

How to Make Inexpensive DIY Home-Built Solar Panel with Damaged Solar Cells from Ebay

by Michael Graham Richard, Gatineau, Canada on 09.18.08

SCIENCE & TECHNOLOGY (alternative energy)

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Making Cheap, Inexpensive DIY Solar Panels at Home

[Mike Davis](#) is an astronomer. To practice his hobby away from the light-pollution of cities, he bought some land in a remote part of Arizona. But there was a problem: No electricity.... But he's a resourceful fellow. He built some home-made solar panels using inexpensive blemished and damaged solar cells from eBay! That might be even cooler though less romantic, than [the couple who got their solar panels via their wedding registry](#).

Read on for more photos and some technical details to give you an idea of how he did

right now on 

solar cells

Product	Price	Bids	Time Left
HOW TO BUILD SOLAR-CELLS-PANELS-ARRAYS-DIY-FREE ENERGY	\$9.99	<i>Buy It Now</i>	40m
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ALTERNATIVE ENERGY-HOW TO MAKE SOLAR CELLS-ON CD EBOOKS	\$5.01	Buy It Now	6h 51n
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60+ broken or chipped solar cells	\$20.00	Buy It Now	8h 53n
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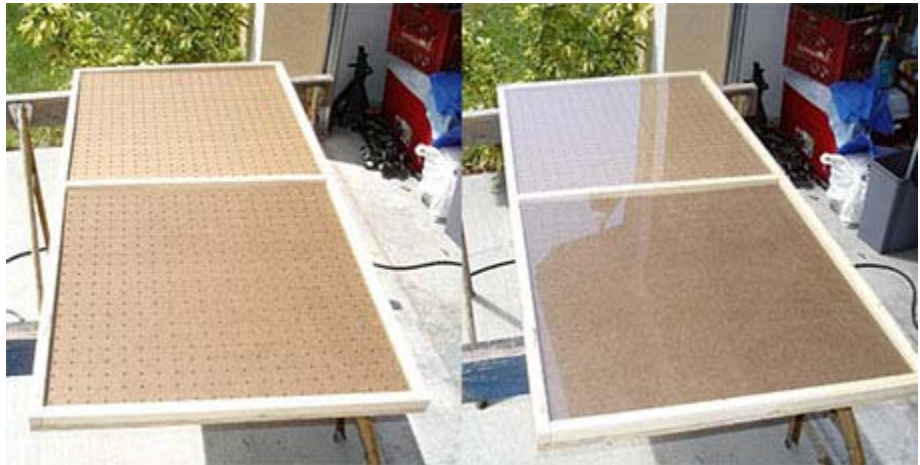


I bought a couple of bricks of 3 X 6 mono-crystalline solar cells. It takes a total of 36 of these type solar cells wired in series to make a panel. Each cell produces about 1/2 Volt. 36 in series would give about 18 volts which would be good for charging 12 volt batteries. (Yes, you really need that high a Voltage to effectively charge 12 Volt batteries) This type of solar cell is as thin as paper and as brittle and fragile as glass.





A solar panel is really just a shallow box. So I started out by building myself a shallow box. I made the box shallow so the sides wouldn't shade the solar cells when the sun comes at an angle from the sides.



Next I cut two pieces of masonite peg-board to fit inside the wells. These pieces of peg-board will be the substrates that each sub-panel will be built on. [...] To protect the solar cells from the weather, the panel will have a plexiglass front.

DIY solar panels continued on [page 2!](#)

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Cool. So, how much power does the thing output in full fun? And kWh/day would be nice, too.

Still at \$105 it's a pretty good deal...

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Anthony  says:

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Heck yes!!! Sign me up!

September 18, 2008 5:01 PM | [flag a problem](#)

Azhura says:

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I read some stuff from Steve Harris at Knowledge Publications. He suggests contacting highway contracting companies ... they operate those solar powered highway info signs and they get hit by drunk drivers and get beat up a lot. They end up having panels lying around that insurance has paid for and they might give them away.

Also for building solar hot water heaters... if you need some good plate glass, contracting companies might have some lying around from damaged doors received in shipping. If you're buiding a box for hot water, it doesn't matter if it has scratch.

vsk

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vsk says:

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Anthony said:

"So, how much power does the thing output in full sun?"

It's in the article. 18.5 volts and 3.05 amps. That's 56.42 Watts. Multiply by about 8 (I don't know how many hours of sunshine Arizona gets in a day, so I'm certain this is an underestimate, but at the same time some of that day will result in less than optimum conditions as the sun moves across the sky) and you get 451 Wh/day, or

U.451 KWN.


Since an observatory doesn't use a lot of power (a laptop, the telescope, and a couple of very low powered red lights, if any at all) and amateur observatories don't see a lot of use (weekends... maybe) this is probably at least several times as much power as he needs (although there's charging/discharging inefficiencies that he mentions, there's also the fact that it's weekends only). It won't, however, power you home. In fact, that won't even power my entertainment center or my desktop computer for more than a couple of hours.

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Ernie  says:

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I would try that with a swimming pool surround which works equally well as anything in general so if you got one of those rolls of plastic be careful using a circular saw cutting it cause they chip and pieces can fly into the face and chest or the arms and hurt as much as a weed eater slinging rocks against a leg which is exposed cause your wearing short pants.

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Michael says:

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Needs way more articles like this.

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Erik says:

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You can repair broken panels

http://www.fastonline.org/CD3WD_40/JF/JF_OTHER/SMALL/Solar%20panel%20testing%20and%20repair...By%20Donald%20Koehler.PDF

(sorry, haven't quite figured out tinyurl)

Or broken panel covers

<http://www.fieldlines.com/story/2003/8/5/121012/8923>

Goodle can be handy for these things

Enjoy!

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Don says:

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A great project! I'll try to do it.

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Mahmoud Kabalan says:

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Erik -

www.instructables.com - Way more articles like this!

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Andrew Jones says:

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Come over to the Treehugger Forums and check out the Supplemental Solar thread where a few of us are doing similar projects and help others who want to do the same.

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mikebeavis says:

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Where in the article does it say 3.05 A? I doubt that 3"x6" panel would produce that much current.. a couple of hundred miliamperes will be the most.

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E.E. says:

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"Where in the article does it say 3.05 A? I doubt that 3"x6" panel would produce that much current.. a couple of hundred miliamperes will be the most."

isn't 3 amps at 18.8 volts only 56 watts? That sounds about right, no?

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Anonymous says:

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Does anyone have the link for the Treehugger forum mentioned in this post:

"Come over to the Treehugger Forums and check out the Supplemental Solar threac where a few of us are doing similar projects and help others who want to do the same".

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Rob says:

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When you measure solar panel output you measure *no* load voltage, then you measure *short circuit* current... the 3amp figure given is short-circuit, i.e. connect the ammeter directly to the panel (be sure you're on a range than can handle it!). It won't put out half a kilowatt, I can guarantee you that... but it *will* charge a motorcycle battery, especially if not drained for a week.

For the Treehugger link, look at the adspace to the right.

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Steve says:

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Don't charge a 12V battery at 18V. You will run it dry.

You're best to charge them at 13.6-14.4v, then have a maintenance charge around 13.6 or lower once the battery is 'topped up'. The load of the battery when empty will pull the voltage lower, as you don't have enough amps to raise it enough. You can still overcharge and damage the battery once it reaches capacity.

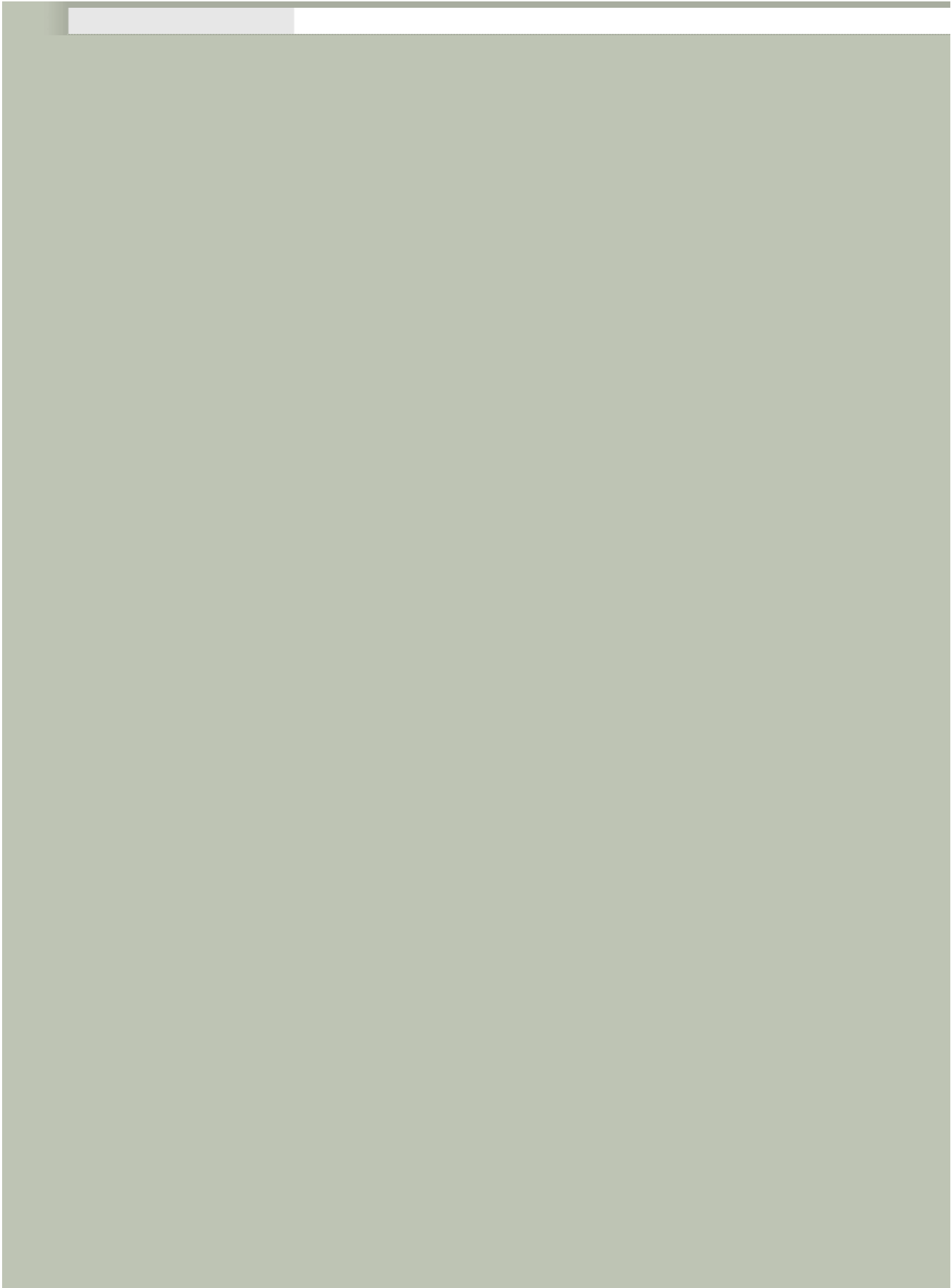
Yes, running 18V is a better idea if there is distance between your solar cells and your batteries, but make sure you install some sort of voltage regulator within close range of the batteries to be sure.

The guts out of a dead 'automatic' battery charger are a great idea if you're handy.

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LummoX says:

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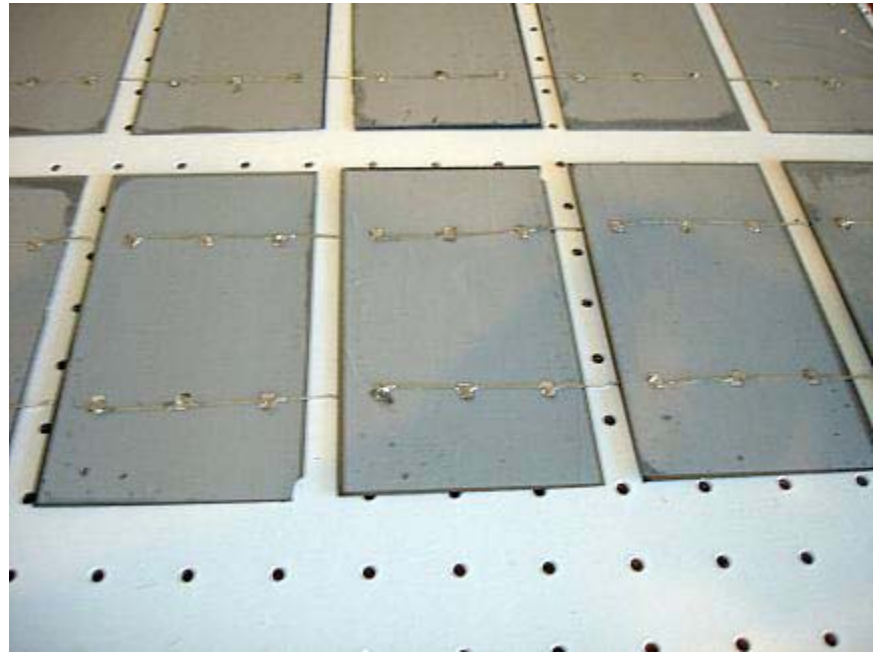
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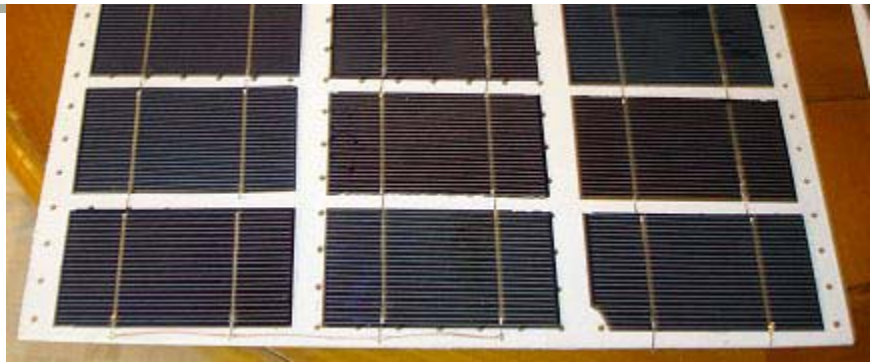
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I laid out the cells on that grid pattern upside-down so I could solder them together. All 18 cells on each half panel need to be soldered together in series, then both half panels need to be connected in series to get the desired voltage. [...]

I used a low-Wattage soldering iron and fine rosen-core solder. I also used a rosen pen on the solder points on the back of the cells before soldering. Use a real light touch with the soldering iron. The cells are thin and delicate. If you push too hard, you will break the cells.





Here's what it looks like from the front.



Here I am testing first half panel outside in the sun. In weak sun through clouds the half panel is producing 9.31 Volts. YAHOO! It works! Now all I had to do is build another one just like it.





I drilled a hole in the back of the panel near the top for the wires to exit. [...] Each solar panel in a solar power system needs a blocking diode in series with it to prevent the panel from discharging your batteries at night or during cloudy weather. [...] I added a polarized two-pin jones plug to the end of the panel wires.



Here is the finished product, producing 18.8 volts and 3.05 Amps in the sun.

How much did it cost?

Part	Origin	Cost
Solar Cells	Ebay	\$74.00*
Misc. Lumber	Homecenter Store	\$20.62
Plexiglass	Scrap Pile	\$0.00
Screws & Misc. Hardware	Already on hand	\$0.00
Silicone Caulk	Homecenter Store	\$2.05

Silicone Caulk	Homecenter Store	\$3.95
Wire	Already on hand	\$0.00
Diode	Ebay	\$0.20±
Jones Plug	Newark Electronics	\$6.08
Paint	Already on hand	\$0.00
Total		\$104.85

Not bad, though of course there's a lot of labor needed to actually build the thing, and you need the skills in the first place. Not a project for everybody, but those with the courage will certainly have a lot of fun.

This is just a quick overview of the project. If you want more, please visit Mark's website linked below. There's a lot more details and more photos about how he built his inexpensive solar panels.


Via [How I built an electricity producing Solar Panel](#)

More Solar Power

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