Solar Matters No. 4

Article by Bruce Sonogan, Benalla Sustainable Future Group.

Is Solar Giving Me Value for Money?

Now that you have taken the plunge and installed a solar electrical system, you may be trying to determine how much money you are saving as a result of your investment. Reading your bi-directional electricity meter will tell you how much electricity you have used, as well as how much you have exported to the grid. If you have signed an agreement with your supplier to accept the "Premium Feed in Tariff", then the exported electricity will be credited to your account at a rate of at least 60cents/kWhr, a great deal more than what you are currently paying.

I have heard reports of some householders being disappointed with the amount of electricity they have exported, as they had expected their systems to generate much more electricity than that shown on their account. In these cases, what may not be clearly understood is that not all electricity generated is exported to the grid (and therefore shown on your account) as some is used before it can be exported. This "offset" amount should be valued at the current rate you are paying for your electricity, as it has been generated by the solar system and replaced what would otherwise have been used from the grid.

The only way to accurately determine how much solar electricity a household has used is to deduct the total amount of solar electricity exported to the grid from the total that has been generated by the system. The problem is that your electricity meter will not tell you how much the system has generated. Your inverter however, should have the capability of recording the total generation of your solar electrical system. It is then a matter of deducting the total amount exported to the grid, as read from the electrical meter, from the total amount generated, as read from the inverter. It is important to take these readings over an extended period of time and average them. Daily readings can have large variations depending on the solar radiation that has occurred during that day. For example, at this time of year, my 1 kW solar system has produced in excess of 5 kWhr of electricity on a sunny day, but less than 1kwhr on an overcast day.

So remember, when determining the financial advantage that your solar electrical system is providing, you must not only calculate the value of the electricity exported to the grid at the Premium Feed in Tariff rate, but also the value of the solar electricity used. This value must be what you would expect to pay for the electricity had you used it from the grid. Where a household has different rates for peak and off peak periods, this can be difficult, but not impossible to calculate.

***Solar Tip for April**. Periodic observation (and recording) of the read outs on your electrical meter and inverter can provide you with all the information you require to determine the financial return from your solar electrical system.*

The table below provides data collected from six Benalla District solar electrical systems for the months of February and March. Most of the systems have recorded a lower solar power generation figure during March as the days are getting shorter and perhaps are more frequently overcast.

System	**A**		**B**		**C**		**D**		**E**		**F**	
Rated capacity	1 kW		1 kW		1 kW		2 kW		4.2 kW		3 kW	
Household description	2 A, SHW, SP, EWP, R		2 A, 2 T, AC, SHW, SP, EWP, R		3 A, SHW, AC, U		2 A, U, AC		2 A, SHW, EWP, R		4A, SP, EWP, R	
Month	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar
Grid power consumed	11	9.2	14.7	20.8	13.9	12.4	7.6	4.9	13.3	12.3	27.8	21.7
Solar power generated	4.9	3.7	4.5	4.6	4.3	4.2	8.7	9.1	19	18.1	17.7	13.7
Total daily household consumption	13.9	11.9	17.7	23.7	17.5	15.7	12.3	8.8	17.8	15.5	34.4	27.2
Daily cost without solar	$2.76	$2.70	$3.73	$3.97	$3.71	$3.35	$2.78	$2.11	$3.10	$2.71	$5.86	$4.66
Daily cost or return with solar	$0.98 cost	$1.59 cost	$2.25 cost	$2.45 cost	$2.61 cost	$2.19 cost	$0.54 return	$1.75 return	$6.41 return	$6.80 return	$2.06 return	$1.28 return
Daily saving	$1.78	$1.11	$1.48	$1.52	$1.10	$1.16	$3.32	$3.86	$9.51	$9.51	$7.92	$5.94
Note 1: Each household will have different supply charges, however for simplicity and for direct comparison, the rates used for all calculations are as follows: Peak - 22.88 c/kWhr, Off Peak - 9.9c/kWhr, Premium feed in tariff - 0.60c/kWhr, Daily charge - 60.5 cents.												
Note 2: A = adults, T = teenagers, C = children, AC = air conditioning, SHW = solar hot water with electric boost, SP = swimming pool, EWP = electric water pumps, R = rural property, U = urban property												

Daily Solar Generation and Electrical Consumption for Selected Households in the Benalla District for the months of February and March 2011.

Disclaimer: Although every care has been taken in providing accurate information, no responsibility will be taken for the use of this information in making investment decisions.