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# Solar's Dirty Little Secrets...



By Randy Velker

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# Dirty Little Secret #1

## DLS1- Solar Energy is Intermittent

[Solar energy](#) only works in the daytime! So half of every year is “powerless.” You can't use solar electricity at night. It only makes sense.

Of course, at night is when we need light.

We certainly use plenty of energy during the day, but to only have energy during the daylight hours would dramatically change the way that we live our lives.

There are a few ways that we have figured out how to get around this “dirty little secret.” Some of them are very helpful, others are only potential solutions.

Early [Photovoltaic Solar Systems](#) used the electricity to charge batteries which could then be used at a later time (at night for instance). This has worked pretty well and makes the system useable at night, but it provides a few problems of its own.

The first problem is that batteries are expensive (see DLS #2), dangerous (see DLS #3), and make the PV system a complex “science

project.” If you are interested in maintaining your system regularly (monthly checks and maintenance) then this route still might make sense, but for those of us who are trying to reduce the amount of “maintenance” that we are responsible for in our lives it may not be a viable option. Without constant maintenance a battery based photovoltaic system can become dangerous (some have even exploded). If you are not going to do the maintenance, then do Not get the system!

A battery based system can be twice (x2) as expensive as a system without batteries. This is significant (and will be explored more in DLS #2).

Batteries also must be replaced regularly. They may last (potentially on the high end) up to 10 years. Remember however, that this is significantly shorter than the lifespan of the Photovoltaic module (up to 50 years). You must budget for replacement of batteries in your financial plan.

Many advances in batteries are becoming available commercially (for instance, ion batteries), but these new and improved batteries also carry with them a “new and improved” price tag (see DLS #2).

The primary way that we can bypass the “Intermittent Issue” is by connecting our photovoltaic system directly to the existing grid. The electricity produced by the photovoltaic system is used when the sun is shining, but if you need more electricity (or you need electricity at night) then you simply use the electricity from the grid. Because most houses and businesses already are connected to the “electrical grid” this is a very simple

and a very real option.

What you are doing in effect is using the grid as your battery bank. Any excess electricity simply goes back into the grid and your utility company pays you for it (or it offsets electricity you use at night). This completely eliminates the hassles of having batteries necessary for a photovoltaic system to be used.

When a [Solar System](#) is “grid-tied” as described above it must conform to safety standards (which are a good idea anyway). All equipment must be UL listed (Underwriters Laboratories) and you must have a system that shuts down when and if the grid goes down. In other words this type of a system is NOT a backup to the grid. It can only be used when and if the grid is functioning. The reason for this is to prevent your photovoltaic system from producing electricity and shocking a utility worker who may be working on the line (to get power back up).

If you are concerned about having a backup power source then you will need to explore a [photovoltaic system](#) with batteries included or some type of a fossil fuel generator.

95% of all photovoltaic systems that have been installed in the past 10 years are “grid tied” systems and send electricity straight back into the grid. This type of a system should be considered as you are exploring solar energy because it is relatively simpler, safer, and less expensive than a battery type system.

The intermittent nature of solar energy requires that it will never be the sole provider of electricity. There must always be an energy source which is a base provider of electricity that solar can supplement.

# About the Author



Randy Velker is a solar designer/installer in Middle Tennessee. He is the owner of Simple Energy Works LLC which plans, designs and installs commercial and residential photovoltaic systems. They are also pioneering PV leasing in Tennessee. He lives in Crossville with his wife and seven children, and they use electricity produced

by their Grid-Tied [Photovoltaic solar system](#). They also track all of their energy usage using the [Current Cost Envi](#) real time energy monitor.

He is interested in renewable energy and “Green” technologies only when they make sense (financially, environmentally, etc.) - and not a moment before!

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