



KG5AKF

Katy Amateur Radio Society

Portable 12V Power Bank
Project

- Idea stemmed from a KARS Net discussion topic on “how long could you operate during an emergency if you lost power from the grid”.
- I started with a \$12 plastic toolbox in which I could accomodate a 12V sealed lead-acid battery.
- Eventually decided the project could be easily upsized to accomodate two batteries, and “a few extras”.

The “extras” in the final version include:

- Two 12VDC sealed lead-acid batteries (in parallel)
- MJF Power Booster
- Renogy Solar charge controller (with lighted switch) + Solar panel
- Common bus (ground)
- Common “live” (+12V) to a Master fuse box
- Interior Led lighting
- Cigarette lighter (and led-lighted toggle switch)
- 12V (non-boosted) powerpole power out (& switch)
- Coax (PL-259) to boost power on TX
- 12V (boosted) powerpole power out (& switch)
- Stores a 120VAC battery charger
- Stores a 130W power inverter
- Stores an inline power analyzer
- Mag-mount base
- Aluminum chassis dolly (the box weighs a ton!)

HARDWARE



DROK 2-wire Car 0.56" DC 3-30V 12/24V Green LED Small Digital Voltmeter Panel Volt Meter Voltage Gauge - \$6.90 (Amazon)



Blue Sea Systems 5028 ST Blade Fuse Block with Cover - \$29.95 (Amazon)



BATTERY, 12V, 33Ah, HOVEROUND, ACTIVE, DM, FORERUNNER, GLX, LX - \$72.20 (Amazon)



New 12V/20A Red LED Illuminated On/off SPST Car Automotive Toggle Switch Button - \$4.99 (Amazon)



Blue Sea Systems Common 100A 5-Gang Mini BusBar with Cover - \$14.97 (Amazon)



Firewall Grommet Bushing 0 4 8 10 Gauge 1/0 AWG Amplifier Install Cable Wire AMP - \$2.98 (ebay)



PG7 Black Plastic Waterproof Cable Glands Joints 10 Pcs - \$3.28 (Amazon)



Dorman 86931 On-Off Toggle Switch with Green and Red LEDs - \$10.32 (Amazon)



Solar Panel Starter Kit 100W Monocrystalline:100W Solar Panel UL 1703 Listed+2 20' Solar cables+PWM 30A Charge Controller+ Uniquely Designed Z Bracket Mounts - \$184.99 (Amazon)



HARDWARE



NOCO Genius G3500 6V/12V 3.5 Amp
Smart Battery Charger and Maintainer
- \$59.95 (Amazon)



In-line ACT Water-resistant
Fuse Holder - 10 AWG -
\$3.49 (Amazon)



"Watt's Up" RC Watt Meter & Power Analyzer WU100
Version 2 --- SALE! - \$54.99 (Amazon)

...realized too late iMeshbean has the same for \$16 !



2pcs Super White 8 LED
Universal Car Light DRL Daytime
Running Head Lamp DC 12V -
\$4.48 (ebay)



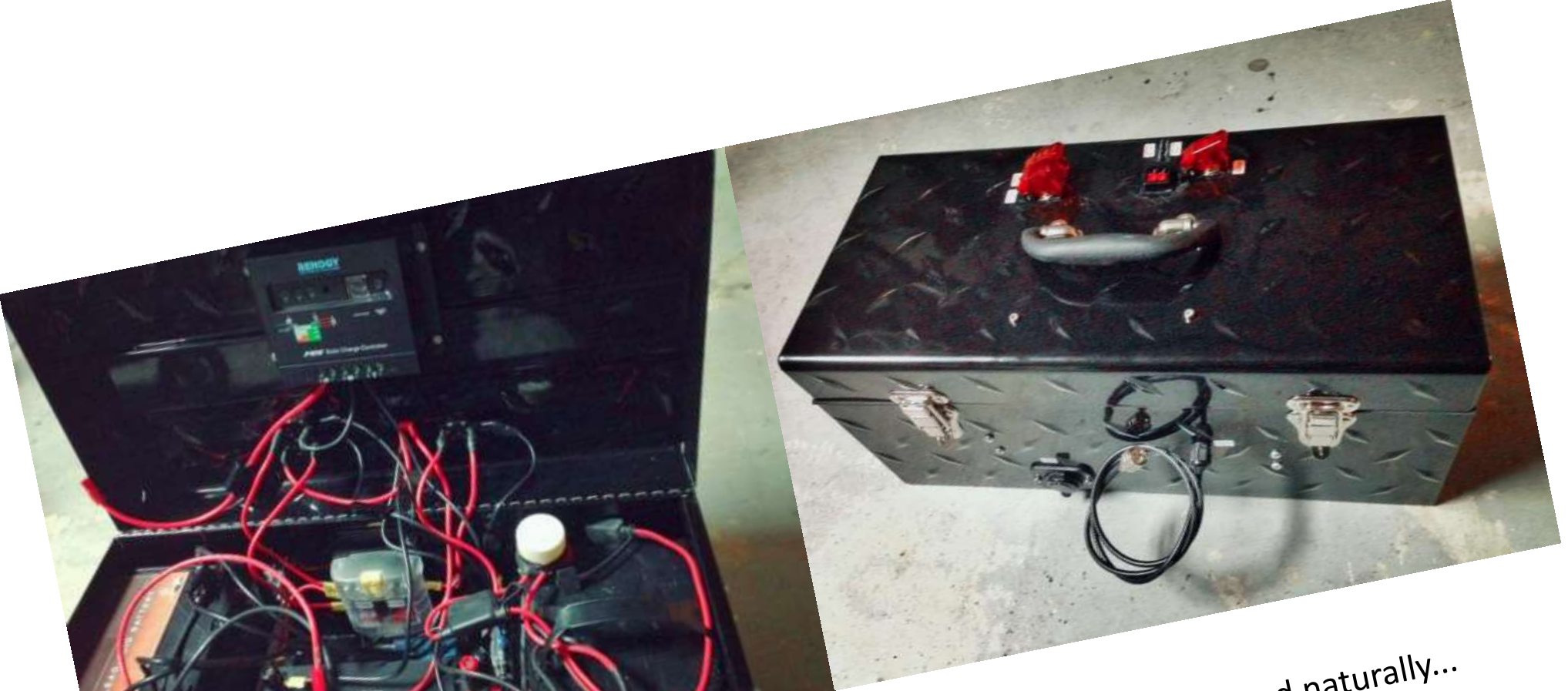
Blue Sea Systems 12 Volt
Dash Socket - \$7.99
(Amazon)



Sirio Mag 145 PL Magnetic
Mount and Cable - \$39.50
(Amazon)



ExpertPower® 42.8" Dual Band
Stainless Steel Mobile Whip
Antenna PL-259 - \$71.09
(Amazon)



Started out with a plan and naturally...
...changed it along the way!



Friends have suggested I do not attempt to
carry this across a TSA security checkpoint



Version 1.0
exterior view



12V (non-boosted) powerpole

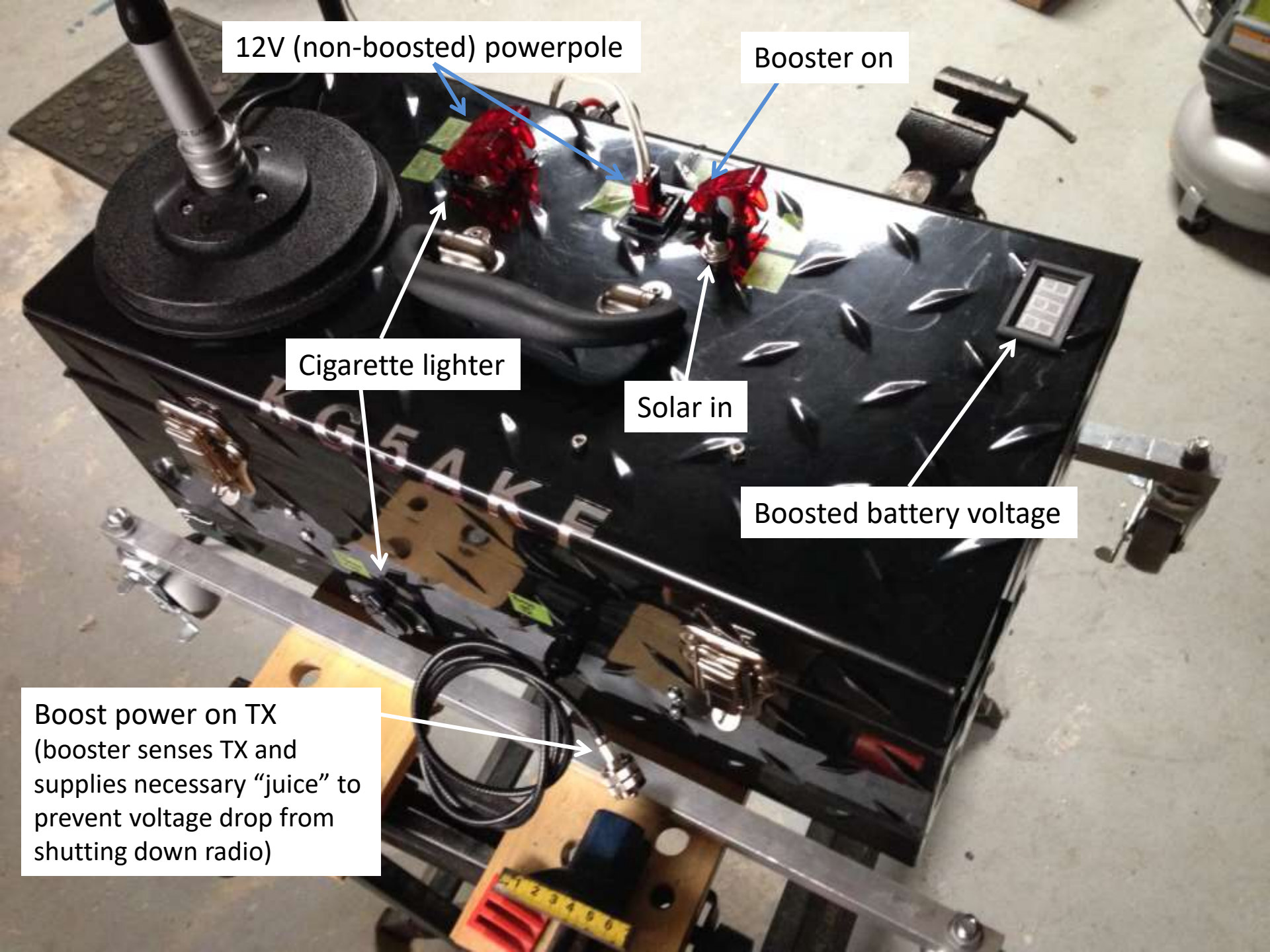
Booster on

Cigarette lighter

Solar in

Boosted battery voltage

Boost power on TX
(booster senses TX and
supplies necessary "juice"
to prevent voltage drop from
shutting down radio)



The "guts"

Solar charge controller

LED lamp

There's enough room under this mess to store a battery charger

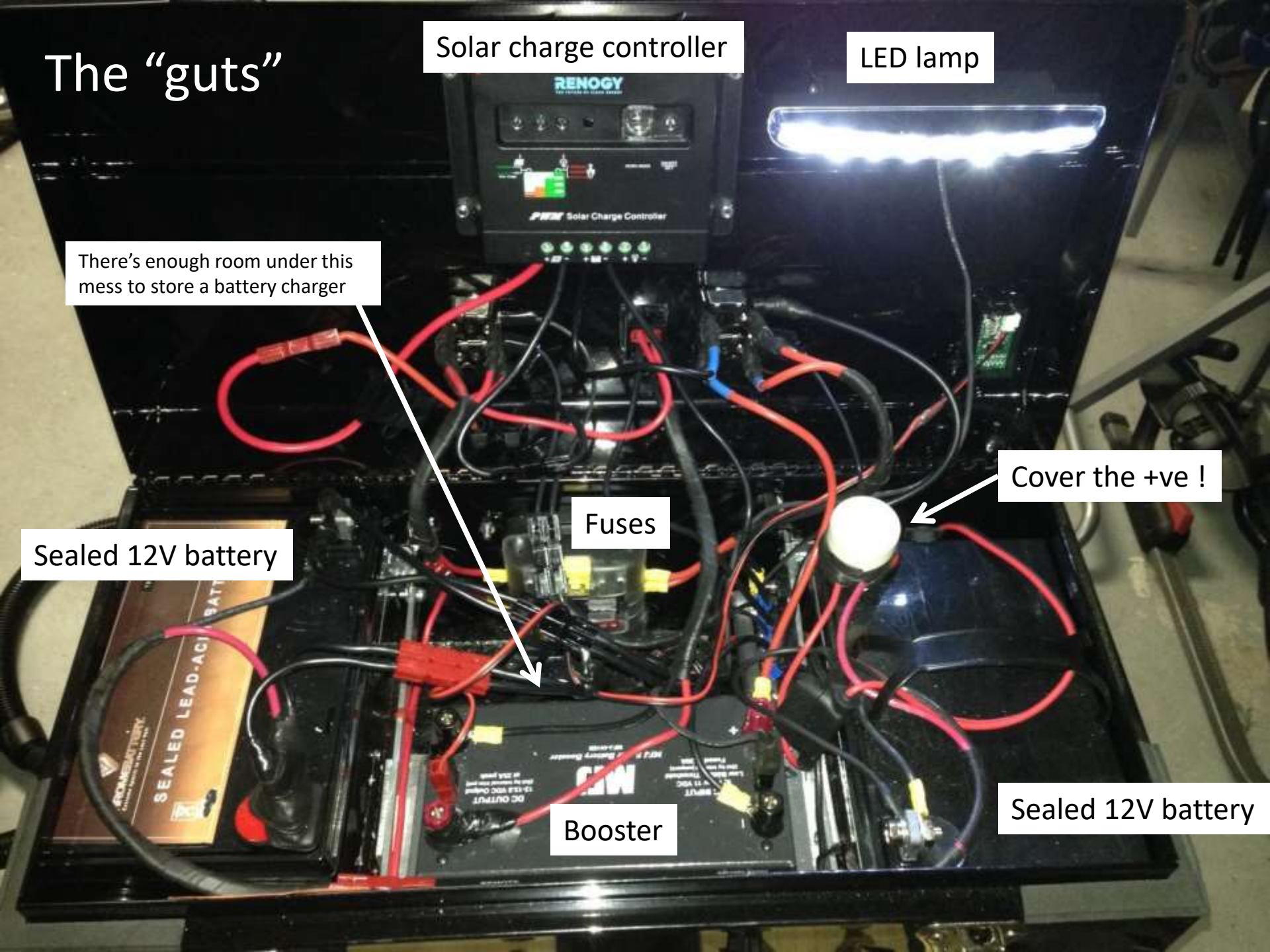
Sealed 12V battery

Fuses

Cover the +ve !

Booster

Sealed 12V battery









Also built a dolly to carry it



Version 2.0



"direct"
voltage

"boosted"
voltage



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Tripod-mounted
LED lightpost

A little bonus “side-project” to the power bank
A portable, tripod-mounted LED lighting system.
It connects to the (non-boosted) powerpole connector.



**LENBO 10W 12V DC Warm White LED Flood
light High Power Waterproof Outdoor Lights
black case LW1 - \$14.99 (Amazon)**







Very useful for operating at night, camping, etc. –if you don't mind the bugs

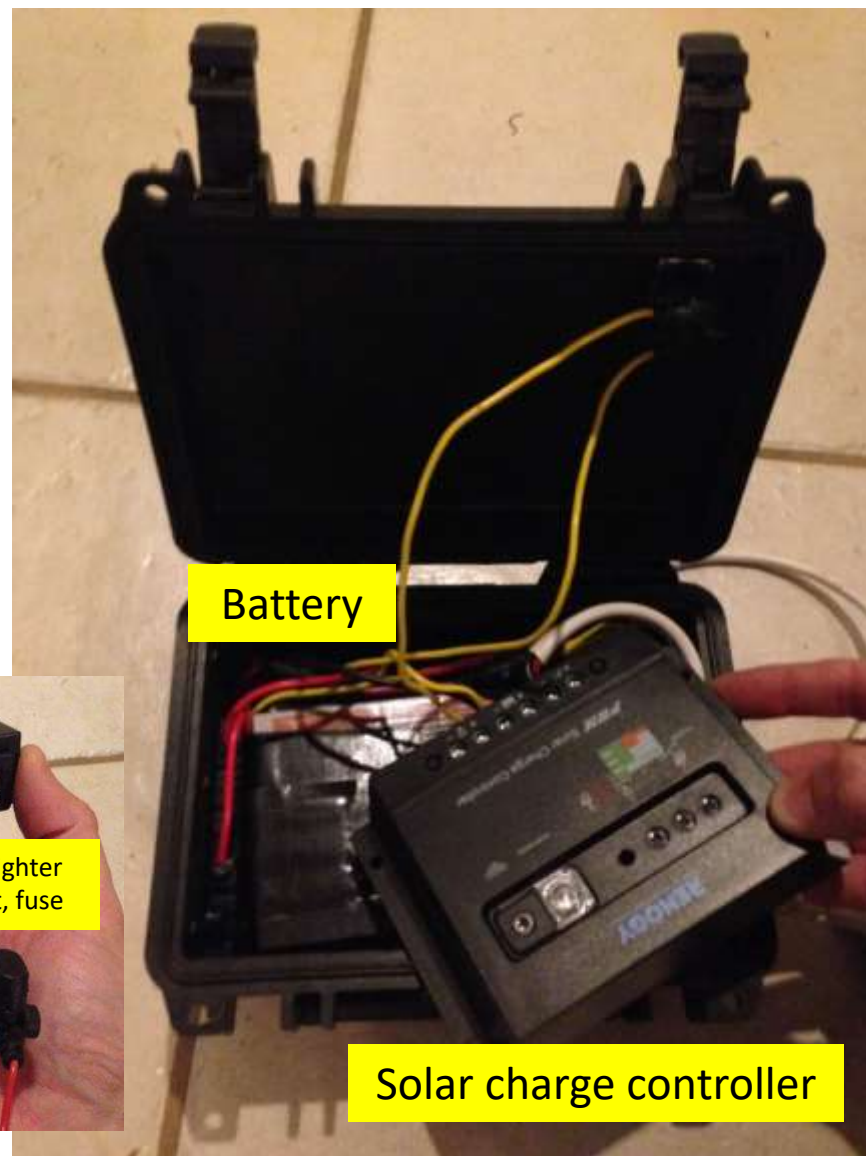
Switch it to toggle charge module on/off (otherwise, standby LED drains battery if not regularly connected to panel)



Several power ports



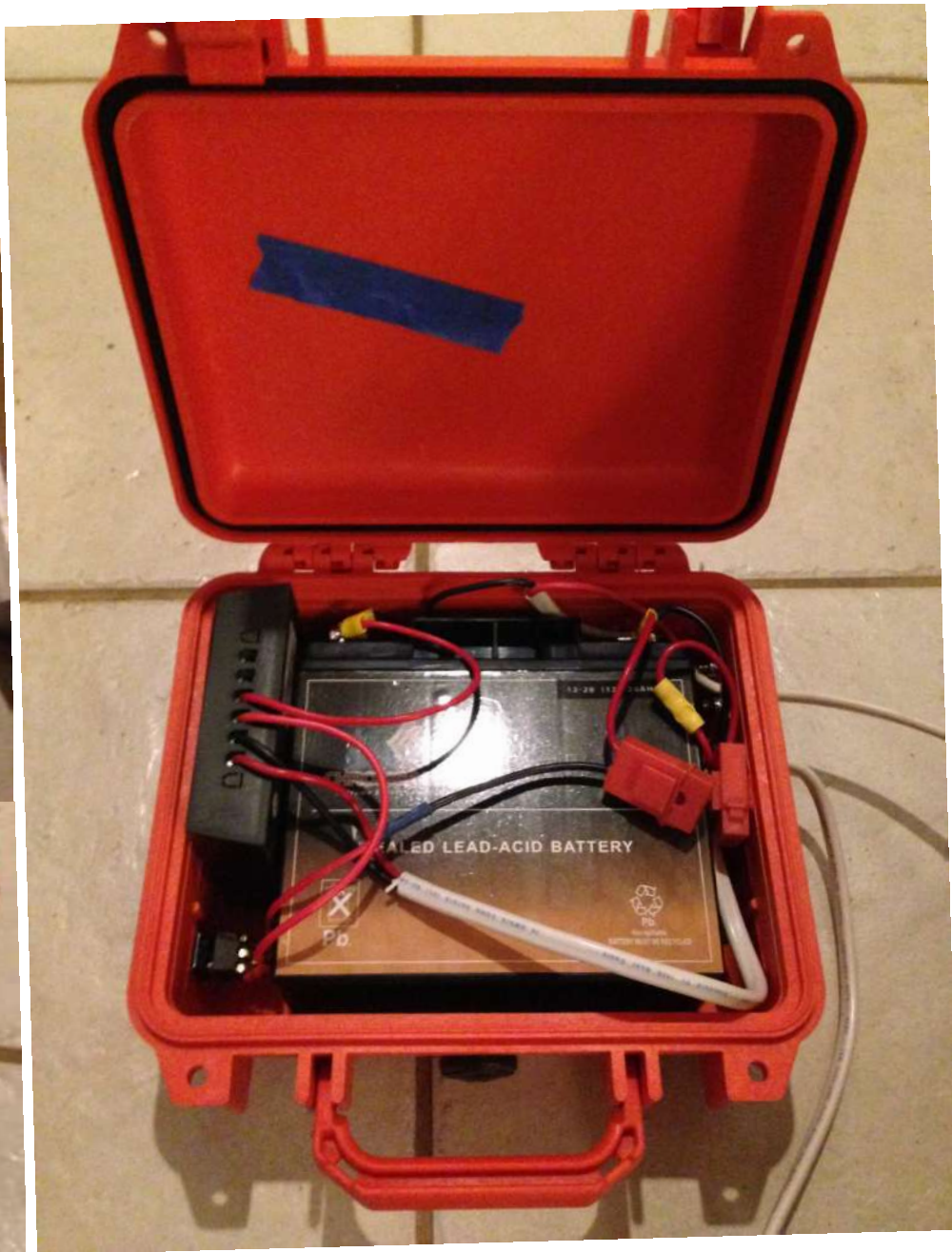
USB, lighter socket, fuse



Battery

Solar charge controller

The concept has been applicable to a wide variety of projects.
I use these for kayak fishing to power a fishfinder and GPS (all waterproof connections)



Thank You!