

Smart Meters: Consumer Privacy (Part 2) and Other Issues

Dr Martin Gill

The lack of consumer awareness of the Australian Energy Market Commission's smart meter rollout is alarming. What consumers are being forced to give away is truly frightening.

Introduction

The Australian Energy Market Commission's (AEMC's) smart meter rollout commenced on 1st Dec 2017. The AEMC smart meter rollout was sold with the clever sales pitch "Giving consumers the Power of Choice". The sales pitch is great example of marketing spin since the rollout gives consumers no choice.

The 'market led' rollout

The AEMC describes their smart meter rollout as 'market led'. The AEMC carefully chose the description to avoid all hints it is a mandatory smart meter rollout. The strategy has been spectacularly successful. Even consumer advocates working in the energy space have been misled! For example feedback left for a recent article by Dr Gill said:

Let's be clear the AEMC hasn't mandated smart meters

Wrong. Electricity meters do not last forever and when they require replacement the AEMC's new rules require the meter be replaced with a smart meter. Consumers are given no rights to refuse the installation of the smart meter. Similarly consumers must accept a smart meter for any new metering requirements (e.g. installation of a solar system).

The AEMC's 'new and replacement' policy ensures in 10 to 20 years every Australian consumer will have an AEMC smart meter installed on their home. Rather than "Giving consumers the Power of Choice" the AEMC has explicitly removed all consumer rights to refuse the installation of one of their smart meters. Calling it a 'market led rollout' has successfully hidden the fact it is a mandatory rollout.

What (else) is the AEMC not telling consumers?

The AEMC smart meters measure consumer energy use every 5 minutes. The AEMC ensures retailers have unrestricted access to these 5 minute measurements.

The 5 minute measurements provide retailers with unprecedented insights into consumer electricity use.

After installing an AEMC smart meter retailers have 26,000 times more information than they ever had before. This data shows retailers exactly when and how individual consumers use electricity.

So consumers are unable to refuse the installation of an AEMC smart meter and once it is installed, the AEMC fails to give consumers the right to control access to the highly invasive measurements the smart meter makes. There is no power of choice.

If only this was the end of the story. The AEMC smart meters support a number of additional "services". The lack of consumer awareness about these additional "services" is alarming. In keeping with the AEMC's policy of refusing to give consumers any power of choice, consumers are unable to control access to these additional services.

Read Meter Status

If retailers determine 5 minute energy measurements are not revealing sufficient information about individual consumer electricity use then the AEMC has mandated an even more invasive service. This service is referred to as "read meter status".

The "read meter status" service provides measurements of the voltage, current and power use at consumer premises. It was included as a cheap alternative to automatic outage reporting (the reason it fails to do so is discussed in the following section).

The AEMC places no restrictions on the use of "read meter status". Continuous requests can reveal consumer energy use measured every couple of seconds, i.e. approximately 100 times more intrusive than the standard 5 minute measurements!

Mathematical analysis of the continuous measurements available via "read meter status" can readily identify the types of appliances being used by consumers. In fact some companies claim their algorithms can identify the specific appliance model and manufacturer. "Read meter status" raises significant issues for consumer privacy.

Note: The mathematical analysis is referred to as non-intrusive load monitoring. The “non-intrusive” refers to avoiding the need to install additional metering equipment inside the household, while still identifying individual appliances. From a consumer privacy viewpoint, the analysis is highly intrusive!

There is a rapidly growing number of companies proposing to use these analytics to create targeted service offerings. Consider the advantages of “check meter status” for companies offering appliance servicing. Analysis is used to find customers with the appliances they can service which is followed up with highly targeted advertising strategies. The major roadblock is not the analytics, but the data.

The AEMC hoped their smart meters would enable additional services and “check meter status” does indeed achieve this. Unfortunately despite significantly compromising consumer privacy the AEMC failed to provide consumer rights to control access to this services.

Why “Read meter service” should be disabled

The AEMC included the “read meter service” as a cheap alternative to automatic outage reporting. Virtually all smart meter rollouts require the meters report outages. This outage reporting provides significant consumer benefits, including faster power restoration, lower field maintenance and call centre costs and reduced energy theft.

Ignoring all these consumer benefits the AEMC declared their smart meters do not require outage reporting. Without automatic outage reporting consumers must continue to manually report power outages. The AEMC incorrectly assumed “read meter status” can be used to help these consumers.

The problem with the AEMC’s assumption is during power outages, the smart meter is turned off. Just like trying to call a mobile phone which is turned off the “read meter status” will fail. The call centre cannot tell the difference between a failed meter or a network outage.

Increasingly consumers will have trouble calling to report the outage. NBN fixed line phones no longer work during power outages (unless fitted with a backup battery). The only hope is their mobile phone has sufficient battery life to make the call because with no power they can’t recharge it.

For financial reasons retailers will simply assume a failure to read the meter status is a network issue and pass the consumer to their local distributor. If it turns out to be a failed meter the consumer must pay for the unnecessary distributor site visit and wait (while still sitting in the dark) for the retailer to dispatch a team to replace the faulty meter (reminder the AEMC smart meters are installed by the retailer not the local distributor).

So “read meter status” does not replace automatic outage reporting.

Uncontrolled use of “read meter status” does however represent a significant privacy concern for consumers. The AEMC should give consumers the right to choose to disable access to the “read meter service”.

Remote Disconnection and Reconnection

All AEMC smart meters must contain a Supply Contactor. A Supply Contactor allows retailers to remotely disconnect consumers, the most common reason being for non-payment.

Historically disconnecting consumers was expensive. A field service crew was sent to the premises to remove the service fuse. Restoring power required another site visit to replace the service fuse.

Remote switching of the Supply Contactor is virtually free. As a result retailers are far more likely to use the service, for example using it to disconnect power as soon as the existing customer moves out. This may benefit retailers, but it is not a consumer benefit.

A major problem with remotely disconnecting premises is how to safely reconnect them. Current thinking is retailers must prepare lengthy scripts shifting liability for safe reconnection from the retailer to the consumer. The script requires the consumer to carefully check nothing is plugged in or turned on. Unfortunately since there is no power at the premises consumers are left to stumble around in the dark to perform the required safety check.

Only once the consumer accepts liability for reconnection will the retailer turn on the power

The Victorian Advanced Meters also contain a supply contactor but unlike the AEMC meters they include functionality able to automatically perform the safety check. After remotely reconnecting the premises the

meter checks for safe conditions and reopens the supply contactor if it senses a problem. This functionality is not included in the AEMC smart meters explaining why scripts are required to shift liability to consumers.

Remote disconnection means there is no point leaving a light on to welcome the new owners. By the time they arrive the retailer will already have turned off the power. One is left to wonder if the permanently dark house increases the risk of vandalism, especially since any burglar alarm will also be disabled.

Turning off the power increases costs for the new owner. For example over 10% of Australian homes have a pool or spa. Once power is turned off the lack of daily filtering quickly turns the pool an unhealthy green colour significantly boosting the local mosquito population (annoying the neighbours). On moving in returning the pool to healthy/safe condition requires considerable time, effort and expense.

Backup batteries are increasingly common in Australian households. These batteries provide power during network outages, for example for NBN phone back up and security/alarm systems. These batteries use lead acid technology with full discharge significantly shortening their useable lifetime. The retailer doesn't care if they shorten the lifetime of batteries because it is impossible for consumers to quantify how much they have shortened the lifetime.

Should a 'Market Led' rollout mandate services?

In a truly market led rollout retailers get to choose the services they wish to offer consumers. This would include the decision to offer a Supply Contactor. For example only including it when the meter is installed at rental properties, especially those offering short term accommodation. It is far harder to justify the cost of the supply contactor for most owner occupied households, were it is unlikely to be used over the entire lifetime of the smart meter.

This leads to an interesting question:

Why did the AEMC include the supply contactor?

Consumer advocates have always viewed the supply contactor with suspicion. They recognise the supply contactor will be used by retailers to 'encourage' consumers to pay their bills. Its mandatory inclusion highlights the AEMC smart meters do not Give

Consumers the Power of Choice, instead they gave retailers even more power over consumers.

Network stability and the Supply Contactor

The AEMC's decision to require every meter in Australia include a supply contactor raises cyber security concerns.

The cyber-attack is straight-forward. The supply contactors on multiple meters are opened and then commanded to close in rapid succession. The sudden increase in network load destabilises the grid (causing blackouts which the AEMC smart meters do not report) and may even cause damage to local distribution transformers and sub-stations.

Most smart meters include functionality intended to protect against cyber-attacks. For example the National Smart Meter Program prevented simultaneous switching of the supply contactor by introducing a short random delay. The AEMC chose not to specify any cyber protections in their meters.

Consumer awareness of new services

To date 500,000 AEMC smart meters have been installed. So far Dr Gill has failed to find a single consumer with an AEMC smart meter who is aware of the new services included with the meter.

Even though most pay their bills on time they expressed concern retailers were now able to remotely disconnect their power. Some were disappointed they would be required to accept liability for remote reconnection, especially when the AEMC could have reduced risks by specifying additional meter functionality.

Concerns about consumer privacy were mixed. Most felt they trusted utilities with their data. These discussions became more 'interesting' once it was highlighted the AEMC no longer allowed distributors to read customer smart meters. Instead AEMC metering services are provided by new and unknown companies. These companies are being forced to offer meters at the lowest price (potentially compromising security) and encouraged to find additional revenue streams (for example by selling consumer meter data).

Conclusion

The AEMC smart meter rollout was sold on the promise of "Giving consumers the Power of Choice".

As it stands consumers are given no power of choice. The mandatory rollout forces consumers to accept the new meter. Once installed consumers are given no control over the services these meters support.

The AEMC smart meter rollout fails to consider how the technology affects consumers. Uncontrolled access to new smart metering services will have a significant impact on consumer privacy and consumer rights. Despite these impacts consumers are unaware of the consequences of accepting a smart meter.

The AEMC should require retailers explicitly inform consumers of all new services supported by smart meters. The AEMC should seriously consider giving consumers the power to choose if their meter should support these new services.

The most damning evidence of the AEMC's failure to engage consumers is the lack of interest in electricity meters, smart or otherwise. Most consumers fail to see any benefit from the installation of a smart meter. Perhaps giving them some power of choice might be a step in the right direction.

Citation

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Comments or Questions?

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About Dr Martin Gill

Dr Martin Gill is an independent consultant specialising in the provision of consumer advice. This advice is based on a deep understanding of the Australian energy industry and strong analytical skills. As a consultant he has prepared advice for consumer advocates, government regulators, electricity distributors, electricity retailers, asset operators and equipment vendors.

Dr Gill is a metering expert. During the National Smart Metering Program he facilitated the development of a specification for Australian smart meters. Innovative metering products developed by his teams have been externally recognised with the Green Globe Award, NSW Government's Premier's Award and Best New Product by the Australian Electrical and Electronics Manufacturers Association.

He currently represents the interests of consumers on a range of Standards Australia working groups including metering, renewable power systems, battery storage and demand management.