

# Validating a Solar Quote

Dr Martin Gill

A friend of Dr Gill's owns a unit in a strata complex. A solar installer has provided the body corporate with detailed analysis suggesting the strata complex would recover the cost of investing in a solar system in "just over 4 years". Dr Gill's review of the installer's analysis raised multiple issues.

## Introduction

Electricity use in common areas of the strata complex costs the body corporate \$10,000 a year. Installing a solar system is one way to reduce this cost.

Even with Government subsidies the installation of a solar system represents a significant financial investment by the body corporate. The critical question is "How quickly do energy savings recover the cost of the investment?"

The solar installer's analysis suggests the complex requires a 17.5kWp solar system. A summary of their analysis is shown in the following table:

Item	Value
Quoted Price	\$39,000
Government Rebate	\$11,000
System Size	17.5kWp
Payback Period	"Just over 4 years"

Dr Gill was asked if the analysis was accurate.

## Quoted Price

The solar installer's quote emphasises the strata complex is eligible for a Government solar rebate of \$11,000. Even after receiving the rebate the body corporate still needs to find \$28,000.

Alarming the quote does not detail all costs to install an operational solar system. In separate correspondence the installer details additional electrical work costing an estimated \$2000.

The out of pocket prices of domestic solar systems are readily available. In March 2018 the average installed price of a 5kWp solar system in Sydney was \$5,360. Installing three 5kWp systems gives a baseline price of \$16,000 for 15kWp.

Comparing the out-of-pocket price of \$30,000 to the baseline suggests the proposed system is expensive (even allowing for slightly higher costs due to the strata complex's flat roof).

## Calculating Annual Savings

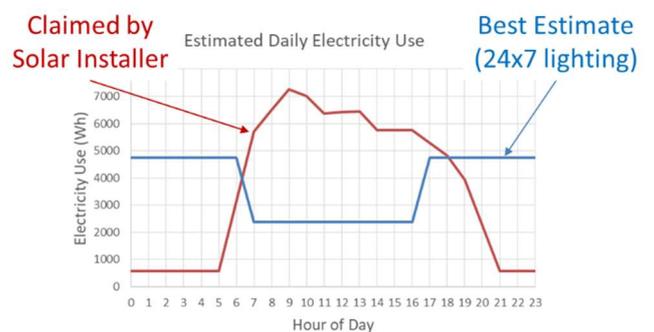
The value of a solar system is largely determined by the amount of solar generated electricity the strata complex uses. This requires estimates of electricity use and forecast solar generation.

### Estimated Electricity Use

Discussions with the unit owner indicate the solar system is only used to offset electricity use in common areas of the complex. This is primarily lighting in the corridors, stairwells, garage and outdoor pathways. No other major loads were identified (specifically no pool, no community air-conditioning, etc).

Outdoor lights are turned off during the day, but indoor lights are left on 24hours a day. The recent electricity bills shows average daily electricity use is consistently around 90kWh/day. This suggests the lights present a nightly load of 4700Watts falling to 2400W during the day.

The solar installer claims "to have closely assessed the electricity usage of the site". Their estimated daily usage varies significantly from the actual lighting load.

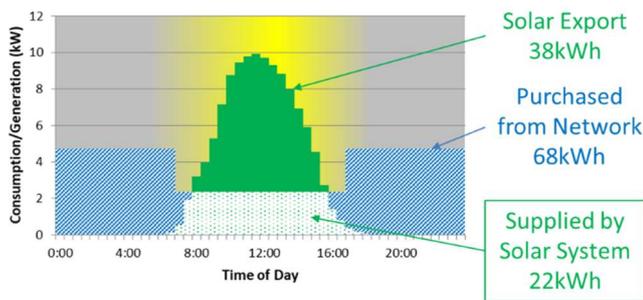


The solar installer's estimated electricity use is highly questionable. Most of the strata complex lighting load occurs at night, but the solar installer estimates overnight the lighting load falls to 600Watts.

### Estimated Solar Generation

The total amount of electricity generated by solar systems can vary significantly. Unfortunately the solar installer does not include details of the assumptions they have used when modelling the solar system.

Rather than use a theoretical model Dr Gill used the measured output of his solar system to calculate annual solar generation. He is located in an adjacent suburb so solar output will be virtually identical.



The above figure shows average daily values. To calculate savings it is necessary to use the price of electricity.

### Price of Electricity

The Government’s independent tariff comparison service was used to find the cheapest tariff (see the Appendix for more details).

Using the cheapest tariff reveals the installation of a 17.5kWp solar system gives first year electricity savings of \$3876.

	kWh	\$
Yearly No Solar	32851	\$8186
Yearly with Solar	25841	\$4671
<b>Saving</b>	<b>7011</b>	<b>\$3516</b>

The annual saving of \$3516 is lower than the \$5500 estimated by the solar installer. The main difference is the daily usage profile. The strata complex uses most electricity at night when the solar system is not generating electricity. The result is the strata complex can only use just over 30% of the electricity generated by the solar system. The solar installer chose a profile which suggests they could use 75% of the generated electricity.

In common with most solar advertisements the solar installer’s analysis emphasises (exaggerated) savings. It fails to mention after installing the solar system the strata complex continues to pay \$4671 a year for electricity.

### Payback Period

Calculating the payback period requires several other assumptions. Most solar installers are keen to point out recent steep rises in the cost of electricity. The key question is “Will these steep rises continue?”

The Australian Energy Market Commission has included several Government initiatives in its forecasts of future electricity prices. They currently predict NSW electricity prices will fall by 5.8% during 2018 and 7.3% in 2019. They attribute these falls to decreasing wholesale prices in the National Electricity Market. As electricity prices fall, annual solar savings decrease, increasing the solar system payback period.

Decreasing wholesale electricity prices has another impact. IPART’s recent recommendation to increase solar feed in tariffs was based on higher wholesale electricity prices. Lower wholesale prices suggest IPART will recommend decreasing the feed in tariff, further increasing the solar system payback period.

The financial modelling has generously ignored these downward price trends. Instead assuming electricity prices, and solar feed in credits, increase with the Consumer Price Index (CPI), taken as 2%.



The financial analysis reveal the payback period for the suggested solar system is 9 years (on current electricity price trends this should be taken as a lower estimate). A payback of 9 years is double the “just over 4 years” suggested by the solar installer’s analysis.

While the above financial analysis suggests the strata complex will receive significant financial benefits beyond 10 years. The critical question is “Will the solar system last more than 10 years?”

## Analysis of offered Warranties

The quote does not summarise applicable warranties instead referring to a lengthy document available from the installer's website. This document suggests the warranty is 10 years.

Under Australian Consumer Law consumers making a warranty claim have the right to choose their preferred option from the three R's; repair, replace or refund. Here the solar installer implies they, not the consumer, choose the option.

### Remedies

If [REDACTED] determines that a reported defect in relation to a Product is eligible for coverage under this Limited Warranty (including retention capacity), [REDACTED] will, at its sole option:

1. Repair the defective Product;
2. Issue a credit note for the defective Product in an amount up to its actual value at the time buyer notifies [REDACTED] of the defect, as determined by [REDACTED], for use toward the purchase of a new Product; or
3. Provide the buyer with replacement units for the Product.

Point 2 raises further concerns. Should the solar installer choose not to repair or replace the faulty unit then *they* do not intend to offer a full refund.

Factually the solar installer is not even offering a partial refund. Their credit can only be used to buy products from the solar installer. This does not appear in anyway compliant with Australian Consumer Law.

The company also fails to offer a performance guarantee on their solar panels. For example guaranteeing "80% output after 20years". Many domestic solar panels are offered with performance guarantees raising questions why such an expensive commercial system does not offer the same peace of mind.

## Integrity of the Solar Installer

The Clean Energy Council maintains a list of Approved Solar Retailers. These retailers voluntarily agree to a high standard of trader conduct including compliance with Australian Consumer Law. The installer is not an Approved Solar Retailer.

An online check of reviews found one relatively recent review from the same area:

*"destroyed my brand new roof by screwing into the valleys of the cliplock. They did nothing to rectify it and scrambled. Now it leaks."*

As a large national company the solar installer is likely to subcontract the actual installation. The online check was therefore limited to installations in the local area (which are likely to use the same subcontractor). The review was posted sufficiently long ago for the solar company to have rectified the issues.

The solar installer's failure to register as an Approved Solar Installer with the Clean Energy Council and the online review, does not instil confidence.

### More solar quotes

There are sufficient concerns with the current solar installer not to proceed. If the strata complex still wishes to install solar they should consider obtaining quotes from other solar installers.

For example the introduction suggested they should investigate installing three 5kWp systems for \$16,000. Analysis shows at this price the payback period is around 5 years.

While researching this article paid advertisements continuously offered "to obtain three solar quotes". A word of warning: Do not accept these quotes without first negotiating the final price with the installer. After using this service consumers report they were able to lower the price by \$1000 (around 20%) from the originally offered prices.

## Alternatives to Solar

### *Find a cheaper tariff*

The easiest way to lower electricity costs is to call your retailer and ask for a better deal. Before placing the call it pays to do some homework.

Dr Gill's analysis of the body corporate's electricity bills showed their existing tariff offered a 12% pay-on-time discount. Using Energy Made Easy the same retailer was offering a discount of 25% (off the same rates).

The strata manager was provided with the details and called the retailer negotiating a further 2% discount off the advertised rate. The phone call saved the body corporate \$1500 a year!

### *Install Energy Efficient Lighting*

The body corporate electricity bill pays for lighting used in common areas, including corridors, stairwells and car park. While some of these lights have been upgraded to energy efficient LEDs many have not. A quick audit of lights yet to be upgraded in the common areas found:

	Number
18W fluoros	21
36W fluoros	30
60W globes	5
10W fluoros	17
22W fluoros	12

Including the ballast used in fluorescent tubes shows just the identified lights are using 2600Watts. (recall the solar installer's unrealistic estimate indicating electricity use falls to 600W overnight).

LED alternatives to the 36W and 18W fluorescent tubes and the 60W globes can be purchased for \$10. These alternatives use 10W. Upgrading only these lights gives annual savings of \$3000 (assuming these lights run 24hours a day).

A \$560 investment in efficient LED lights provides similar savings to the proposed \$30,000 solar system. Even if installation by an electrician increases the cost of the LED light upgrades to \$1000 the payback period is still 4 months, compared to the 9 years for the solar system.

Note: After upgrading to energy efficient lighting a smaller (and therefore lower cost) solar system can be installed.

## Conclusion

A number of issues are identified with the provided quote

- The offered system is too expensive
- The solar installer's analysis over-estimates annual solar savings (\$5500 v \$3500)
- The solar installer's analysis under-estimates the payback period (4 years v 9 years)
- The offered warranty is substandard and may breach Australian Consumer Law
- The installer has not signed the solar installer code of conduct

The strata complex should investigate upgrading their lighting to energy efficient LEDs. If interested they can then consider investing in a much smaller solar system.

## Citation

Please accurately attribute all quotes and references to this article. It would be appreciated if references also included the author's website

[drmartingill.com.au](http://drmartingill.com.au).

## References

Energy Made Easy ([energymadeeasy.gov.au](http://energymadeeasy.gov.au))

Australian Energy Market Commission ([aemc.gov.au](http://aemc.gov.au))

IPART ([ipart.nsw.gov.au](http://ipart.nsw.gov.au))

## Comments or Questions?

The author is happy to receive comments or questions about this article. He can be contacted at

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## Appendix

### Best Solar Tariff

The Government provided tariff comparison site, Energy Made Easy, was used to find the cheapest tariff. Unfortunately Energy Made Easy does not support the almost 2 million Australian consumers who have chosen to invest in a solar system. The lack of solar system support forces consumers to manually adjust the figures to find the cheapest tariff.

The analysis shows before installing solar the strata complex uses 90kWh/day. After installing the 17.5kWp solar system daily usage drops to 68kWh/day. At 68kWh/day Energy Made Easy lists 60 offers with annual costs ranging from \$6683 to \$11,240 (including discounts but before solar credits).

On average the solar system sends 38kWh/day to the network. Solar credits must be manually included as shown in the following table:

	Feed In Credit	Cost (no solar)	Final Cost (with solar)
Tariff 1	6.1	\$6,683	\$5,785
Tariff 2	8	\$6,692	\$5,514
Tariff 3	12.5	\$6,927	\$5,086
Tariff 4	11.1	\$6,936	\$5,301

With almost 70% of the solar generated electricity from the 17.5kWp solar system being sent to the network tariffs offering higher feed in credits become cheaper. For properly designed solar systems this is not always the case.

Energy Made Easy is provided by the Australian Energy Regulator (AER). The AER claim they are currently upgrading Energy Made Easy and will investigate adding support for solar systems. The same promise was first made to Dr Gill four years ago.

Full details of the cheapest tariff are:

Item	Cost
Usage Charge	23.891 c/kWh
Daily Charge	92.51c
Feed In Tariff	12.5 c/kWh

## 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, electric vehicles 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.