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Submitted electronically

Dear Reena

Value of customer reliability (VCR) issues paper

We welcome the opportunity to respond to AEMO's issues paper. We agree that a detailed review of VCRs is timely, particularly in light of the AEMC's work on reliability frameworks. We apologise for the lateness of this submission.

VCRs have the potential to be a key resource for network service providers, regulatory bodies, consumer representatives and other market institutions. Understanding consumer preferences will bring benefits in terms of more tailored and appropriate network design, more rigorous investment decisions, and improved transparency and accountability. For this reason, the AER commends AEMO for the important work it is doing to establish a clear methodology for the determination of the value that consumers attach to a reliable electricity supply.

This submission focuses on the role of VCRs within the economic regulation framework. We also offer some comments on the methodologies for calculating VCRs and the importance of establishing flexible arrangements that can mature over time.

Role of VCRs within the economic regulation framework

We perceive a number of potential roles for VCR data within the economic regulation framework, including in relation to:

- reliability targets and standards
- our assessment of efficient expenditure
- regulatory investment tests
- service target performance incentive scheme
- consumer engagement processes

Reliability framework

VCRs can be used to set reliability targets that reflect the value that consumers place on a reliable electricity supply as part of a probabilistic reliability framework.

In many states, the current regulatory framework remunerates NSPs on the basis of inputs. Ultimately, however, a regulatory regime that rewards NSPs for delivering services valued by consumers is clearly preferable to a regime that rewards NSPs for building assets.

As we have noted previously in our submissions to the AEMC's review of reliability frameworks, the effect of deterministic reliability standards can be to force the AER to accept an investment proposal, even if the economic merit of doing so is not readily demonstrated. Deterministic standards can lead the NSPs to augment their network at an earlier date or to a higher capacity than would be required under a probabilistic approach. This has direct consequences for the level of augmentation and reliability driven capex approved by the AER during the regulatory determination process.

A probabilistic framework regime gives NSPs the ability to make decisions that deliver the required reliability outputs in the most efficient manner, without needing to conform to prescriptive (and potentially inefficient) rules about how those targets should be met. NSPs under this framework have the opportunity to innovate and to recognise the trade-off between the costs of investment to improve reliability and the costs to consumers associated with interruptions to supply. This approach is likely to result in materially lower costs to consumers than if deterministic reliability standards set the planning criteria.

In future, there may be scope for groups of consumers based in a particular location to receive a level of reliability that is specific to their needs.

Assessing efficient expenditure

VCRs represent the value that consumers place on the services they receive in return for the expenditure they fund. It provides a quantifiable link between reliability and expenditure. By looking at the VCR, it is possible to assess whether there are net consumer benefits associated with a proposed investment.

One technique that can be used to carry out this type of assessment is to estimate expected unserved energy[1] and multiply it by the VCR. Other things being equal, if the cost of an investment to ensure energy is served is less than the value to consumers of that energy, then the proposed investment should proceed.[2] Victorian DNSPs use this type of economic assessment in preparing their augmentation capex forecasts.[3]

Robust VCR data has the potential to make the revenue determination process simpler and less subject to manipulation, since it enables the AER to directly assess the financial value that consumers attach to a proposed investment.

VCR data could initially be incorporated into the AER's assessment of augmentation and growth related capex. Going forward, it could potentially be applied as part of our assessment of maintenance and replacement expenditures. If allowances are determined using an economic framework, the VCR is of fundamental financial importance to NSPs since it determines which projects are viable and which are not.

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1 EUSE is derived taking into account the capacity of the supply assets, load growth and the probability of failure of the assets under study.

2 There are other factors that must be considered including safety, operating and maintenance expenditures, etc. This technique has most application at higher levels in the distribution chain such as the feeder and substation levels. In practice, asset failure rates are not always well documented and it may be necessary to apply more mechanistic asset management practices at the lower levels of the network (for instance, below the zone substation level).

3 AER, *Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015, October 2010* (see http://www.aer.gov.au/node/7208).

Regulatory investment tests

Similarly, VCR data could also be incorporated into the regulatory test framework to more accurately assess the net benefits associated with a proposed project. The regulatory test for transmission (RIT-T) and regulatory test for distribution (RIT-D) could be applied more efficiently if businesses justify their reliability augmentations based on the net benefits of improved reliability, taking into account the VCR. We support arrangements which allow RIT-T and RIT-D assessments to be based on the best available information.

If an economic approach to investment decisions is embedded in the reliability framework, there would be scope to remove existing rules which permit investments with negative net benefits where required to meet the NSPs' reliability obligations.

Service Target Performance Incentive Scheme (STPIS)

We strongly support the use of financial incentives to encourage DNSPs to provide an appropriate level of reliability. Under the AER's distribution STPIS, DNSPs are set performance targets based on the duration and frequency of interruptions, with financial rewards and penalties determined by reference to the VCR. Accordingly:

- if the DNSP outperforms the target, they receive an incentive payment which reflects the value that consumers place on the reliability improvement
- if the DNSP fails to meet the target, the financial penalty reflects the costs that consumers incurred as a result of the interruptions above the target.

Different incentive rates apply for different parts of the network.

The distribution STPIS creates incentives for DNSPs to improve reliability where it is efficient to do so — i.e. where the costs of investment are less than the VCR.

Given the more widespread consequences of a transmission outage, transmission networks are designed to provide a higher level of reliability than distribution networks. It is rare for an end use customer to experience an interruption caused by a transmission network outage. The transmission STPIS has been designed to reflect these differing circumstances and does not incorporate the VCR at this time. Instead, the transmission STPIS includes incentives for TNSPs to improve network availability at those times and on those parts of the network that are most important in moderating wholesale electricity spot prices.[4]

Improved consumer engagement

The AEMC's decision on the economic regulation of electricity networks[5] introduces an obligation on network businesses to consult with consumers prior to submitting their regulatory proposal. NSPs' consumer engagements strategies should be based on the best available information. VCR data will be an independent supplement to the information generated through this process. It will help NSPs to prepare regulatory proposals which more closely reflect the preferences of their consumers.

The network regulation rule change requires the AER to take into account the extent to which the NSP has engaged with consumers in preparing its forecasts. One of the factors that the AER could consider is the extent to which the results of an NSP's consumer consultation process are supported by VCR data. We note that the two processes may not necessarily produce results that are consistent. However, a well supported regulatory proposal would explore the reasons for any major discrepancies.

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4 AER Final Decision - Electricity TNSP Service Target Performance Incentive Scheme (STPIS) version 4, 19 December 2012.

5 AEMC, Economic Regulation of Network Service Providers – Final Determination, 29 November 2012.

Limitations on the role of VCR

By necessity, VCRs involve aggregating divergent consumer views. Hardship customers, or customers located on a poor performing part of the network, may place a significantly different value on a reliable electricity supply to other customers. A regulatory framework which uses VCR to drive key decisions (such as investment decisions) should also have regard to whether additional measures are required for specific consumer groups.

Other roles of VCRs

There are a number of potential roles for VCR data outside the economic regulation process. We provide some comments in relation to network business decision making processes and the somewhat related concept of spot market price cap (MPC).

Network business decision making processes

There is scope for NSPs to use VCR data to enhance their decision making processes. VCR information could be used to assess, among other things, the capex/opex trade-off, maintenance intervals, and risk assessments.

Spot market price cap (MPC)

The issues paper seeks views on whether VCRs should be estimated using a different methodology when the results are to be used to set the MPC.

There are important differences between the VCR as used for planning and revenue setting purposes and the value associated with the MPC. Importantly, the VCR should be calculated differently if it is to be used for the purpose of informing the MPC.

The wholesale market price is capped at the MPC. When there is insufficient available generation capacity to meet electricity demand, AEMO instructs NSPs to disconnect consumer load. This is termed "manual load shedding". Under these conditions – which occur very rarely and have only ever interrupted a small fraction of the demand in a region – AEMO sets the spot price at the MPC.

The priority of consumers that are shed under these conditions are predetermined by the Jurisdictional System Security Coordinator in each state[6]. Implicit in this priority is an assessment of the VCR of each group of consumers, with those with the lowest VCR interrupted first. If a "manual load shedding" event continues beyond a short period then supply to the interrupted consumers can be restored as other consumers are interrupted thereby limiting the period of interruption. This is termed "rotational load shedding".

"Manual load shedding" differs from shortages in network capacity. A shortage of network capacity usually requires all consumers at a connection point to be interrupted – regardless of whether there are different categories of consumers (with different VCRs) located at the connection point. The interruption continues until the failed network element can be repaired and returned to service.

MPC should be set having regard to the different customer impact of "manual load shedding". This assessment should take into account the built in priority of customers selected, and the limited scope and duration of those interruptions. Therefore the level of the MPC would normally be significantly lower than the VCR which is related to un-prioritised consumer interruptions that occur when network elements fail (or SRAS is required). In this case the VCR is that for the highest consumer that is affected by the outage interruption. Note that NCAS should be considered in the same category as interruptions that occur when network elements fail.

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6 In accordance with clause 4.3.2(f)

Methodologies for calculating VCRs

The calculation of VCRs will be useful at a regional level as well as on a sectoral basis. This is because network assets typically serve a region or area that includes a cross-section of consumer types or sectors. While sectoral breakdowns may be available to some networks (e.g. DNSPs), they may not be available to networks that have little or no contact with consumers (e.g. TNSPs).

There may be scope to make VCRs more granular so that they better reflect consumer needs. For instance, VCR studies could differentiate by location, region, consumer type, industry etc. They could also distinguish between different types of outage, for instance by timing or duration of the outage. However, we note that this type of information will add significantly to the complexity of the studies, and there are limitations to the extent to which the additional information can be assimilated.

At present, the AER makes use of information which is disaggregated by location (CBD, metro, rural long, rural short) when setting STPIS targets for distribution.[7] Going forward, we would seek to further refine our processes to take advantage of new information on consumer preferences.

Given the potential importance of the VCR and interaction with the regulatory processes, we support the alignment of the timetable for VCR studies with the regulatory determination process. This approach would allow us to assess forecast expenditure using up to date information on consumer preferences. We agree with the indexing of the VCR between periodic reviews.

Shortcomings and potential improvements to existing survey based VCR methodologies

We welcome the assessment of the cost-duration curve and consider it likely that this curve will vary considerably for different consumer types (e.g. the dairy industry in comparison to irrigation). We similarly welcome consideration of momentary interruptions.

We support the inclusion of residential inconvenience within the VCR studies, however we are yet to form a view on the best way to achieve this.

We consider that VCRs should be independent of network type. The VCR should not change because the assets under consideration fall on one side of a grid exit point or another. While network type will affect the scale and duration of an interruption, these matters should be reflected in the application of the VCR. For instance, the VCR should be applied in a way that reflects the number of consumers affected by an interruption. The impact of an interruption that affects a large number of consumers will be greater than the impact of an interruption that affects a small number of similar consumers, regardless of whether the interruption occurs on the transmission or distribution network.

High impact/low probability events

High impact/low probability events present particular difficulties because the events are often not identified as being credible, or are assigned probabilities that are not reflective of their real likelihood. Accordingly, these events may be difficult to include in a consistent and robust manner.

High impact/low probability events should be addressed via emergency protection and control schemes. If these events were to be included in the VCR, it could result in the construction of network assets that are unlikely to be used. We note that the capex reopener and pass-through provisions set out in the National Electricity Rules establish a mechanism that allows the revenue determination to adjust in response to major unforeseen events.

[7] There is no equivalent framework at present for transmission.

Importance of flexibility

While we agree that VCR studies should fulfil an important role within the regulatory framework, we also recognise that they are a developing area of energy regulation. Measuring the value that consumers place on reliability is an extremely complex task. AEMO's work to establish a methodology for determining VCRs is therefore important and valuable preparatory work.

We expect the VCR methodology to evolve and improve over time as it incorporates experience from previous studies. It is also likely that the required outputs of VCR studies will evolve over time as the relevant parties gain experience in applying the results of VCR studies, for instance by incorporating VCR data into regulatory incentive schemes and/or network decision making processes. Going forward, new uses for VCR data may be identified.

Accordingly, we support a flexible framework that promotes a cycle of continuous improvement.

Given the complexity and subjectivity of the matters under consideration, there is a risk that the results of VCR studies may be unreliable during the learning period. AEMO's review will reduce this risk by ensuring that the relevant issues are thoroughly explored before the new methodology is implemented. If unreliable VCR results are applied in a mechanistic fashion, consumer charges and NSP investment programs could be subject to instability associated with flawed survey results rather than changes in underlying consumer preferences.

There may be scope for further checks and balances to ensure that unreliable results are not applied in a mechanistic way. For instance, side constraints (limitations on maximum annual percentage increases or decreases) could be applied to reliability targets derived from VCR data.

The AER would be pleased to provide further assistance to AEMO on this area of work. If you would like to discuss any aspect of this submission please contact Jess Hunt on (08) 8213 3441.

Yours sincerely

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