

Government Ineptitude hinders tariff comparisons

Dr Martin Gill

The Australian Energy Market Commission (AEMC) claims the mandated rollout of smart meters will lower consumer energy costs. They then oversee rules hindering the use of the smart meter data to find cheaper energy tariffs.

Introduction

The Australian Energy Market Commission's (AEMC's) mandated rollout of "smart meters" is now underway. While they claim smart meters allow consumers to lower their energy costs this claim is not supported by early trials. Analysis of early smart meter trials consistently shows:

Smart meters, by themselves, do not lower energy costs

And

Consumers only benefit when the smart meter rollouts are accompanied with extensive consumer education

Unfortunately the AEMC rollout makes no attempt to provide consumers with simple access to relevant information or to provide them with the skills to use this information to lower their energy costs. The conclusion is consumers are unlikely to benefit.

Why mandate a smart meter rollout?

The AEMC's mandated rollout of smart meters continues their policy of creating a competitive retail market. In this competitive market the AEMC foresees retailers free to offer consumers a wide range of new and innovative tariffs.

While innovative tariffs create an opportunity for informed consumers, this occurs at the expense of passive consumers, who end up paying more. This conclusion is supported by the ACCC's recent review of retail electricity prices.

In the AEMC's competitive retail market consumers must continuously compare tariffs or end up paying more. The AEMC smart meter rollout makes no attempt to simplify the process of comparing available tariffs.

Summary of Findings

The AEMC mandated smart meter rollout has now commenced. The AEMC claims smart meters can lower consumer energy costs. So "What is the difference between a smart meter and a dumb meter?" The answer is not found in the meter.

While the AEMC may claim smart meters will lower consumer energy costs, the reality is a meter stuck on the outside of a house cannot achieve this. Lowering energy costs requires programs showing consumers exactly how they can lower their energy costs. Critically these programs do not require the rollout of expensive smart meters, they are equally effective when applied to existing electricity meters.

So why has the AEMC mandated the rollout of expensive smart meters? Recent AEMC decisions show the answer has nothing to do with lowering consumer electricity costs. The desire is to continue to increase competition across the energy market, including the introduction of new and innovative electricity tariffs.

Research consistently shows consumers will avoid risk. Risk adverse consumers will not adopt new tariffs unless the benefits are clearly demonstrated. If the AEMC wants to introduce new tariffs they must first address consumer concerns. This requires consumer education programs, not expensive smart meters.

The education programs need to show exactly how consumers can lower their energy costs, including choosing a new tariff. The AEMC's current efforts are at best feeble. Less than 15% of consumers are even aware of the Government provided tariff comparison service and even less are confident to use it.

The best thing to be said about the AEMC smart meter rollout is it offers consumers little of anything new. Unfortunately the statement supports the case for not rolling out expensive smart meters.

AEMC Claim	Analysis of Claim
Smart meters will lower consumer energy costs	Overstates the benefit. <ul style="list-style-type: none"> ✘ Consumer trials show smart meters do not lower energy costs without education programs. These education programs show consumers how to use their meter to lower energy costs, including comparing retail tariffs. ✘ Retailers, who own and control the AEMC smart meters, do not want consumers to compare tariffs ✘ Education programs are equally effective without expensive smart meters
Smart meters enable consumers to participate in the NEM	Considered unrealistic. <ul style="list-style-type: none"> ✘ The less than 5% of consumers able to afford expensive battery storage systems are more likely to use them to lower their own energy costs, not to participate in the NEM. ✘ Additional metering will generally be required for consumers to participate in the NEM ✘ Does not justify the mandated rollout of smart meters to the other 95% of consumers
New tariffs share electricity costs “more fairly”	True but ... <ul style="list-style-type: none"> ✘ New tariffs create both winners and losers. The AEMC provides no education programs helping consumers choose a tariff lowering their energy costs ✘ Over 95% of consumers still choose a fixed tariff which does <u>not</u> require an expensive smart meter
Enables third party services including tariff comparisons	Unlikely without reforms <ul style="list-style-type: none"> ✘ AEMC allows retailers to charge consumers to access their own data ✘ The AEMC does not require retailers offer cost effective access to any other legitimate service providers (even those selected by consumers) ✘ The AER does not allow access to their complete list of available tariffs
Smart meters support more frequent billing helping consumers manage energy costs	Overstated benefit <ul style="list-style-type: none"> ✘ Retailers already offer more frequent billing without expensive smart meters ✘ The AEMC smart meters support credit control, including allowing retailers to remotely disconnect consumers for non-payment
Smart meters can be remotely updated to support new tariffs	False <ul style="list-style-type: none"> ✘ The AEMC smart meters do not store tariff details ✘ The AEMC provides no means for consumers to readily obtain details of their current tariff

Australia’s National Energy Market

The AEMC is responsible for rules governing Australia’s National Energy Market (NEM). The NEM introduced the questionable concept of making access an essential service a competition. The promise was “competition would lower electricity prices”.

The ACCC’s review found retail competition is contributing directly to higher electricity prices. Their analysis reveals retailer costs are increasing as the NEM forces them to undertake expensive advertising campaigns and special promotions to win/retain customers. These costs are then passed onto consumers through higher electricity prices.

The AEMC’s Power of Choice

The AEMC decided to mandate the rollout of smart meters as part of their Power of Choice. The Power of Choice aspires to increase consumer participation in the NEM, for example selling power from their battery storage system. How realistic is this claim and what are the consequences for consumers who cannot afford to participate or choose not to participate?

Only a minority of consumers will be able to afford a sufficiently large battery storage and/or automated demand response system to receive significant financial benefits from deciding to participate in the NEM. These consumers can already afford to install additional metering needed to participate in the NEM.

Even among consumers able to afford the systems many will chose to use them to lower their own energy costs rather than actively participate in the NEM. For these consumers there is little incentive to install an expensive smart meter.

The majority of consumers just want to return to the days before the NEM when Australian consumers paid low electricity prices. Unfortunately history suggests non-participation will increase their electricity costs. For example retail competition forces consumers to constantly review tariffs or risk paying significantly more for electricity.

A mandated smart meter rollout assumes the majority of consumers will benefit. This analysis suggests only a minority of consumers will actually benefit. Despite only a minority of consumers standing to benefit the

AEMC mandated rollout forces all consumers to bear the cost of a new smart meter, even when they do not benefit.

Lowering energy costs by finding a cheaper tariff

In the NEM retailers are constantly changing the tariffs they offer. Consumers who do not *continuously* review their electricity tariff end up paying more. The AEMC suggests consumers will be able to use their smart meters to find cheaper electricity tariffs. There are numerous flaws in their logic.

Comparing tariffs requires access to

- consumer energy data,
- a list of available tariffs and
- knowledge of the consumer's current tariff.

Addressing these points separately:

Access to energy data

The AEMC gives retailers full access to meter data, however it carefully limits consumer access to their own data. For example while the Power of Choice suggested third parties could offer to analyse consumer data to lower energy costs, the AEMC allows retailers to charge consumers requesting third party access to their meter data. These uncontrolled charges will retard the development of this market.

There is an obvious conflict of interest handing the monopolistic provision of smart meters to retailers who stand to lose the most if consumers then use their meter data to lower energy costs. In fact the original Power of Choice avoided this conflict of interest by allowing consumers to choose an independent party to provide their smart meter. The AEMC even suggested these independent parties would compete for consumers by offering additional services, for example continuous tariff comparisons. The final decision therefore appears at odds with the AEMC's focus on enhancing competition in the energy market.

The AEMC will be forced to review their restrictions on consumer data access in the very near future. In November 2017 the Productivity Commission released the Consumer Data Rights suggesting consumers be given access to their banking, telecommunications and energy data. For example the banking sector is currently developing rules ensuring consumer can

easily access their banking data to find better deals. Critically this access includes the right to share it with third parties. Consumer access to their telecommunications data and energy data will follow shortly.

List of available tariffs

The AEMC requires retailers provide details of their tariffs to the Australian Energy Regulator (AER). The AER uses this list in their tariff comparison website. The list of tariffs is **NOT** made available to third parties trying to offer superior tariff comparison services. The lack of access to the list forces third parties to manually search for tariffs significantly increasing the cost to provide the very services the AEMC is hoping the smart meter rollout will enable.

The Productivity Commission study into Consumer Data Rights also extends to data held by Government agencies. The AER's comprehensive list of all available tariffs is of significant value to consumers, for example to St Vincent de Paul's tariff tracking project. In light of the Productivity Commission's ruling the limits currently placed on consumer access to the list of available tariffs should be reviewed.

The AEMC often highlights the de-regulated contestable market allows retailers to offer 'special tariffs' to some consumers. The theory is retailers will use knowledge of how much and when consumers use electricity and target them with special offers. Besides the significant cost implications of trying to manage a potentially large number of special tariffs there is another problem.

There is nothing in the AEMC's discussion to suggest special tariffs result in lower electricity costs. Any consumer offered a special tariff needs to carefully compare it to other tariffs. Unfortunately they will find the AER does not include 'special tariffs' in their tariff comparisons. The loophole ensures consumers cannot compare energy costs on special tariffs. Unless this loophole is addressed special tariffs are not a consumer benefit.

Current tariff details

The AEMC has removed restrictions on when retailers can change electricity tariffs. Retailers are now allowed to change tariff details several times a year. In this market consumers wanting to lower energy costs

must **constantly** review available tariffs. The arrival of the electricity bill provides a useful reminder it is time to repeat the process. The process starts by finding details of their current tariff.

So where do consumers go to get details of their current tariff? The AEMC smart meters do not store the details. Electricity bills do not show a summary of the tariff details. The only option is for consumers to try to locate the tariff change notice they received (which is not required to show what the retailer has changed).

There are numerous possible solutions to this issue from requiring retailers to show the AER assigned tariff identifier on all electricity bills all the way through to requiring retailers provide an electronic summary of the tariff in a standard file format. While both are possible solutions to the 'special tariffs' problem mentioned above, the second solution has the advantage of allowing consumers to easily send details of their current tariff to third parties to enable tariff comparisons.

The purpose of this article is not to propose a solution, but to highlight while the AEMC assumes smart meters simplify the now continuous necessity of comparing tariffs, they fail to provide the information consumers need to compare these tariffs.

Point of Clarification

A claimed benefit of the AEMC smart meter rollout is the meters can be remotely updated to support new tariffs. This is completely fictitious. The AEMC smart meters do not store the tariff.

When a consumer changes tariff, for example from a fixed tariff to a time of use tariff **no change is made to the meter**. The only change is made to how the retailer's back office systems calculate the consumer's next electricity bill.

Why is tariff innovation important?

There is nothing inherently wrong with the AEMC's desire to introduce new tariffs. Tariff reform has been a continuous process for over a century. The main question is whether it justifies the mandated rollout of smart meters to all consumers?

Electricity tariffs are used to share the cost to generate and distribute electricity. The AEMC

regulates some of these tariffs while encouraging retailers to develop and offer new 'innovative' tariffs.

The AEMC claim these new tariffs share the cost of electricity costs more fairly. While claims of fairness are important, the truth is unless the tariffs lower the cost to generate and distribute electricity then if one group of consumers pay less, others must pay more.

The following sections considers how tariffs and electricity meters have evolved to meet the need to bill consumers for their electricity use.

The development of electricity tariffs

The primary role of an electricity meter is to calculate electricity tariffs. The first electricity tariffs did not even use meters.

The first electricity tariffs

In 1899 the small New South Wales country town of Young was among the first places in the world to supply electricity to consumers. The electricity network was originally only used for street lighting but within a year shops, offices and homes were being connected.

Using electricity for lighting allowed for a simple tariff. Bills were calculated by charging a fixed fee per light bulb. On this tariff consumers did not pay for their actual electricity use! A consumer who used their lights sparingly paid too much while those who left their lights on paid too little.

The Lamp-Hour Electricity Meter

An early attempt to measure electricity used a 'clock'. The clock counted the total number of hours each light was used. The tariff charged consumers for the total number of hours lights were used. This was an improvement, but it still did not take into account the wattage of the bulb.

Billing for measured electricity use

During the 1920's consumers began to use electricity to power domestic appliances. Tariffs based on a fixed fee per light bulb and hours of use were unsuitable. What was needed was a means of measuring the actual amount of electricity being used. This led to the induction disk meter.

The induction disk meter

An induction disk meter comprises a solid metal disk that rotates in a magnetic field. The disk is connected to a mechanical dial which counts the total number of revolutions. The more electricity the consumer uses the more revolutions shown on the dial.



Induction disk meters still in use today

Electricity bills are calculated by taking the difference between two consecutive meter readings. Initially the tariff applied a fixed charge per kWh.

Induction disk meters support innovative tariffs

An early attempt to introduce innovative tariffs applied a different charge depending on the total amount of electricity used. Consumers using large amounts of electricity paid less per kWh. These tariffs encouraged consumers to install more electric appliances, which was seen as a sign of economic prosperity.

Over 95% of Australian consumers remain on these fixed tariffs. Smart meters are not needed to support these tariffs. For over 100 years simple, reliable and low cost meters have been, and continue to be, successfully used to support these tariffs.

Fiction: Remote meter reading is cheaper

Manual reading of induction disk meters is surprisingly cheap, think less than \$4 per year. Remote reading for the AEMC smart meters occurs over the Telstra, Optus and Vodafone mobile networks. Remote reading incurs commercial cellular data costs which are typically three to four times higher than the manual readings they replace.

Remote meter reading also requires every meter be fitted with a cellular modem. As commercial cellular networks continue to evolve retailers are forced to upgrade the cellular modem every 5 to 10 years (the shut-down of 3G networks in 2021 will require tens of thousands of meter upgrades). The cost of the

modem and its replacement further increases the cost of remote reading.

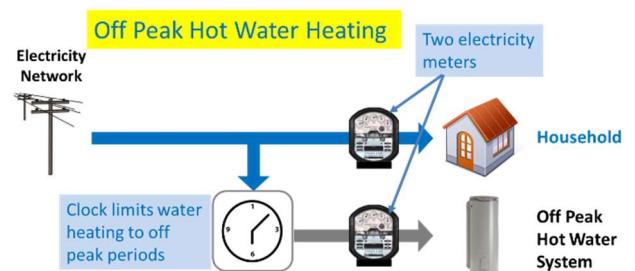
Time of Use Tariffs

Time of Use tariffs charge different prices depending on when the electricity is used. An online search quickly shows Time of Use tariffs are highly unpopular with Australian consumers. This is slightly surprising because under a different name Australian consumers have happily accepted Time of Use tariffs as a simple way to lower their electricity costs.

Off Peak Electricity Tariffs

During the 1950's natural gas was offered to Australian consumers. In an attempt to stop consumers switching to (clean) natural gas, electricity suppliers offered cheap electricity *provided* it was only used for heating during off-peak periods.

Off-peak tariffs require the installation of a clock to restrict when the water heater runs and a second electricity meter to measure off-peak electricity use.



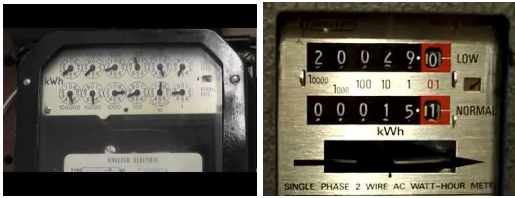
The advantage of off peak electricity tariffs is they offer a lower fixed price for the electricity used by the hot water heater.

Despite off peak tariffs allowing consumers to lower their electricity costs the AEMC smart meters are not required to support the required load switching.

Time of Use Meters

The cost to produce electricity has historically been lower overnight and more expensive during the day. Retailers wanted to charge consumers different prices depending on when they used the electricity.

An early solution was an induction disk meter with two separate dials. A device fitted externally to the meter controlled which dial counted electricity use.



Examples of two rate Time of Use meters

The electricity tariff then applied different kWh prices to the figures shown on each dial. Consumers prepared to run pool pumps, dishwashers and/or clothes dryers later in the evening could reduce their electricity costs.

Despite being available for over two decades time of use tariffs have proved highly unpopular with Australian consumers. Most cite concerns over often frighteningly high peak prices, for example while a fixed tariff might charge a little over 20 cents/kWh peak prices exceeding 60 cents/kWh are not uncommon. Consumers perceive a risk of increasing their electricity costs if they use too much electricity during peak periods.

In fact analysis of typical Sydney electricity consumers shows without adjusting their electricity use a significant percentage can lower their electricity costs by selecting a time of use tariff. These savings could be increased by minor adjustments to when they used some appliances.

The AEMC's consistent failure to provide education programs enabling consumers to determine if they could lower their energy costs on a time of use tariff is one of the largest impediments to the acceptance of these tariffs. The AEMC's mandated rollout of expensive smart meters without consumer education is a continuation of this failure.

Demand Tariffs

The AEMC has amended the market rules forcing distributors to offer 'cost reflective' network tariffs. The AEMC analysis of the claimed benefits looked at Demand Tariffs.

A demand tariff charges consumers a fee which depends on the maximum amount of power they use over a short period of time. Explaining demand tariffs is difficult. An analogy would be your local petrol station offering two petrol pumps. Both offer exactly the same petrol and charge the same price per litre, however one fills the tank in 1 minute and the other

takes 5 minutes. Despite dispensing exactly the same amount of petrol, choosing to use the fast pump results in higher costs.

On a demand tariff a consumer coming home and turning on their air-conditioner, at the same time they are running the washing machine and dishwasher are charged a higher fee than a consumer carefully running one appliance at a time.

While the AEMC has only recently mandated the rollout of demand tariffs they are not new. In fact induction disk meters have been used to support these tariffs for more than 50 years.



Induction disk meter with Maximum Demand (dial at bottom)

A demand tariff is calculated in two parts: As before electricity use is charged at a fixed rate with a separate charge based on the maximum demand.

The demand charge is calculated using the maximum demand detected each month. Even though a consumer might only use this demand value once in the entire month they pay the higher fee for the full month.

The problem with demand tariffs is electricity use is invisible. Educating consumers how individual appliances affect "demand" is virtually impossible. While the Victorian Advanced Meters offered options making electricity use visible to consumers the AEMC smart meters do not support these options.

Prepayment "tariffs"

While not strictly a tariff some Australian consumers are required (or choose) to pre-pay for their electricity. Positively prepayment tariffs can assist consumers to manage their electricity costs but negatively the same tariffs are utilised to enforce credit management. On these tariffs consumers are reminded they have run out of credit when the lights go out.

The following is an image of a current (!) coin operated pre-payment meter. It works just like old

mechanical parking meters. The consumer inserts a coin which turns on the electricity. When the credit runs out electricity is turned off until another coin is inserted.



It is not suggested the AEMC intends to rollout prepayment tariffs, however their smart meter mandate requires all meters contain a supply contactor. Similar to a prepayment meter the supply contactor is intended to be used for credit management. Specifically the supply contactor allows retailers to remotely disconnect consumers for non-payment. The introduction of the NEM has seen electricity prices rise dramatically pushing more consumers into energy poverty. High prices combined with the availability of a remotely controlled supply contactor will result in more consumers being disconnected.

The AEMC claims smart meters will allow vulnerable consumers to request more frequent bills. Billing more often for smaller amounts is assumed to assist consumers to manage electricity costs. In reality the option of sending a bill more often has been available for years. It does not require the rollout of expensive smart meters.

The fundamental issue is high electricity prices are responsible for pushing more consumers into energy poverty. Education programs showing consumers how to reduce their electricity costs would be more beneficial than providing retailers with the ability to remotely disconnect vulnerable consumers. These education programs do not require a smart meter.

Advanced Services – Not Included

When the NSW energy minister announced his support for the AEMC smart meter rollout he explained smart meters allowed consumers to see their energy use, choose the best tariffs and directly control appliances to lower energy costs. While some

smart meters offer these possibilities **NONE** of these advanced services are supported by the AEMC smart meter rollout.

While the AEMC foresaw the uptake of domestic solar systems they did not fully consider adverse effects on the local distribution network. For example solar systems can increase voltages above allowable limits. For this reason virtually all other mandated smart meter rollouts include network management services. The AEMC smart meters do not support these services.

Somewhat alarmingly the AEMC subsequently recognised the issue and allowed distribution businesses to install 'network devices'. For example a distributor network device can continue to control an off-peak hot water heater after the retailer replaces the customer's existing meter (reminder: the AEMC smart meters do not offer this service). The problem is consumers therefore pay for the retailer provided smart meter AND the distributor provided network device. Global smart meter rollouts avoid this unnecessary cost by including additional services in the smart meter.

Conclusion

The AEMC claims smart meters allow consumers to lower their energy costs. Unfortunately the claim does not stand-up. Analysis of smart meter trials consistently shows smart meters, by themselves, do not lower energy costs. Lower energy costs are delivered by consumer education programs typically accompanying smart meter rollouts. Further trials show these education programs can lower energy costs, even without smart meters. The AEMC does not intend to offer consumer education programs suggesting the AEMC mandated smart meter rollout is not intended to lower consumer energy costs.

The AEMC is solely focussed on developing the competitive retail market. In the competitive market it is claimed active consumers can reduce energy costs, but only by continuously reviewing available retail tariffs to find the cheapest options. Passive consumers are penalised with higher annual energy costs. So does the AEMC smart meter rollout make it easier for consumers to continuously review tariffs? In a word NO. The AEMC continues to do nothing to simplify the ability for consumers to compare tariffs.

About Dr Martin Gill

Dr Martin Gill is an independent consultant specialising in the provision of consumer advice 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.

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

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.

If the AEMC is so focussed on the creation of a competitive market why did they remove competition from the provision of smart meters? They originally proposed separating smart meter provision from the retailer. In this model the chosen meter provider has an incentive to provide services valued by the consumer, for example offering to continuously review tariffs to lower energy costs. In the final rule change the AEMC only allows a retailer to offer consumer smart meters, and retailers do not want consumers to actively compare tariffs.

Finally one feature of the AEMC smart meters which deserves more discussion is the ability for retailers to remotely disconnect consumers for non-payment. While this feature is not supported by current dumb meters it is difficult to see how it can be perceived as a consumer benefit.

Comments or Questions?

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

Citation

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