

AEMC Smart Meter Rollout

(failing to deliver benefits outlined in the Power of Choice)

Dr Martin Gill

The AEMC's Power of Choice detailed changes giving consumers the freedom to participate in the emerging energy services market. Disappointingly the AEMC's final rule changes fail to provide this freedom, instead giving electricity retailers a mandate to rollout smart meters to all Australian consumers.

A Digital Revolution is coming

A recent McKinsey article discusses the digital utility. The introduction to their article states:

[Renewables, distributed generation, and smart grids demand new capabilities and are triggering new business models and regulatory frameworks.](#)

The Australian Energy Market Commission (AEMC) has sole responsibility for maintaining the regulatory framework required to control the complex Australian Energy Market. The AEMC continuously reviews the framework to ensure it supports new business models and technologies. Modifications the AEMC makes to the regulatory framework must be ***"in the long term interest of consumers"***.

In 2012 the AEMC released its Power of Choice review. This major review foresaw new consumer energy services in the digital utility. The changes proposed in the review promised to give consumers greater freedom of choice to select new energy services.

The new rules have now been finalised and far from giving consumers freedom of choice they have instead increased costs to provide new energy services. Most benefits are delivered to retailers who have been given a mandate to provide smart meters to all their customers.

For the removal of doubt

During 2014 the author provided assistance to the AEMC for the industry workshops considering the adoption of a common standard for the smart meter rollout. While his presentations remain publicly available he emphasises this article does not present workshop discussions.

Summary of findings

The AEMC's Power of Choice review promised to empower consumers so they could choose to participate in the emerging energy services market. Instead the new rules:

- Do not give consumers the freedom to choose who installs the new smart meter
- Fail to provide a common platform supporting the efficient provision of new energy services

The new rules require electricity retailers to lead the AEMC Smart Meter Rollout. Some retailers are already using aggressive sales tactics to encourage consumers to accept a smart meter, suggesting they, and not consumers, stand to benefit.

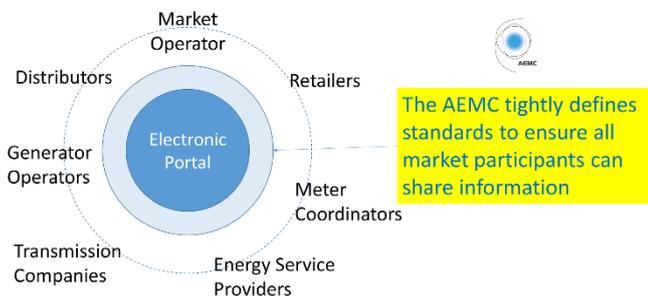
The AEMC is aware of the issues. In a recent determination on new energy services the lack of a common platform forced them to conclude each new service requires a separate meter, even when this new meter makes exactly the same measurements as the existing meter! This unnecessarily increases costs for consumers wishing to accept new energy services.

The Australian Energy Market

The Australian electricity market is incredibly complex. The regulations are set out in almost 1500 pages of rules, and this just describes the high level requirements! The role of the AEMC is to maintain and amend these rules to ensure they remain ***in the long term interest of consumers.***

For example the rules detail the roles and responsibilities of all market participants. In the Australian electricity market this includes electricity generators, transmission companies, distribution companies, electricity retailers, meter providers, meter data providers, ancillary service providers, load aggregators and many others.

With so many different market participants the AEMC (via the Market Operator) provides an electronic portal enabling the numerous market participants to share information. Market rules tightly define what information the various participants are required to share, how regularly they are required to provide this information and even the format for this information.



Standards ensures market participants can share information

Recognising the importance of Metering

The electricity market relies on the accurate measurement of the amount of electricity being bought and sold. An entire chapter of the electricity rules is dedicated to defining requirements for meter installations, meter measurements all the way down to the accuracy of the meter measurements.

Meter rules ensure all electricity measurements made by all these different meters still meet market requirements



The AEMC metering rules ensure all meters support the market

The AEMC metering rules ensure consistent measurement of the flow of electricity to and from the market. Ultimately this ensures consumers pay the right amount for the electricity they use.

The Power of Choice

In 2012 the AEMC released its Power of Choice review. The review recognised new technology would change the way consumers used electricity and the range of energy services offered to them. For example after installing a solar system consumers could choose to use the electricity, sell the electricity or store it in a battery for later use.

The Power of Choice promised to simplify consumer access to new energy services enabled by new technology. The AEMC recognised (excluding Victoria) most existing Australian electricity meters are inadequate to support new energy services. So in

addition to giving consumers the freedom to choose new energy services the Power of Choice gave consumers the freedom to choose who installed the smart meter needed to support the new services.

The AEMC Smart Meter Rollout

After releasing the Power of Choice the AEMC made extensive modifications to the electricity rules. The new rules are now complete and come into effect on 1st December 2017.

Recently the author received this note from a large Australian retailer:

“With the planned industry changes from the 01.12.2017, customers will at some point have to change to digital meter no matter what retailer you are with”

The quote (and others) show electricity retailers are interpreting the new rules as requiring all consumers to eventually accept a smart meter.

The original Power of Choice promised consumers the freedom to choose if they wanted a smart meter and who could install it. The final rules removed this freedom. Instead the smart meter will be installed by the consumer’s electricity retailer.

Missed Opportunity

The Federal Government recognised the AEMC smart meter rollout as an opportunity to build national infrastructure able to support future energy services. The Federal Government asked the AEMC to consider ensuring all energy service companies could efficiently utilise this national infrastructure. Despite the obvious advantages the AEMC took a different view.

An example of incompatible infrastructure

During the 19th Century each Australian state invested in the rail infrastructure needed to grow their state. Unfortunately since this occurred before Federation each state allowed their own self-interest to override common sense and they selected different widths for their rail gauges.



More than a century later inefficiencies caused by this self-interest continued to force passengers travelling between states to be woken in the middle of the night to change to a different train. Addressing these inefficiencies required a national approach and adoption of standard gauge railways.

Consequences of incompatible infrastructure

Australian consumers are among the most proactive in changing electricity retailers. The AEMC has chosen retailers to lead their smart meter rollout but with no standard in place:

What happens when a consumer changes retailer?

The failure to provide a common standard 'rail gauge' to each meter increases the likelihood the customer's meter must be replaced each time they choose a different retailer. The costs of replacing one smart meter with another could have largely been avoided if the AEMC had chosen a common standard.

An early test of the Power of Choice

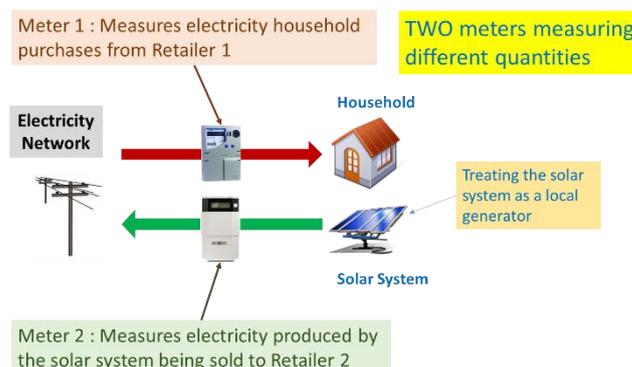
Having completed the Power of Choice rule changes the AEMC was asked to clarify a new energy service: Specifically ensuring consumer freedom to trade electricity with more than one retailer.

For example currently consumers with a solar system have one retailer. They buy and sell electricity from that one retailer, but ...

Should consumers be able to sell the electricity generated by their solar system to the retailer offering the highest price?

The AEMC's goal of promoting competition suggests consumers should have the freedom to choose who they buy **and sell** their electricity from/to. If another retailer is prepared to pay more for the solar output consumers should have the freedom to sell it to them independently of the retailer they currently buy electricity from.

Encouragingly the AEMC found the new rules already allowed consumers to choose multiple retailers. Unfortunately the AEMC found the new rules failed to efficiently support new energy services since each retailer must install their own meter!

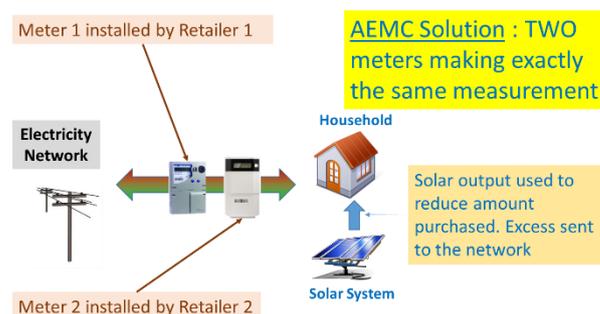


Electricity bought and sold from/to different retailers

The above shows a consumer choosing to buy electricity from one retailer and sell the output of their solar system to another retailer. As required by the AEMC each retailer installs their own meter, but this metering arrangement is not in the long term interest of the consumer.

The end of subsidised solar feed in tariffs means electricity sold to the network is valued at the average wholesale price, around 6 cents/kWh. Electricity used by the consumer must still be bought at the full retail price of at least 20 cents/kWh. Consumers who use the output of their solar system increase the value from 6c to at least 14c/kWh. Measuring the difference between household electricity use and solar system output is easily achieved using **one meter**.

The AEMC quickly realised without a common standard 'rail gauge' to the meters there was no certainty two retailers could access the one meter. The AEMC solution was therefore to require both retailers to install their own meter despite both measuring exactly the same flow of electricity.



AEMC Solution for Net Metering

The AEMC's failure to provide a common 'rail gauge' is inefficient. Consumers wishing to trade their solar energy must incur additional (and unnecessary) metering costs. These costs could easily have been avoided by adopting a common standard to the meter.

Failing to learn from other industries

Service companies offering to lower consumer costs have been around for decades. For example a decade ago telecommunications service companies offered their customers the lowest available overseas call rates selected from multiple retailers. The consumer simply dialled the required overseas phone number, with smart electronics automatically selecting the retailer offering the cheapest rate at that time.

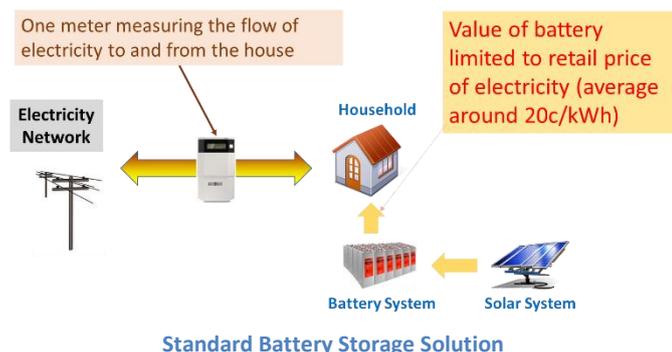
Applying the current AEMC electricity rules to this telecommunications example would have required consumers to install a separate phone for each retailer they wished to use (also losing the ability to automatically select the cheapest retail rate).

A Common Market Protocol

The AEMC's formal response to the Federal Government's request to provide national infrastructure mentions a "Common Market Protocol". The AEMC's decision recommending the installation of separate meters highlights even they acknowledge the Common Market Protocol does not efficiently support new energy services.

New Energy Services

In the Power of Choice the AEMC promised to provide consumers the freedom to choose new energy services, for example the ability to significantly increase the value of battery storage systems.



Using the battery storage system only to meet household requirements limits the value of electricity

to the retail price of electricity. For households on a fixed tariff this is typically around 20 cents/kWh. Unfortunately at 20c/kWh the household will never recover the high cost of the battery storage system.

Selling stored electricity

New service providers are emerging offering to significantly increase the value of battery storage systems. The service provider offers to sell stored electricity into the wholesale electricity market. To explain how this works requires an understanding of the Australian energy market.

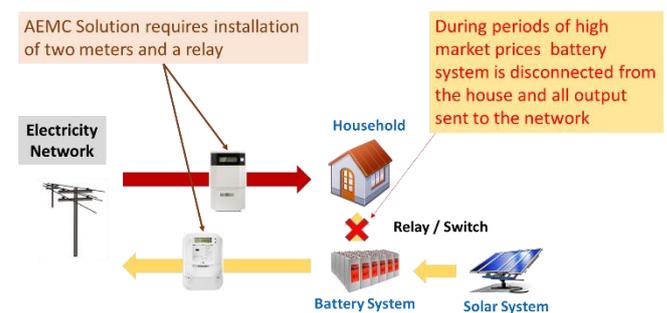
The complexity of the Australian energy market is hidden from most consumers with retailers offering most consumers a fixed price around 20 cents/kWh. The AEMC requires retailers to purchase the electricity used by their customers from the wholesale market. In the wholesale market the price of electricity is updated every 30 minutes and varies from -10cents/kWh to a maximum price of 1250 cents/kWh!

When the wholesale price reaches the maximum price retailers are buying electricity at 1250 cents/kWh and selling it to their customers at 20 cents/kWh. During these periods retailers **lose over \$12 for every kWh**.

The new service provider constantly monitors prices in the wholesale electricity market. When the price is high they negotiate the sale of electricity stored in the consumer's battery potentially for dollars per kWh.

Amazingly everyone wins! Retailers pay less for electricity. Consumers earn much more from their battery storage system. The new service company profits from the fee they charge consumers to provide the service.

The following figure shows the metering solution as suggested by the AEMC:



Selling battery system output when market price is high

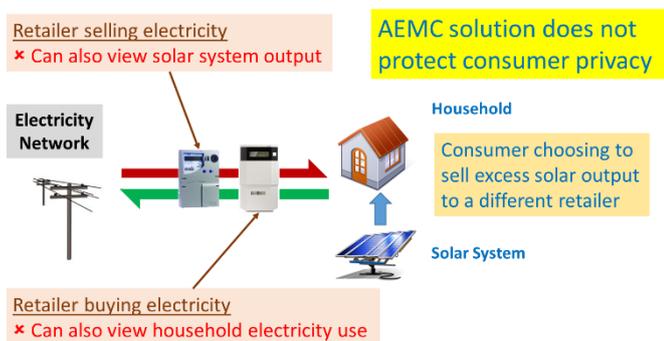
The AEMC solution forces the installation of two meters where one smart meter (with two measurement elements) would be sufficient. In fact the one meter solution would be simpler since it also removes the need to install the relay disconnecting the battery storage system from the house.

The original Power of Choice promised consumers the freedom to choose who installed their meter. Under this proposal consumers were free to choose who installed a suitable smart meter and provide data from this one meter to both their existing retailer and new service provider(s). Once the AEMC decided against a common 'rail gauge' there was no certainty a retailer and service provider(s) could access the one meter, hence the need for two meters.

The AEMC's failure to support a common standard increases costs for consumers to participate in the new energy services market. The common standard would have allowed retailer(s) and other market participants to share information from the one meter. Without the common standard the AEMC requires consumers to pay for the installation of additional meters, even when these meters make exactly the same measurements as the existing retailer meter.

Consumer Privacy

Privacy laws require controlled access to consumer information. The AEMC requirement for consumers to install two meters in order to trade electricity with different retailers is used to explain the requirement:



AEMC two meter solution does not protect consumer privacy

The AEMC solution fails to protect consumer information with both retailer meters measuring the difference between household use and solar system output. Consumer privacy is compromised since the retailer selling electricity can view the output of the solar system, and the retailer buying excess solar output can view household use.

Installing one smart meter with controlled access can protect consumer privacy. Two solutions are possible:

- Each retailer is provided individual direct access to the one meter, with each only able to access the information relevant to their service(s). International smart meter standards are available to support this individual direct, but controlled, access.

Or

- A trusted party reads the meter data and provides each retailer only with the information they are allowed to see.

This is exactly the same solution German consumer privacy legislation expressly forbids!

Ensuring consumer privacy in the digital utility is clearly an issue the AEMC is yet to tackle.

Conclusion

The role of the AEMC is to regulate the incredibly complex Australian energy market. As part of its role the AEMC continuously reviews the regulations controlling this market to ensure they remain **in the long term interest of consumers**.

In 2012 the AEMC released its Power of Choice review. The Power of Choice promised to provide Australian electricity consumers access to new energy services being enabled by new technology. The review also intended to simplify the provision of the smart meters needed to support these new energy services.

A review of the final rules suggests the AEMC have failed to deliver on these promises:

- They failed to provide a common platform supporting the efficient provision of new energy services
- They removed consumer freedom to choose who installs the new smart meter
- They have not fully protected consumer privacy

Hindsight is likely to view the new rules as a missed opportunity to provide infrastructure upon which new energy services can be efficiently provided. Worse the rules do not appear to have been made in the long term interest of consumers.

Citation

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Comments or Questions?

The author is happy to receive comments or questions. He can be contacted at martin@drmartingill.com.au.

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Correspondence from *a major Australian retailer* received by Dr Gill 13th May 2016

About Dr Martin Gill

Dr Gill is an independent consultant specialising in the provision of advice and data analysis to the energy industry. He has provided this advice to government regulators, distributors, retailers, consumers, asset operators and equipment vendors.

Dr Gill has a broad technical background having personally developed advanced communication modems, burglar alarms, electricity meters, high voltage fault monitors and power quality analysers.

Dr Gill is a metering expert. His innovative products and systems have been recognised with the Green Globe Award, NSW Government's Premier's Award and Best New Product by the Australian Electrical and Electronics Manufacturers Association.