

Learn how to shut off the grid when power goes down

Stewart Somerville

Alternative Energy Solutions, Inc.

When doing net-metering and have a battery backup there is equipment out there that functions in different ways.

On any system you will have to have a grid interconnect to shut off the grid when the utility power goes down.

OutBack, Xantrex, and SMA all have equipment that does that. But they function very differently.

Let's look at how each one functions first. OutBack and Xantrex both has charge controllers. The array feeds the charge controller and charges the batteries.

There are several circuits ran from the panels to a combiner box. In most cases there are only one to three panels per circuit. Wire sizing has to be larger to handle the lower voltage. Voltage drop is a very big deal in low voltage systems. In these runs you want to keep your voltage drop to less than two percent.

Batteries take more power to recharge than you use. An estimate is roughly for every 100 amp hours you put in you only get 80 amp hours out.

The batteries have to be full before any net-metering will take place. Both OutBack and Xantrex will go to sell mode and sell until the batteries voltage reaches a set point. This is a most inefficient way of dealing with net-metering with battery backup. The efficiency of these systems can be as little as sixty percent.

SMA functions a little differently. The array feeds an inverter that converts 200-600 volts dc to 240 volts ac. In most cases you can string four to fourteen panels together depending on the rating of the panel.

In some cases you only will have one circuit going to the

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inverter.

With the voltage being higher voltage drop is less, smaller wire and less wire runs. Here is where SMA differs. The power comes from the array to the inverter and feeds the power panel.

Then another inverter feeds the circuits that need to be hot when the utility power goes down. This inverter also will charge the batteries as needed.

The batteries are kept in a float state until needed. When the utility power goes down the isolated circuits are powered by the batteries

and solar array. The efficiency of the SMA is as high as ninety percent. When you are trying to lower your power bill from the utility you want as high efficiency as possible.

Any of these systems can have a generator backup added to them. The generator can charge the batteries and supply additional power to other circuits while it is running. When it comes to solar or generators if the deal sounds too good to be true, it probably is.

I have had several unhappy clients that listened to a deal that sounded too good to be true and ended up with something that did not work. The internet is a great tool and has some good deals but if you don't know what you need it

can be a nightmare.

Installation is a big undertaking. It is important to follow the NEC code. When dealing with dc circuits using the right breakers and equipment is crucial. If you use an ac breaker on a dc circuit you could have a fire on your hands. At the very least have a qualified designer design your system. NABCEP is a national certification that is tough to get. Check out the NABCEP site www.nabcep.org. I recommend you to use a designer with these qualifications.

For more information, contact Stewart Somerville, Alternative Power Systems, Inc., 1038 West Industrial Road, Cedar City Utah 84720, 435-586-9181.