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By email: reena.kwong@aemo.com.au

Dear Reena

Value of Customer Reliability Directions Paper

Grid Australia has reviewed AEMO's Value of Customer Reliability (VCR) Directions Paper and has a range of observations to offer AEMO. Observations are made in three key areas:

- Selection of customer categories – Grid Australia recommends that AEMO seek additional information about the value of customer reliability for the commercial sector, in particular for 'large' consumption businesses;
- Consideration of different outage durations and events causing prolonged widespread outages (high impact low probability or HILP events) – Grid Australia recommends that prolonged and widespread longer-duration outages be dealt with via independent engineering and economic studies rather than seeking information about these through customer survey (it would be most unlikely that customers will be in position to consider and accurately analyse the costs of such an outage); and
- Publication of statistics relating to the uncertainty of resulting VCRs – Grid Australia recommends that publication of VCR estimates be accompanied by statistics describing the variability in the underlying data.

Given the increasing focus on striking the right price/ service balance in relation to network reliability, and the role VCR will play in this process, Grid Australia agrees with AEMO that VCR estimates should be as accurate as pragmatically possible. This letter explains areas in which Grid Australia supports AEMO's proposed approach to determining VCR, and also those areas in which we believe the approach could be further improved. Grid Australia is keen to discuss with AEMO potential improvements to the proposed approach.

Selection of customer categories

Grid Australia supports AEMO's proposal to differentiate the value of customer reliability according to customer class. However, Grid Australia considers that further classification of businesses by sector would be advantageous for network planning purposes.

In its Directions Paper, AEMO has proposed four customer classes based on annual average energy consumption levels and whether the customer is a business or a residence. AEMO's proposed categories are: residential; small business (<40 MWh pa); medium business (40 to 100 MWh pa); and large business (>100 MWh pa). These categories appear to be based on thresholds established in the National Energy Retail Regulations, which as AEMO notes are not currently in force in all jurisdictions.

Grid Australia considers that the proposed large business category is too broad to be meaningfully representative. A minimum energy use of 100 MWh per annum is equivalent to an 11 kW average load. This covers businesses as diverse as medium sized suburban grocery stores, shopping centres, large schools, large farms, mines, manufacturing plants and smelters. It is almost inconceivable that these different business types would place comparable values on reliability, even when normalised (i.e. expressed on a per MWh basis).

Grid Australia considers that the surveys to determine VCR should attempt to classify customers to a greater level of detail. Even if AEMO is unable to apply the resulting information at each connection point, network service providers may well have more detailed information about their load composition and may therefore be able to utilise more granular VCR information if it is available. For example TNSPs explicitly understand the nature of each directly connected load; some DNSPs possess more detailed information about the nature of each connected load, or are at least able to estimate the make-up of feeder business loads via the load profile and the geographic area.

Grid Australia therefore proposes that, in addition to the small/ medium/ large commercial categories proposed, AEMO's survey should seek information as to the broad type of commercial load. We suggest the categories used in the Victorian VCR approach: commercial, industrial and agricultural. Grid Australia envisages that an additional survey question to obtain such information would involve minimal incremental effort. Even if the resulting additional VCR detail may not be able to be applied at every connection point, its existence cannot be detrimental and may be beneficial.

Consideration of different outage durations and events causing prolonged widespread outages

Grid Australia supports AEMO's proposed approach to elicit information about customers' reliability preferences related to both the length and severity of the outage. Such information would provide a more robust basis for cost/ benefit analysis in network planning than a single number which does not consider outage duration or severity.

Grid Australia considers the proposal to differentiate between outages of 5 minutes, 1 hour, 6 hours and 1 day durations is entirely appropriate. We also consider that survey questions which aim to further distinguish between localised and widespread outages are appropriate.

We are concerned, however, that it would be most unlikely that a customer responding to survey questions will be in position to consider and accurately analyse the costs of a 1 week outage for example which results in an extended loss of supply to a major city or other large load centre. Such an event includes the risk that infrastructure such as water and sewerage, fuel pumps, traffic control, trains, and refrigerated food and medicine storage cannot function properly across a large area and population for the duration of that outage. These effects and their costs are distinct from those accompanying a shorter term and, or, localised outage.

In its Electricity Network Regulatory Frameworks Inquiry report (released publicly on 26 June 2013), the Productivity Commission recognises that transmission is distinct from distribution in significant ways, and makes the following observations¹ (pp 542-43):

'Interruptions in transmission networks can include widespread cascading interruptions that take a long time to resolve. The costs of these faults could be larger than the costs found in a distribution-focussed survey. For example, the options for customers facing an outage might be more limited and costly if the whole region is without power...'

Transmission businesses have to consider high-cost, low-probability events, and how these might be valued by customers who may have never experienced such extensive outages before. Costs might include trucking in fuel for generators and fresh water from long distances, and the costs to society of being without everyday services such as street lighting and some public transport...

'Transmission networks in one part of the NEM are connected to transmission networks in other parts. Failures in one part of the network can have network-wide impacts. Any such costs would also need to be included.'

The Productivity Commission therefore recommends²:

'The Australian Energy Market Operator (AEMO) should commission and pay the Australian Bureau of Statistics to undertake regular, detailed, disaggregated surveys based on best practice methodologies to reveal the value of reliability for different categories of customers, with the methodologies and results made public.'

AEMO should commission suitably qualified experts to consider and measure the costs of interruptions not likely to be captured in the Australian Bureau of Statistics surveys. This should include the costs associated with citywide disruptions, including to telecommunications, water services and public transport, and the resulting loss of international reputation from lower reliability. AEMO should use these measures to supplement the results of the surveys.'

Grid Australia suggests that those qualified experts should assess the types of costs identified by the Commission by conducting a broadly scoped engineering and economic study of a major outage of a large load centre. Grid Australia suggests this approach to assessing the value of reliability in the context of avoiding a prolonged widespread outage will provide more meaningful information for decision-makers than a customer survey question about a one week outage of this kind.

Grid Australia notes that AEMO has been asked to develop VCRs and that, as AEMO acknowledges in its Directions Paper, it cannot specify the contexts for the application of VCRs throughout the NEM. Nonetheless, an engineering and economic study will be essential to inform Governments and the public about the potential consequences of a prolonged widespread outage. Planning for such an event cannot be done mechanistically. It requires senior decision

¹ Productivity Commission 2013, Electricity Network Regulatory Frameworks, Report No. 62, Canberra, pp.542-532.

² Ibid, p57.

makers to expressly exercise judgment, informed transparently by strong engineering and economic advice, about the balance to be struck between the costs of network investment and the cost and social impact of such an event. Grid Australia is of the view that it would not be acceptable after such an event to argue that the outcome was acceptable because, on the basis of a mechanistic probabilistic assessment, the event was not worth avoiding. This would be particularly so where the actual cost of an event was orders of magnitude greater than the cost to avoid it.

Publication of Statistics Relating to the Variability in the Customer Response Data

In its submission to AEMO's VCR Issues Paper, Grid Australia highlighted the uncertainty inherent in VCRs, as evidenced by the differing values of VCR between Victoria and New South Wales, and even between New South Wales distributors.

Prudent investment analysis always considers the sensitivity of any inputs with which any degree of uncertainty is associated. In the case of transmission planning, such sensitive inputs include the load forecast, discount rate for cash flows, contingency event probabilities and value of customer reliability. Whilst AEMO's intention to publish differing VCRs according to customer class, length of outage and severity of outage is an immense improvement upon the publication of a single VCR value for each region, this still does not allow a practitioner to understand the possible variation of each VCR when conducting sensitivity analysis.

Grid Australia therefore reiterates its previously stated position that AEMO should, in addition to publishing VCRs themselves, publish statistics that describe the variability in the underlying data from which the VCR estimates were derived.

Grid Australia considers that all stakeholders will benefit from a national transmission reliability framework which has been developed rigorously so that its benefits and its limitations are widely understood. It is essential to the long term credible application of VCRs and any other inputs to the reliability framework that the limitations of the methods applied and the resulting estimates are reported and discussed openly.

Grid Australia looks forward to discussing these issues with AEMO directly and through the AEMC's Review of the National Framework for Transmission Reliability.

Please do not hesitate to contact me in relation to matters discussed in this letter, on (08) 8404 7983 or korte.rainer@electranet.com.au.

Yours sincerely



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