

December 2011

1 Key Messages

Reliability is crucial to a modern economy and Australia's economic prosperity. However, an appropriate balance between the level of investment and community expectation needs to be achieved. It is for this reason that Ausgrid submits that the Review of Distribution Reliability Outcomes and Standards (NSW and National workstreams) represents an opportunity to drive change in industry reliability measurement, reporting definitions, and to close the legacy gaps and short-comings of the current framework. However, the national review may represent the best opportunity to introduce more appropriate customer segmentation in the regulatory framework and to address the limitations of the current Steering Committee on National Regulatory Reporting requirements (SCNRRR). Most notably, the customer category framework which does not differentiate between the diverse reliability needs of business and residential customers.

Ausgrid has a number of key messages in relation to the NSW review which are outlined below and further discussed in the submission:

NSW Licence Conditions requirements are largely reflective of the existing technical architecture of the NSW networks and internal DNSP practices.

In reviewing other jurisdictions (particularly international) it will be necessary to consider the impact of underlying and existing network technology or architecture, the operating environment and legislative and regulatory frameworks.

Best practice approaches to distribution reliability need to focus on best practice in terms of regulatory structures not reliability outcomes.

The AEMC should therefore note that the methods/definitions for recording reliability performance are different across jurisdictions.

Sydney has unique reliability requirements due to its global city status.

Sydney's reliability requirements and associated standards should be benchmarked internationally with similar cities, rather than nationally. Ausgrid would support inclusion of an international comparison with similar international cities.

Cost estimates on alternative reliability scenarios are likely to be at a very high level.

Due to the restrictive timeframe of the NSW review, cost estimates can provide only a general indication of whether costs are likely to be higher or lower under each scenario.

The AEMC must be clear on the timeframes required for the purposes of analysis.

Due to the long lead times involved, both in terms of the implementation of reliability projects and the inherent inertia of network performance, the impacts of changes arising out of the review are likely to take many years to realise. As a result, to enable a consistent view of the outcomes, the AEMC must be clear on the timeframes required for the purposes of analysis.

Customer service standards are not appropriate for inclusion in the NSW review.

Ausgrid supports the retention of customer service standards in the Licence Conditions but states that they are not appropriate for inclusion in the NSW review.

Value of Customer Reliability and Willingness of Customers to Pay are not the same concepts.

The AEMC uses the terms "Willingness to Pay" (WTP) and "Value of Customer Reliability" (VCR) interchangeably in the Issues Paper. However, it is important to recognise that there is a difference between WTP and VCR.

There are issues in applying AEMO's Victorian VCR methodology in NSW

The differences between the deterministic planning criteria used in NSW and the probabilistic planning criteria used in Victoria means that there are issues in applying AEMO's Victorian VCR methodology in NSW.

2 Response to Issues Paper Questions

Question 1 Terms of reference for the NSW workstream

a) Are there any other issues which should be considered within the scope of the MCE's terms of reference?

Ausgrid understands that the NSW review is intended to enable a change in Licence Conditions which will apply from July 2014 and be considered as part of NSW DNSPs' 2014-19 regulatory proposals. However, as the AEMC will not be recommending specific changes to the Licence Conditions as part of its advice, drafting of the revised Licence Conditions will need to be undertaken by the NSW government following a decision on the required levels of performance. This means that there will be limited time available between the NSW review, any subsequent changes to the Licence Conditions and the submission of the 2014-19 regulatory proposal.

The impact of this tight timetable is two-fold. First, cost estimates provided by Ausgrid and other NSW DNSPs on alternative reliability scenarios are likely to be at a very high level and provide only a general indication of whether costs are likely to be higher or lower under each scenario. Second, Ausgrid will have little capacity available for reviewing capital programs to respond to alternative reliability scenarios prior to submission of its draft 2014-2019 regulatory proposal in May 2013. On this point, Ausgrid would like to clarify for the AEMC the scope for a network service provider to lodge a revised proposal following the publication of the AER's draft determination.

The Issues paper at page 22 (footnote 26) indicates the AEMC's view is that "A revised regulatory proposal may incorporate changes to address matters raised by the draft distribution determination or it may be required by the AER. This process may be used to incorporate late changes to the NSW distribution reliability outcomes." However, it should be noted, that under clause 6.10.3(b) of the Rules a DNSP may only make revisions to its proposal so as to incorporate the substance of any changes required to address matters raised by the draft determination or the AER's reasons for that determination. These provisions do not enable the AER to "require" a revised proposal as indicated by the AEMC. The submission of a revised proposal is a matter for the DNSP to decide. Consequently a revised proposal must address a question or point brought up by the AER or an objection or difficulty put forward by the AER.

It is therefore difficult to see how these provisions provide adequate scope for a DNSP to revise its proposal in response to changes to the Licence Conditions related to reliability as indicated by the AEMC. It would certainly provide no scope if the change to the Licence Conditions were not raised by the AER in its draft determination. Moreover, the extent to which the AER could raise changed Licence Conditions in its draft decision would depend upon the timing of those changes.

The revised proposal provisions are designed to allow DNSPs to revise their proposals in response to the proposed action by the AER set out in the draft determination and as part of that to respond to issues raised by the AER in that draft determination. These provisions presume that the AER is in a position to make a decision, albeit on a draft basis in response to the proposal put to it. If the AER was aware of the change to the Licence Conditions, but did not have sufficient information in relation to the impact it would probably not be in a position to make a decision even on a draft basis.

Therefore, the extent to which the impact of any change to the Licence Conditions could be properly reflected in a revised proposal or a final decision of the AER would depend upon a number of factors including:

1. the timing of the change;
2. the extent of the change;
3. whether the DNSPs had any prior opportunity to consider and analyse the impact of the change (and to develop credible forecasts); and

4. whether the AER is in a position to pro-actively manage consideration of the change in a manner which enables the impact of any change to be properly considered and appropriately reflected in the final decision.

In conclusion, given the presently tight timetable and the recognition that any substantive changes will follow on from the national review, it is not possible or appropriate to consider other significant issues in the NSW review. Ausgrid considers that the NSW review scope is appropriately limited and will provide a good indication on the likely direction of the national review.

Question 2 Required considerations during the NSW workstream

a) Should the AEMC have regard to any other factors to those outlined in the MCE's terms of reference in undertaking the NSW workstream?

Ausgrid submits that it would have been more appropriate for the national review to be considered before the NSW review, where the timeframe for investigation and consultation is much greater. However, given that is not possible, Ausgrid considers that the range of factors in the terms of reference is generally appropriate and that there are time constraints on introducing any additional factors.

Question 3 Customer service standards

a) Should customer service standards be considered within the scope of the NSW workstream?

Ausgrid supports the retention of customer service standards in the Licence Conditions but states that they are not appropriate for inclusion in the NSW review. This is because guaranteed customer service standards are designed to provide compensation for customers who suffer abnormally poor performance but these standards do not drive significant network expenditure.

Question 4 Best practice national and international approaches to distribution reliability

a) Are there any other criteria we should take into account in reviewing national and international approaches to distribution reliability?

The current Licence Conditions requirements are largely reflective of the existing technical architecture of the NSW networks and internal DNSP practices. In reviewing other jurisdictions (particularly international) it will be necessary to consider the impact of underlying and existing network technology or architecture, the operating environment and legislative and regulatory frameworks. Accordingly, Ausgrid submits that the NSW review should take into account the following:

- Best practice approaches to distribution reliability need to focus on best practice in terms of regulatory structures not reliability outcomes. The AEMC should therefore note that the methods/definitions for recording reliability performance are different across jurisdictions. Assessment of historical reliability performance based on AER reporting definitions would ensure appropriate comparisons. To this end, it is proposed that the NSW definition of the major event day boundary should be aligned with the definition used by the AER.

- Sydney is a global city and hence its reliability requirements and associated standards should be benchmarked internationally with similar cities, rather than nationally. Data on equivalent ranking global cities can be obtained from the Global Power City Index[1] and the Infrastructure Australia "State of Australian Cities 2010" report[2].

- Ausgrid would support inclusion of an international comparison with similar international cities. However, care must be taken with using international comparisons with cities that have a different network architecture and performance drivers.

- The International Review of Transmission Reliability Standards report (KEMA Report[3]) prepared for the AEMC reliability panel noted criteria for successful reliability standards. These principles included transparency, consistency, independently established, specific, and provide upward flexibility. Ausgrid considers that these criteria would be appropriate to this review.

- NSW uses a forecast of 50% Point of Exceedance (PoE 50) for its design criteria. It is important to understand the nature of the forecasts used by other DNSPs/jurisdictions when analysing network performance and its relationship to the design standards.

- Consideration should be given to ensuring that the complexity in analysis is commensurate with the level of investment undertaken. Such consideration should note that complex analysis is not appropriate for small value investments such as those typically required for a distribution substation and distribution (11kV) system.

- The KEMA report (op cit p13) noted a number of disadvantages with the application of probabilistic planning approach. Many parts of the Ausgrid transmission and sub-transmission system comprise large complex networks, which are unsuited to the use of the probabilistic approach.

In conclusion, and as noted above, consideration of best practice should be more about the design the regulatory framework than reliability outcomes. A sensible benchmarking approach would involve not only an examination of how reliability is measured, expressed and reported but would also accommodate the community expectations for a global city like Sydney compared to the rest of the country.

Question 5 Selection of alternative scenarios for NSW distribution reliability outcomes

a) What scenarios should be considered? What kinds of changes to the components in the existing NSW distribution licence conditions should be assessed?

Ausgrid is broadly comfortable with a small selection of alternative scenarios. In order to limit the difficulty of providing cost estimates, the scenarios should be defined in terms of revisions to schedules 1 to 3 of the current Licence Conditions. Ausgrid submits that the following areas of the current schedules would be amenable to adjustment.

Schedule 1

The provision of Schedule 1 are currently the most dominant in driving investment, so the main focus for the alternate scenarios should be on this area.

1. The current design planning criteria apply differentially based on whether load supplied is greater or less than 10MVA. This break point could be adjusted to apply the different requirements at higher or lower levels.

2. The criterion for urban distribution feeders (note 4) requires an average utilisation of 80%, falling to 75% in 2019 in addition to a requirement to be able to restore supply in 4 hours. These provisions

[1] http://www.mori-m-foundation.or.jp/english/research/project/6/pdf/GPCI2010_English.pdf
[2] http://www.infrastructureaustralia.gov.au/publications/files/MCU_SOAC.pdf
[3] International Review of Transmission Reliability Standards, Summary Report prepared for the AEMC Reliability Panel, KEMA, 27 May 2008, p 2.

both target the same outcome and this duplication could be removed by deleting footnote 4 with no reduction in performance but some potential for savings.

3. Footnotes 1b and 2 provides that the thermal capacity of most zone and subtransmission network components must be greater than 115% of forecast demand. This provides a conservative margin in capacity to allow for increases in demand above the PoE 50 forecast. Consideration could be given to either reducing this margin or linking it to a more conservative forecasting assumption (e.g. PoE 10).

4. The present criteria for sub-transmission equipment (with loading below 10MVA) specify restoration within the infrastructure repair time. Whilst this is appropriate for overhead feeders, which can generally be restored within 8 hours, the repair/restoration times for items such as power transformers and subtransmission cables can be many days. As a result, application of the present Schedule 1 criteria implies that townships could be without supply for several days. An option could be to consider placing an upper limit on what constitutes an acceptable repair time.

5. It may be possible to implement individual feeder section standards rather than individual (whole) feeder standards. This would better represent potentially diverse customer type segmentation along the one feeder. For example, a feeder with a mixed urban and rural supply area may be categorised as urban, and therefore it would be necessary to apply n-1 criteria to the whole feeder at significant expense. Allowing the flexibility to apply urban or non-urban classification to separate feeder sections may provide opportunities for savings.

6. The Licence Conditions currently differentiate between performance on zone and sub transmission substations and overhead and underground feeders. As system architecture develops, these distinctions can become blurred. Ausgrid submits that it may be more appropriate to differentiate performance based on the amount (and possibly type) of load supplied rather than on the category of infrastructure.

Schedule 2 & 3

These schedules generally drive reliability improvement investments designed to ameliorate performance issues not adequately addressed by the design criteria in Schedule 1.

By tightening or relaxing reliability performance minimum service standards in Schedules 2 and/or 3 a change in customer reliability performance could be achieved. This may take the form of a simple adjustment to the target levels. Additionally, an adjustment could be made to the required confidence level. Reliability performance exhibits variability and an implied requirement of 100% compliance in the current arrangements drives a conservative approach. Targeting feeder category performance at an 80%, 90%, or 95% confidence level of meeting the Schedule 2 minimum service reliability standards may provide for some additional flexibility.

Question 6 Estimating the costs of meeting alternative distribution reliability outcomes

a) Are any other factors likely to affect the degree of accuracy of the cost estimates? What measures could be taken to improve the accuracy of the estimates?

b) Should we consider any other factors in estimating the costs of meeting the alternative distribution reliability outcomes?

Ausgrid submits that the accuracy of the cost estimates will be impacted by both the review time frame, the clarity of the scenarios under consideration, and the data required for analysis. For the purposes of this review however, incremental cost estimates compared to the current (base) Licence Conditions requirements are likely to be the most appropriate for considering the costs of meeting alternative reliability outcomes.

The AEMC should note that due to the long lead times involved both in terms of the implementation of reliability projects and the inherent inertia of network performance, the impacts of changes arising out of the review are likely to take many years to realise (and cost estimates more difficult to quantify). NSW DNSPs have until 2014 to be reasonably compliant with the design planning criteria and until 2019 to be fully compliant. As a result, to enable a consistent view of the outcomes, the AEMC must be clear on the timeframes required for the purposes of analysis.

The AEMC should also note that Ausgrid is working towards a reasonable level of compliance by 2014 which should be a key assumption for costing estimates.

Question 7 Estimating the willingness of NSW customers to pay for distribution reliability

a) Are there any potential issues with the use of AEMO's Victorian VCR methodology in estimating the willingness of NSW customers to pay? If so, how should the Victorian VCR methodology be adapted to ensure that it reflects the characteristics of NSW customers?

b) Should additional or alternative customer types to the customer types used by AEMO (that is, residential, industrial, commercial and agricultural) be considered?

c) Should willingness to pay by customer type be further segmented by distribution area or feeder type? If so, for which customer types would this be most relevant and feasible?

Differences between Value of Customer Reliability and Willingness of Customers to Pay

Ausgrid notes that the AEMC uses the terms "Willingness to Pay" (WTP) and "Value of Customer Reliability" (VCR) interchangeably in the Issues Paper. However, it is important to recognise that there is a difference between WTP and VCR.

The planning criteria in NSW are predominately "deterministic" which means that the need for investment is established when it is likely that the planning design criteria in the Licence Conditions will not be met. Network augmentations are then chosen by DNSPs on the basis of least cost. In contrast to deterministic planning criteria, probabilistic planning (used in Victoria) measures the benefit of the augmentation through a value of customer reliability (VCR) to assess whether an augmentation should proceed, rather than applying pre-determined criteria. It is therefore a more risk-based approach to planning.

The VCR values are a survey of the cost of outages whereas WTP values are surveyed values of customers' willingness to invest in improved performance. Therefore, WTP necessarily includes a level of acceptable performance which varies according to circumstance.

For example, the cost of an interruption to a data processing centre may be extremely high, however the customer's willingness to pay for improved distribution network reliability may be much less than the costs of supply interruptions due to the availability of alternatives such as privately owned back-up generation facilities. In other cases, the community cost of interruption may exceed the customers' willingness (or ability) or pay to avoid interruptions.

Overall, from a customers' perspective, it is historical performance, their use of the electricity service and their locality (e.g. urban or rural) which are the main drivers of performance expectations. As a result, customers tend to have difficulty in valuing high impact/low probability reliability events outside their recent experience.

Issues in applying AEMO's Victorian VCR methodology to NSW

The differences between the planning criteria used in NSW and Victoria mean that there will be some issues in applying AEMO's Victorian VCR methodology to NSW.

Victoria has been operating under a reliability incentive framework for some time and as a result, Victorian distribution businesses were provided with significant incentive to reduce the frequency and duration of outages. Consequently, the relative duration of outages in Victoria is shorter than for other jurisdictions. Since shorter duration outages have a higher relative value, it is not sensible to use VCR estimates obtained in a jurisdiction with systemically lower durations to other jurisdictions with different reliability characteristics (and network topology). Moreover, there is an implicit assumption that duration is the prime driver of value and that value is linearly proportional to summated duration. Both assumptions are easily challenged.

In addition, there are potential issues in translating the Victorian (VCR) results into the costs of commonly used performance metrics (e.g. SAIDI, SAIFI) used in NSW. For example, the VCR methodology potentially results in different values ($/MWhr) of lost load for residential customers in different states because of variations in interruption durations. Ausgrid submits that these differences must be considered by the AEMC if it intends to use this methodology to determine values for SAIDI and SAIFI. In addition, more consideration needs to be given to the duration of outages. For example, the impact of an outage of a few hours to residential customers is much less than an outage of a few days. This is particularly relevant to townships or isolated communities where alternative supply may not be available.

On a more general point, the AEMC should be aware that the reliability values used in the AER STPIS[4] scheme are based on the Victorian VCR methodology. There is a risk that significant differences between the values of reliability used in the STPIS and Licence Conditions will result in potentially conflicting investment signals. If the AEMC persists with applying the VCR methodology to NSW, it is important that the estimates are as accurate and appropriate for the particular jurisdiction as possible. The use of incorrect estimates could result in inadequate or excessive investment and increase the costs to network users.

An alternative approach - Conduct a WTP survey in the national review

Ausgrid submits that rather than trying to replicate the Victorian VCR outcomes in NSW, it would be more appropriate to conduct a WTP survey of NSW customer types that better represent the reliability performance preferences of customers. Better customer types could include their performance history, their electricity service use, and their location. The current VCR customer types (residential, industrial, commercial and agricultural) only represent their electricity service use characteristics. Surveying customer types such as "Urban-Residential", "Rural Industrial/Commercial" and the like combined with information about those customers' performance history would result in more appropriate WTP values than an energy-based survey profile.

Due to the short time frame of the NSW review, it will not be possible to change customer types and conduct a WTP survey. Ausgrid submits that the national review may present an opportunity to conduct a WTP survey. However, for the purposes of the NSW review, the Licence Conditions should continue to reflect the prevailing segmentation of feeder types/customer types. This is important to both keep the quantum of work required for the NSW review to manageable levels and to maintain consistency in reporting between the

[4] The AER has been collecting historical SAIDI and SAIFI performance against which Ausgrid's 2014-2019 performance targets will be based.

NSW jurisdiction and the AER. In addition, there are practical limitations in applying detailed customer information to the established broad based Licence Conditions.

Question 8 Cost-benefit assessment of alternative scenarios for NSW distribution reliability outcomes

a) Should we consider any other factors in our cost-benefit assessment of alternative scenarios for NSW distribution reliability outcomes?

It has been recognised that there will be potentially significant delays between the changes to Licence Conditions and their impact on prices and network performance. In considering the cost-benefit assessment of alternative scenarios, analysis should:

- accommodate the longer term uncertainties of demand and customer growth;
- consider the community impact of long duration outages. For example, replacement of a failed transformer supplying a rural township may take many days. An outage of this duration would be potentially devastating to the community; and
- consider the impacts of changes to Schedule 1 of the Licence Conditions in terms of both maintenance outcomes and the customer impacts of planned interruptions. This is because a significant driver of network redundancy (as specified in Schedule 1) is the need for planned outages to maintain equipment.