AEMO Value of Customer Reliability Issues Paper

Submission by the Alternative Technology Association

ATA Alternative Technology Association

Document Information

Prepared for

ATA Energy Policy Team
Prepared by: Craig Memery, Damien Moyse

Alternative Technology Association
Level 1, 39 Little Collins St, Melbourne VIC 3000
+61 3 9639 1500
+61 0412 223 203
www.ata.org.au

Promoting Renewable Energy, Energy Efficiency and Water Conservation since 1980

Contents

1.0 About ATA

Founded in 1980, the ATA is a National, not-for-profit organisation whose 5,500 members are mainly small energy consumers with an interest in sustainable energy and resource use.

Through the application of our in-house expertise and experience in the energy market to our continuing advocacy and research, and close collaboration with fellow members of the National Energy Consumer Roundtable, the ATA is an important voice for energy consumers Australia wide.

ATA presents a uniquely two-fold perspective in the energy policy space: as well as representing all energy consumers through our support of increasing energy affordability through improvements to the energy market, we speak with authority on behalf of the growing portion of the consumer base who have an active interest in demand side participation.

While ATA's membership is diverse, most members keenly await opportunities for more effective ways to interact with the National Energy Market to become available, and provide more opportunities to bring down the cost of energy for themselves and all consumers.

Some ATA members play an important role as the 'early adopters' of new technology, which is vital to bring about the uptake and maturation of any emerging technology or service in the context of DSP.

As a leading consumer advocate, ATA works with energy market institutions, energy businesses and state and Commonwealth governments to promote addressing the problem of increasing energy prices through realising potential efficiencies in the National Energy Market.

ATA's Energy Policy Team is primarily resourced by the Consumer Advocacy Panel, along with contribution by our members.

ATA thanks AEMO for the opportunity to respond to the issues paper, and would welcome the opportunity to engage directly with AEMO throughout this process.

2.0 Responses to Questions in Draft Report

Question 1 – In what planning contexts should VCR be applied?

In ATA's view, VCR has a useful role in the context of transmission planning.

ATA note that AEMO's (and others') approach to determining VCR to date is generally intended as a transmission planning tool, and are of the view that the current transmission VCR is not appropriate for distribution planning.

As acknowledged by the AEMC in their recent review of reliability standards, the practice of using of a single energy-based Value of Customer Reliability for every class of consumer at a distribution level is inherently flawed, to the extent that, in ATA's view, using this method is inconsistent with the National Electricity Objective and should be avoided.

However, in ATA's experience, in the absence of more appropriate tools, the transmission VCR often is sometimes used as proxy for distribution reliability[1] and other applications for which it was not designed.

Clearly, there is a need for VCR values that are useful at a distribution and market planning level. ATA are of the view that the **VCR methodology and metrics should be improved to provide a range of values that allow VCR to be usefully applied to distribution planning, market planning and other contexts.**

Question 2 – In what network regulation contexts should VCR be applied?

ATA are of a view that more meaningful VCR measures are needed to fill gaps in many network and system planning related contexts, including:

- **RiT-Ts;**
- **RiT-Ds;**
- **some investments that fall below the thresholds for RiT-T and RiT-D;**
- **network pricing determinations; and**
- **network and system reliability reporting.**

Further, the VCR for different customer classes should have a role in network pricing and cost recovery from consumers, where transmission and distribution network upgrades are required to maintain reliability. **VCR values for different consumer classes should be a factor in determining prices to recover those costs, to avoid cross subsidy between consumer classes.**

[1] By way of example: in the absence of another metric, the transmission VCR was used by Victoria's Bushfire Powerline Safety Taskforce (of which ATA were a member) in considering the cost impact of planned supply outages at specific remote and rural properties and communities to mitigate the risk of bushfire starts at a distribution level. While potentially a useful application of VCR, the transmission VCR is clearly not designed with this, and so our confidence in the validity of this aspect of the findings of the Taskforce was low.

For example, if the VCR values show that commercial consumers place a higher value on reliability than residential consumers, the charges levied that recover the costs of these investments (e.g. TUoS, DUoS) should reflect that, otherwise there is a cross-subsidy of commercial consumers by residential consumers.

Question 3 – If the VCR be used in informing the market price cap, should it be calculated differently?

ATA question the value of using VCR in setting the market price cap.

In our view, it is incorrect to assume that the MCP can be drawn from the price at which consumers are prepared to forego supply: if anything, MCP only reflects the willingness of energy retailers to pay for the portion of wholesale energy they have not hedged.

ATA strongly feel that if the VCR is used in setting the MCP, it should be calculated differently to that used for planning and revenue setting.

Question 4 – VCR, NMAS and SRAS

Given the difficulty of measuring customers' willingness to pay for reliability at transmission network planning level, ATA are doubtful that VCR could be used effectively in determining NMAS payments.

If a VCR is used in the SRAS process, in ATA's view it should be developed to specifically reflect customers' willingness to pay to have power restored sooner after a once in ten year outage, rather than willingness to pay to avoid an outage.

Question 5 – Are there other NEM contexts in which VCR should be applied?

As discussed in response to Q3, **VCR values for different consumer classes should be a factor in determining prices to recover costs of network upgrades are required to maintain reliability, to avoid cross subsidy between consumer classes.**

ATA are of the view that VCR should also be considered in:

1. Considering the value and impact of demand response measures, including AEMO's current process to develop a wholesale demand response mechanism for the NEM; and
2. Setting service standards and levels for individual consumers, including addressing reliability of energy supply for worst served consumers.

In relation to 1, the VCR for a given consumer should indicate the price they are willing to accept to respond to a price signal to reduce their load. ATA note that our proposed treatment of VCR (herein) will allow for better identification of these opportunities by valuing different levels of supply.

By way of example of both 1 and 2, for a capital outlay of approximately $10,000, recent ATA modelling[2] demonstrates that a DNSP or other party could provide a consumer with a grid interactive battery-inverter system with storage capacity to either:

- supply all the energy needs of an average residential energy consumer for network outages of 10 to 20 hours at a time; or
- allow the same consumer to run all their appliances 'as normal' at all times while drawing no more than 1kW from the grid at any time.

In some circumstances, implementing this solution is would be a far more cost effective than grid upgrades to meet reliability (or other) requirements[3]. Using VCR as a metric in network planning would help to identify the value of these opportunities.

Question 6 – Treatment of consumer sectors and regions in relation to VCR

100% reliability of supply at all times is critical for a relatively small number of consumers for medical reasons and the protection of critical plant, and naturally these specific customers' needs must be accounted for when developing any approach to reliability.

At the other extreme, some consumers would prefer to accept low reliability in return for lower energy bills.

However, the treatment of all consumers between and within sectors as equal, in terms of their ability to compromise supply reliability in return for a financial trade off, makes it highly difficult to assess the value of both demand side and supply side investments.

Use of the energy-based common Value of Customer Reliability across consumer classes as a means of valuing the need for continuous supply leads to over-investment, and inappropriate investment, to meet demand. This leads to higher than necessary costs being passed through to all end consumers.

ATA are of the view that VCRs should:

- distinguish between consumer sectors; and
- distinguish between levels of criticality of the load supplied.

Questions 8 and 9 – Approach to VCR

(Refer to 3.0 below)

Noting our earlier points on VCR, **ATA recommend that customer consultation for determining VCR must extend beyond surveys**, to more rigorous consultative measures such as, but not limited to, workshops, focus groups and opportunities for written submissions as appropriate.

Transparency will ultimately be the key to consumers understanding the relationship between the costs and benefits of a particular level of reliability delivered under any national approach. In ATA's

[2] Modelling is available upon request.

[3] It should be noted that the value to consumers and DNSPs of this and other DSP measures is currently limited by split incentives arising from the disaggregation of the energy market.

direct experience, network businesses have a poor record at making publicly available critical information that can assist consumers to understand the justification for certain costs and resultant benefits in this regard.

3.0 A better approach to VCR – valuing partial supply

A key flaw of the 'single value' VCR method used by AEMO and others is that it does not allow correct valuation of the 'partial supply' DSP-based measures that could be made available to the many consumers who do not require unrestricted supply to energy at all times.

This places artificial barriers on non-network alternatives of those consumers who are in a position to be more flexible in their energy use

This is in spite of the fact that tools such as Direct Load Control, Supply Capacity Control/Limiting, Critical Peak Pricing and other DSP-based solutions, coupled with appropriate incentives, would benefit participating consumers as well as other electricity consumers through reduced or deferred network expenditure and lower wholesale prices.

If VCR is to be used effectively, especially in some of the other areas noted in our response to Q2 and Q5**, a method is required that makes a distinction between the value of:**

- **essential loads, and**
- **non-essential and or interruptible loads.**

ATA are of the view that the cost of the small degree of additional complexity required to make this distinction is far outweighed by the value of improved usefulness and accuracy of VCR across the NEM, including AEMO's current process to develop a wholesale demand response mechanism for the NEM.

To illustrate this point, **Table 1** below contains the relative consequence of unserved energy for an example residential customer, by appliance and duration of unplanned outage:

Table 1: Consequence of outage for one residential customer, by appliance type and outage duration

Residential Appliance In Use During Unplanned Outage	Relative Impact of Unplanned Outage Lasting:			
	Seconds	Minutes	Hours	Days
Refrigerator/freezer	Low (if infrequent)	Low	High	High
Lighting	Low (if infrequent)	Medium	Medium	High
Electric stove /oven	Low	Medium	High	High
Clocks, digital equipment	High	Low	Low	High
Clothes dryer	Low	Low	Medium	Medium
Air-conditioner	Low (if infrequent)	Low	Medium to High	High
Space heating	Low	Low	Medium to High	High
Dishwasher	Medium	Low	Medium	Medium
Washing machine	Medium	Low	Medium	High
Television, entertainment unit	Low	Low	Low	Medium
Desktop computer (without UPS)	High	Low	Low to Medium	Medium to High
Water heating (electric storage)	Low	Low	Medium	High

Table 2: Breakdown of essential and non-essential loads, and range of values of unserved energy, across residential customer classes

Residential Load Type	Proportion of Total Energy Use[4]	Indicative value of unserved energy per appliance type[5]
Essential, non-interruptible e.g. Lights, refrigerator, clocks, desktop PC	30% (+/-5%)	$50,000 – $750,000/MWh (mostly in middle of range)
Essential, partly-interruptible e.g. Washing machine, space heating/cooling, laptop	25% (+/-5%)	$200 – $700,000/MWh
Non-essential *and/or* fully interruptible e.g. TV/entertainment, water heating, pool pump	45% (+/-10%)	$0 – $250,000/MWh (mostly lower end of range)

While the first table is indicative of the preferences of a single 'typical' consumer (individual consumer preferences can vary widely) these tables illustrate that:

a. Approximately half of a typical residential consumers' average load ('Non-essential *and/or* fully interruptible') could be interrupted for hours at a time a number of times each year without significantly impacting t his consumer's use of essential appliances;

b. The actual value of unserved energy for this portion of the load is much lower than the average residential VCR, such that were they given the choice, many consumers would opt out of incurring the expense of the transmission VCR for supply to those appliances;

c. Most of the actual average transmission VCR value is attributable to essential, non-interruptible appliances that use only approximately one third of a customer's energy supply;

d. Direct load control, supply capacity control/limiting, critical peak pricing and other DSP-based solutions, along with appropriate incentives, would benefit participants as well as other electricity consumers through reduced or deferred network expenditure, however these measures are hardly to value with a single VCR measure;

e. Given the range of variables, factors and assumptions required to estimate how consumers value energy, a single average energy-based VCR for a whole consumer class is virtually meaningless at a distribution level.

In this regard, **ATA recommend that AEMO use a methodology for determining VCR provides for the correct valuation of 'partial supply' DSP-based measures.**

For example, this might be in the form of a series of two values for supply capacity scenarios (e.g. 0% supply representing total loss of supply, and 50% supply representing loss of non-essential and/or flexible loads), across each sector of consumers (e.g. urban, regional, and remote).

[4] Example proportions based on http://www.trade.nsw.gov.au/data/assets/pdf_file/0011/368561/factsheet6-reducing-energy-costs.pdf and http://www.yourhome.gov.au/technical/fs61.html

[5] Based on indicative values calculated by ATA for a number of hypothetical scenarios, considering the cost of maintaining local supply during an outage, the consequential cost impact of an unavoided loss and supply, and/or willingness to pay, for outages of less than 24 hrs. Assumptions and modelling available on request.

In ATA experience, many consumers are interested in a framework that facilitates 'opt-out' type incentives that allow them to benefit from trading off lower bills with a reduced level of reliability, whilst also benefiting the broader consumer base through reduced network management costs.

Thank you for the opportunity to provide comment to this process and please do not hesitate to contact us at Craig.Memery@ata.org.au on 0412 223 203 should you have any queries regarding our submission.

Yours sincerely

Craig Memery