ARE SOLAR PANELS RIGHT FOR MY VEHICLE?

AN INFORMATION GUIDE FROM THE MOBILE SOLAR COMMUNITY

GETTING STARTED

HOW DO SOLAR PANELS WORK?

Solar panels work by **absorbing solar energy through silicon cells**, referred to as photovoltaic cells, during daylight hours. RV or van-affixed solar panels work the same as the stationary panels found on buildings or ground-based arrays. This allows your vehicle to run off solar power instead of having to rely on a campsite hookup or a gas generator, potentially saving you money and lowering your carbon footprint.

SOLAR PANEL TYPES

Monocrystalline panels are the most durable and efficient option but are also the most expensive. Each photovoltaic cell is made of a single silicon crystal.

Polycrystalline panels are the cheaper option that are still durable, but encounter issues in high temperatures. Each photovoltaic is made of multiple silicon fragments.

ESSENTIAL HARDWARE

Different vehicle rooftop configurations and solar usage patterns will dictate equipment choice. Portable and permanent solar panel rigs both have their advantages:

PORTABLE VS PERMANENT

Portable rigs allow for flexible use and are ideal when you only need to power a few devices. Portable solar panels can be attached, usually by Velcro, to the top of the vehicle or to wherever the panels may receive the most direct sunlight. Typically, these can cost anywhere between $200 and $1300.

Permanent rigs stay fixed to the roof and maximize your energy efficiency. Permanent panels allow for constant harvesting of solar energy, even when driving. Typically, these rigs are installed professionally and power devices which require higher wattage allotment. These can cost anywhere between $350 and $5000.

BATTERIES, CONTROLLERS & INVERTERS

Along with your solar panel choice, you will need **three** other appliances to create a functioning solar system for your vehicle:

- **Solar batteries** store the harvested solar energy.
- **Charge controllers** prevent the storage system from overcharging.
- **Solar inverters** convert solar energy from DC to AC Power.

INSTALLATION, MAINTENANCE & COST

Top mounted permanent panels may come with instructions for installation. Mainly this involves brackets which are mounted to your roof which keep the solar panel in place. You need only minor handiwork skills to install these on your own. If that is not your speed, you can have them professionally installed or opt for portable panel systems.

Thankfully, maintenance is minimal, requiring periodic cleaning which could increase while off-roading and kicking up dust. Most panels come with a 25-year extended warranty.

Typically, RV or van solar panel systems can cost between $600 and $2000. Higher end systems can reach up to $5000.

YOUR WATTAGE USE

Wattage use for certain devices is a great way to understand what your solar panels can realistically power. The table below outlines some basic appliances and devices wattages.

Appliance	Power Consumption (W)	Daily Hours of Use	Daily Power Consumption (Wh)
Cell Phone Charger	5W	6	30Wh
40 in LED TV	50W	2	100Wh
Mini Fridge	100W (on average)	24	2400Wh

Compare these numbers to the solar panel rig you are considering. If your rig is a 400W system, you will (on average) produce 400W per hour of direct sunlight. So, if you are in direct sunlight for 6 hours you would produce 2400Wh of energy. This will allow you to charge the mini fridge on the table above, but nothing else. Consider which appliances you need to power when deciding how big of a solar panel system to purchase.

KEY TAKEAWAYS

- A typical RV or van solar panel system can cost between $600 to $2000.
- Depending on what device or appliance you plan to use, you may need a higher wattage system. Refer to the wattage table within this pamphlet for more details.
- Monocrystalline panels are durable but expensive. Polycrystalline panels are cheaper but sacrifice some efficiency.
- Consumers need to weigh the pros and cons of portable and permanent configurations and determine which option better suits their needs.

A SINGLE SOLAR PANEL CAN LAST ANYWHERE BETWEEN 25-30 YEARS!

To learn more or share tips with the Mobile Solar Community, visit us at WWW.MSCISFAKE.ORG