What is the Difference Between a Kilowatt and a Kilowatt-hour (kW vs. kWh)?

What the heck is the difference between a Kilowatt (kW) and a Kilowatt-hour (kWh)?! When looking over your solar proposal, you're probably trying to understand that before making the plunge. This question is one that puzzles many people, so here's the scoop.

When you get your electric bill, of course most of us just look at the total cost. But do you ever look closely at the number of kWh's you've used - and do you know what it means?

If you know what a kWh is, it can help you understand:

- How your energy supplier works out your bills
- Why some appliances use much more electricity than others
- How much individual appliances use
- Why you should turn appliances off at the wall to save energy costs, and not just leave them on standby

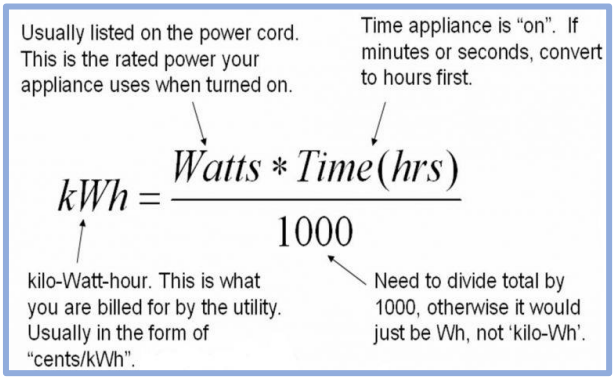
So What Exactly is a kWh?

A kilowatt-hour (kWh) is a measure of how much energy you're using.
It doesn't mean the number of kilowatts (KW's) you're using per hour. It is simply a unit of measurement that equals the amount of energy you would use if you kept a 1,000 watt appliance running for an hour:
So, if you switched on a 100 watt light bulb, it would take 10 hours to rack up 1 kWh of energy. Or a 2,000 watt appliance would use 1 kWh in just half an hour. While a 50 watt item could stay on for 20 hours before it used 1 kWh.

What Else Takes Around 1 kWh?

It's hard to be precise, as similar appliances can have very different wattages, but here are some examples of consuming 1 kWh:

- Keeping a space heater (1,500 watts) on for 45 minutes
- Cooking in a 2,000 watt electric oven for half an hour
- An hour's ironing with a 1,000 watt iron
- Less than an hour using a dishwasher (1,000 - 1,500 watts)
- Around three hours watching a plasma TV (350 watts)
- Keeping a fridge (500 watts) on for about two hours
- Using a laptop (20 - 50 watts) all day
- Keeping a broadband router (7 - 10 watts) on for five days



What's the Difference Between kWh and kW?

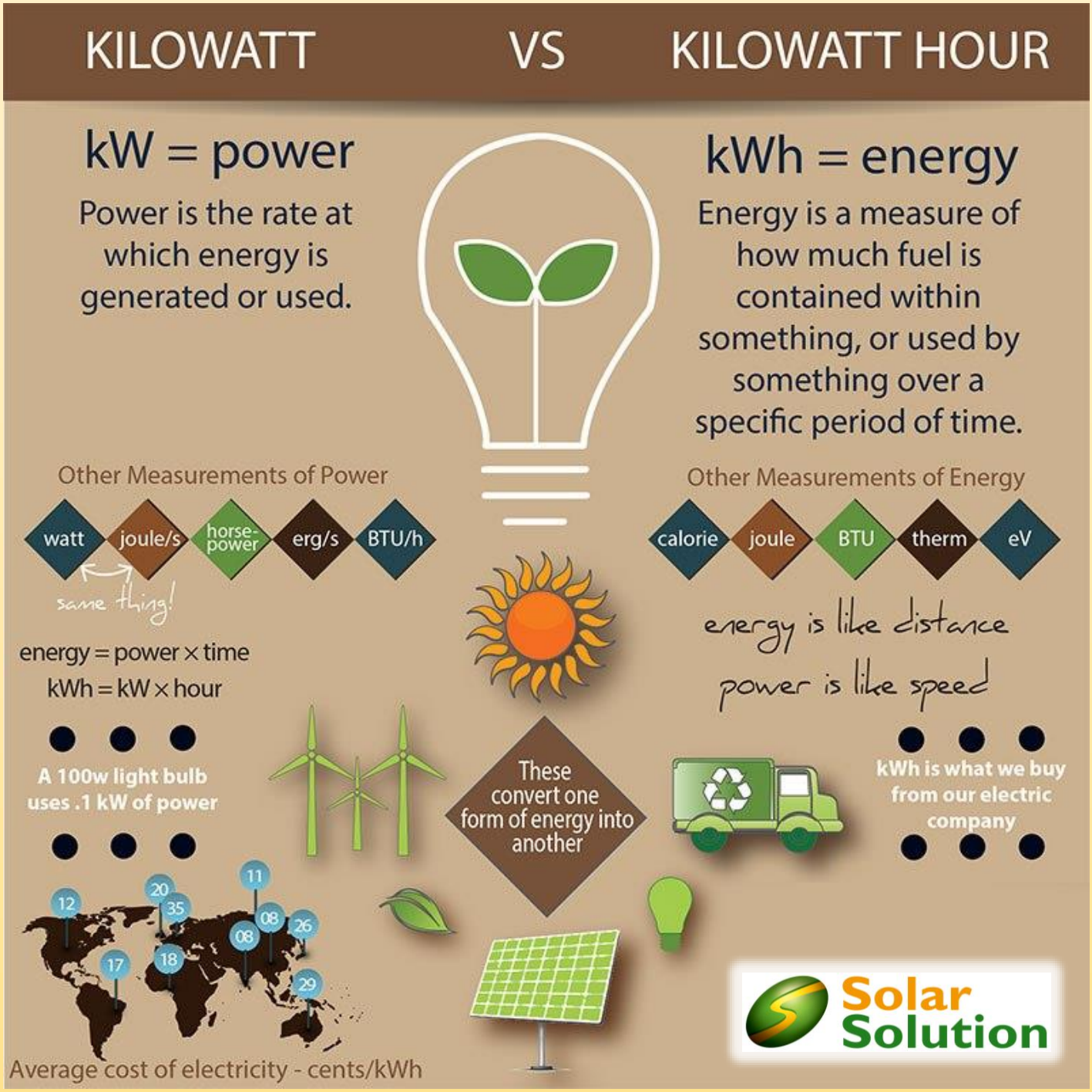
kW stands for kilowatt. A kilowatt is simply 1,000 watts, which is a measure of power.
So a 1,000 watt drill needs 1,000 watts (1 kW) of power to make it work, and uses 1 kWh of energy in an hour. That's why, if you leave a TV or computer on standby, it is still using power and creating a kWh cost on your energy bill.

How is That Measured in Relation to Solar?

For the purpose of relating to solar energy: A 260 watt solar panel may generate 260 Watts (or 0.26kW) of *power* when the sun shines on it. No matter how long the sun shines, 260 Watts will be the power output from the panel (*more or less - this is a complicated area, but for now we'll just say it's 260*). When the sun goes down, the panel stops functioning and 0 Watts are produced. However, if you want to know how much *energy* this same panel will produce, we need to consider a time factor - how many kWh's can the same panel deliver in, say, 1 month? To answer this, we need to know how many hours the panel is generating power for each day during the month. Let's estimate 5 hours per day, for 30 days. This means the panel will deliver 260 (Watts) x 5 (hours) x 30 (days) = 39,000 Watt-hours in a month - we can divide this big number by 1,000 so it's easier to read. This makes it kWh's. So, the panel makes about 39 kWh's of electrical energy per month. If you pay your electric provider 12 cents per kWh, then that panel would generate 39 kWh's x .12 = $4.68 worth of electricity for that month.

Simple, right?

Solar Solution



The average residential roof in Washington DC can fit 20 solar panels. (20) 260 watt panels would make up 5,200 watts, or a 5.2 kW system. The estimated output of this system, considering no shading issues and south facing, is 7,545 kWh's annually (the output differs month to month)**. That would be a value of $905 of free electricity** (at today's electric rates)**. Your out of pocket for this system installed for a property in the District with Solar Solution LLC would only cost $3,600!** (After a 30% Federal Tax Credit) **That's less than a 4 year simple payback on a system with a 25 year warranty!**

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