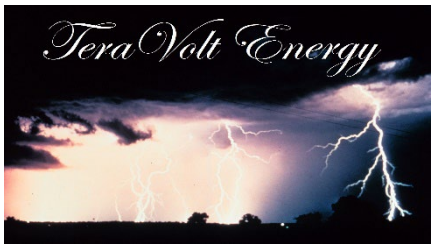

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Solar Energy and Energy Storage Development

What's Involved in Setting Up Your Modular Expandable Transportable Energy System (METES)

Introduction.

Like many of the items parents buy for their children, the METES comes with "Some Assembly Required." However, almost all of the guess work has been taken out of the METES through our standard designs and manufacturing process. When you purchase a METES system as either a grid-tied or off-the-grid system, all of the critical electrical connections for the solar array, batteries (if included), and internal electrical components have been taken care of at the factory. There are some steps in setting up your system that, by their very nature, must be done after your system arrives. This article describes what is involved after you receive your system.

When Your METES Arrives.

When the truck(s) arrive it is important to inspect the containers for any missing or damaged equipment. The TeraVolt Energy METES have been secured to a flatbed semi-trailer at our factory acceptance point (to be shipped overland or by ocean vessel). Before we allow a system to leave our facility, we perform an end-to-end quality control check and confirm all of the features ordered by the customer are installed or securely stored inside the enclosure(s). Included in the stored items will be the solar panels, solar mounting equipment, stainless steel ground rods, and your paperwork. Since the solar mounting system is larger than the METES foot print, it must by necessity, be assembled at the customer's location after arrival. This assures that the system will arrive with all of the components safey and securely stored inside the enclosure and (hopefully) undamaged. BUT, sometimes things happen. We will verify and document that your METES left the factory as promised and undamaged. The very first task of the customer is to unlock the enclosure and inspect all of the solar panels and installed equipment for any sign of damage or theft. Any exterior damages should

also be noted. Should there be any issues, we will guide you through the process of dealing with your shipping company. Although you will be accepting your METES at the factory, we are available to guide you through the shipping process and, if necessary, coordinate replacements for any damaged equipment.

Setting Up Your METES.

The METES Units are heavy, weighing several tons. You will need to arrange to have an all-terrain forklift available upon arrival of the truck(s) to off-load the units (a 15000 pound capacity forklift or crane, and operator is recommended). The trucking company will not unload your system for you. The best location to place your Master unit is as close as practical to your utility company meter and/or the building you want to power. Electrically, the units can be placed anywhere, however the further away you place them from your loads and your meter (if grid-tied), the larger your feeder conductors must be to compensate for voltage drop. Typically, a distance of 100 feet or less is recommended. The final resting spot for the units must be level and comprised of either a compacted base (such as crushed limestone or Caliche), or a concrete pad. It is important that your unit(s) are properly oriented. We design the systems so that when you face the rear access door, the long left side of the enclosure will be on the south side. It isn't absolutely necessary to be exact on the orientation, but should be as close to the south compass heading as possible. You should download in advance of your system arriving, the standard site plan from the tvnrg.com website so you can have your site ready when the units arrive. This will also allow your electrician to install your underground feeders so the site will be ready before your shipment arrives. When you open your METES enclosure, you will find all of your Owner's Information in a pocket affixed to the inside wall. Take the time to go through the information thoroughly.

Assembly of Your METES.

The installation process is fairly straight-forward and should take a minimum amount of time to accomplish. This involves installing the racking and solar panels, and grounding the system. Should you decide not to do your own final assembly, TeraVolt Energy can arrange (for an added charge) to have a traveling technical team come to your site and perform this task. There is nothing complicated about installing the racking and the solar panels---it does require some heavy lifting and at least two people should perform this part of the set up. Part of the racking system involves 2" diameter thick wall galvanized steel pipe. The piping normally comes in 10-foot lengths, but we have cut the pipes in half and included couplers to make the pipe easier to handle. The heaviest components are the solar panels. They weigh approximately 50 pounds each and there are 20 solar panels. Our teams would normally use a scissor lift

to move the panels from the enclosure to the top. An alternative is to use a drywall lift to move the solar panels from ground level to the top of the enclosure. If you believe that you may not have the capability to do your own solar panel installation (or if you want it done quicker with us assuming the installation liability), it might be well worth the extra expense of having a TeraVolt Team do your final assembly. Should you decide to do your own assembly, we will guide you through the process and be available to answer any questions you might have.

The racking comes with engineered drawings plus we will provide links to the Unirac ULA assemblly instructions on the tvnrg.com website to further assist you in the assembly process. The racking is comprised of 2" pipe upright legs, 2" pipe horizontal main beams, solar panel mounting rails, and solar panel hold-down clamps. We have marked these components so that you will easily locate where they should go for the proper spacing. Once the rack is installed, the solar panel wiring harnesses (two of them) are uncoiled from the front equipment cabinet. inserted into grommet lined openings in the cabinet, and routed along the horizontal main beams. The accessory kit includes the mounting hardware for the wiring harnesses. One end of each harness is already connected to the internal METES equipment. A simple plan is provided in the Owner's Manual for routing each of the wiring harnesses on the racking. There will be four rows of solar panels that will be mounted sequentially starting with the bottom (SOUTH) row and moving upward. The solar panel wiring harnesses are desgined so that as the solar panels are mounted, the plug-and-play solar panel connectors are where they need to be for each specific solar panel. The connections and grounding is accomplished as the solar panels are installed. A qualified installation team can complete the assembly in about two hours time or less. For the first-timer, it will probably take a little longer.

Adding Slave Units.

The METES Hybrid and METES Small Grid-Tied Systems can accommodate up to three Slave METES enclosures, for up to 32 kW/DC of solar capacity. The solar panel and racking assembly for the Slave units are identical to the Master unit. Once the solar array for the slaves are assembled, your electrician simply installs a set of subfeeders for each Slave and connects one end of the subfeeder conductors inside the designated Junction Box (with Polaris Taps included and connected on the load side) and the opposite end (likewise) to the Master Unit Junction Box. A total of eight connections are made---six for the load carrying conductors and neutral, and two for the ground. Each Slave (and the Master) have two stainless steel 8-foot ground rods that must be driven in

the ground at the designated grounding points, and the grounding cables attached to the rods.

The Master Final Connection.

Typical commercial or residential structures that are connected to the utility company power lines, will have a utility company meter either on a pole, on a service rack, or on the structure; and normally a main disconnecting means between the structure and the meter. The simplicity of the METES allows the Master unit to be placed electrically between the meter and the Main disconnect at the structure. The METES Master has installed electrical disconnect breakers that allow all of the power to be controlled at the METES Master and according to the National Electrical Code requirements. Detailed information on connecting your METES to your structure would be provided as well as technical support to answer any questions.

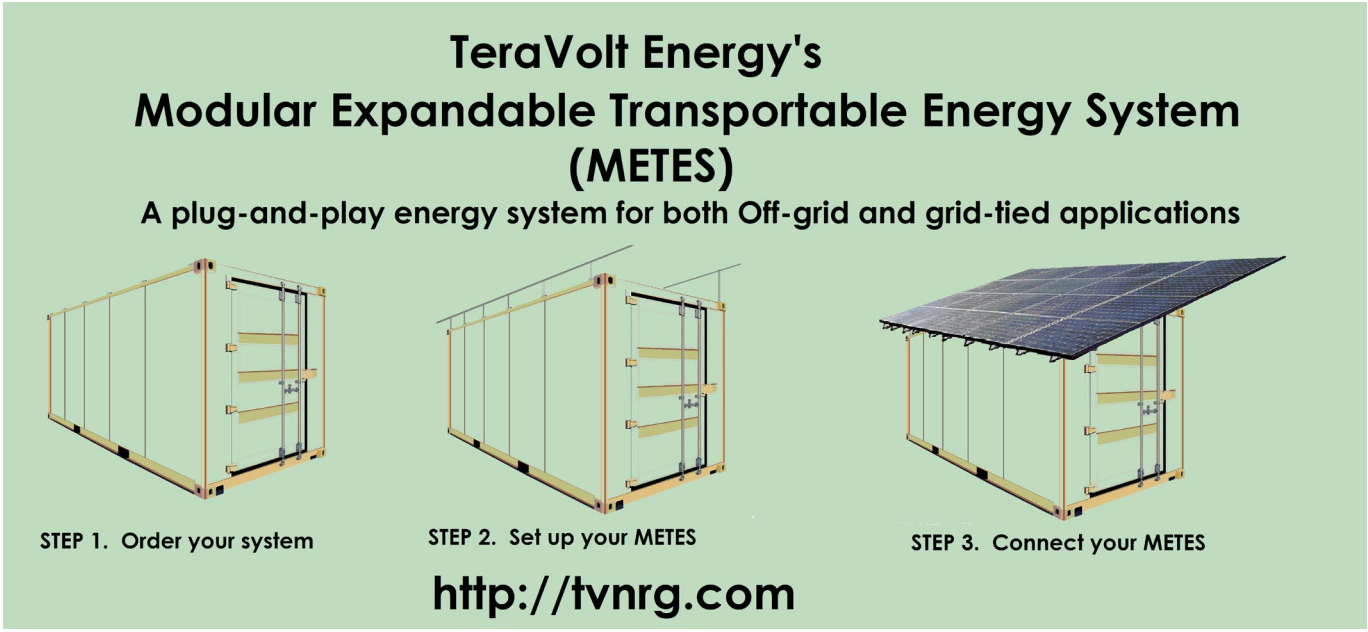
Commissioning Your System.

Your METES is assembled and your electrician has connected all of the feeders and sub-feeders. Now you are ready to "Commission" your system. Commissioning is the process of turning everything on. The step-by-step approach involves sequentially turning on inverters, and turning on the various breakers and manual disconnect switches. Your Owner's Manual has the process described for you and again, our technical team is always standing by to assist. Once everything is turned on, and you have verified that none of your breakers have tripped off or your inverters failed to boot up, from this point on, your system should perform its job automatically and with very little supervision for years to come.

Conclusion.

This may seem to be a lot of effort, but in reality, the METES System is simple by design and serves as a fully self-contained solar and/or energy storage mounting system. By building your system in a factory setting, we can achieve economies of scale from the production of many units at the same time. Each system has a standardized design and literally all of the complicated connections have been already accomplished (as is the case with all of the internal wiring), and what is left is simplified to the greatest extent possible. We have found that there are many locations that are a considerable distance from qualified solar and energy storage installation companies. This means it is either too expensive or impossible to get solar and energy storage installed because of the lack of local solar and energy storage professionals. The METES concept was

designed to be transported, which makes it possible for anyone to get a professionally designed and built system that can be installed without sending expensive solar teams to distant locations to build systems from the ground up. In other words, the TeraVolt Energy METES makes it possible and affordable to get solar and energy storage to you no matter where in the world you need the system.



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