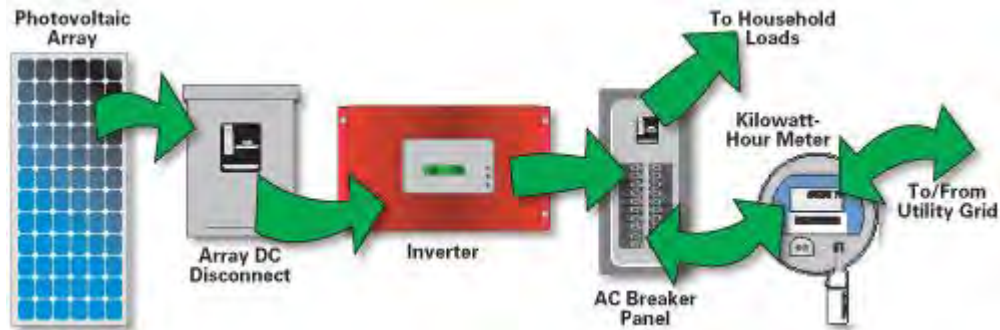


Grid-tied PV Systems

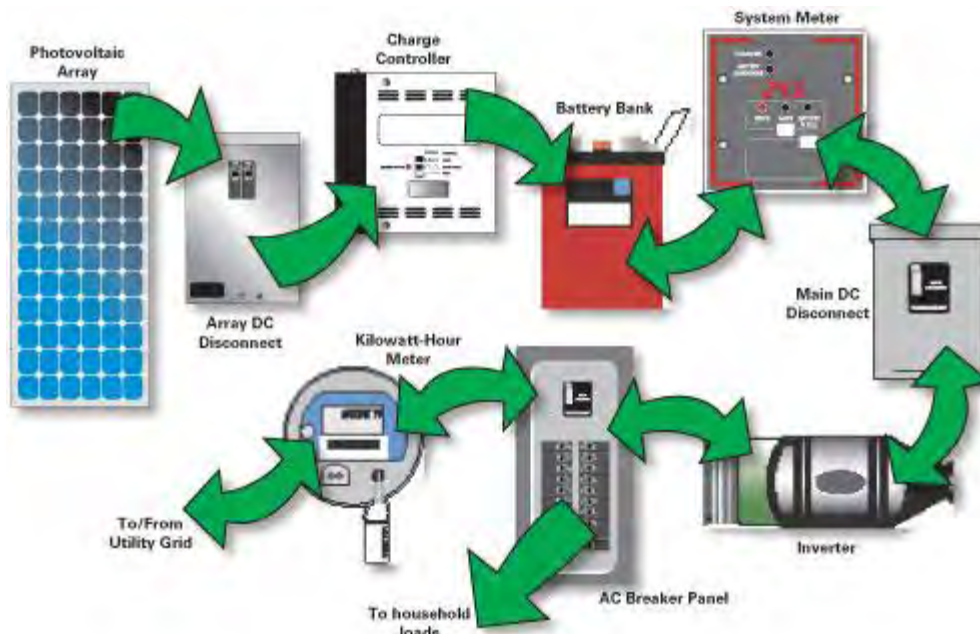
Grid-tied solar-electric systems generate solar electricity and route it to the electric utility grid, offsetting a home's or business' electrical consumption and, in some instances, even turning the electric meter backwards. Living with a grid-connected solar-electric system is no different than living with grid power, except that some or all of the electricity you use comes from the sun. In many states, the utility credits a homeowner's account for excess solar electricity produced. This amount can then be applied to other months when the system produces less or in months when electrical consumption is greater. This arrangement is called net metering or net billing. The specific terms of net metering laws and regulations vary from state to state and utility to utility. The following illustration includes the primary components of any grid-tied solar electric system.



Grid-tied PV Systems with Battery Backup

Without a battery bank or generator backup for your grid-tied system, when a blackout occurs, your household will be in the dark, too. To keep some or all of your electric needs (or "loads") like lights, a refrigerator, a well pump, or computer running even when utility power outages occur, many homeowners choose to install a grid-tied system with battery backup. Incorporating batteries into the system requires more components, is more expensive, and lowers the system's overall efficiency. But for many homeowners who regularly experience utility outages or have critical electrical loads, having a backup energy source is priceless.

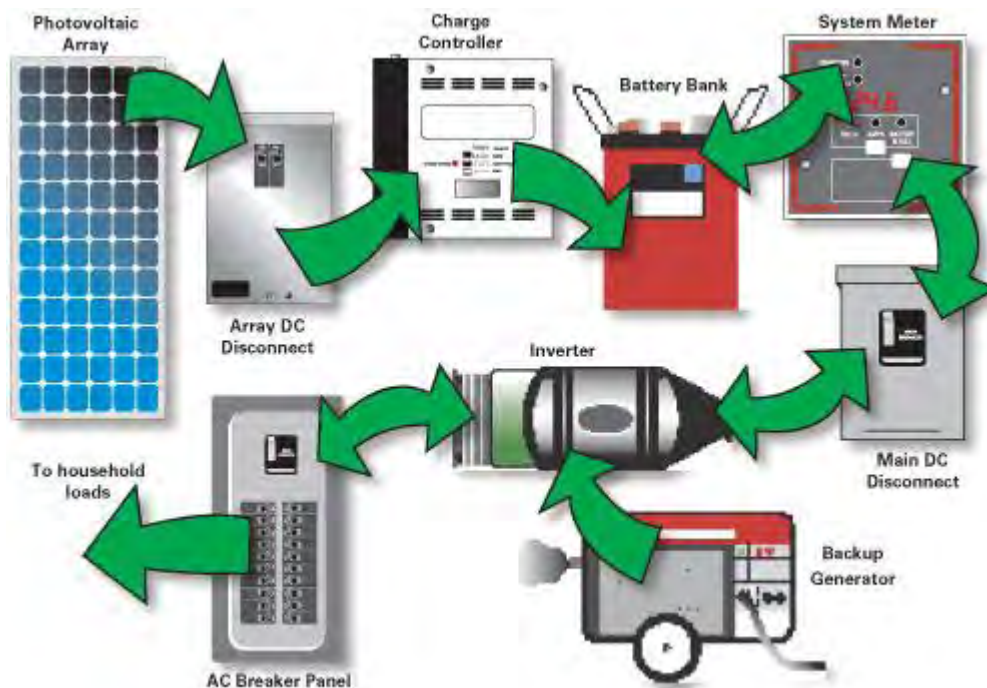
The following illustration includes the primary components of any grid-tied solar electric system with battery backup.



Off-Grid PV Systems

Although they are most common in remote locations without utility grid service, off-grid solar-electric systems can work anywhere. These systems operate independently from the grid to provide all of a household's electricity. That means no electric bills and no blackouts—at least none caused by grid failures. People choose to live off-grid for a variety of reasons, including the prohibitive cost of bringing utility lines to remote homesites, the appeal of an independent lifestyle, or the general reliability a solar-electric system provides. Those who choose to live off-grid often need to make adjustments to when and how they use electricity, so they can live within the limitations of the system's design. This doesn't necessarily imply doing without, but rather is a shift to a more conscientious use of electricity.

The following illustration includes the primary components of any off grid solar electric system.



A one kilowatt PV system each month:

- prevents 150 lbs. of coal from being mined
- prevents 300 lbs. of CO₂ from entering the atmosphere
- keeps 105 gallons of water from being consumed
- keeps NO and SO₂ from being released into the environment

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