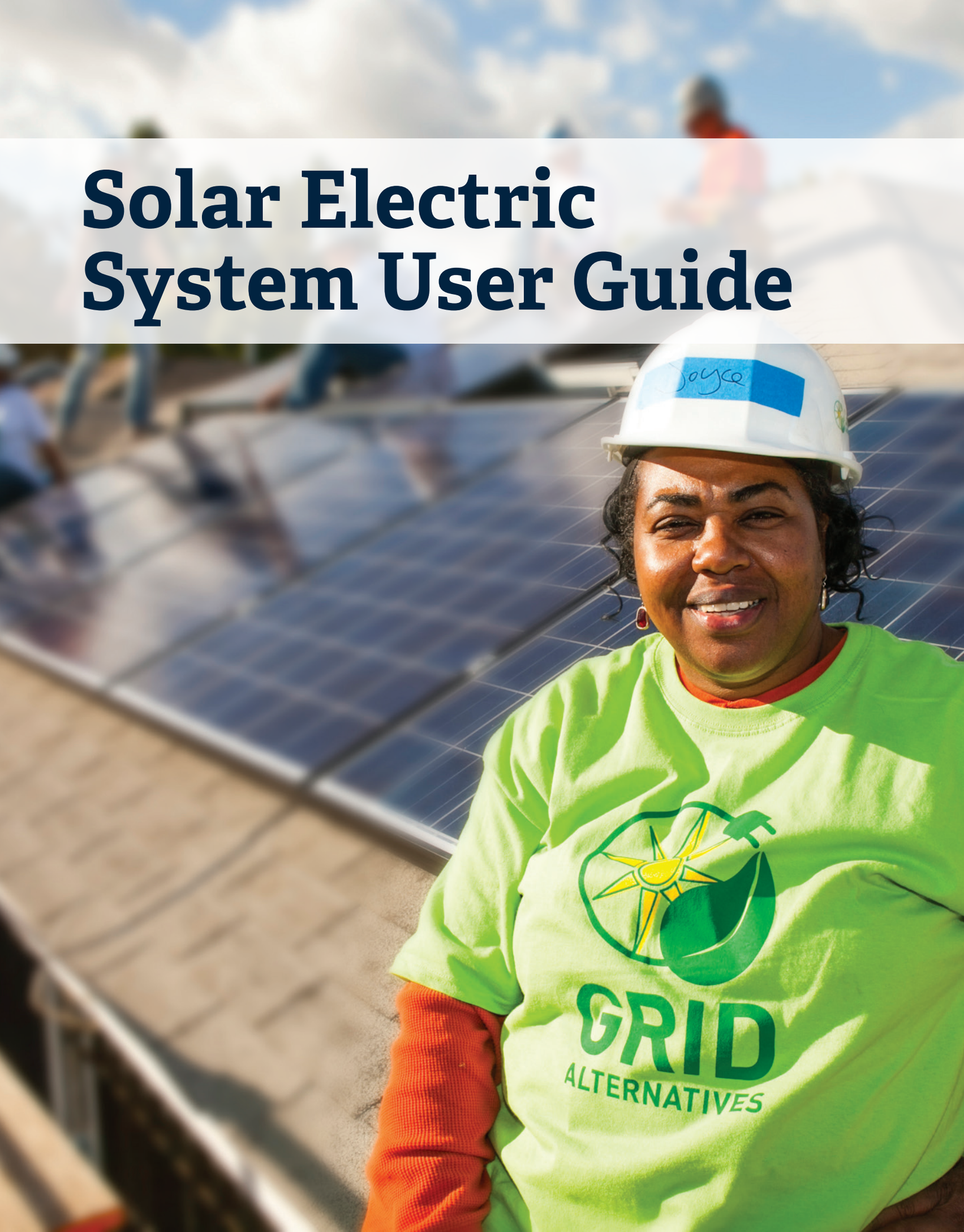
Solar Electric System User Guide



Contacts & introduction

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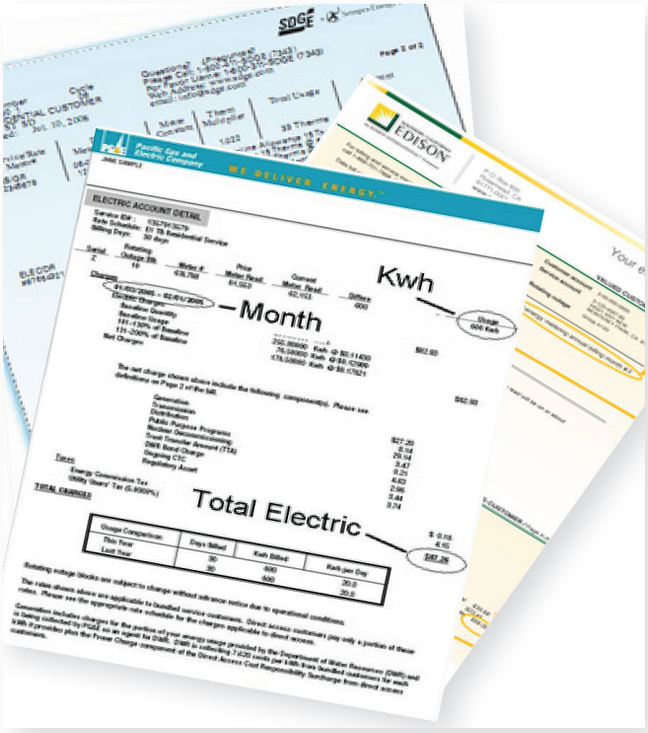
Attachments:

Net Metering Bill Information (from utility)
Economic Analysis
GRID Alternatives Labor Warranty
Inverter Warranty
Solar Panel Warranty
Inverter Manual
System Plans
Building Dept. Permit Copy

Your electric bill



Your system is tied to the electric grid, allowing you to use electricity from both your system and the grid, depending on the time of day and how much electricity you are using. You will be billed by your utility company through a process called net energy metering, or NEM. NEM means that your electric company will credit your account for the electricity produced by your system that you do not use on-site. These credits will lower the amount you owe for the electricity you take from the grid.

How net energy metering works

At any time of day, your system may produce more or less electricity than you need for your home. When the system is producing more than needed, the extra energy automatically goes through your electric meter into the utility grid, running the meter backwards to credit your account.

At other times of the day, your electric usage may be higher than what your system produces and will take extra energy from the utility. Switching between the system's power and the utility grid is instantaneous. You will never notice any interruption in the flow of power.

Under a net energy metering agreement, your utility will continue to read your meter monthly and you will receive a monthly statement indicating the net amount of electricity you consumed or exported to the utility grid during that billing period. You may have the option of paying the utility for your net consumption monthly, or settling your account every 12 months. Contact your utility for billing options.

Your utility will continue to read your meter monthly and you will receive a monthly statement.

Turning your system on

Your system should already be turned ON, but you are able to turn your solar system OFF or ON if needed.

Turning the system ON

All switches must be in the ON position to operate the system. The order in which they are turned ON is not important. After all of the system switches have been turned ON, the inverter will power on and may take up to 5 minutes to finish starting up.

When the startup is complete, the screen on the inverter will show the status of the system and a solid green light will display.

Turning the system OFF

If any one of the switches are in the OFF position, your system will not operate. Your system will not generate electricity at night, or anytime when the sun is not shining, but should produce electricy again when the sun is out.

CAUTION: Even when one or more system switches is OFF, there may still be high voltage electricity in the system. Never try to service any part of the system including the wiring, fuses or breakers.

Your system will automatically shut down during a blackout, but should restart after it ends. Make sure to check your system.

Reading your inverter

Green: System is operating

No light (at night or when cloudy): System is on standby

No light (during full daylight): System is off. Turn all switches to ON.

Red or Yellow: There is a system error. Write down the error message on the display screen and call GRID Alternatives.

Your inverter has indicator lights to help you check that the system is working. A green light displayed during daylight means that your system is working normally. Check for the green light at least once a week. This will help you catch any problems with your system before your electric bill is affected.

It's a good idea to check the inverter more often in the summer when your system will be producing the most electricity.

NOTE: Review the owner manual your inverter came with for information about reading your specific display.

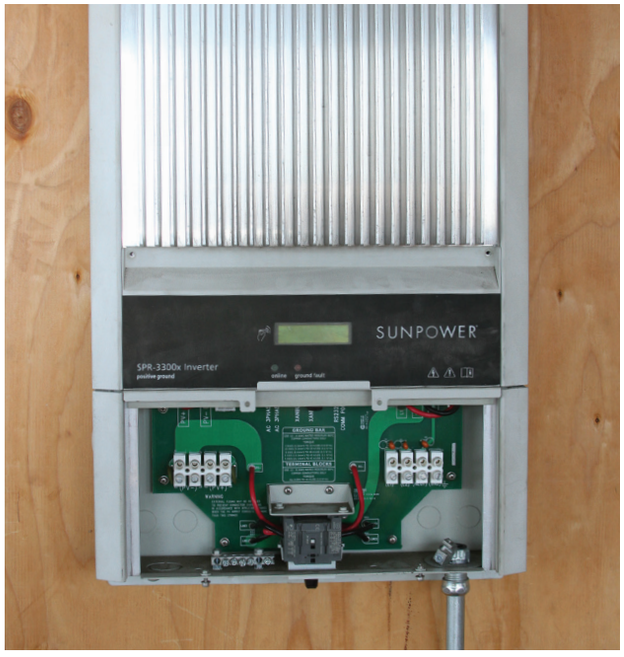
Common messages on your inverter screen:

Inverter Offline - This is normal at night when the system is not generating electricity.

Insufficient Solar Energy - This is normal when there is not enough sunlight for the system to produce electricity.

Ground Fault - If you see this message, contact GRID Alternatives.

GRID Alternatives office contact information can be found on the first page of this booklet. Call GRID Alternatives immediately if you see a yellow or red light on your inverter or it displays a ground fault message.



System maintenance

Monitoring Your System

Understanding Your Inverter

The inverter manages and converts the electricity from your solar panels into power that can be used in your home.

There are different brands and types of inverters, and most likely you will have either a central inverter or a series of microinverters. GRID Alternatives customized your system to maximize efficiency and energy production, so you can be sure you have the most efficient and cost-effective inverter for your system.

A microinverter converts the direct current (DC) generated by a single solar panel to alternating current (AC). The electricity from several microinverters is combined and then fed to your house. Since they are located under the panels you might not be able to see them.

A central inverter converts the current produced by all the panels together, not just one. This inverter is larger and usually installed next to your master service panel.

Reading Your Inverter

Central inverter – has a screen display and indicator lights to help you check that the system is working. A green light displayed during daylight means that your system is working normally. The screen will also show messages that describe the energy produced over time and alert you about any problems.

CALL GRID ALTERNATIVES IMMEDIATELY IF:

- **You see a yellow or red light on your central inverter**
- **Your central inverter displays a ground fault message**

Microinverters – have a monitoring device connected to the microinverters that show the power produced by each panel. Ensure that all the panels/microinverters installed are shown on the monitoring device. Most microinverters can also be connected to the internet, where you can get status updates and alerts. This device does not have indicator lights.

CALL GRID ALTERNATIVES IMMEDIATELY IF:

- **Your microinverter monitoring device does not show all the panels on your roof**
- **Your microinverter monitor displays an error message**

GRID Alternatives contact information can be found on the first page of this booklet.

Solar PV parts

Solar Panels

Collect energy from the sun and convert it into usable energy for your home. Photovoltaic (PV) cells in solar panels typically contain no corrosive chemicals, do not pollute, require little maintenance, and operate silently.

Inverter

Changes direct current (DC) electricity generated from a PV panel into alternating current (AC) electricity that can be used by appliances and the electricity grid. Because PV panels produce electricity in DC, an inverter is required to make the electricity usable. You may have a string inverter on your wall or micro inverters, which are smaller and placed under the solar panels.

Disconnect

This switch disconnects power between the solar panels on the roof and the inverter. Push the handle up to turn the switch ON, and pull the handle down to turn the switch OFF.

Conduit and Wire

Conduit are the pipes that protect the system's wiring.

Energy Efficiency

Energy wise habits

- Turn off lights and computers when not in use.
- Use a power strip for televisions, DVD players, VCRs, and chargers, and turn off power to the strip when not in use. All together, these small items can use as much power as your refrigerator.
- Recycle burned-out CFL bulbs, fluorescent tubes, televisions, computer monitors, and all other electronic waste.
- Unplug and recycle any inefficient old refrigerators and freezers.
- Use appliances efficiently. Use your dishwasher and clothes washer for full loads only. Use the cold water setting on your clothes washer when possible.
- Turn down the water heater to 120
- Use your drapes properly. In the summer, close your drapes during the day.
- Clean or replace furnace air filters monthly.

Energy saving tips

- Replace incandescent bulbs with compact fluorescent lamps (CFLs) or light-emitting diodes (LED) and save up to 75 percent on lighting costs.
- Replace all nightlights and holiday lights with LEDs.
- Choose ENERGY STAR® appliances, computers, and televisions.
- Insulate the first 5 feet of pipes from the cold and hot water heater.
- Install low-flow showerheads and faucet aerators.
- Add or repair weather stripping on all doors and windows.
- Use caulk and spray foam to fill all visible air gaps.
- Replace heating equipment more than 15 years old with new ENERGY STAR® qualified models.
- Have your air conditioning unit serviced to cut 15% of cooling costs.

Additional online resources and information about solar power:

Go Solar California
www.gosolarcalifornia.gov

American Solar Energy Society (ASES)
www.ases.org

Solar Energy International (SEI)
www.solarenergy.org

Solar Living Institute
www.solarliving.org

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