



Australian Energy Regulator

Value of Customer Reliability (VCR)

Comments on the Consultation Paper

Submission by

The Major Energy Users Inc

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The content and conclusions reached in this submission are entirely the work of the MEU and its consultants.

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Executive Summary

The review by AER of the Value of Customer Reliability (VCR) is occurring against a backdrop where the costs of electricity in the NEM are widely recognised as way too high and that network charges are excessive. One of the reasons given by the ACCC is that these high network costs are a result of inappropriate reliability standards being set by some governments. As VCR is predominantly used to justify augmentation of networks, setting a VCR that is unnecessarily high will continue to increase network costs.

The previous approaches used by AEMO in Victoria and by regulators in other NEM jurisdictions resulted in VCRs that were too high. The most detailed assessment of VCR in the 2014 AEMO review resulted in VCRs that were much lower than previously thought resulting in VCRs much closer, but still higher, than those used overseas.

As VCR is not a tool used by consumers to signal a reduction in demand but by networks in the assessment of network augmentations, the MEU considers that stronger pricing signals for consumers are necessary to moderate their demand when there is increased network congestion. This will put downward pressure on the need for network augmentation.

VCR is a very blunt tool and, being an average, needs to reflect the reality of how consumers use their electricity over time, and not just focus on the costs that occur if an outage occurs at the worst time for each consumer. It needs to be remembered that the VCR does not reflect the needs of each consumer in a region all the time but is an aggregate that reflects the broad consumer base in the region that the VCR is calculated for.

VCR should not be used for any other purpose than assessing network augmentations. There are other measures that can be developed for the wholesale market, HILP events, planned outages and network cost allocation.

Notwithstanding the qualifications surrounding the MEU views on assessing VCR, the MEU considers that there needs to be a consistent approach to evaluating the benefits of augmentations. This means that the **cost** of developing the best approach for assessing VCR should not be a primary concern and should be seen in context with the costs that consumers will face if the approach delivers an inaccurate value, either in terms of not having sufficient augmentation or from the costs of over-investment.

1. Introduction

1.1 About the MEU

The Major Energy Users Inc (MEU) represents some 20 large energy using companies across the NEM and in Western Australia and the Northern Territory. Member companies are drawn from the following industries:

- Iron and steel
- Cement
- Paper, pulp and cardboard
- Aluminium
- Processed minerals
- Fertilizers and mining explosives
- Tourism accommodation
- Mining

MEU members have a major presence in regional centres throughout Australia, e.g. Western Sydney, Newcastle, Gladstone, Port Kembla, Mount Gambier, Whyalla, Westernport, Geelong, Launceston, Port Pirie, Kwinana and Darwin.

The articles of the MEU require it to focus on the cost, quality, reliability and sustainability of energy supplies essential for the continuing operations of the members who have invested \$ billions to establish and maintain their facilities.

1.2 The MEU view on reliability

MEU member companies' main objective is to promote access to long term, sustainable and competitively-priced energy (electricity and gas) supplies. We have identified a key interest in the **cost** of energy supplies (commodity, network services and transactions costs) as this represents a significant cost element in each member's business operations.

Although electricity and gas are essential sources of energy required by each member company in order to maintain operations, a failure in the supply of essential energy supplies will cause every business affected to cease production and/or suffer loss. Thus the **reliable supply** of energy is an essential requirement of each member's business operations.

With the introduction of highly sensitive equipment necessary to maintain operations at the highest level of productivity, the **quality** of energy supplies has become increasingly important, with the need for a focus on the performance of the transport networks.

Each of the businesses represented by the MEU has invested considerable capital in establishing their operations and in order that they can recover the capital costs invested, long-term **sustainability** of energy supplies is paramount. If sustainable supplies of energy are not available into the future, investments made by energy users quickly lose their value.

Accordingly, the MEU has a keen interest in addressing issues that impact on the **cost, reliability, quality**, and the long term **sustainability** of member companies' electricity (and gas) supplies.

The MEU and its members recognise that reliability used in relation to electricity supplies is a combination of many elements. Consumers of electricity see the impact of the reliability of the electricity system as comprising reliability of the generation supply, the transmission system and the distribution networks. While each element of the supply chain has its reliability assessed in different ways, the MEU considers that decisions on reliability measures must be made in relation to the overall reliability of the supply chain., and in particular, taking into account the cost and benefit to consumers of any decision made in each element.

In terms of network reliability, there are two core aspects that must be addressed. The first is in relation to the performance of the existing assets and this is measured and assessed by the various network businesses (and the AER) on a continuing basis. The second is in relation to the augmentation of the networks so that the capacity of the networks reflects the changing demand made by consumers. It is this second element where the AER attention to valuing customer reliability is focused in this analysis.

As the value of customer reliability used in assessing network augmentations can lead to higher network costs for all consumers, it is important to recognise that consumers are already concerned at the rapidly escalating cost of electricity supplies.

1.3 The MEU view of the market as a whole

Consumers are already seeing electricity costs have risen to extraordinary high levels with all three of the key elements (wholesale market, network costs and retail costs) all contributing to the increases seen over the past decade.

In particular, it has been observed that the impact of excessively high reliability standards set by some state governments has had a significant impact on the massive increase in investment in networks. As a measure of this investment, the regulatory asset base of all electricity networks has more than doubled in the past decade while, at the same time, the growth in

demand has been relatively flat and consumption has fallen. The reliability of the networks has improved marginally but utilisation has fallen by nearly 50%.

This reality has driven costs for networks to very high levels and the only aspect that has tended to limit the network price rises has been a reduction in the cost of capital. As the cost of capital returns to more normal levels, consumers will be hit even harder by the cost of providing network services.

At the current levels for the cost of electricity, the willingness to pay for network services (and indeed other elements of the supply chain) has fallen to low levels, as consumers are advising that they do not want to pay more for increased reliability and that they need to see the cost of electricity services fall significantly, while maintaining the same level of reliability.

As the AER progresses with its review of the value of customer reliability (VCR), this salient issue of willingness to pay must be kept as a top-of-mind concern.

The MEU has noted over the years that there is a consistently expressed view by governments and particularly by networks, that the VCR needs to be increased. The views of both are self serving – governments see that increased reliability provides evidence that they are responding to consumer concerns and are taking actions and network owners expand their networks, increasing the Regulatory Asset Base (RAB) and thereby increasing their returns. Yet neither of these parties actually pay for the service provided and are able to point out that the increased costs are an outcome of the regulatory process rather than caused by them.

In its report from its retail electricity pricing enquiry, the ACCC makes the same point – that the cost structure of the networks is too high (such that the RABs should be reduced) and that actions in setting the levels of reliability by governments had resulted in excessive and unnecessary investment.

A fundamental question that has to be asked as part of this AER review is: Will any increase in VCR result in a real benefit that consumers will “see” at their point of supply, or will it just increase the cost of providing the transmission and distribution networks?

The MEU considers that the approach used by AEMO in 2014 delivered outcomes for VCR that provided a good balance between reliability outcomes and a willingness to pay.

1.4 Views on VCR and its development

The AER makes a very sound observation (page 9):

“There is no single VCR, rather for every customer their individual VCR may vary with circumstances of the outage:

- the duration of the outage (for instance, fifteen minutes, one hour, one day, one week)
- the timing of the outage (for instance, during the middle of a weekday, early in the morning on the weekend)
- the extent of the outage (for instance, localised to a block, a suburb, or the entire state)
- the season the outage occurs in (for instance, summer or winter)
- the frequency of the outage (for instance, one prolonged outage, or a series of short outages)”

The MEU would add that even a single customer will have different VCRs depending on what the electricity is used for. Further, consideration is needed as to whether the loss of supply results in a loss in funds or whether the outage results in a loss of comfort are also important. The MEU considers that, as discussed in section 1.6 below, whether the costs incurred from a loss of supply event are dependent on the notice a customer has prior to the loss of supply¹.

But what the AER overlooks is that the AEMO work also identified some other very critical aspects that arose out of the comprehensive analysis they undertook – that the larger the business customer, the smaller the VCR, with the extreme that very large customers (ie directly connected to the transmission network or at subtransmission level in distribution networks) had a VCR that was perhaps a tenth of the VCR applying to small business activities. The MEU considers that, amongst other issues, this is possibly a reflection of the better understanding that larger customers have of their operations relative to the electricity market and the implications on costs on reliability of supply. This aspect needs consideration by the AER.

Further, discussions the MEU has had with its members highlight that electricity usage has no single use – that different parts of their operations are more critical than others. Implicit in the questioning of customers is that the loss of supply will be total; in practice, end users have different parts of their usage that have the ability to “ride through” a loss of supply (eg cold stores, refrigerators). This highlights that VCR is a very blunt assessment because, as discussed in section 1.6 below, providing a price signal for a need to reduce demand provides a better approach than a very high VCR based on what customers see is the worst case.

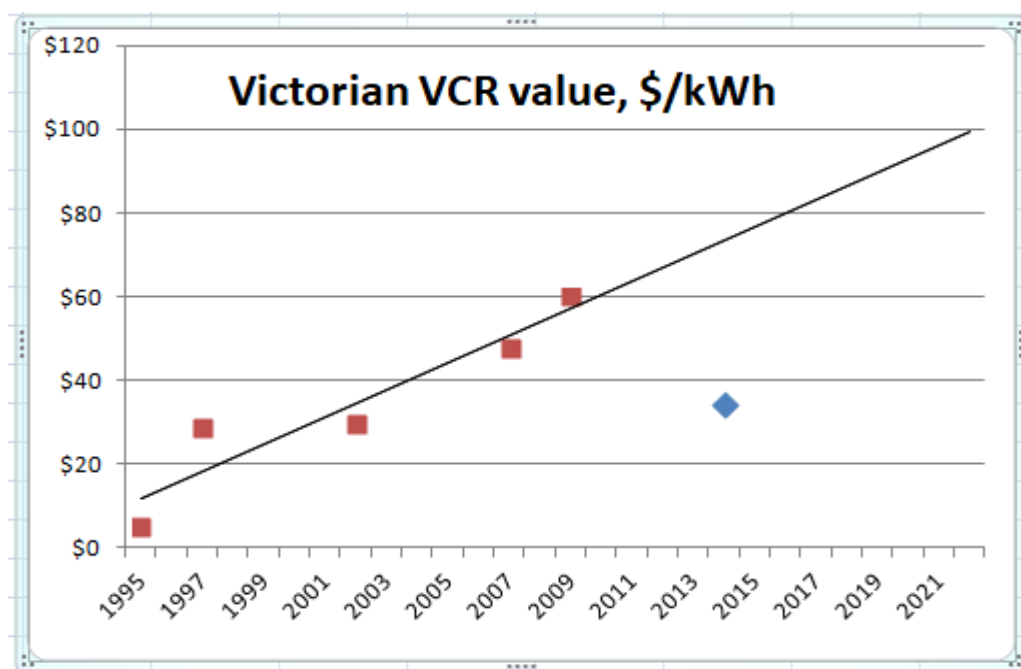
The MEU sees that the major risk in developing a VCR is whether it is based on the loss that occurs at critical times (eg, a dairy farm has a high exposure to loss if the outage occurs at milking time but very much less so at other

¹ Implicit in the AER observation is that the loss of supply occurs with no notice, yet if there is notice, the loss incurred by the consumer might be mitigated.

times) and a loss at a critical time becomes the over-riding concern and therefore impacts the estimate of the cost of an outage.

The MEU considers that an estimate of VCR needs to reflect reality that across the NEM networks are providing increasing reliability under the current levels of VCR, that utilisation of networks has decreased markedly and the RAB for networks has doubled in the past decade. All of these indicators imply that the current levels of VCR as determined by the 2014 AEMO review are more than those required to ensure that needed network infrastructure occurs.

The VCR concept has been used in Victoria for many years and it is worth considering the trend of Victorian VCR estimates over the years. The following chart shows this change over time clearly.



Source: MEU based on VENCORP/AEMO data

The chart shows that under the previous approaches to estimating VCR, at the 2014 review, it might be expected that the Victorian VCR should be about \$70,000/MWh yet the comprehensive approach by AEMO resulted in a VCR at about half this. More analysis indicates that for nearly 15 years, the VCR had been climbing yet that rate of change is not supported by any growth factors extant in Victoria to explain why VCR had climbed so much over time. The MEU considers that it was the simplistic approach used by VENCORP/AEMO over time that led to such massive increases. In contrast, in 2014, AEMO used the most intensive analysis undertaken to that time to set VCR and this demonstrated that previous estimates were grossly overstated. This was reinforced by international comparisons at the time.

Table 3 Comparative estimates of the VCR (2009 AUD/kWh)

Region	Sectors	Source	Original Value	Year	AUD/kWh
Sweden	Residential	Carlsson and Martinsson (2008)	kr 61.16	2004	13.00
Chile	Industrial	Serra and Fierro (1997)	\$US 0.22	1989	0.49
Indian States	Industrial	TERI (2001)	Rs 24.71	2001	1.35
Thailand	All	ERI (2001)	60 Baht	2000	3.22
France	All	Gouni and Torrior (1988)	\$US 3.60	1988	7.96
NE USA	All	ICF Consulting (2004)	\$US 4.11	1977	15.84
New Zealand	All	Electricity Authority	\$NZ 20.00	2008	17.22
Netherlands	All	de Nooji et al. (2007)	€ 8.56	2001	17.98
Great Britain	All	Redpoint Energy and Energy Strategies (2007)	£ 10.00	2006	26.09
Ontario	All	Bhavaraju (2004)	\$US 10.00	1980	33.00
NW USA	All	Bhavaraju (2004)	\$US 16.93	1990	36.57
Ontario	All	Wacker and Billington (1989)	\$US 17.00	1989	37.58
USA	All	Sullivan (2009)	\$US 33.01 ⁹	2008	37.63
Ireland	All	Tol (2007)	€ 40.00	2005	76.39

. Source: AEMO 2011 Issues Paper on VCR

This table of international comparisons highlights not only that the VCR numbers are now closer to international standards, but that VCR is considered to vary little over time.

What the 2014 work by AEMO also shows is that simple approaches to setting VCR are wildly inaccurate and VCR needs a detailed and exhaustive study to ensure the most appropriate outcome is achieved.

1.5 Other uses of VCR

The AER posits that the VCR could be used more widely than just for regulation of networks, which is its current primary purpose. The MEU is very concerned that a tool designed to assess the needs of investment in long term assets (ie networks) could be used for more short term needs. The AER suggests that it might be used for.

- Load shedding priorities
- Price cap on ancillary services in the wholesale market
- Use in the development of the Reserve and Emergency Trader (RERT)
- High impact low probability events
- Scheduling of planned outages
- Cost allocation of services

The MEU does not consider that a tool designed for assessing long term investments should be formally used for assessing short term operational

impacts in networks nor should it be used for aspects of the wholesale market which already has its own set of tools and values for managing that market. The MEU considers that inappropriate use of tools drawn from one market to be applied in another, has the potential to drive costs higher. It needs to be remembered that we are already seeing massive cost rises in both the network arrangements and the wholesale market under the current arrangements.

For example, while VCR and the market price cap (MCP) in the wholesale market have some similarities in purpose (in that the MPC is to set a value which is supposed to just incentivise new generation without providing an over incentive), to increase MCP to the current VCR would have a massive impact on a wholesale market that is already under significant stress and experiencing very high prices. To reduce VCR to the single value used for MCP to predicate new network investment does not appear to be sensible or reflect the realities outlined above, that there are be different VCRs for different consumers at different times.

The MEU is aware that reliability in the wholesale market is very high as is reliability of the transmission networks. It is clear that the major cause of the loss of supply to consumers is from the distribution network outages, particularly the deeper the customer is in the network². To impose reliability standards seen in wholesale and transmission might result in excessive costs in distribution.

The MEU considers that the VCR should be used just for the purpose of assessing the development of long term network investments.

1.6 Sending price signals

The NEM is designed to operate under incentive based regulation. From a consumer viewpoint, the incentives are provided in the form of pricing signals – the higher the price the greater the incentive to use less. Setting a high value for VCR for network investments clouds the use of price signals to change behaviour. This is because the VCR is not a value that consumers see or can use, but which is used primarily by networks to justify new investment.

What has been seen is that in recent years³ some networks have been active in discussing issues of network constraints with their customers. The low utilisation rates seen in the networks coupled to high reliability demonstrates

² As noted earlier, implicitly AEMO identified that subtransmission customers of distribution networks (larger consumers) have a lower VCR than those connected at low voltage (small customers)

³ Particularly since the AEMO 2014 report

that for only short periods of time networks are constrained⁴. As a result of this, many customers are prepared to load shed some or a large part of their electricity usage for agreed periods of time providing they have some notice of the need to load shed, and get some recompense for the load reduction. What this highlights is that assessments made of VCR need to reflect on the notice period a customer has when a loss of supply is likely. This introduces another element of the searching for inputs to an appropriate VCR – what would be the cost to a customer, if the loss of supply had a notice period⁵.

The MEU notes that the publishing by AEMO of expected wholesale prices in the future allows consumers to make plans for a potential loss of supply but more commonly to assess whether the price for electricity in the coming hours could be higher than the costs of their production, incentivising plans to reduce electricity demand. If there is a similar ability for a customer to plan a reduction in usage, it is likely there would be a reduction of the costs they incur for loss of part of their supply.

The introduction of a high value of VCR does nothing in relation to providing signals to consumers to use less. Effectively, the VCR calculated by AEMO is derived from observations and calculations from data provided by consumers as to the cost impacts of a total loss of supply. In general, the highest cost is used as the basis of the calculation. But this high value may be totally inappropriate for many other consumers.

The consultation paper does not identify that there are degrees of reliability which vary with the type of plant affected by loss of supply, which is evident with consumers that do use strong price signals to modify their usage pattern⁶.

The current approach to VCR development or use does nothing to assist in providing signals to consumers to lessen demand when supply is congested but makes the assumption that all demand has the same value. This is reinforcing a fundamental anomaly in an electricity market based on incentives.

1.7 The NEO and network principles in the Law

The National Electricity Law is specific that changes to be made to the Rules and their application (such as setting and changing VCR) needs to be

⁴ It is widely accepted that this is primarily a result of airconditioning loads.

⁵ The MEU Notes that networks commonly give up to 24 hours notice for a programmed load shedding requirement, with a limited duration and a limit on the frequency that load shedding will be called in a year.

⁶ The MEU notes that its members do vary their demand based on the wholesale price of electricity

examined in terms of the National Electricity Objective (NEO) and the six revenue and pricing principles for networks.

The consultation paper makes little reference to the NEO or to the pricing principles, yet the VCR has particular application that impinges on these requirements.

Firstly, the NEO is quite specific that the long term interests of consumers must be addressed in terms of price and reliability. There is no doubt that increasing reliability (by increasing the VCR) will increase the price for networks, so AER must examine the issue of VCR in terms of the price consumers are willing to pay as much as on reliability.

Secondly, the revenue and pricing principles make specific reference to over and under investment in networks, and over and under utilisation of the networks. There is no doubt that a higher VCR will result in more investment and more investment could well result in lower utilisation of the networks.

1.8 Summary

Consumers are concerned at the trend of regulators and rule makers to assume that higher electricity costs are needed when examining specific elements of the supply chain but fail to recognise that by examining a specific issue, they have not addressed the issue on a holistic basis, in context with other aspects of the supply chain.

The previous approaches to setting VCR appear to have resulted in a very high value when compared to international benchmarks. The more intensive approach implemented by AEMO in 2014 resulted in values more comparable to those seen in overseas jurisdictions. But by setting a single value for VCR, this does not take into account of the wide variety of values for reliability that actually do apply.

VCR has been set without reference to what better outcomes might eventuate should stronger pricing signals be provided to consumers. It has also not been addressed in reference to the Electricity Objective or the revenue and pricing principles for networks

2. AER Assessment of Customer View of Reliability

As noted in section 1, large customers of electricity view reliability of supply from the standpoint of reliability across the electricity chain, i.e. reliability of generation, transmission and distribution.

Major customers of electricity have invested very substantial sums in equipment, and reliability of supply – even over short periods of time – is critical for their efficient operations. As they use sensitive and sophisticated equipment and adopt sensitive manufacturing and production processes, frequency dips, momentary loss or volatile electrical services, can cause damage to their operations. So, reliability of supply is very important, yet these same customers are prepared to load shed for significant parts of the operations when prices are high.

Major customers of electricity report from experience, the following:

- Reliability issues, such as supply interruptions, occur mostly at the distribution end of the electricity chain.
- In the event of supply interruptions, major users of electricity are generally the first to be called on to reduce supply in preference to involuntary load shedding.
- The rate of electricity demand increases continues to exceed the rate of increase in consumption, causing “needle” peaks in demand – peak demands being caused predominantly by air conditioning. Despite this, **all** customers are being charged for network augmentations irrespective of whether they have been responsible for the increase in demand
- There are little or no pricing signals to manage demand from the main causers of the needle peaks which, in turn, creates the need for network augmentation to accommodate these needle peaks.

All users of electricity have many different operations within their facilities such that some elements can be load shed more readily than others. This results in different values for VCR for the different elements even for the same customer class. At the same time, there is a risk that the VCR will be set based on the most critical time for the customer and therefore results in a VCR which is higher than needed.

VCR is a very blunt instrument as, in reality, there is no real single VCR for a network, it being reflective of different uses made of electricity, time of loss, duration and many other factors. VCR is not a value that consumers can use as a price signal to reduce demand and is really needed only by networks as a guide on which to augment the electricity network. It is because of this that VCR needs to be an average value and only used for assessment of options for network augmentation.

It needs to be remembered that the VCR does not reflect the needs of each consumer in a region but is an aggregate that reflects the broad consumer base in the region that the VCR is calculated for

2.1 Concept of the Value of Customer Reliability

From the previous section, it would be clear that different customers are differently impacted by the loss of supply either from the standpoint of prices charged, but also in the incidence of service interruptions and queuing of parties to be switched off before others.

Even the same customer has differing VCRs for different parts of its load (eg a glass manufacturer might have some of its load being essential (just to keep liquid glass flowing – implying a high VCR) but other parts of its load are less critical and therefore would have a lower VCR. How to address this, if all is assumed to be at high VCR then assets will be built that might not be needed for a high proportion of the time or the network limitation could be accommodated in another way (eg load controls at peak demand times).

Major consumers also have different experiences and values placed on avoiding service interruptions. Those consumers that are able to demand manage and/or are able to switch to alternative fuels will have a different set of values placed on service interruptions, as well as a sliding scale of values based on the duration of the interruptions. There are also major consumers with on-site generation that will have different values of VCR.

The MEU agrees that there is **no easy way** of estimating VCR, let alone ranges of VCR. Yet if a high VCR is used for all supplies, then the outcome will be over-investment and increasing under utilisation of the networks.

Equally, those consumers who do have the ability to manage their demands are still required to contribute to the network costs resulting from the actions of those consumers who cannot or will not manage their needs and therefore appear prepared to pay a premium for their supplies. This means that equity is being ignored in preference to simplicity.

2.2 Dimensions of the VCR

The primary use for the VCR is as a guide for network augmentation, but as noted earlier, even for a single user, there are different values of VCR to reflect the differing uses (and therefore the priority) a single consumer has for electricity at the same time.

The MEU considers that before the AER can determine a single value for VCR, there have to be stronger price signals provided in the provision of network services to consumers so they have the ability to modify their usage.

At the same time, giving notice that a supply shortage is imminent, allows a consumer to reduce its demand potentially eliminating the supply shortage forecast.

Once stronger price signals are provided to reduce demand, then it will be apparent that the remaining demand is considered to be “essential” and thereby attract the highest value for reliability. Based on such outcomes, a value that is set on that basis will be inefficient as it will reflect a higher value for significant portions of demand than should apply.

As noted above, a too high a value for VCR will result in over-investment.

Already, the MEU is aware that some networks are assessing their own values for VCR and applying these to substantiate network augmentations⁷. One of the distinct benefits of having a widely based VCR is that it can be used explicitly without attempts to bias an outcome. If specific customers (eg those in the CBD) want to have increased reliability, they should pay for this directly and not expect other consumers to contribute but gain no benefit.

2.3 Consumer Characteristics

Consumer activities and therefore the costs of electricity outages vary among different types of consumers depending on a range of reasons (see section 1.4). Further, they are also likely to vary widely between different locations and therefore between different regions of Australia⁸.

As noted above, the reliability of supply for some consumers could be more readily managed by providing signals to other customers so they reduce usage at times that would otherwise result in a need for more investment. To assess the VCR in the absence of price signals that consumers can use for better management of their demand could result in an overstated VCR, with the attendant issues that arise from that.

Also as AEMO accurately put in its 2014 review process,

⁷ The MEU is aware, for example, that Ausgrid attempted to set its own value for VCR for the Sydney CBD. The VCR used was appealed by the EUAA on the grounds that it was significantly higher than what had been developed by AEMO in 2014. The MEU points out that if this occurs, the users in the CBD would be gaining a benefit of even higher reliability but funded by other users in Ausgrid's network.

⁸ For example, rural electricity customers in more remote locations may be more accustomed to a lower level of reliability than urban customers, and therefore better prepared to cope with an outage when it occurs.

“...it is important to consider the weightings that should be applied to individual costs when aggregating costs for a sample of consumers with differing characteristics. For an aggregate measure of economic damage, care should also be taken to exclude costs that are essentially transferred from one electricity consumer to another. For example, a single enterprise may lose sales during a local blackout at the expense of other similar enterprises that did not suffer from the same blackout. Social costs that are not captured by individual survey responses also need to be included. For example, the increased inconvenience for stranded commuters or an increase in accidents or theft due to darkness.

Where there are pricing signals to incentivise consumer actions, it is clear that the value for load varies with the plant type involved, even for the same consumer. This aspect is noted in section 1 above.

Whilst the above demonstrates the complexity of seeking to estimate VCR, VCR does not readily relate to an incentive regime where the optimum outcome can be achieved. Better pricing signals are essential.

An example of better pricing signal is related to a consumer with self generation. Self generation provides a consumer with a degree of independence from grid provided supplies. However, most self generating consumers use the grid for back up purposes. Under the current approach to pricing, a consumer that uses the grid at any time is charged for the use of the network as if that demand applied all the time. A pricing signal to such a consumer to encourage them to use the grid at times of low demand (eg mid season, at night and at weekends) utilises unused capacity on the network. But the current pricing approach used for network services makes little or no distinction in relation to the time that the network is used.

If a change was made such as this, it would improve load factors on the networks and encourage better utilisation. This would reduce the need for surplus capacity on the network and would make the value of VCR more appropriate to the real need for augmentation.

2.4 Measurable Outage Costs

The MEU acknowledges that measuring outage costs is a very difficult task, and is dependent on good survey techniques and a commitment of consumers to be rigorous in the costings. It also needs a wide understanding of the causes of why demand by consumers can vary. In this regard, there is a failure to recognise that the task in developing an appropriate value for VCR is made more complex due to the lack of price signals to consumers to modify their behaviour.

If pricing signals were well developed and reflected the actual needs of consumers such that their behaviour was modified to reflect their actual costs, then the value of VCR would only need to be that which meets those needs where the consumer costs for loss of power were at the maximum value.

2.5 High impact, low probability events

The AER seeks view on whether the VCR should include the effects of long term high impact low probability (HILP) events.

The MEU considers they should not. The VCR is primarily there to provide an ability to base an assessment to augment the network and manage the demands that normally occur. To design the network to manage HILP events would impose massive costs on consumers.

For example, a HILP event would be akin to the Black Saturday bushfires in Victoria or a cyclone of the strength of Tracey in Darwin in 1974. One of the solutions proposed to overcome the impacts of these events is for the networks to be under-grounded. Already, such a cost has been discounted for very valid cost reasons. To develop a VCR for events such as would be seen (say) once in 50 years, would impose costs on consumers that would greatly outweigh the benefits of the investment.

After all, the HILP event may never occur yet the cost to prepare for it will be significant!

2.6 Frequency and timing of recalculating VCR

AER posits questions as to the frequency and timing of VCR reassessments. Yet the analysis provided of the VCR calculations made for overseas jurisdictions seem not to support that such regular review is needed.

There are five elements that need to be addressed – cost, methodology, frequency, timing, and adjustment between assessments.

Cost: It is more important to get the correct answer than to get an incorrect answer. This means that at a high level, cost to develop the VCR is less important than ensuring the right answer is provided. Too high a VCR, consumers will pay for the next 40 years or more for assets not needed, but too low a VCR, then consumers will pay for loss of supply.

Surveys are needed to best understand the needs and desires of consumers and their preparedness to pay for reliability. This view is essential as the final value(s) of VCR used to substantiate

augmentations can result in very high costs for consumers, recognising that consumers pay well over 95% of all network revenues.

The AER should provide an estimate of the cost for the surveys to demonstrate that there is a benefit to consumers that outweighs the costs of the surveys proposed.

Methodology: There is no doubt that the methodology will impact the results, and the methodology must incorporate the fact that consumers do vary the way they use the networks if they are provided with strong pricing signals. Unfortunately, the network pricing approaches used in each region vary and therefore the price signals also vary. This fact alone highlights that the results will vary with the region and the methodology used in each region.

As AEMO has the primary role for the national Transmission Planner is to assess the need and business case for inter-regional connections⁹, continuity of approach between regions becomes critical. On this basis, in order to carry out its NTP function properly, there is a need for a standardised national approach to transmission augmentation.

Frequency: AEMO used to review its Victorian VCR on a five year cycle, and in its 2014 process, suggested that a 10 year cycle would limit the overall cost. As the assessment of VCR in overseas jurisdictions appears to be done on a once or twice basis only, the MEU questions why the AER would see the need for more frequent assessments.

Timing: As noted above the MEU queries the need for frequent VCR surveys. Regular surveys imply that there is an expectation that the results of each survey will be significantly different from the one carried out a few years previously. This concern does not seem to be replicated in overseas jurisdictions. But in Victoria such frequent surveys have resulted in a continuous upward trend in VCR, despite the fact that consumers have barely changed their usage of electricity. That such large changes in VCR have been calculated within such short periods of time indicates that a robust methodology even if more costly is more important than frequent assessments.

Adjustments: Consumer costs which underpin the VCR are widely assumed to move with the consumer price index. Equally, the assessment of the VCR is very approximate so to adjust the VCR annually based on CPI implies a level of accuracy inconsistent with the process for developing the number. The MEU considers that as each

⁹ It must also be recognized that to make best use of inter-regional connectors, the networks deeper in each region also have to have the capacity to manage the inter-regional flows that the interconnector can carry

electricity network has a regulatory period of five years, a fixed VCR should be established for each region's regulatory period, but derived from the earlier VCR assessment, adjusted by CPI. This provides recognition that consumer costs do change over time, but that the VCR is an approximation only.

2.7 Summary

In most ways, the AER has identified the aspects that consumers consider influences the reliability for power supplies, although when strong price signals are present it has been seen that consumers significantly modify their usage of power. In particular, these price signals show that the reliability of supply varies with the actual usage the consumers have for their power.

It is clear that the value for VCR used in Victoria was considerably higher than used in overseas jurisdictions and the rapidly increasing values for VCR appear to be at odds with the a much lesser change in consumer usage patterns. At an annual increase of 10%, the earlier methodologies used by AEMO probably resulted in an overstatement of VCR. This coincides with the comparisons with VCRs in overseas jurisdictions which consistently show a lower value for VCR than the Victorian estimate. The 2014 review supports this view as it delivered significantly lower values for VCR than the earlier AEMO estimates.

The approach used by AEMO in 2014 was much better and more comprehensive than the methods used previously and the outcome shows this. Equally, the MEU still considers that a better understanding of what consumers actually experience is critical and the MEU has provided views on how these experiences could be better implemented in the VCR process. In particular the MEU considers that better signals for network congestion need to be provided as this will impact the VCR.

There needs to be consistency between regions in assessing the benefits of augmentation and MEU considers that having a National Transmission Planning function requires consistency in approach to valuing augmentation benefits.

The MEU considers that VCR needs to be assessed much less frequently than the 5 year cycle used by AEMO.

Notwithstanding the qualifications surrounding the MEU views on assessing VCR, the MEU considers that there needs to be a consistent approach to evaluating the benefits of augmentations and that the cost of deriving the best approach should not be a primary concern and should be seen in context with the costs that consumers will face if the approach is incorrect, either in terms of not having sufficient augmentation or from the costs of over-investment.

3. Responses to AER questions

The following responses are short and the sections above provide a greater understanding as to the reasoning behind the response.

#	AER question	MEU response
1	How might the wholesale market price cap be informed by VCR?	It shouldn't
2	What customers and outage scenarios should be considered when deriving applicable VCR values to inform the wholesale market price cap?	
3	Should VCR inform load-shedding priorities for services other than essential services, and if so, how?	No. Load shedding already is addressed under the RERT and applied to large readily managed consumers that have the ability to load shed
4	What customers and outage scenarios should be considered when deriving the VCR values considered when establishing load-shedding priorities?	
5	Should VCR inform a price cap for ancillary services such as NSCAS and FCAS, and if so, how?	No
6	What customers and outage scenarios should be considered when deriving applicable VCR values?	VCR should only apply to network augmentations. See comments above
7	Should VCR inform a price cap for RERT, and if so, how?	No
8	What customers and outage scenarios should be considered when deriving applicable VCR values?	See comments above
9	Should the AER determine a VCR for prolonged and extensive outages envisaged by System Black and HILP events?	No
10	Should VCR be used to inform scheduled planned outages, and if so, how?	No
11	Should the AER determine additional VCRs for planned	No

	outages?	
12	Should VCR values for different customer types also inform the allocation of distribution and transmission shared costs among customers, and if so, how?	No
13	Are there any other regulatory investment assessments and/or NEM planning contexts that could be informed by the application of VCR values?	VCR should only be used for assessing the merits of network augmentation
14	If so, what customer and outage scenarios should be considered when deriving applicable VCR values?	
15	For what purposes do you currently use VCR? Is the current level of VCR segmentation by customer type and outage scenarios in AEMO's 2014 review fit for your purposes?	VCR is the measure against which to assess the value of network augmentation. The MEU considers the 2014 AEMO review process adequately provides the basis for this purpose
16	For what future purposes could you use VCR? What level of VCR segmentation would you require?	None
17	Do you think the methodology used by AEMO to derive (CVS and CM for residential and business, and DCA for direct connect customers) is still appropriate, taking into account current and potential uses of VCR discussed in chapter 4?	The AEMO methodology is fit for purpose. The VCR should not be used for other purposes
18	If not, what other method or methods would be most appropriate to engage with customers and derive VCR values?	
19	Should different methods be used for different customer types?	No
20	Should multiple methods be used to cross check derived VCR values?	The risk of introducing other methods as checks has the potential to weaken the VCR determined through a detailed and comprehensive methodology. While checks are a useful tool in many other areas, such checks should have a similar rigour in

		their development to ensure that the comparator has a similar standing to the primary methodology
21	What levels and categories of segmentation in VCR values are useful to you, taking into account the trade off between accuracy and required survey respondents and resources?	The AEMO approach provided a reasonable balance between cost and accuracy. To overcome the imposition of significant time usage provided by respondents, consumers could be paid to ensure that each consumer provides accurate information. It needs to be recognised that a survey uses a limited number of respondents in each class to act as a surrogate for the many consumers not consulted, strengthening the need to ensure the surveys deliver accurate information.
22	Are there particular customer types, categories, sectors etc. that are critical to focus on in this review and any surveys we conduct?	The MEU considers that the AER should identify relatively broad classes of consumer to ensure that the outcome is as representative of that class as possible. Attempting to pre-select certain consumers to provide information can lead to unintended outcomes.
23	What categories of segmentation do you consider necessary as being likely to drive variation in values of customer reliability?	The MEU is aware that even customers of the same class and doing much the same activity can have different VCRs and that the same customer will have different VCRs for each of the various processes they use. To overcome any inherent bias, there should be multiple respondents for each class and the outcomes averaged. To limit the time and cost, this would mean that broader classes are needed than seeking to segment to much
24	What categories of segmentation do you consider unnecessary as being unlikely to drive variation in values of customer reliability?	If segmentation is made too widely (ie too many segments) this could lead to a conclusion that one of more segments can be disregarded. This is not equitable. The needs of all consumers should be considered to be important, and this can be achieved by having fewer segments but all being representative of the

		consumers in that segment. The total of users in each segment should equal the numbers of consumers in that region. Weighting of outcomes for each class should reflect the electricity usage of that class
25	What level and categories of segmentation in VCR values can be utilised, given the level of detail and segmentation present in customer data and data sets to which you have access?	As AEMO identified, segmenting the customer classes to the extent they did, allowed a relatively easy conversion to address the weighting of each customer class to be applied to many different regions, resulting in VCRs for each region appropriate to the mix of consumers in each. Increasing the segmentation increases the complexity in calculating the VCR for each region but this would not necessarily increase the accuracy of the outcome.
26	What outage scenarios should be included when surveying customers to establish a CDF?	
27	Are there particular outage characteristics that are critical to focus on in this review and any surveys we conduct?	Attempting to be too specific on outage characteristics will make the assessment less representative. Essentially, as VCR is used to assess new network augmentations, it is the degree to which a consumer is likely to lose supply and the costs that result from the outage that are critical.
28	What outage characteristics do you consider necessary to include as being likely to drive variation in values of customer reliability?	All outage characteristics have an impact on VCR, but each needs to be balanced against the cost impact of network augmentation
29	What outage characteristics do you consider unnecessary as being unlikely to drive variation in values of customer reliability?	None
30	What outage characteristics can be utilised, given the level of detail and segmentation present in customer data and data	

	sets to which have access?	
31	What method should be used to representationally weight affected segmented customer classes at the point of proposed investment?	<p>It needs to be remembered that the VCR is not exact but an average for each class of customers. There is a risk that attempting to allocate a VCR to a relatively small cohort of users could result in all consumers having to subsidise an investment that makes sense for the small cohort but where they don't carry to entire cost. Cost structures used by networks (and often imposed by governments) do not allow networks to have different network costs for consumers of the same class, regardless of their location or quality of the network infrastructure supplying them.</p> <p>The MEU considers that a region wide VCR should be applied rather than a VCR that might be argued applies to the small cohort</p>
32	Should different consumption information be used to weight VCR values depending on the nature of the outages being considered? For example, should average annual consumption information be used to weight VCR values when considering prolonged outages, and average peak consumption values be used to weight VCR values when considering short outages during peak periods?	<p>VCR is an average – it is not determinative and varies under many different scenarios. A single customer might have different VCRs for different parts of its operation depending on the use made of each plant element and the time of the loss (eg the VCR for the refrigerator in a household would be different to that of lighting during the day which is different again for lighting during the night).</p> <p>Equally two different consumers of the same class might have their main usage at different times of the day, and different usage at different times of the week</p> <p>So VCR will be based on an average and therefore average annual consumption should be the main weighting factor</p>
33	What datasets are available to accurately estimate the	

	probabilities of different outage scenarios occurring at the point of proposed investment?	
34	How often should the AER undertake reviews of VCR?	No less than every 10 years, but even less frequently as VCR should not vary much over time. See response in section 2.8
35	What mechanism(s) should be applied to adjust the VCR on an annual basis?	See response in section 2.8
36	Should smoothing techniques be applied when transitioning to newly derived VCRs?	See response in section 2.8