

# June 2018

Newsletter

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## Funny Thought For The Day



"The surest sign that intelligent life exists elsewhere in the universe is that it has never tried to contact us."

~ Bill Watterson, Calvin and Hobbes ~

"You can't have everything... where would you put it?"

~ Steven Wright ~

"Insanity: doing the same thing over and over again and expecting different results."

~ Albert Einstein ~

## Beginner's guide to RV trailers

By Tom Mutchler

Towable RVs are the least expensive way to get into RVing. That's because they are propelled by the family SUV or truck, making them much cheaper and simpler to get started with than a motor home. They also come in a wide range of designs and sizes, providing something for every budget.

Because the trailer can be removed from the tow vehicle, the SUV or truck can be used year-round—rather than just serve as a vacation coach, like an all-in-one recreational vehicle. Plus,

the tow vehicle will likely have modern safety features not readily available on an RV, including forward-collision warning, automatic emergency braking, blind-spot warning, and robust crash protection. Tow vehicles also provide the ability to safely travel with kids and their car seats, an option that is not readily available in motor homes.

Trailers offer a lot of flexibility when you get to the campground. You can unhitch the trailer and leave it behind, using the tow vehicle for exploring. This means you don't have to pack things away inside the camper and disconnect all the lines each time you want to go out, like you have to do when traveling with a motor home. And a tow vehicle will be a lot easier for local sightseeing, including navigating downtown roads, parking, and going through drive-thrus.

However, there is a price to be paid for that flexibility. Towing an RV trailer requires a new set of skills from merely driving a car. A lot of space is required to park a long tow vehicle and trailer combination. Learning how to reverse the trailer takes a lot of patience and practice. You also need to hitch and unhitch the trailer, carefully going through the steps to ensure a safe connection. Last, you need to own a vehicle that is capable of safely towing the trailer.

There are several different types of recreational trailers to consider, as outlined below:

### **Folding or Pop-Up Trailers**

Sitting only about 4 feet high when towed, pop-up trailers are raised (by hand crank or electrically) when at the camp site. Most have tentlike sides, as well as extensions that pull out of either end. Some brands, like Aliner and TrailManor, have hard sides, providing more durability and insulation.

How long are they: 8 to 20 feet

How much do they weigh: 1,000 to 4,000 pounds

How many can they sleep: From two to eight

How much do they cost: \$10,000 to \$30,000

Pros:

- Least expensive type of trailer
- Can be very lightweight; the smallest ones can be towed by most cars.
- Low aerodynamic profile helps fuel economy.
- Pull-out end extensions, which are typically beds, create large sleeping spaces for what is a relatively short trailer.
- Some hard-sided models can be put up very quickly.

Cons:

- Often lack the luxuries of larger trailers, like an enclosed bathroom (or any bathroom at all).
- Not much insulation from noise or cold.
- Stopping for a quick camp-style lunch while on the road requires raising up the trailer to gain access.
- Tent-sided models need more maintenance, and fabric requires eventual replacement.
- Tent-sided models are prohibited in some campgrounds due to danger from bears.

### **Travel Trailers**

Travel trailers are the most popular—and most varied—type of towable RV. They have solid walls and often feature a slide—a section of wall that pulls or motors out to provide more interior width when camping.

Travel trailers come in a wide variety of sizes and designs:

- Small retro-inspired "teardrop" trailers are essentially a tent and bed on wheels.
- Small molded fiberglass trailers like the Casita and Scamp have passionate fan bases for their low-maintenance designs.
- Midpriced trailers from companies like Forest River, Gulfstream, and Jayco offer a lot of space and features for the money.
- The iconic Airstream has a distinctive aluminium body. Aerodynamic and low to the ground, these are easy to tow but are expensive for their size.

Smaller trailers have a single axle; larger trailers can have two (or even three). More axles increase towing stability and let you limp the trailer to safety in case of a single flat tire, but they also add to tire replacement costs.

How long are they: 8 to 40 feet

How much do they weigh: 1,000 to 10,000 pounds

How many can they sleep: From two to eight

How much do they cost: \$10,000 to \$150,000

Pros:

- Rigid walls provide some insulation from cold and noise, compared with a pop-up trailer or tent.
- Very little setup time.
- Come in a wide variety of lengths and weights.

Cons:

- Need a suitable tow vehicle.
- Towing requires learning (and practicing) some different driving skills.
- Larger trailers won't fit into small campsites.

### **Hybrid or Expandable Trailers**

Hybrid or expandable RV trailers increase sleeping space without the downsides—the added length and weight—forced by getting a bigger trailer. They do that by combining the hard-sided body of a conventional travel trailer with the pull-out end extensions typically found on a folding trailer. This design can let you use a smaller tow vehicle while still providing enough sleeping space and amenities for your family.

How long are they: 8 to 26 feet

How much do they weigh: 2,500 to 5,500 pounds

How many can they sleep: Four to eight

How much do they cost: \$10,000 to \$40,000

Pros:

- Extra sleeping space without added length and weight.

Cons:

- Takes more setup time than a typical travel trailer.
- Need to maintain tent-sided material, and fabric may need eventual replacement.

- Not as quiet in noisy campgrounds as fully hard-sided trailers.

### **Fifth-Wheel Trailers**

Fifth-wheel trailers are designed to be towed by pickup trucks. Their front extends over a pickup bed and has a hitch beneath the forward sleeping quarters that slides into place in the bed. Because that front portion overlaps the truck, it reduces the overall length of the truck and trailer combination, given the amount of trailer living space.

Fifth-wheel trailers are generally large and heavy, requiring at least a half-ton truck that is equipped from the factory to maximize its payload. A handful of manufacturers, like Escape fiberglass trailers, make smaller fifth-wheels that can be easily towed by smaller trucks.

How long are they: 20 to 40 feet

How much do they weigh: Typically 7,000 pounds and up, excluding a few small models

How many can they sleep: Four to eight

How much do they cost: \$20,000 to \$150,000

Pros:

- Provide more living space for their given towing length.
- Fifth-wheel hitches tend to be very stable for towing.
- Typically has a dedicated bedroom in front.

Cons:

- Often needs a heavy-duty truck.
- Tall height means might not fit under some bridges.
- Limited use of truck bed when towing.
- Not many truly small fifth-wheel trailers are available; "lightweight" ones typically weigh at least 7,000 pounds.

### **Toy Haulers or 'Sport-Utility Trailers'**

Toy haulers or "sport-utility trailers" can come in any travel trailer type. Typically they have an enclosed garage in back of them, designed for carrying motorcycles, ATVs, or other outdoor playthings. A ramp lowers off the back of the trailer, letting you drive these out of the trailer. The ramp itself can often be used as a porch once the toy is unloaded.

How long are they: 18 to 40 feet

How much do they weigh: 3,000 to 10,000 pounds

How many can they sleep: Four to eight

How much do they cost: \$10,000 to \$150,000

Pros:

- Lots of storage space.
- Gives garage space to keep things dry or store tools.

Cons:

- Shrinks available living space.
- Putting heavy ATVs or motorcycles at rear can impair trailer balance and handling.

### **Truck Campers**

Truck campers slide into the back of a pickup truck's bed—no towing needed. Often they project overtop the truck's cab to increase living space. Lightweight "expedition-style" models typically have tentlike fabric sides, popping up to add headroom.

Having enough truck payload is key for truck camper owners. Though some pop-top lightweight models fit into smaller trucks, the typical hard-sided truck camper is too heavy for a half-ton truck, unless that truck is very carefully optioned to maximize payload. Most owners tend to use heavy-duty trucks.

How long are they: 6 to 12 feet

How much do they weigh: 1,000 to 3,000 pounds

How many can they sleep: Two to four

How much do they cost: \$15,000 to \$40,000

Pros:

- Compact and easy to drive; not much bigger than the truck itself.
- Allows for off-roading adventures.
- Some specialty models fit in midsized trucks, like the Toyota Tacoma.

Cons:

- Not much living space.
- High climb to get in.
- Typical hard-sided truck campers require a heavy-duty truck.
- Something of a hassle to install and remove from truck.
- Often expensive for their size.

### Bottom Line

No matter what recreational trailer or RV you buy, take your time. A common adage in the hobby is to "buy your third trailer first," because many people who stick with the hobby go through two or three RVs before they find the right fit. You can accelerate that process (and thus save grief and money) by renting an RV before buying. That helps you sort out what kind of floor plan and what features are important for your particular type of camping and your family.

## Go RVing Survey Predicts 25 Million Vacationing RVers

MAY 31, 2018

by: RV PRO Staff

More than 5.8 million American RVers used their RV during the Memorial Day Weekend, according to Go RVing's 2018 RV Owners Insights survey, conducted by Go RVing, the RV Industry Association, and Inquisium.

As the summer travel season shifts into high gear, 92 percent of RV owners said they expect to use their RVs as much as or more than they did in 2017. A record 25 million people are expected to vacation in an RV this year.

RVers said they're going to use their RVs to get outdoors and enjoy nature (65 percent), take more mini-vacations (64 percent), and spend more quality time with family (50 percent).

"The RV lifestyle has come to be embraced by a wide cross-section of Americans who work hard and want to enjoy the fruits of their labor," said Frank Hugelmeyer, president of RVIA.

“RVers enjoy the convenience, comfort and flexibility RVs offer, as well as the savings RVs provide.”

While fuel prices remain unpredictable from year-to-year, 81 percent of RV owners said this year’s fuel prices will not affect their travel plans. In fact, 80 percent of survey respondents in this year’s study said RV vacations cost less even when fuel prices are higher, with 77 percent saying they save 25 percent or more; and 55 percent saving 35 percent or more.

Over the past three years in the U.S., RV shipments from manufacturers to dealers have spiked to record levels, and consumer purchases from RV dealer lots have risen steadily. According to the survey, recent buyers were motivated by a desire to see America (90 percent), the travel advantages offered by RVing (83 percent), and innovative features and designs on new RVs (74 percent).

Two-thirds of RV owner respondents said an RV is the “most affordable way to travel.” These findings were echoed by research conducted by CBRE Hotels Advisory, which found savings of 21 to 64 percent for a four-person travel party, and 8 to 53 percent for a two-person travel party, depending on factors such as the type of RV and the type of vacation.

While 63 percent of 2018 RV owner respondents cite the “escape of everyday stress and pressure” as a “top benefit of RVing, these same RV owners want to stay connected while on the road – 89 percent bring their smartphone, 69 percent their laptop and 62 percent their tablet PC. The most-used campground amenity is Wi-Fi (84 percent).

Favorite activities for RVers included:

- Sightseeing: 72 percent
- Visiting state and national parks: 71 percent
- Grilling/cookouts: 69 percent
- Visiting historic sites: 66 percent
- Hiking: 58 percent
- Fishing: 42 percent

More than 70 percent of RVers said they’re more physically active when vacationing in an RV than on other types of vacations, and 81 percent say their kids are more active.

More than 65 percent bring a pet on their RV excursions. Dogs dominate at 93 percent with cats next at 8 percent. The 101 percent total means that some RV owners bring both.

The Go RVing 2018 RV Owners Insights survey included 562 respondents and has a 4 percent margin of error.

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# What is solar? How does it work?

Ok.. Are you ready for some science? If your answer is, "not really", don't worry, this won't last long. **Here is a super-duper-basic explanation of solar power.** Solar power converts sun energy into electricity. A solar panel's key elements are silicon and phosphorous. Photons from the sun cause electrons in the panel's silicon and phosphorous cells to break and bond, break and bond, break and bond. This repeated action creates enough electricity to be harnessed and stored in batteries. DC battery power can then be inverted into AC power and used to run standard electronics.

So what does this really mean? With a small investment up front, we can generate FREE, renewable energy!

The basic set up goes like this. You get a solar panel and run wires from it to a control box. That control box is connected to one or more 6 or 12 Volt DC batteries like the one you have in your car. When the sun is out, the solar panel generates electricity which is controlled and properly distributed by the control box to the batteries. These batteries are then connected to an inverter which changes DC power to usable AC power. Don't worry about the whole DC to AC thing quite yet, just know that in general everything you use- your computer, your blender, your fan- run off of AC. Thus, you connect an inverter to the batteries and BOOM you have electricity. As you use electricity from the inverter, the batteries are drained and as the solar panel creates energy from the sun the batteries are charged.

Isn't it more complicated than that? Well.. yes it is. But it is not *that* complicated and by the time you are done reading this article you are going to an (amateur) pro like me!

## How much does it cost?

Like most other things in life, when it comes to pricing out your solar system, you get what you pay for. **The bigger the system, that is, the greater potential for usable solar energy, the higher the cost.** The higher quality products, that is, the longer lasting and more efficient your products are, the greater the cost.

For me, I wanted a system that was going to support my basic electric needs without being overkill. Not only was cost a factor but space was also a consideration. The larger the system, the more space (and weight) it takes up. That being said, I didn't want to do all this work and not be able to use my blender or charge two computers simultaneously or run a fan all night. When considering what size of solar system to purchase, it may be helpful to do some basic math for the electronics you are looking to run. We will discuss this more below in the section *How much power can I get? What can I run on it?*

With no further ado, **the entire system I installed cost me a total of \$609.98.** We will get more detailed about the products I used and alternative products in a following the section *What do I need to install?* The general brake down was roughly as follows: \$175 went to the panel kit (this included one panel, control box and wires), \$200 for the inverter and about \$250 for the batteries.

How much power can I get? What can I run on it? There are several factors that determine how much power your system can create, store and turn into usable electricity. In order to simplify this, we will break it down into three parts. First, the solar panel itself. Second, the battery. Third, the inverter.

## Solar Panel

Solar panels come in a huge variety of sizes and capacity to harness the sun's power. Ideally, you want a panel set up that will be able to charge your batteries fully every day. If you are unable to charge your batteries before every use, at some point, you will run out of the stored power in your batteries because you will be using it faster than you are creating it.

## Batteries

One car battery has the potential to run almost any household device, the question is, for how long? The number of batteries you have will determine the length of time you will be able to run your electronics.

## Inverter

As I said before, stored battery power is in DC form and must be converted to AC in order to run your electronics. In order to do this you will need an inverter. The size of your inverter will determine how much AC power you can use at any given time. Some inverters only have the capacity to invert enough AC power to charge a phone while others have enough to run your whole house.

Check out the section, *What do I need to install*, for more detail.

In our system we are able to charge multiple devices at the same time, run a Vitamix to make smoothies, and have a fan on all night long. The only time we ran out of power was using an electric heater which pulled all the power in about 30 minutes. Which leads us to the part of this article that discusses some limitations of solar systems you may want to be aware of.

**Although it is certainly possible to run any and all electronics off of stored battery power, there are some basic household electronics that zap a lot of power very quickly.** For these you may want to find alternative energy sources. Here is a basic list of electronics to be aware of that gobble your stored energy.

- Anything that heats up or cools down. This includes tea kettles, toasters, coffee pots, heating pads, heaters, electric ranges, refrigerators, hair dryers and air conditioning units.
- Microwaves
- Washer/Dryer
- Power tools

If you are looking to move off grid there is good news. For many of these electronics there are alternatives. AC units, stoves, washers/dryers and even refrigerators can run off of propane. Additionally, because in the conversion of AC to DC a lot of energy is lost, there are many electronics available that can run directly off of DC power and thus reserve more solar generated energy than their AC counterparts.

Is it easy to install? How do I install a solar system? So you want to know if installing solar is easy? You want to know if you can do it yourself? **The short answer is a resounding YES!** Every install will vary slightly depending on your set up but the basic concepts will remain. Let's go through the steps that I took to install a solar panel system on our 19 foot RV.

First, I decided on my location for the solar panel itself. Ideally, your solar panel will be on a flat surface. This will give you the most sunlight available. Our RV roof is mostly a flat surface so I had plenty of real estate to choose from. I decided on the back center, huddled between our skylight and vent pipes.

The solar panel is held down with 4 bolts. That means that I needed to create 4 holes in the roof, which meant a high risk for leaks. Simply drilling 4 holes and bolting the panel down would not suffice. I needed to make sure the bolts were running through something more solid and fixed than the thin aluminum and plywood roof. I wanted to provide the best conditions possible to prevent leaks.

Let's talk about what this means starting with the inside of Winnie. When Brittany first got Winnie, she renovated her. Part of that process was installing 2 X 3 beams running along the width of the roof. I lucked out with spacing and was able to line up my holes for the bolts to run through the 2 X 3's. If I were not able to go through the existing 2 X 3 I would have installed a 2 X 3 or at the very least 1 square foot of 3/4 inch plywood for each bolt. This would act as a large washer, spreading out the force of the bolt when the nut was tightened.

Let's move back outside. Winnie's roof is aluminum and twice a year we paint her with aluminum roof paint. Although I can use a small roller and reach under the newly installed panel, I knew that once I installed the panel I would not want to remove it. So I took some time to inspect that area of the roof and give it a nice thick coat of paint. I cut some 1/2 inch plywood into 4, 6 inch strips. I screwed them down to the roof where the bolts would be going and then wrapped them in rubber, aluminum tape and painted them with a aluminum roof paint. By doing this I created a platform that prevents the brackets of the solar panel from digging into the aluminum of the roof. This also created a second water barrier to prevent water from entering through the holes created by the bolts.

After the paint dried I laid the solar panel down and marked the holes for the brackets. I used a 1/2 inch drill bit and a rigid portable drill and drilled the holes. Because I didn't want to have the bolt ends sticking down through the ceiling, causing a potential head gauge when moving around Winnie, I ran the bolts from the inside with the threads exposed on the roof. I then used silicon caulking around the bracket and the bolt. Finally, I covered the bracket and bolt with strips of rubber, aluminum tape and painted it with aluminum roof paint.

With the panel in place it was time to run the two -positive and negative- wires that are attached to the solar panel. The panel kit came with connections and long enough wires to run them down through the roof and into the cabinet where we decided on housing the rest of the system. The question became; **Where was I going to create a new hole in the roof to run the wires and how would I ensure that it would not leak?** I had some pretty good ideas of how I could do this, but as it turned out, it wasn't necessary. I instead used an existing vent pipe to run the wire through. The vent pipe I used allows gasses from the waste water tank to exhaust. It is covered, water tight, and had plenty of room to run the wires.

I drilled two holes at the base of the pipe from the inside of Winnie and ran the wires up through the pipe. I connected them to the solar panel and sealed off the holes with a thick tape (you could also use caulking or a mixture of the two) so we wouldn't get any waste exhaust inside our living space.

I drilled through the back of the cabinetry, ran and tacked the wires to the back side of the cabinet and then connected them right into the control panel that I had mounted on the inside of the cabinet. I then ran a negative and a positive wire from the control panel to the batteries.

Here we will need to take a moment to talk about the battery set up. I went with 4, 6 volt golf cart batteries that are running parallel. Well... what the heck does that mean? Your car battery is 12 volt. You can absolutely use a 12 volt car battery in your system but I wanted to make sure I have enough stored energy to run all the electronics I want so I got a total of 24 volts.

You may ask, "why not just get 2, 12 volt batteries?" A complicated and very long answer could be provided here but do you really want that? I know that I didn't when I was doing my research. So I will give you the condensed version and hopefully it will provide the info you are looking for. **2, 6 volt golf cart batteries last longer both in their life expectancy and capacity to provide electricity than a standard 12 volt car battery.** They are also smaller which for me meant that we could install them easily within the cabinetry where larger 12 volt car batteries would not have fit as well. Overall, the price worked out to be just a little higher for the four golf cart batteries than for two car batteries, and they are expected to last significantly longer.

Before attaching the positive and negative wires from the control box to the batteries, the batteries must be linked. I am providing an image from rvroadtrip.com to help explain the wiring. Wiring up multiple batteries is easy but different depending on 12 volt versus 6 volt. I simply followed the diagram here and all is working well. I recommend you do the same. Be sure to do a little research on wiring so you are aware of how to keep yourself safe when wiring up your batteries.

Once I had my batteries wired I ran my positive and negative wires from the control panel to the batteries. As soon as the connection was made the display on **the control box turned on and revealed that the solar was generating electricity** and that the system was wired up at 13.6 volts, the exact number I wanted to see.

Here I paused, turned up some music, and committed to a solid five minutes of celebratory dancing. I highly recommend you do the same. Once this subsided I hooked up my negative and positive wires from the inverter to the batteries' positive and negative terminals. The inverter we bought has a wired remote power button that connects with a phone line wire. I cut a hole on the outside of the cabinet and installed the button. I then ran a standard three prong wire from a standard outlet I had installed next to the on/off button for the inverter, and plugged it into the inverter. This gives us the ability to control and plug into our power from the solar system without having to open up the cabinet.

Finally, I tested it. I turned on the inverter and checked it's LCD screen which lit up and displayed the same number, 13.6 volts, telling me that the system was connected and had plenty of juice. Now for the real test! **I pulled out my Vitamix with it's 1380 watt motor, put in some frozen bananas, blueberries and apple juice and flipped it on.** A few short minutes later I was drinking a delicious smoothie with the music back up and my little feet

doing a happy jig throughout the RV.

### **Is there maintenance?**

There is minimal maintenance needed for your system. The most important is to refill the water cells in your batteries. It is recommended you check your cells every month. I think this is a little over kill but since they are probably the most expensive part of your system, I certainly wouldn't say it is a bad idea. Check the directions on your battery to refill. For most batteries you simply use a screwdriver to pop off the lid on top of the battery and fill to the line with distilled water.

For a system installed on a roof or anywhere that has the potential for leaking, I recommend checking after every big storm, long trip (if your system is mobile), or every few months, whichever comes first. Check for cracks and holes. Install fresh silicon, patch and paint with aluminum paint as needed.

What do I need to install? I am going to give you links to everything you need to install the same system I installed. I am also going to provide you with some alternatives to create custom system that will fit your needs. I have set up an amazon store with all the products you will need. If you purchase any of the products through the store you get them at the same price you would if you bought them directly through amazon but you get the additional satisfaction knowing that I get a small percentage. This percentage keeps this page running and creates a smile on my face. So... you might want to do that.

I am going to make it super simple and break this up into four categories, giving a little information about each product and a link to purchase the product.

### **Solar Panel**

As I said, there are many options for solar panels. After doing a lot of research I decided that the company *WindyNation* on Amazon seems to have the best options. Because you will need the panel, wires, and a charge controller, I would recommend buying it all in one lump. This assures that they all work together properly and save you a little bit of money in the process.

I went with the single, 100 watt, panel kit. The great thing about this kit is if you wanted to add more panels in the future you do not need to get a new charge controller because it can handle up to 3, 100 watt panels.

*The solar panel kit costs \$179.99.*

## **RV Solar: Is It Worth It?**

We absolutely love living in a solar powered RV.

But as awesome as solar can be, it is NOT for everyone.

A lot of RVers seem to think that a few hundred watts of solar will magically give them absolute electrical independence (even running air conditioners!) with an investment that will pay for itself in no time at all. And we've run across others who regard solar with distrust – just a way for “environmentalists” to throw money down the drain while acting smug about it.

### **But the truth is – both extremes can be deluded about the realities of solar.**

We find relatively few RVers have actually taken the time to think through the real benefits, costs, and cost savings associated with going solar to decide if investing in a solar system actually makes sense.

There is no one right answer for everyone.

But hopefully this guide can help you decide – what is right for you?

### **Our Solar History**

Solar power actually played a big roll in the beginning of our relationship.

When Chris hit the road solo in a minuscule T@b trailer 9 years ago, the first thing he did was

upgrade the electrical system with a 110W solar panel. When we met in person later that year for our epic 27 hour first date, I told him that I needed to be able to get a day's work in, and he was able to squeeze out just enough power from the sun while boondocking that I didn't need to cut things off early.

Who knows – if it wasn't for that solar panel, we might not have ended up together.

When we designed our next RV together, of course we integrated in as much solar as we could fit (200W) on the roof of our tiny Oliver Travel Trailer. Our goals at the time were to be as off grid as possible, without being constrained to RV parks or hookups. We didn't even carry a generator with us at first, so of course solar was a must.

But when we moved into our bus Zephyr four years ago, solar was not on our immediate upgrade list. Our style of travel had changed, as had our electrical needs. We instead first invested in a robust battery & inverter system that could store plenty of energy for a couple days off grid at a time, and this gave us tremendous flexibility in between stops while relying on minimal generator usage.

It wasn't until a year ago that we at last went all in with our big solar upgrade.

For us – it made sense to wait, and we had other life priorities that we knew would keep us on the grid for a while. But now we are back to enjoying boondocking part of the year and being powered by the sun while doing it. We love our solar setup, and the increased freedom it provides us. And we're not at all deluded that it's necessarily saving us money right off the bat.

But that's us.

Does solar make sense for you?

When Solar DOESN'T Make Sense  
Solar is an investment.

It requires planning, substantial upfront expense, and a sizable chunk of physical roof and/or storage space devoted to the cause.

And if you're not going to be able to take advantage of sucking power from the sun often enough, going through the effort may not be worth it.

As much as we would love all our neighbors to be dependent on solar (and thus silent) – running a generator on occasion isn't the end of the world.

So let's start with some scenarios where installing solar just doesn't make sense:

- **You'll be sticking mostly to electric hook-ups anyway.** To be honest, you can perfectly enjoy an abundant RVing lifestyle while staying in places with RV electrical hook-ups, thus having little need for solar (or even a generator). There's a plethora of options out there ranging from traditional commercial RV parks to absolutely amazing state and national parks. If you focus on hookups and your only dry camping tends to be a night here or there while in transit (such as blacktop boondocking in a rest area or commercial parking lot), then solar probably doesn't make a ton of sense.
- **If you are a "special event" boondocker.** If the only time each year you are away from hookups is for a single week or two to attend a special event (like Burning Man or the Balloon Fiesta) – a solar system might not make sense. A week of heavy generator use once or twice a year won't cost you much at all. Even us solar enthusiasts understand that when we choose to attend such events, there will be lots of generator noise (but please do keep it to a minimum).
- **You'll frequently be in places with extreme climates.** Especially if you'll need air conditioning a substantial part of the year, you're more than likely going to be best off finding a place with hook-ups. Trying to be off-grid and comfortable with just solar on roasting summer days is not fun. It takes an extreme solar & battery setup to keep up with air conditioning – whereas most generators can run an AC with ease.
- **You'll be sticking to more populated areas.** Unless you're embarking on some urban stealth camping, the areas where off-grid boondocking spots are most plentiful don't tend to be near cities or populated areas. The east coast and midwest have fewer options – and most campgrounds in these areas offer hook-ups. Go out west however, and the opportunities for solar boondocking and dry camping are endless.

- **You're more of a weekend warrior than extended-time RVer.** If you'll just be going out for short trips a few times a year, the investment in extensive solar may not be worthwhile. It's easy enough to find campgrounds with hook-ups, or to learn to live without much energy – supplementing with a generator (please get a quiet one however!) when necessary. Or you can get a simple solar setup to meet your minimal needs, instead of investing in a larger system.
- **You're not otherwise setup for dry camping.** If you don't have large enough waste holding tanks or don't care to conserve other resources – then solar alone isn't going to make extended boondocking magically feasible.

### Solar is a Lifestyle Change

If you've gotten comfortable in your RVing lifestyle going pole-to-pole – you of course have to step back and ask yourself if you're avoiding solar because you don't go places you need it, or if you're not going to those places because you don't have solar?

It is a Catch-22 that way. Installing solar can be a complete RV lifestyle change.

Once you have solar, you start thinking differently about the variety of places you can go. You have a new freedom where you don't have to plan around hook-ups, and energy usage & collection becomes quiet and passive.

Here's some of the changes that solar can create:

- You can seek out more remote locations with amazing vistas, privacy, getting further out in nature. There's an abundance of free dispersed camping options available on public lands, especially out west. You can go entire seasons moving between them, hardly ever hooking-up – having priceless experiences almost for free.
- There are many campgrounds that have developed campspots that don't offer hook-ups, and staying in these campgrounds (or dry loops) will become an option for you. Often the camp areas without hookups have better views, lower prices, easier availability, and increased privacy over their hook-up alternatives.
- You can take advantage of 'driveway surfing' options to stay with friends & family without worrying about plugging into their house and potentially tripping circuit breakers.
- If you have a mechanical break-down while on the road or you need to wait in a parking lot for a while – you have magical power still flowing in that can make the wait a little less stressful.
- If you are in a developed campground with hook-ups, and the power goes out – you can keep on ticking while your neighbors may have to resort to a generator or going without.
- If you install solar on your roof, while in motion or parked, your house batteries are getting charged whenever there are sun's rays are hitting your cells.

If you're on the fence about solar for your RV, we recommend giving some scenic boondocking or dry camping a try first. See if you even like it before investing in solar. Try conserving power and minimizing generator time as best you can to get a feel for it. Budget out your water usage, and really get to know your tank capacities.

It's particularly helpful if you have boondocking savvy friends you can join up with for a couple days to show you the ropes. We've certainly enjoyed introducing friends to the lifestyle.

## RV Tech Q&A:

### Downhill Braking

#### Question:

I read February's "Tundra Brake Problems?" letter from David Chapman and your reply about truck and trailer brakes. Neither your reply nor Chapman talked about downshifting the transmission, which is an important part of driving down long or steep hills, particularly with a trailer. Some newer truck automatic transmissions downshift themselves on a downhill grade.

My opinion is that the engine and transmission should provide most of the retarding, and that the brakes should be used only to help hold the speed down. If Chapman's truck wasn't downshifted to help retard the unit, then that might be the cause of the overheated brakes. The owner's manual should provide information about towing and descending grades.

Rick Stuchell | Centennial, Colorado

**Answer:**

You're right, Rick. Using downshifting and engine compression to help control speed down a grade should always be part of the discussion. Some of the people who report consistent brake problems when others have great towing success with the same vehicles are likely among those who don't downshift to help maintain speed and experience brake fade, adverse wear and/or warped rotors due to heat. That wouldn't apply to all of those with brake problems, but certainly the majority.

**Disc-Brake Selection**

**Question:**

My wife and I are planning a cross-country trip in about two years. After reading various articles about disc brakes, I am considering changing my fifth-wheel drum brakes over to disc brakes. We own a 2013 Keystone Montana 3582RL. I believe the axles have a 7,000-pound gross axle weight rating (gawr), and dry weight is 12,600 pounds. Can you recommend a brand of disc brakes that has performed better than the others?

Art Frament, Clifton Park | New York

**Answer:**

The use of disc brakes will make a big difference in stopping ability. Titan is a well-known brand, and there's also Kodiak, and both offer parts and kits to fit today's trailers.

You might want to make sure that you'll own the trailer you want to convert for a while, as the kits aren't cheap, and you're unlikely to recover the full investment cost at resale.

Even at a price, it's one of the best safety-related accessories you can add to your trailer.

**Trailer Level and Tire Wear**

**Question:**

Last year I purchased a 2017 Ram 2500 4x4 truck to pull my 31-foot 2016 Dutchmen Denali 262RLX fifth-wheel. The mounting-surface plate of the fifth-wheel hitch on the new truck is 7 inches higher than it was on my old 1995 Ram. The nose of the fifth-wheel is up, and the trailer does not travel parallel to the road surface by less than 2 degrees, measured from the kingpin to the center of the tandem axle.

On our last trip, there were two blowouts on the rear axle. The trailer has an Equa-Flex leaf-spring suspension and had the original ST225/75 R15 load range D tires. I kept the air pressure up to 65 psi max and was well within the gross vehicle weight rating (gvwr) and gawr.

Is it possible that when the trailer travels nose up there is more weight on the rear axle? I replaced all four tires with Goodyear Endurance ST225/75 R15 load range E and hope that I don't have to go through that nightmare again.

Klaus Krolik | Fallbrook, California

**Answer:**

Although the equalizing suspension part of a dual-axle trailer is supposed to provide more or less equal weight on the axles, that's not 100 percent the case. If the trailer body is angled back somewhat, there's going to be a weight transfer toward the rear axle, but how much weight is transferred depends on a lot of trailer-body design factors and the suspension configuration. It also depends on how much weight is carried on the axles and tire carrying

capacity. The weight transfer would need to be pretty significant to have an effect like overloading and blowing out two tires.

You can use a commercial scale to determine the trailer's axle weights. Park the trailer so both axles are on the scale and note that figure. This is also a good time to compare the trailer's posted gawr to those scale results, as this will tell you where the RV stands on being overloaded or not.

Now, with the help of a spotter, roll ahead until one axle is off and one is still on the scale. Note that figure and deduct it from the total for both axles to determine how much weight is being carried at each axle. If there is a significant difference in weight, that could aggravate the blowout situation. It would also affect the tires during a sharp turn, which will scrub sideways, placing a lot of stress on the sidewalls.

It's best to figure out a way to get the trailer riding level. This can be done by lowering the fifth-wheel hitch saddle, if there's still enough bed-rail clearance for trailer movement, or raising the suspension somewhat using the techniques we discuss in this column on a regular basis. A level ride will help with the axle-loading situation

### Contact Us

Air Safe Hitches  
7 Indiana Ave  
Long Beach, New York | 11561  
Tel. 321-939-2132  
Fax. 866-201-3391  
[airsafehitches.com](http://airsafehitches.com)

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