10 Things To Know About Tesla Batteries

Unfortunately, there is no such thing as a power generation method that does not rely on batteries to produce stable current and store excess electricity. Sadly, the vast majority of batteries on the market will not last very long, let alone be easily refurbished in a time of crisis. From Edison batteries to Lithium Ion, and automobile batteries, there is truly no perfect solution for off gridders.

While many people are becoming excited about the Tesla batteries, I tend to find them as unattractive as all the other battery options on the market. Here are some things to keep in mind about Tesla batteries and how they compare to existing and emerging battery technologies.

What is a Tesla Battery?

At heart, the Tesla Battery is a Lithium Ion battery. As you may recall, this battery type is:

- Rechargeable
- Cannot be fully discharged or "deep cycled" on a routine basis without causing damage to the battery
- Even though lithium ion batteries are lightweight, they require complex equipment to ensure they are charged and discharged without causing damage to the battery.

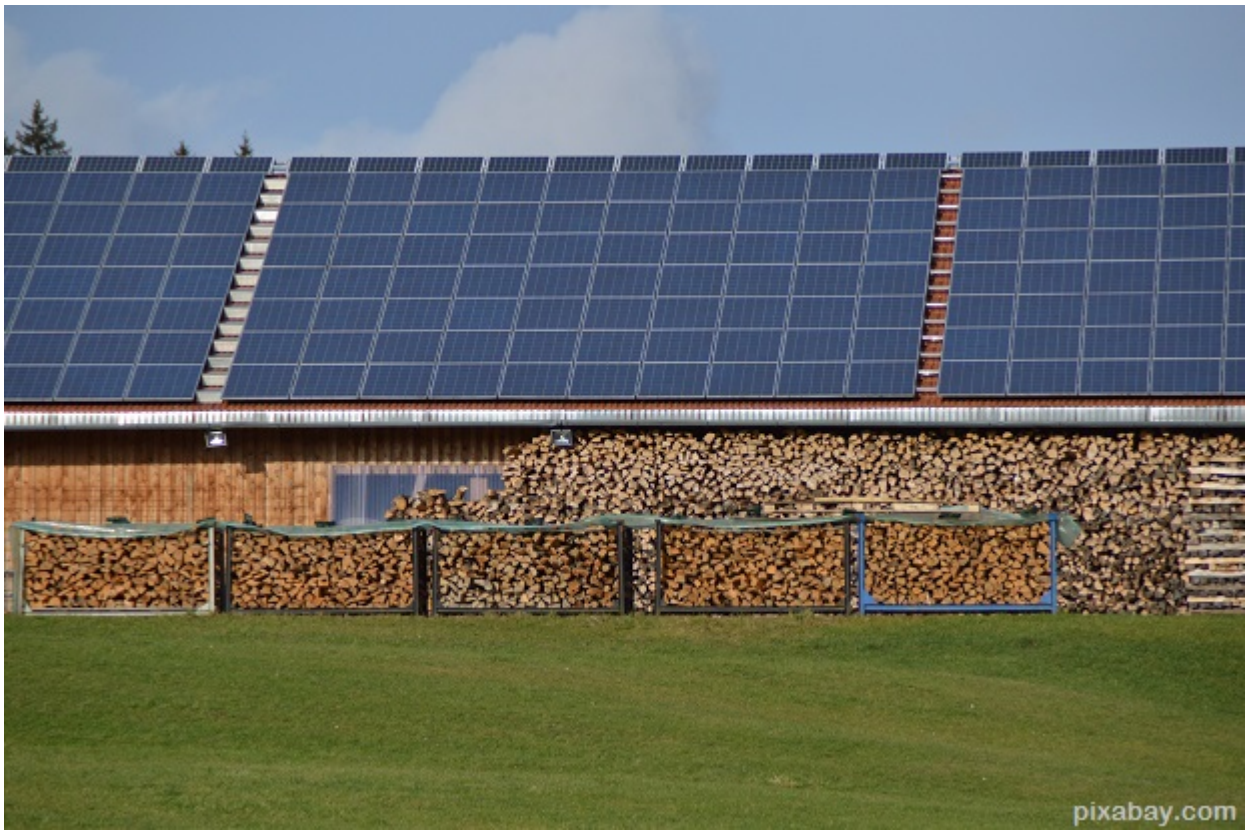
Right now, there is a good bit of excitement over the Tesla Battery because it is one of the first Lithium Ion batteries sold specifically for home energy storage and off gridding. The battery itself was designed by Tesla Motors, and attempts to take advantage of technologies the company has used in the process of developing batteries for electric vehicles. According to the manufacturer, they are willing to guarantee the usability of the battery for 10 years.

As mentioned earlier, a lithium ion battery is not of much use if you do not have a surrounding system to regulate incoming and outgoing energy from the battery. The Tesla Battery designed for home use comes with a self-contained water cooling system to ensure maximum viability of the battery. You will still need to purchase an inverter and other supporting equipment.

How Do They Work?

Consider a situation where you have installed solar panels and currently feed excess power back to the electric company. According to Tesla Motors, research indicates that peak solar power generation usually occurs during a time of day when power is less likely to be used in the home. This, in turn, creates a situation where people wind up selling lower costing energy to the electric company, and then pay a higher price to get it back during peak usage hours.

By contrast, the Tesla Battery will store electricity during peak hours, and then disperse it when you actually want to use it. Once the power is depleted, then you would go back to the power from the electric company. You can also use the system without hooking up to a utility company.



At the current time, there are two versions of the “Powerwall” Tesla Batteries available for home consumers. Both battery versions can deliver 350 – 450 volts at 5.8 – 8.6 amps. The 7 kWh version is designed for daily use and costs around $3000 just for the battery. If you are looking for a backup battery, the 10 kWh version is better suited for this purpose. It should be noted that the 10 kWh version is not recommended for daily use or deep cycling on a regular basis.

Chances are, if you are planning to operate a large number of high drain electrical devices, the 7 kWh Tesla Battery is not going to be of much use to you. That being said, these batteries were designed with modular expansion in mind. You can purchase additional batteries and hook them into the system with very little effort.

Do Tesla Batteries Work with Energy Generation Systems?

Tesla Batteries can work with wind turbines as well as solar panels and other electricity generating methods. That being said, there is a minimum amount of power required to pump

energy into the battery. At the current time, it is not known how internal resistance within Tesla Batteries will change over time.

Even though the water cooled system should help reduce the chance of harmful changes within the battery, there is simply no guarantee that the battery will truly be functional 10 years down the road. While this may not be a problem in a pre-crisis world, it can create absolute chaos if a time comes when Tesla Motors Inc is not around or otherwise unable to meet their warranty obligations.

Why Are They Important to Preppers?

When it comes to generating energy at home, storing and evening out the power supply are two of the thorniest issues to overcome. Here are just a few problems that will cause interruptions in power generation and dispersal in a system that relies on solar energy:

- It is difficult, if not impossible to generate sufficient energy at night, as well as on rainy and cloudy days. In fact, I've personally seen peak solar capture be reduced by over 50% when a single cloud passes by.
- As the sun moves from location to location during the day, a stationary solar collector will not gather up as much energy. This is especially important to consider for rooftop solar panels.
- Over the course of a year, the sun also changes height levels in the sky, which translates to a change in the angle of the rays hitting the solar panels. In general, narrow angles cover a wider surface, but provide less power, while more direct angles cover less area but provide more power so long as the medium can effectively capture the energy. Even land based flat solar panels usually cannot be shifted sufficiently to maximize solar ray capture.

- If you work away from home during the day or have no use for the electricity being generated, it will be wasted unless you find some way to store it.
- It is difficult, if not impossible to estimate exactly how much electricity is being generated from one moment to another. Trying to power devices directly from the panels will result in excess and low voltages and amperages that can easily destroy even the most robust appliances.

Consider a situation where an EMP from a solar flare is followed up by an internal uprising that causes collapses at the city, state, and federal levels. Even though there were riots and other problems in your usual living area, you made it safely to your bug out location and must now carry out the basics of survival. If you need a doctor, you must rely on others in your survival group. If you need a part for an appliance, you will need to cobble something together from materials that you carefully stored away over the years.

As each day goes by, you lose touch more and more with the chaos that has become the norm in areas where you used to live and beyond. At the same time, everything you own is depreciating in tangible value, including the batteries that you rely on for electricity.

Years may go by, but one day, sooner or later, you will find out that the batteries you have been relying on for power storage can no longer be used, or that you made some mistake that shortened their lifespan to a point where you have no time to develop alternative fuels or other power storage methods.

Even though there is no such thing as a machine that will last forever, modern rechargeable battery technologies simply aren’t good enough if you expect to live for several generations without relying on a larger social structure. From that perspective, Tesla Batteries are important because they

offer something new to look at and study, as well as give you some perspective on precisely what you can expect if inventors don’t look for better ways to store power.

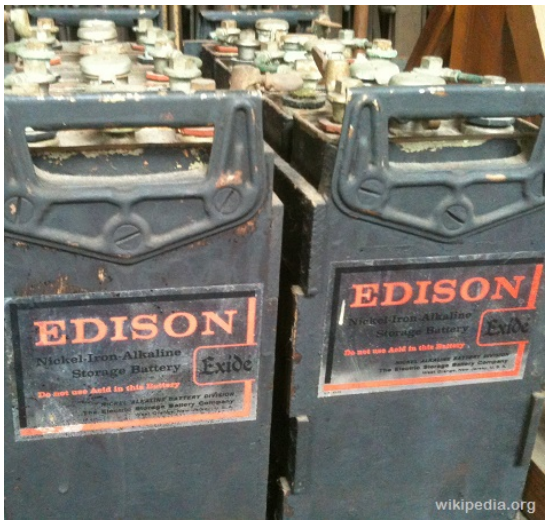
Tesla Batteries can be a useful tool as long as you realize that their functionality only appears optimal in the modern social context, and that you truly won’t be able to gauge their durability and usefulness in a long term, large scale post-crisis setting.

Should You Convert Your Bug Out Location to Work with Tesla Batteries?

Overall, it is very important to choose at least two or three different battery types to have on hand in your bug out locations. You can use auto batteries for shallow cycle, emergency and low drainage applications and then two other types for deep cycle recharging.

Personally, I would not rush out to buy a Tesla Battery, however I would watch to see how others are doing with using these batteries in off-grid applications. As for converting a bug out location just to run on Tesla Batteries, I would have a hard time justifying that from both a longevity and durability perspective.

Advantages of Tesla Batteries



There is no question that Tesla Batteries offer a number of cosmetic advantages over other battery types. To begin, these batteries are much smaller and weigh less than other batteries. They can be hung up on the walls inside your homes or in any other place where they won’t be easy to steal. If you are bugging in or concerned about theft, then the

Tesla Battery may be a good option. That being said, if you are worried about scavengers, the Edison Battery's weight and cumbersome size may make it harder to steal by an individual, even if it must be kept outdoors.

Since the Tesla Battery comes in a daily use and backup version, you can also have confidence that you will not ruin your whole power storage system by making one mistake. No matter whether the batteries overcharge because of external system failure or you drain them too much repeatedly, the backup batteries will still be on hand and ready to use. While the backups are used for emergency needs, you can focus on bring other power systems online or start using alternative fuels.

Disadvantages of Tesla Batteries

It is fair to say that Lithium Ion batteries have been around long enough to reveal how long they will last and how to get the most out of them. On the other hand, Tesla Motors Inc is still a very new company, as is their battery design. Unlike other Lithium Ion batteries, Tesla Batteries make use of very small cells that are surrounded by water cooling systems.

While this is supposed to reduce the risk of fire, it does not necessarily mean that the battery will be more durable over time. No matter how many failsafes you put into place to prevent overcharging of these tiny cells, the technology is simply too new to be sure it will work.

Anyone familiar with the Solyndra fiasco is bound to be wondering if Tesla Motors Inc can become an iconic, long lasting company with a good reputation. Even Chrysler and other famous automobile manufacturers have found themselves driven out of business by reliance on technologies that simply didn't work as well as expected when released to the consumer market.

By the same token, Tesla Motors Inc can easily find itself in

a situation where it cannot honor warranties on the batteries you may have purchased for your bug out needs. No matter whether the company fails in five years, or is sold or merged with another company, rest assured that a failure of technology in these batteries will end up with consumers losing out.

Depending on where you live, you may already have a new electric meter supplied by the power company. These “smart meters” monitor all of the energy usage in your home, and then send the information back to the power company where it can be recorded and analyzed. While this information may be useful if you are looking to cut back on specific areas of power usage, it can also be a tremendous invasion of privacy.

Unlike many older batteries on the market, the Tesla Batteries have “software” that can be accessed from Tesla Motors Inc at will. No matter how hard you try, there is the potential for these batteries to track all kinds of information about you and how you are using the batteries.

Given your interest in survival and off gridding in a post-crisis world, can you really feel comfortable purchasing a battery that will reveal your whereabouts and other information that you may want to keep hidden? As with many other “high tech” gadgets produced in the last decade, you will have to make some hard choices about which devices (and in this case, batteries) you choose to bring along and use at your bug out location.

Alternatives to Tesla Batteries for Home Energy Storage

When it comes to batteries, you will find that there are many different kinds of rechargeable variants on the market. No matter whether you choose old car batteries, Edisons, or NiCd’s, they all come with a limited shelf life and a range of functional problems. This includes losing power during the charging process, acid or other material leakage, and plate

wear. In most cases, you cannot rebuild these batteries let alone build them from scratch.

Perhaps it should come as no surprise that there are a number of DIY home batteries that can be used for any number of applications. This includes modifying Earth Batteries (which also pull some of their power from the Earth), or using water/electrolyte batteries.

Even though these batteries may not store or be as efficient as commercially available batteries, they are fairly easy to make. In addition, if you are looking for power sources that do not come with all kinds of surveillance software, there is nothing quite like a DIY battery.

Alternative Power Conversions for Your Homestead and Bug Out Needs

Aside from batteries, you can always use extra electricity to generate some other kind of fuel. In particular, you can use the power to assist with operating a methane generator and tank filling system. This is especially important if you decide to run your bug out location on natural gas or methane in combination with electricity.

It should also be noted that newer technologies are making it much easier and safer to store natural gas. In particular, if you do some research on ANG (Adsorbed Natural Gas) tanks, you will find that they are far more efficient than conventional CNG tanks. As this technology becomes more available, you may find it better to use excess electricity to increase methane production and then use the methane to power all your devices.

You can also use the power generated to heat water that can be run through pipes. Once the pipes get hot enough, you can easily cook with them, heat your home, or carry out any number of other tasks. If you need to store hot water, there are also many passive insulation methods that can keep the water at or above a minimum temperature required for your needs.

Are There any Technologies Worth Waiting For?

There are at least two battery technologies that can easily take the place of all the rechargeable batteries on the market. While these technologies are still in the testing stages, it may be as little as 5 – 10 years before they become available for a wide range of applications. This includes forming the centerpiece for off grid power generation.

The first battery is referred to as a "solid state" battery. It was developed at CU Boulder in 2013. Instead of using Lithium metal in the battery, researchers used iron and sulfur in the cathode in such away that it eliminates the need for a liquid or gel electrolyte.

Aside from being safer and lighter in weight, the batteries can store and discharge twice as much power. While the batteries are currently being geared for automobiles, it won't be long before the growing home based power generation market attracts the interest of manufacturers.

Next, the Ryden Battery is very different from other batteries in the sense that it relies on carbon fibers (made from cotton) for both the anode and cathode. This battery was developed in Japan and does not rely on rare metals or complex manufacturing processes.

At the same time, it charges up at least 20x faster than any other battery on the market, and can provide almost as much power as a Lithium Ion battery. The Ryden Battery can be deep cycled well over 3000 times, does not generate excessive amounts of heat, and is 100% recyclable. Even though only a

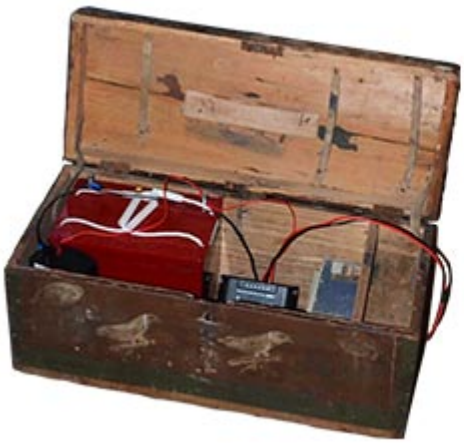
small number of these batteries were produced in 2014; they can easily be the best option for home power storage once they become available in larger quantities worldwide.

At first glance in the media headlines, it may seem like the Tesla Battery is an innovation that will usurp the Edison and many other rechargeable batteries used by off gridders. On the other hand, never forget that this is “yet another” version of the Lithium Ion battery.

There aren’t any especially new innovations in the design, other than to use smaller cells that are supposed to be more fire and heat resistant. Even those claims aren’t because of new cathode, anode, or electrolyte technology. Rather, they are the result of changing the arrangement of power and cooling units within the battery itself. From that perspective, the Tesla Battery may not truly be the best technology for survival needs.

Depending on your interests and budget, you may find it best to stay with older battery technologies so long as you know how to use them and keep them in good working order. You can also look to older technologies such as Earth and water batteries for both energy generation and storage needs.

Finally, if you are as jaded as I am about the “necessary evil” of rechargeable batteries for power storage, then you might just as well wait for Ryden Batteries to become available. I, for one, will not be spending my money on a Tesla Battery, but will most certainly be looking to Earth Batteries and other technologies while I wait to see what happens with the Ryden Batteries.



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This article has been written by ***Carmela Tyrell*** *for Survivopedia.*