Generous Feed-in-tariff Schemes: their demise and what information is useful for affected system owners?

The Situation

Various generous feed-in tariff (FiT) schemes, including NSW's 60c Solar Bonus Scheme, will come to an end on the 31st December 2016. It is estimated that over 275, 000 households in Australia will be affected by these changes to feed-in tariffs. For PV system owners in states other than NSW, feed-in tariff rates will be reduced from around 16c-25c/kWh to 5c-7c/kWh. However, NSW system owners on the solar bonus scheme may also face the additional cost and imposition of having to replace or reconfigure the existing meter to allow for net metering so that they can maximise the benefit of their system.

These changes present an opportunity for PV system owners, regardless of their location, to rethink their energy use. For system owners in NSW, the end of the scheme also gives system owners the chance to install a smart meter, which might be done for free – depending on the retailer.

It has also been flagged that households having previously received greatly reduced energy bills will be more willing to spend money on an energy storage system as a hedge against rising energy costs.

State government may already have notified households regarding the end of these schemes and system owners may be seeking advice from their PV system provider regarding their best way forward. This document seeks to provide some guidance in this respect.

What Advice to Give

The end of the generous FiT schemes is an opportunity for the PV system provider to act as an informed adviser to their customers, to offer advice to further develop their business and to cater for customers' needs emerging in this market.

System owners would be looking at ways to limit their financial losses following the end of these schemes. The follow are steps recommended for system owners to take:

1. Ensure that the correct meter is installed: this applies only to gross-metered systems.
2. Investigate what is being offered by energy retailers
3. Optimise the system owner's energy use for the self-consumption of PV generation
4. Evaluate PV system performance.
5. Consider PV system upgrades and additional battery installation if justified either on a cost basis or on request by the system owner.

To provide helpful information on the first two points above, GSES has asked five energy retailers regarding the offers they have available for PV system owners that will be affected by the end of the FiT schemes, especially the Solar Bonus Scheme. These details are shown in Table 1.

In this document, net or digital net meter refers to a digital remotely read meter, whereby customers can be billed monthly. A smart meter is a meter where, in addition to the net meter benefits, the meter is capable of recording energy consumption on a 30 minute basis and the data can be made available to the customer.

System owners in Ausgrid and Essential Energy network areas may already have a net meter installed, configured to act like a gross meter. A simple reconfiguration of the meter by a level 2 Accredited Service Provider (ASP) would change the meter function to net metering.

Table 1. Retailer Questions and Answers. Please note results may vary depending on individual contracts.

Retailer	Q1	Q2	Q3	Q4
	What is your policy regarding the end of the solar bonus scheme and change over to net meters?	*What do system owners have to pay to have a net or smart meter installed?*	*Can system owners install their own net/ smart meter?*	*What feed in tariff will system owners receive for exported energy?*
Energy Australia	All customers are encouraged to change to net metering.	Customers will have to pay $800 to have the net meter installed.	Yes, it may be cheaper to have a L2 electrician switch your meter.	5.2c/kWh
Origin	Origin recommends system owners to change to a digital net meter.	The net meter will be installed free of charge for Origin customers, please contact us to arrange.	Yes, customers may choose to arrange their own meter or not change their meter.	6c/kWh but final offers will be sent out in October
AGL	Digital net meters are available for those who meet the AGL customer criteria	Installation of net meter is free for current AGL customers.	Yes, customers may choose to arrange their own meter or not change their meter.	6.1c/kWh
Powershop	Powershop already uses net metering and smart metering to bill customers.	Customers receive a free smart meter installation.	Yes, but have to pay for meter installation.	7.2c/kWh
Mojo*	A smart meter is installed when a customer chooses the higher energy pass billing account.	Included in the price of the energy pass – smart meters will be installed if certain conditions are met.	Not recommended. Meter may need to be changed to match Mojo's requirements. Cost of installation would be left to the consumer.	6c/kWh
Enova+	Will discuss options with customer and provide a variety of solutions to meet consumer needs.	It will cost $300 to have net metering installed. This can be done by customer or retailer. Retailer will discuss with customer	Yes, Enova can recommend L2 electricians for households.	10c/kwh

**** NSW networks only***
+ Currently Essential Energy Network Only

These responses are not exhaustive and are only intended to give an overview of retailers' responses to those PV system owners affected. System owners would still need to contact retailers to confirm details of arrangements applicable to them. Overall response from retailers suggest that they are taking a passive approach in the net and smart meter transitions and are relying on system owners to approach them.

It was clear that several retailers are not clearly distinguishing between net and smart meters. Make sure the customer knows whether they are getting a net meter (simple bi-directional meter) or smart meter (capable of logging interval energy usage), so as not to be disappointed.

A Network Operator Approach

The NSW Distributed Network Service Provider (DNSP) AusGrid has discussed a low cost solution with energy retailers as an alternative to new meter installation, known as 'Calculated Net Solution', which can provide energy retailers with a net reading from the customer's gross meters. AusGrid uses measured data to calculate the premises' accurate interval load data, which can then be used to determine the net export of solar at that location. AusGrid has offered this service to energy retailers to allow them to change a customer's billing structure to net energy billing without the need to change the existing meter. This would save retailers and customers the time and cost of changing meters.

AusGrid is currently in discussion with several retailers regarding the uptake of this solution and its availability across the Ausgrid network.

Recommendations for Self-Consumption of Solar Generation

The value of feed-in tariffs available after the 31st of December 2016 will be less than the cost of grid electricity. As a result, the PV system would represent the greatest financial savings if system owners shift their energy usage to correspond with the times of PV generation so that their PV system can directly displace the grid energy cost. This change of behaviour is known as load shifting.

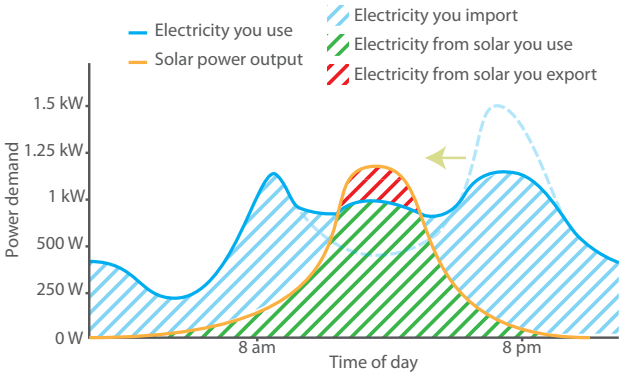

Figure 1 - Load shifting demonstrated as a power demand curve throughout the day, where the original consumption pattern is shown with a dotted line

Some recommendations for system owners to increase self-consumption are:

- Use timers to run appliances such as pool pumps during daylight hours, but avoiding afternoon peak pricing.
- Set 'boost' times of electric storage hot water heaters or heat pump water heaters to mornings.
- Smart Home Appliances including lights and general power outlet add-ons allow the user to program operation times and turn appliances on and off remotely via Bluetooth or internet. This is especially beneficial for people who are not home during the day.
- Switching gas appliances to operate on electricity may make sense if the system owner uses these loads predominately during the day. It can also be a precursor to prepare for energy storage systems.
- Houses that are well insulated may be suitable for preheating or precooling of living spaces during the day to reduce the demand for heating or cooling in the evening.
- Being aware of the time periods related to time of use tariffs and adapting energy consumption habits to help system owners reduce bill shock.

System owners need to be aware that if their tariff structure changes to time of use tariff, and that they shift any loads to early afternoon and their PV system is not generating, they will be charged peak rates at that time.

Depending on the location's electricity retailer, PV system providers could encourage replacement of meters, where required, with smart meters. This will give system owners detailed information regarding day to day energy usage patterns without having to invest in monitoring systems. The interval data gathered by a smart meter will also provide reliable consumption data that can be used as a basis for making battery sizing and costing estimates further down the track.

Additional services opportunities for Installers

Opportunities may exist for installers to provide value-add services to help the PV system owner manage energy use and adapt to the tariffs. This may include:

- A simple energy audit to identify opportunities for energy efficiency and self-consumption of PV generation.
- Provide and install monitoring system for PV generation and/or energy consumption.
- Performance testing services and module cleaning services to review and improve PV system performance.
- Install additional timers on the electric storage water heater, or install a dedicated PV energy diverter which prioritises water heating.
- Install another small system, which with the original PV system will meet the overall daily demand. Consumers may have accumulated savings from their 60c or 20c FiT that they may be willing to spend on upgrading or expanding their PV generation capacity to meet a greater portion of their daytime demand.
- Install energy management relays to connect specific loads, which will operate at certain PV generation thresholds.
- Install battery storage systems. Whilst the payback period of battery storage systems is still longer than acceptable in most cases, some system owners may be willing to install a small storage system to offset peak demand prices.

Battery Options available to customers with existing PV Systems

It may not be practical to modify an existing PV system because of the cost involved in bringing the system up to current standards which will be due to the age of the PV system and the many changes in regulations since 2011. Below are two retrofit options, which do not require modification of the existing system.

Two inverters

The installation of a multimode inverter with batteries and the rewiring of specified loads will reduce energy consumption during the day by providing self-consumption from the PV. The multimode inverter can be used to offset the specified loads during peak demand FiT times. This configuration requires specific programming to achieve the desired behaviour.

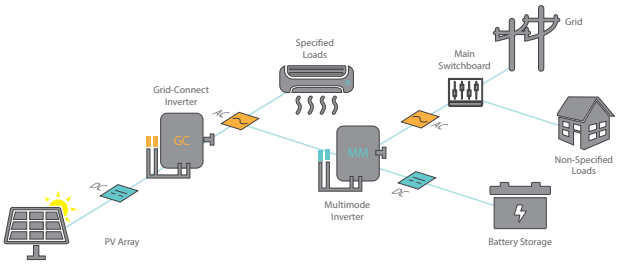

Figure 2 Two inverters with grid connect inverter connected to specified loads (Configuration 5)

Whole House Tariff Optimisation

This option requires considerable upgrades to the premise's electrical system. However it can provide a UPS power solution for specified loads and provide power in the event of outages. This is an option for customers who live in areas with an unreliable grid. It enables consumers to optimise self-consumption at those premises and reduce retail energy bills.

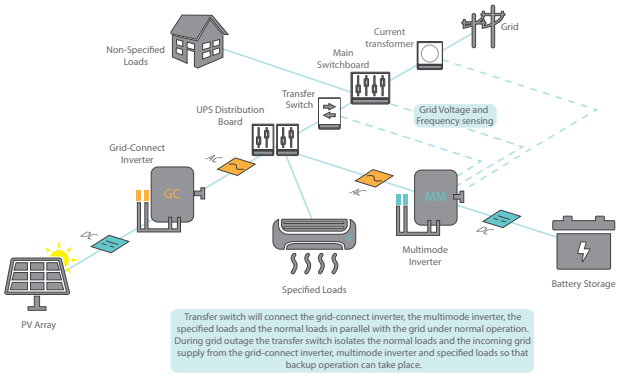

Figure 3 - Whole house tariff optimisation (Configuration 6)

Conclusion

The end of these feed-in tariff schemes, such as the solar bonus scheme, will mean a reduced financial gain for the scheme participants. However, it can be seen as an opportunity for system owners to carry out improvements to their home energy systems and rethink their energy usage. This also is an opportunity for installers to provide smart energy services which will meet the needs of customers wanting to optimise self-consumption of solar and maximise system performance. The options available will no doubt become more popular as more people become more aware of their power usage.

GSES is a Registered Training Organisation providing industry leading nationally recognised training for the design and installation of Grid Connect PV Systems and PV Systems with Batteries.

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