RV Power Management Guide

Enlightened RV Life™

Understanding and Managing Your RV's Power Sources

Shore Power (120V AC / 240V Split-Phase)

When plugged into a campground or RV park pedestal, shore power supplies a steady source of electricity to run most of your RV's systems. Most RV hookups are 30A (120V single-phase) or 50A (240V split-phase, providing two 120V legs for higher capacity). While most RV appliances run on 120V, 50A service gives you two separate 120V circuits, allowing more devices to operate at once. Always ensure your RV is connected to a safe, properly grounded pedestal and use an Energy Management System (EMS) or surge protector.

Battery Power (12V DC)

Your RV's house batteries, typically deep-cycle lead-acid, AGM, or lithium, supply 12V DC power for essential systems when you're not connected to shore power. These systems include lights, water pumps, and the blower fan for your propane furnace. Proper maintenance and regular charging are critical to ensure reliable performance.

Generator (120V AC or 240V AC)

When shore power isn't available, a generator can supply electricity for your RV. Most onboard RV generators produce 120V AC, but some larger models can provide 240V AC for specialized appliances. Generators can power high-demand items like air conditioners, microwaves, and space heaters. Always be mindful of fuel usage, maintenance intervals, and campground noise restrictions.

Solar Power

Solar power is a renewable and eco-friendly way to charge your RV's batteries. Panels mounted on your RV's roof collect sunlight and send it to a charge controller, which regulates the flow of electricity to prevent overcharging. Solar power is best suited for running low-power devices such as LED lights, fans, and electronics. Running high-demand appliances like air conditioning solely on solar requires a large battery bank and an extensive panel array.

How Solar Works:

- Solar panels capture sunlight and convert it into DC electricity.
- A charge controller manages voltage and prevents battery overcharging.
- Stored power is drawn from the batteries to run your 12V systems or, through an inverter, small 120V appliances.

Monitor Your Power Usage

Use a power monitor or EMS to track voltage, amperage, and frequency. These tools can alert you to unsafe conditions such as over-voltage, under-voltage, or faulty wiring.

Prioritize your power use by identifying essential systems such as the refrigerator, lights, and water pump. Use high-demand appliances like air conditioners or microwaves only when needed.

Maximize Battery Life and Efficiency

- Keep your batteries charged using your converter, solar panels, or generator.
- A converter changes AC shore power into DC to maintain battery charge.
- An inverter converts DC battery power into AC to run small appliances.
- Monitor battery voltage regularly to avoid deep discharges.

12V Battery State of Charge Guide:

Voltage (Resting)	Approximate Charge
12.7V – 12.8V	100%
12.4V	75%
12.2V	50%
12.0V or less	25% or lower – recharge immediately

Reduce Energy Consumption

- Switch to LED lighting to reduce power draw and extend battery life.
- Unplug devices when not in use to eliminate phantom loads.
- Choose energy-efficient, RV-rated appliances where possible.

Maintain Your Electrical System

- Inspect wiring for frays, corrosion, or damage.
- Use an EMS for surge protection and to disconnect power during unsafe voltage conditions.

- Maintain tight, corrosion-free battery and electrical connections.

Know Your Limits

Understand your RV's electrical capacity, typically measured in amps. Avoid overloading circuits by running multiple high-power appliances at once. When additional power is needed, use a generator or inverter appropriately.

By understanding and managing your RV's power sources, you'll enjoy safer, more comfortable, and more sustainable travels whether you're plugged in at a resort or camping far off the grid.