Ville neuss off-grid solar

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Having yoursolar arrayconnected to the power grid definitely has its benefits. You can take advantage ofnet metering, and in case of a cloudy day, you have the grid to back you up. Still, many are opting to disconnect and build their photovoltaic (PV) systems completely off the grid. Off-grid solar is great for those withRVs,boats, or a backyard shed or guest house. For those who live in isolated areas that lack the infrastructure, off-grid solar might be a necessity. Going off the grid means you keep all the power you generate, and there"s no interruption in service when the power grid fails.

However, you’ll need to consider some important factors if you plan on building an off-grid PV system. Adequate energy storage is a necessity. You"re going to need plenty ofbackup power storedfor those days when the sun isn"t shining. You’ll also need to do some in-depth calculations to assess what size PV array you’ll require. In this article, we’ll guide you through the steps.

Before you even start looking intosolar panels, you need to know what devices you"re powering and how much energy they use. Make a list of all the electrical appliances you"ll be powering, from lights and refrigerators to phone chargers and power tools.

Once you know what devices you’ll be powering, you can determine each device’s wattage. You can find the wattage by looking at the manufacturer sticker, searching online for information about the device, or using a wattage meter to measure the wattage directly. Then, write down how many hours you use each device daily. It’s best to overestimate each time, just in case.

Base the voltage of your system on your estimated daily usage. In our example, the total daily consumption of our appliances, both AC and DC, is 900 watt-hours, but the potential peak power usage of our system is 1,325 watts. While we only expect to use 900 watt-hours on a daily basis, we want to accommodate our peak load, so we"re going to build a 24V system.

Now it"s time to find yourself a battery. What you want is a battery that can output the wattage you need to power all of your devices. Batteries are differentiated by voltage (V), representing power output, and amp-hours (Ah), which represents capacity. Wattage equals amps (A) times volts. For example, let"s say we are using a 12V battery with a 125Ah capacity, that battery will store 1,500 watt-hours of energy. On the other hand, a 24V 62.5Ah battery will also have the same 1,500-watt-hour capacity.

Since we"re installing a 24V system, we"re going to need a 24V battery. We also need a battery that can give us over 1,325 watts on a single charge. A 24V battery that can give us 1,325 watts will have a 55Ah capacity.To give us some headroom, we"re going to go up a few sizes and use a 70Ah battery. A 24V 70Ah battery will have a capacity of 1,680 watts.

You should also consider a battery’s depth of discharge, or DoD. This represents how much of the battery"s rated capacity you can actually use. Lead-acid batteries have a DoD of 50%, while lithium and Ni-Cd batteries have a DOD of about 80%, and flow batteries have a DoD of 100%.

We also have to remember that the sun may not shine every day. We"re not always guaranteed to have ideal weather conditions for charging our battery bank. So we want to have several days of autonomy to keep us going when it"s cloudy. Let"s say we want three days of autonomy. That means we need to triple our battery capacity. Six 70Ah batteries would give us 5,040 watts, which is more than enough power to carry us through three days of bad weather.

It"s time to start looking for a power inverter.Power inverters convert DC electricity to AC, and since solar panels generate DC power, we only need to worry about having enough capacity for our AC appliances.

According to the chart above, the total wattage of our AC appliances is 1,115 watts. You should always leave some headroom for safety, so an inverter with a capacity of 1,500 watts would suffice.

Unless you plan on powering very simple devices, you should buy a pure sine wave inverter to help your electronics run smoothly. Most of our everyday electronics can’t handle square wave inverters--they’ll make a humming or droning sound when turned on, and they won’t have much power.

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