



If you are looking to tour Australia, and want a solar and battery setup to take, there are more options available today than ever before. Things have come in leaps and bounds in this industry, and you can now run everything from coffee machines to microwaves if you please. Of course, everyone's budget and requirements vary and lucky for you, so do the choices available.

In this article, I'm going to share with you our current setup at 4WDing Australia, split into a [2016 Isuzu Dmax 4WD](#), and our camper trailer. I'll also share with you some of the most important things to consider when setting up a solar system and then you can go out and get something that is going to do what you require it to do. Yes, there are caravans out there which will run air conditioners off the battery and solar setups, but a lot of people don't have any need for it.

Our setup is quite a bit simpler but has been built with a fair bit of thought, redundancy and functionality.



*Camping in the Kimberley.*

## Requirements for our build

I wanted something that was low - mid-range budget, reliable, hands-off operating, overkill in terms of solar and battery capacity and that had some redundancy should things go wrong. I also wanted both systems to be separate, and run on their own but have the ability to join them together as required to charge either the Dmax battery or the camper trailer.



*Our Dmax and Camper Trailer.*

## What do we run from the Dmax

The primary current draw from our Dmax is a 55L Evakool Fridge, which runs 24/7 when we are away. This is our day-to-day [fridge](#) for all meals, and in reality, is critical for remote touring. Beyond that, we use the deep cycle battery for charging phones, the water tank pump, lights, [portable showers](#) (small pump) and a [350W pure sinepower inverter](#) which charges our camera batteries, laptops and smaller batteries for [head torches](#)/Ryobi drills, etc. We don't have any extremely power-hungry devices on board, as we really haven't found any need for them.



*Our Dmax setup.*

## Our Dmax solar and battery setup

Starting with the tow vehicle, I designed and purchased all of the gear used in the 12V touring setup with exception of the cabling, connections and odd bits and pieces, which were done by a mobile auto electrician.

I went with a 200W solar panel from Low Energy Developments, which is permanently bolted to the roof racks on the canopy. This feeds a 150aH Bosch AGM battery right at the front of the canopy. The charging of the battery is done via a Projecta 25 amp DCDC battery charger,



which will either take power from the alternator or the solar panel on the roof depending on the conditions.



*Dual battery voltage monitor.*

I have a second, cheap solar regulator which is also inside the canopy on Anderson plugs, so if the DCDC battery charger fails, I can bypass it and charge the battery from that. If the solar panel fails, the battery will be charged via the DCDC unit/alternator. For monitoring the battery condition, I have a Projecta Dual Battery monitor, which simply displays the voltage. I had an auto electrician run all of the cabling and breakers, and simply did the mechanical part of the install which included securely mounting the secondary battery, bolting the solar panel onto the roof racks and making up a box to house the cabling. There's a big cable from the starting battery running along the chassis and to a terminal box under the ute tray, which is fused. Power from that then tee's off to inside the canopy, and to the rear Anderson plug which is used for charging the trailer we tow.



*Junction box under the Dmax tray.*

## Our camper trailer setup

At this point in time, we actually have two camper trailers, but we are still playing with the solar system on the new Reconn R2, so let's leave that alone for now! Our other camper trailer is a simple, Australian-made soft floor camper trailer with a difference - a huge solar and battery setup!

This particular setup stems from the need to run a freezer on board purely off battery and solar. It's also a 55L Evakool, but as I soon found out, when you run a freezer at -18 degrees (which is the recommended safe food storage temperature) it uses a lot of power. In our particular case, around 3 amp hours, 24 hours a day. That's quite a bit of draw, and you need a significant battery and solar system to back it up



*A 55L Evakool Freezer in our camper.*

The freezer was installed for a couple of reasons. With a young kid on board (two now!) we wanted to have frozen meals that were healthy, ready to go at a moment's notice. Travelling with young kids in a soft floor camper trailer isn't exactly easy, and living off 2-minute noodles isn't our idea of fun either, so the freezer was a logical option. Beyond that, we do a lot of fishing and spearing, so having a decent size unit that could take our fresh fillets home was a pre-requisite.

We don't run much else off the camper trailer. Some basic lights and occasionally the inverter to charge laptops etc., but that's about it.



*Camper trailer batteries with DCDC and Victron Regulator.*

## Installation

On this particular install, I did everything, including removing the originally installed 100 aH battery and replacing it with two 135 ah Power AGM batteries. The camper trailer came with a 20 amp Projecta DCDC battery charger which takes power from the tow vehicle's Anderson



plug and charges the battery when driving.

Again, I purchased two 200W panels from Low Energy Developments and connected them into a Victron 100/30 regulator. To monitor things a bit more closely, I purchased the Bluetooth dongle too, which passes on information to your phone via a Bluetooth app. This makes life a lot easier for monitoring how much power the solar is generating, and what it does on a day-to-day basis.

The panels are mounted to a DIY boat loader, which flips up and in most cases points North. If we have to face a different way, the panels pivot off the boat loader to other angles.



*The Victron phone app is super useful.*

## Overall

Both of these systems are overkill, and that's exactly what you want. I've never seen the Dmax go below 12.4 volts, and the camper trailer not much less than that. If you are running deep cycle batteries, it's important that you don't discharge them too much/too often or you will drastically shorten their lifespan.

Both systems work independently, but I can charge the camper batteries from the Dmax motor, or secondary battery if required. On the flip side, I can also use the camper trailer to charge the Dmax batteries if needed. We also carry a 190W portable solar panel set, which gives us some extra redundancy if things really go pear-shaped, or we get stuck under some trees for several days in a row.

I wanted both systems to comfortably last two days without any sun, as it doesn't always shine well, and it's not uncommon to get several days in a row of overcast weather. I hate the idea of taking a generator camping, so solar seemed like the logical arrangement.

The only thing that has changed since installing these systems is the price and attractiveness of lithium batteries. These have some major benefits, and they are becoming extremely popular. It's something I would consider if I did it again.



*200W solar panel on the Dmax.*

## What do you need to look at when building a good touring setup?

This probably deserves its own post, but I will give some brief pointers to think about when building a solar/battery setup for touring Australia.

### 1. Work out what you're running and how much power it uses

Work out what you are running, how long you are going off-grid and how much power it uses. In reality, this is all one [big maths solution](#), and every device you buy will have figures for its power consumption. Whatever you consume, you need to be able to recharge that day from solar, or driving around. If you are running normal deep cycle batteries, try not to discharge



them below 50%. This means for a 120aH battery, bank on only having 60 available. Only bank on getting about 6 hours of good quality sun each day. Of course, this varies depending on where you are in Australia, but it's a good guide to go off of.



*400W of panels on our camper trailer boat loader.*

## **2. Make sure you have redundancy**

Make sure you have redundancy. Some days the sun is terrible, or you have no choice but to stay under a tree. Portable panels are a great option for this.

## **3. Not all solar panels are the same**

Not all solar panels are the same. 12V solar panels vary in price like you wouldn't believe. However, there are a lot online that are not actually the size they say they are. More expensive is not always indicative of better quality.

## **4. Make sure you use the correct cable size**

Use the right cable size. This is critical. Too many people install wiring that is underrated. This is problematic as the voltage drops significantly more, and it can also cause severe issues like cables melting and electrical fires. Not good. Cable size should be determined by the power required, length of the run and how much voltage drop you can afford.



*Inside the Dmax electrical panel.*

## **5. Good connections are essential**

Use good connections and fuse things correctly. Nothing is worse than scotch locks and a pair of poor quality crimps. Make sure your cable connections are done well, and that you have appropriate fuses in place. This is not an option! It protects your equipment and stops your vehicle or trailer burning to the ground. A quality crimp or soldered joint is the way to go.

## **6. It's important to choose quality gear**

Use decent quality products. There's a lot of rubbish out there, including solar panel regulators. Don't pair a decent solar system to a poor quality regulator, or run your expensive 240V electrical equipment off cheap inverters.



*12V to 240V inverter.*

## **7. Big inverters don't pair well with small battery**



## systems

Big inverters don't pair well with small battery systems. There's a lot of people installing 2000W inverters on battery systems that are nowhere near big enough to handle that sort of load. You will cook your batteries running excessive load through them.

### 8. Shop around and choose a reputable installer

Speak to multiple suppliers. There are some very shady installers out there, charging excessive fees for work that doesn't justify it. Get quotes from a few different places, make sure they are using quality equipment, and that the system suits your requirements.



*Make sure your electrical work is done well.*

### A good solar setup is worth its weight in gold

Being able to travel anywhere, and knowing that without lifting a finger my batteries are being well cared for and that they are happily running the devices we need to keep exploring this great country is fantastic. We don't carry a generator, because the solar system has been designed and installed to suit our requirements.

If you are looking at setting something up to power your gear when 4wd touring you have plenty of great options today. Take your time, do lots of research and you'll be able to enjoy some of the creature comforts you have at home in the middle of Australia!

See you out there!

**What does your current solar and battery setup look like?**