Major Energy Users Inc.

Australian Energy Market Operator

Value of Customer Reliability (VCR)

Comments on the Background Paper

Submission by

The Major Energy Users Inc

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The views expressed in this document do not necessarily reflect the views of the Consumer Advocacy Panel or the Australian Energy Market Commission. The content and conclusions reached in this submission are entirely the work of the MEU and its consultants.

A condition by the Consumer Advocacy Panel for making funding available to the MEU to provide this submission is a requirement imposed on it by the Ministerial Council on Energy.

This requirement is that this submission must be considered to be a draft until the MCE has the opportunity to review it for accuracies of fact. The MCE review will take two weeks and when MCE approval is granted, the MEU will advise the AEMC of any changes to this submission that are required by the MCE.

Until this requirement is fulfilled, this submission must remain as a draft, not be made public in any form, and must not be placed on the AEMO website

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Executive Summary

Review by AEMO of the Value of Customer Reliability (VCR) is occurring against a general expectation that electricity supply costs will rise by 100% in real terms over the next few years, resulting from the confluence of a myriad of factors, including steeply rising transmission and distribution network prices.

The current approach in Victoria in setting VCR appears to result in a very high value when compared to international benchmarks. Setting a single value for VCR ignores the wide range of values for reliability that is possible.

It also ignores investigation of likely better outcomes by providing the market with stronger pricing signals to consumers. Moreover, the issues have not been addressed in reference to the National Electricity Objective or the revenue and pricing principles for networks outlined in the National Electricity Law.

It is clear that the value for VCR used in Victoria is considerably higher than used in overseas jurisdictions and the rapidly increasing value for VCR appear to be at odds with the a much lesser change in consumer usage patterns. At an annual increase of 10%, the methodology used by AEMO probably results 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.

AEMO's Background Paper has failed to explain the processes used in other NEM regions for identifying the benefits of augmentation and whether these other approaches might deliver equal of better outcomes than by using VCR.

AEMO considers that because it currently assesses the Victorian VCR on a five year basis, then this same approach could be used to value VCR in the other NEM regions. The MEU considers that VCR needs to be assessed much less frequently, replicating the calculations of VCR in other jurisdictions.

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.

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 AEMO 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 rising very quickly, from a range of causes, such as:

- Generator market power (the AER has identified that Torrens Island Power Station in SA has market power when regional demand exceeds 2500 MW)
- Steeply rising transmission and distribution network prices – on average these will rise in real terms by ~50% over the next five years
- Implementation of the carbon emission reduction program (CPRS)
- Implementation of the 20% renewable electricity target (eRET)
- The indirect costs for network augmentation to meet the CPRS and eRET
- Myriad Federal and State Government 'greenhouse abatement' and 'energy efficiency' schemes.

Overall, there is a general expectation that electricity supply costs will rise in real terms by 100% or more over the next few years as a result of these changes.

This raises the fundamental question as to whether against an expectation of a doubling of electricity supply and delivery costs, consumers will remain content (let alone afford) to pay for the same reliability at an even higher cost level or would prefer a reduction in price but with perhaps a lower level of reliability.

A report by McGregor Tan[1] for ESCoSA in 2007 specifically addressed the issue of consumer preparedness to pay for improved reliability. This report quantifies the amounts consumers would be prepared to pay for improved reliability. This report showed very clearly that consumers are not prepared to pay more for increased reliability. The report specifically addressed the whole of the supply chain as consumers do not care where the supply problems occur, only that supply has ceased.

As AEMO progresses with its review, this salient issue must be kept as a top-of-mind concern.

1.4 Views on VCR and other reliability costs

In many ways VCR is related to the Market Price Cap (MCP) previously called Value of Lost Load (VoLL). Whereas MCP refers to the maximum price that generators can bid into the wholesale electricity market, it was originally derived as being the value of electricity at which point consumers would cease to take supply. Already, the MPC (or VoLL) used in the NEM is recognised as being one of the highest (if not the highest) in the world of electricity markets, and there are pressures to further increase its value.

Recently there was a recommendation to double the MCP from $10,000/MWh to $20,000/MWh. After much deliberation and consideration by the Reliability Panel, it was decided that the MCP should not be increased above $12,500/MWh (indexed to CPI) as the outcomes of setting a higher value would be quite perverse. The Reliability Panel decided that a higher value would be unlikely to provide greater incentive to invest in new generation (on the basis that MCP at $10,000/MWh had already proven to provide adequately for sufficient supplies to deliver an amount of unserved energy well below the target set. At the same time, the Reliability Panel recognised that increasing MCP could result in increased risks. On 30 April 2010, the Panel noted (page x of its report[2]):

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[1] McGregor Tan Research for ESCoSA "Consumer Preference for Electricity Service Standards", November 2007

[2] Reliability Standard and Reliability Settings Review, Final Report, 30 April 2010

> "The Panel considers that, given the way the NEM is developing, the continued ability of the current set of Reliability Settings to achieve each of these objectives is limited. In particular, the Panel is concerned that increases in the MPC may reach a tipping point beyond which the benefits of increasing the MPC and CPT do not offset the costs in terms of market risks".

The clear import of the review is that continual increasing of MCP (or VoLL) has a downside in terms of increasing market costs. Just as importantly, the Panel identified that an increase in MCP would increase the risks of operating in the market, providing increased barriers to competition and increased costs. These detriments need to be balanced against the benefits that will result from an increase in the value.

VCR is a value used by network businesses against which to assess whether an augmentation of the network would be seen by consumers as a cost at which they would prefer to see less reliability of transport of electricity. In some ways it is seen as the network equivalent of the MCP used in the wholesale market. Because of this apparent similarity, it is appropriate to recognise that a high value for VCR might result in detriments to consumers just as the high MCP has been identified to deliver to the wholesale market.

The value for VCR used in Victoria is some three times the recently set value for MCP and on this basis is a very high value. The Oakley Greenwood survey shows that it is the highest used anywhere in the NEM, although all regions had a VCR well in excess of the value of MCP.

The very fact that a high value is used for VCR, may result in more network augmentation than if a lower value of VCR was used. Put another way, the higher the value of VCR, the higher the network costs for consumers.

This raises the question: If a very high value is used for VCR, is there an increase in the reliability seen at the consumer's point of connection?

In its response to the Reliability Panel review of MCP, the MEU questioned whether the increase in MCP would be seen by consumers, bearing in mind that the reliability seen by consumers is at the end of the supply chain, as the generation supply reliability seen by consumers is influenced by the reliabilities of the transmission and distribution systems.

In its response the MEU commented:

> "The MEU is especially concerned that by focusing on USE and the market settings needed to achieve that level of generation supply reliability in isolation, the RP will be instituting such levels of supply reliability on the basis of costs incurred which, when taken across the entire supply chain, do not deliver value for the costs involved.

> For instance, the setting of USE of 0.002% means that the average consumer will not get supply for notionally 10 minutes each year. If the SAIDI for a network supply is 104, (as proposed by AER for ETSA urban supplies) this means that the network reliability provides a network USE of 0.02% and that the average consumer can expect to be off supply for 104 minutes each year. It would be false economy to look at reducing the generation USE by half as the impact would be minimal to the average consumer. Equally, if the cost to maintain generation USE at the nominal 0.002% is too great, then there is an economic argument to increase the generation USE as the slight loss in generation reliability will be insignificant overall, as seen by the consumer embedded in the distribution delivery system.
>
> Therefore as the direct and indirect costs[3] of the generation reliability setting are carried by consumers the MEU considers that the RP must examine its reliability settings in the context of the overall reliability of supply at the end of the supply chain, and not at a notional point well up the supply chain."

This view is just as important in the setting of VCR. VCR is the tool used by AEMO and other transmission businesses for setting needs for augmentation of the transmission network. Already the transmission networks have a much higher reliability than distribution networks, yet it is distribution networks that have the greatest impact on reliability as seen by consumers.

Just as the MEU noted in its response to the Reliability Panel, a small increase in reliability in the transmission network will have almost no impact on the reliability as seen by consumers, and therefore there is little value in increasing it, but a stronger argument that there should be consideration given to reducing it.

A fundamental question that has to be asked as part of the AEMO review is: Will an 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 networks?

1.5 International and national benchmarking

While the MEU sees that the Oakley Greenwood report rigorously addressed VCR in terms of the NEM, it did not look at VCR values used in other electricity markets, nor how these other markets calculated their VCRs. The AEMO background report does provide comparisons with values for VCR used in other countries. Overwhelmingly, the international VCR values are well below that used in Victoria.

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[3] The indirect costs are those due to increased volatility in the spot market, increased risks across the NEM, increased prudential requirements, and the impact of increased incidence in the exercise of generator market power.

The AEMO report does little to explain why there is such a massive difference between its values for VCR and those used overseas, other than to rationalise why they are much lower than the Victorian VCR. Rather than rationalising, it could well be that that the Victorian VCR is too high!

The issue of international comparisons has pertinence in other areas – whether there should be a national value for VCR or whether each region should have a separate VCR which addresses the unique circumstances for each region, based on, for example, the types of consumers in each region or sub-region.

It would appear from the AEMO report, that VCR is seen as more on a national basis than on a regional basis, lending support, at least prima facie, that a national basis should be used.

Due to the absence of any real examination of the need or benefits for a national VCR in the background paper, the MEU is unable to provide much input on the issue. This needs to be addressed by AEMO.

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.

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 in Victoria is derived from observations and calculations from data provided by consumers as to the cost impacts of the loss of supply. In general, the highest cost is used as the basis of the calculation. But it may be totally inappropriate for many other consumers.

The Background Paper and the Oakley Greenwood report do provide a good assessment of the challenges facing the setting of a VCR for differing type of consumers. However, consumers also provide some very strong indications as to how they use electricity to assist in this consideration. The MEU provides two examples of how consumers use electricity – one where there are price signals and one where there are no price signals.

1.6.1 No price signals

> It is widely recognised that the “needle” peaks in electricity demand are driven by air conditioning loads. The outcome of these needle peaks is that there is a need to provide generation for infrequent use and to size transmission networks to transport for these infrequent peaks.

Few consumers are directly connected to the transmission networks so almost all electricity is subsequently transported on the distribution networks.

Pricing signals in the transmission system are heavily biased to support occasional high but infrequent users. In most regions about 2/3rd of the transmission costs are the lower of a tariff based on demand or consumption. This means that the infrequent but high demand user, pays the bulk of its network costs related to usage. This is in spite of the fact that the size of the networks is related almost entirely to the peak demand on the system.

Likewise in the distribution system, the bulk of intermittent air conditioning load (ie in the residential sector) pays network charges only in relation to consumption[4].

As the main cause of the peak power demand is related to occasional very high demands, the pricing signals provided by networks actively mutes the signals to moderate demand.

Because of this the feedback provided by consumers tends to reflect a view that network charges are unrelated to the cost of reliability and the ability of a consumer to modify its behaviour to reflect the cost of its supplies. Accordingly, most consumers do not rationalise between the various applications they use electricity for.

1.6.2 Strong price signals

In contrast to the feedback consumers generally provide due to the lack of understanding of the market and the absence of price signals, there are some consumers that operate in the spot market. Analysis of the way these consumers operate with the strong price signals provided by the spot market provides an interesting outcome that has direct application to assessing VCR.

Examining the internal protocols for load shedding used by these consumers in response to high wholesale market prices shows that consumers who see these price signals vary their load shedding to reflect the spot price.

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[4] Stronger price signals could be easily introduced into the residential sector without the need for interval metering by, for example, the introduction of demand switches used in other electricity markets, where a consumer purchases the right to a certain maximum demand and when this demand is exceeded, the switch opens preventing any supply. The consumer is thus “trained” not to use more demand than they have agreed to use. This replicates the charges large consumers see where they pay for demand in relation to the highest demand recorded in the previous 12 month period.

Such a consumer will have multiple price points at which load shedding is triggered. For instance, at a spot price of (say) $300/MWh, the consumer will shed non-essential or low production plant. At a higher price, it will shed more critical plant but where there are stocks available of the product to provide for immediate needs. Even when the spot price reaches MPC, there is certain essential plant that has to be maintained in operational condition where loss of supply will create catastrophic damage (eg molten glass freezing in the process equipment).

What these internal protocols show is that each customer has a varying price point at which reliability is determined not to apply.

Extrapolating this response to strong price signals to a residential situation might indicate that at peak price times, a clothes-dryer or pool pump might not be used at high price times, but maintaining lighting, the refrigerator and food freezer might be considered to be essential, especially if the outage is of a long duration.

Clearly when provided with strong price signals, the value of customer reliability has differing values, even when all other conditions might be the same. Yet despite this, the AEMO approach assumes the worst and is geared to providing supply as if all usage was essential. This is fundamentally incorrect.

The background paper identifies that there are many variables in terms of reliability and notes these on page 5:

> "These circumstances include the time of day, month and season when a single outage occurs, the duration of each outage and the frequency with which outages are experienced over time. For example evening and weekend blackouts are likely to inconvenience residential electricity customers more than business customers; while a number of short daytime interruptions that have few consequences for the majority of residential customers may cause expensive equipment damage in some industrial processes. In this respect it may make a significant difference to the customer's actual costs if prior notice was given of an outage (where this was possible), rather than have the customer suffer an unexpected and unpredictable outage."

However, the Background paper does not identify that there are degrees of reliability which vary with the type of plant affected by reliability, which shows up due to the responses used by consumers that have strong price signals to modify their usage pattern.

Under the current approach of AEMO to reduce demand when supply is insufficient, AEMO introduces rolling blackouts. This means that all

consumers in a geographic area lose supply regardless of the individual requirements of the consumers connected and who might prefer to lose only some supply rather than all supply.

The current approach to VCR quantification does nothing to assist in providing signals to consumers to lessen demand when supply is short but makes the assumption that all demand has the same value. This is reinforcing a fundamental anomaly in the electricity market.

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 examined in terms of the National Electricity Objective (NEO) and the six revenue and pricing principles for networks espoused in the Law itself[5].

The AEMO Background Paper makes no reference to the NEO or to the 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 will increase price, so AEMO must examine the issue of VCR in terms of price as much as of 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 might result in lower utilisation of the networks.

The fact that the Victorian VCR is so much higher than equivalent VCRs in other jurisdictions, leads prima facie to the conclusion that the current levels of VCR might result in outcomes that result in overinvestment and thereby under utilisation.

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 current approach to setting VCR appears to result in a very high value when compared to international benchmarks. By setting a single value for

[5] See appendix 1

VCR, this does not permit the taking into account of the wide variety of values for reliability that 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. AEMO Assessment of Customer View of Reliability

As noted in section 1, major 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 for 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 or volatile electrical services, can cause damage to their operations. So, reliability of supply is very important, yet it is in the distribution networks that consumers see the detriments of poor supply rather than in the transmission networks, which are the focus of setting the VCR.

Major customers of electricity note 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 for the main causers of the needle peaks which create the need for network augmentation.

2.1 Concept of the Value of Customer Reliability

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

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 or 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.

Major 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 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.

2.3 Dimensions of the VCR

The AEMO is correct in stating (page 4):

> "The cost of an outage of a given duration to individual electricity consumers varies widely between agricultural, residential, industrial and commercial customers and on their location and other characteristics. These costs depend on the extent to which the typical consumer's activities rely on electricity and their ability to postpone these activities without cost. Outage costs may either consist of expenses that arise directly as a result of the outage, or else consist of foregone benefits as a result of the outage. There may also be social disruption costs that spread beyond the direct consequences and location of an individual outage".

Whilst this demonstrates the degree of difficulty in seeking to estimate VCR, it still leaves the issue of equity not being addressed at all.

Nor does it recognise that 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 AEMO can determine a single value for VCR, there have to be stronger price signals provided in the market to consumers so they have the ability to modify their usage. Once these stronger price signals result in voluntary load shedding, then it will be apparent that the remaining demand is considered to be "essential" and thereby attract the highest value for reliability. Pending such outcomes, any value that AEMO

sets for VCR 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.

2.4 Consumer Characteristics

AEMO is correct in stating (pages 4 and 5):

> "Consumer activities and therefore the costs of electricity outages vary among different types of consumers. For example, residential electricity customers may suffer very different costs at home, compared to agricultural, industrial and commercial customers who operate equipment for production and sales. Costs to individual businesses tend to be more tangible (equipment damage, food spoilage, labour costs, net sales lost etc), whereas home-based costs, while no less important, may be more related to inconvenience and annoyance (rescheduling of activities, wasted time etc).
>
> Consumer characteristics are also likely to vary widely between different locations and therefore between different regions of Australia. 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. Also, electricity used for heating and cooling will play vastly different roles in different climatic locations and in jurisdictions where alternative fuels have historically been available.
>
> 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 has not been addressed by AEMO.

Whilst the above demonstrates the complexity of seeking to estimate VCR, it 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 transmission network services makes 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

2.5 Outage Characteristics

The MEU agrees that the cost of electricity outages also depends very much on a range of factors that reflect the circumstances in which the outages occur:

- Time of day, week, month and season
- Single or multiple outages
- Duration of each outage and frequency.

In addition to this, as the MEU has demonstrated, it also depends on the purpose the electricity is being used for.

2.6 Measurable Outage Costs

As AEMO points out, this is a very difficult task, and is dependent on good survey techniques. It also needs a wide understanding of the causes of why demand by consumers can vary. Whilst AEMO covers very well the various complexities involved, it fails to recognise that its 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 there pricing signals were well developed and reflected the actual needs of consumers such that their behaviour was modified to reflect 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.

However, comparisons to overseas jurisdictions indicate that the current value of VCR used in Victoria is excessively high. This discrepancy needs to be

more fully examined than has been done in the Background Paper. More information is also required on overseas approaches and their relevance.

2.7 Existing Estimates of VCR

Both the development of the Victorian VCR and the overseas studies of VCR suggest massive amounts of data and huge costs involved. Even after the analysis is completed the answer is still at best only an indication and probably overstated. This does raise the issue of costs and benefits of the AEMO exercise.

The value for the Victorian VCR is probably overstated as it is essentially based on the costs consumers face in the event that their entire load is curtailed. As total curtailment in a region is seldom (if ever) needed, it is more appropriate to assess what load can be curtailed at a lesser cost, as has been demonstrated by those consumers operating in the spot market where strong price signals are provided.

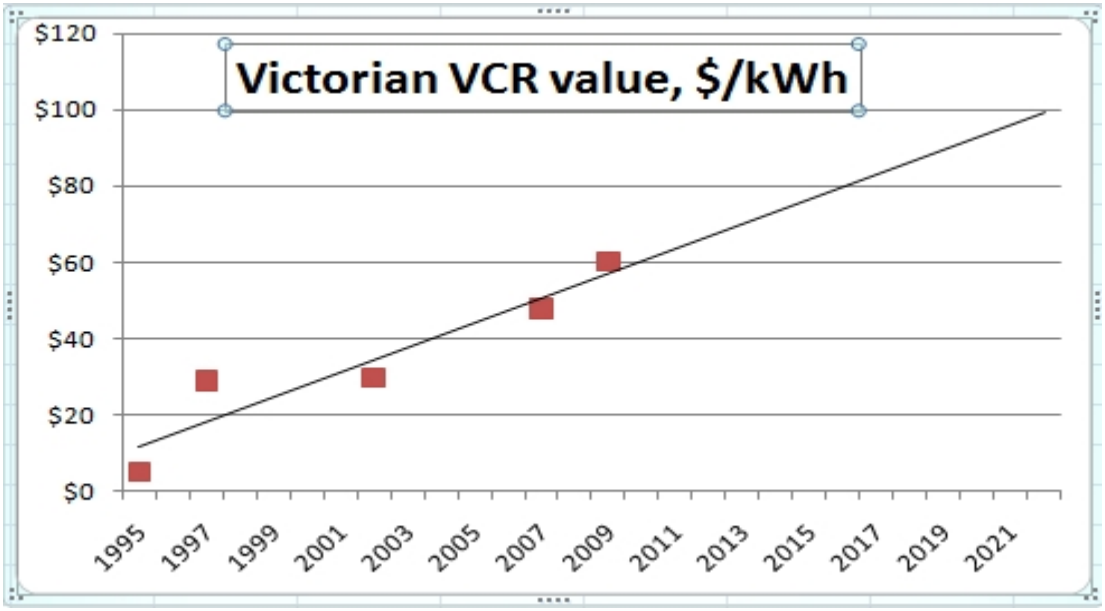
The MEU can see the value that a single VCR has in developing a business case for a network augmentation, as this provides a very clear quantification of the resultant benefits. But as AEMO clearly points out, “one-size-does-not-fit-all” and therefore a business case developed from one value does not necessarily prove a legitimate outcome.

The MEU considers that a better outcome would be demonstrated if there were stronger pricing signals provided and thereby encourage better utilisation of the assets, with a resultant lesser demand for augmentation. Once the benefits of the price signals had been fully utilised, then a VCR would be more reflective of the need for augmentation.

2.8 The changing value of VCR used in Victoria

The Background Paper provides a view that VCR changes (increases) dramatically over time. In 1997, VCR was $28.89/kWh, by 2002 this had risen to $29.60kWh, and by 2007 it was assessed as being $47.85kWh. Only two years later (in 2009) AEMO calculated VCR was $60.18kWh. It should be noted that when NEM1 (the Victoria and NSW normalised market) was instituted in 1995, VoLL was $5/kWh. So in a mere 16 years, VCR has risen by a factor of 12 times.

This change is shown graphically in the following chart which implies that at the current rate of change, VCR will be $100,000/MWh in another ten years. This rate of change is a 10% increase per year, well in excess of inflation.



This high rate of change implies that the consumer needs for reliability for power are changing dramatically over short periods of time. Yet in practice the needs of consumers would have changed only marginally.

The fact there has been such large increases in VCR over such a relatively short periods of time raises real concerns that the methodology used by AEMO (and VENCorp in earlier years) needs re-examination.

2.9 Why is AEMO Estimating VCRs for all Regions?

AEMO implies that there is a need for developing VCRs for the other NEM regions. This would assist AEMO in its role as the National Transmission Planner. However, the other regions already have their own processes for proving the business case for an augmentation and the implication of the AEMO proposal is that these other approaches are flawed, and the application of a VCR is more robust.

The Background Paper does not provide any explanation as to why the AEMO approach is better than those currently used, and before the MEU could offer a view, AEMO needs to provide analysis of the other approaches and to demonstrate that the VCR approach is superior. Having said this, MEU considers that the very high value for the Victorian VCR being used, probably results in over-investment when the values for VCR assessed in overseas jurisdictions are considered.

2.10 Frequency and timing of recalculating VCR

AEMO posits the 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.

Other than its assertion that a VCR is a better basis for assessing investment needs, AEMO has not provided a clear reason that its methodology is better and that the costs and approach involved are warranted.

However, if it can be demonstrated that the use of a VCR is a better tool for substantiating the need for transmission augmentation, then a method for calculating VCR has to be developed.

AEMO poses the following questions (page 12):

- **"cost** – would participants be willing to fund AEMO to undertake a survey on the scale that is necessary;
- **methodology** – if the results are sensitive to the methodology used then continuity problems arise for all NEM regions;
- **frequency** – one way to limit the cost would be to undertake surveys only every 10 years, or some other frequency; and
- **timing** – one way to spread the cost more evenly would be to undertake a survey in a different single region only every year, thus maintaining a 5-year cycle for each region but never obtaining synchronous results across the entire NEM"

In response to these, MEU comments:

> **Cost:** It is more important to get the correct answer than to get an incorrect answer. 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 90% of all transmission revenues.
>
> AEMO 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 the primary role for the national Transmission Planner is to assess the need and business case for inter-regional connections[6], 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 observes that its Victorian practice is to review VCR on a five year cycle, and suggests 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 AEMO sees the need for more frequent assessments.

Timing: AEMO suggests that a review would be carried out in one region each year delivering a 5 year cycle but never delivering a synchronous outcome for the NEM. As noted above the MEU queries the need for frequent VCR surveys. Regular surveys imply that AEMO expects that the results of each survey will be significantly different from the one carried out five years previously. This concern does not seem to be replicated in overseas jurisdictions. But such frequent surveys have resulted in a continuous upward spiral in VCR based on the Victorian experience, despite the fact that consumers have barely changed their usage of electricity. That such large changes in VCR have resulted over very short periods indicates that the AEMO process is not as robust as AEMO professes.

2.11 Summary

In most ways, AEMO has identified the aspects that consumers consider influences the reliability for power, 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 is considerably higher than used in overseas jurisdictions and the rapidly increasing value for VCR appear to be at odds with the a much lesser change in consumer usage patterns. At an annual increase of 10%, the methodology used by AEMO probably results 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.

What AEMO fails to do is to explain the processes used in other NEM regions for identifying the benefits of augmentation and whether these other approaches might deliver equal of better outcomes than by using VCR. Also,

[6] 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

AEMO should explain what other approaches are used in other overseas jurisdictions so that a better outcome can be achieved.

AEMO posits that there needs to be consistency between regions in assessing the benefits of augmentation and MEU would agree that the implications of having a National Transmission Planning function executed by AEMO does require consistency in approach to valuing augmentation benefits.

AEMO considers that because it currently assesses the Victorian VCR on a five year basis, then this same approach could be used to value VCR in the other NEM regions. The MEU considers that VCR needs to be assessed much less frequently, replicating the calculations of VCR in other jurisdictions.

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.

Appendix 1

7—National electricity objective

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

(a) price, quality, safety, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system.

7A—Revenue and pricing principles

(1) The revenue and pricing principles are the principles set out in subsections (2) to (7).

(2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—

(a) providing direct control network services; and

(b) complying with a regulatory obligation or requirement or making a regulatory payment.

(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—

(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

(b) the efficient provision of electricity network services; and

(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

(4) Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted—

(a) in any previous—

(i) as the case requires, distribution determination or transmission determination; or

(ii) determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or

(b) in the Rules.

(5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

(6) Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

(7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.