How many solar panels do you need?

the bad news and the good news

by

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Let's ask ourselves a question

- If we live in an average household and,
- we have a car which does an average annual mileage

- *How many solar panels would we need to break even?*

Please note: I am talking about ENERGY here not cost.

The Average Household

The average household consumes about 15 kWh of energy per day.

The Average Car

The average car travels 20,000 Km per year.

ie. 55 Km per day.

The Average Car

- The average car requires 10L of fuel to travel 100 Km
- ie. we need 5.5 L per day

The Energy Density of Petrol

- The enegry density of petrol is quoted as 32 MJ/L
- ie. 32 X 0.278 = 8.9 kWh/L
- So at 5.5 L per day we need 49 kwh of energy per day

Therefore in Total

The Energy we need:

- For house: 15 kWh/d
- For the car: 49 kWh/d
- Total: 64 kWh/d

What do we get?

- At our house near Rye we have 18 solar panels and I have been keeping records for several years.

- I get on average 12.21 kWh/d

What can I do with my 12.21 KWh

Either:

Provide 80% of my household needs

OR:

Run the car for 13.7 Km.

Now the GOOD NEWS

The efficiency of an Electric car is 5 times that of Petrol or Diesel car

Typically 18kWh/100km

Our Total need becomes

- For the house: 15 kWh/d
- For the car: 9.8 kWh/d
- Total (approx.): 25 kWh/d

Therefore what we need

- If my 18 panels give 12.2 kWh/d and we need 25 kWh/d
- we must have at least

36 solar panels per house

QED

The End