



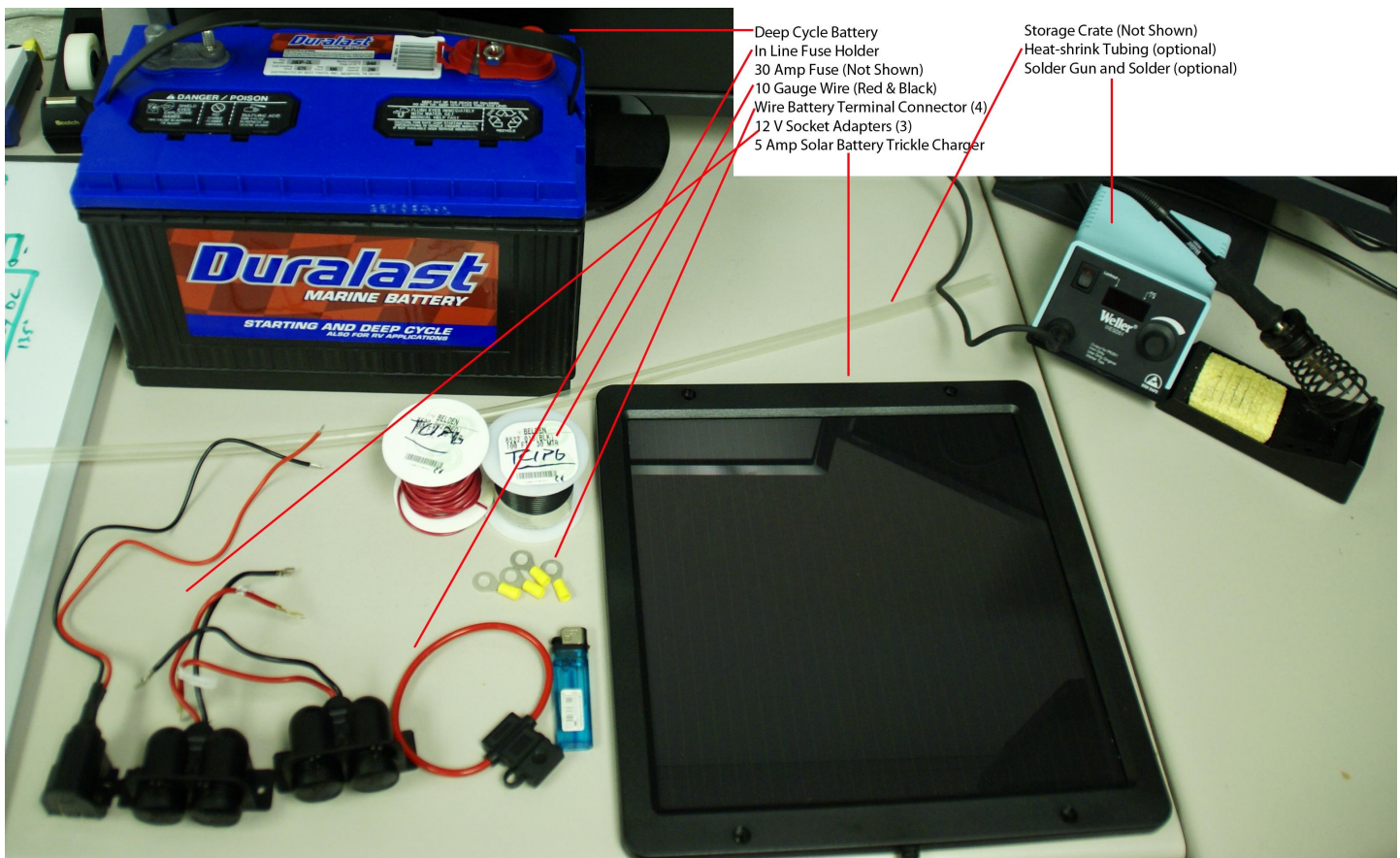
# Modular Solar Power

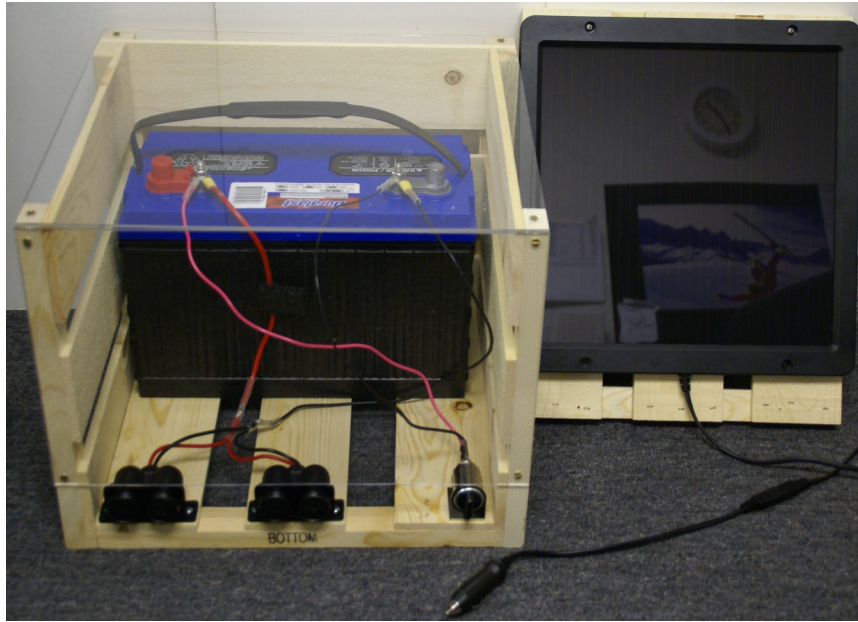
TCIPG Education

<http://solar.mste.illinois.edu>

## Required Items:

Deep Cycle Battery	--- \$100
In Line Fuse Holder	--- \$4
30 Amp Fuse	--- \$5 (30)
10 Gauge Wire (Red & Black)	--- \$40 (100ft)
Wire Battery Terminal Connector (4)	--- \$3
12 V Socket Adapters (3)	--- \$18
5 Amp Solar Battery Trickle Charger	--- \$70
Storage Crate	--- \$13
Heat-shrink Tubing (optional)	---\$5 (6ft)
Solder Gun and Solder (optional)	





## Instructions

**Step 1:** Cut two lengths of black wire, long enough to connect the 12 V socket adapters to the deep cycle battery. Cut two similar yet shorter red wires taking into account the length of the inline fuse holder for one of the wires.

**Step 2:** Strip each end of the wires, the 12 V socket adapters, and the inline fuse  $\frac{1}{4}$  inch.

**Step 3:** Attach one the black wires to the black wire ends of the 12 V socket adapter. Do the same with a red wire and then attach the inline fuse as well. Attaching the ends of the wire can be accomplished using solder as we did in this project, a wire nut, or insulating crimping connectors. If using heat-shrink tubing remember to slide the tubing onto the wire first before attaching the ends.

**Step 4:** Attach the remaining black and red wires to the last 12 V socket adapter using the aforementioned methods. This socket will be used solely for the solar panel trickle charger.

**Step 5:** Attach the four wire battery terminal connectors to the ends of each wire. With all wiring done you can use a volt meter to check all the connections.

**Step 6:** Mount the battery and the sockets to the storage crate and connect the wires to the battery. Be sure to connect the negative (black) ends first.

## Additional Notes:

The battery will now supply power to the 12 V socket adapters. A variety of compatible devices can be found online or at a local auto store. For this project we have a lamp, fan, cell phone chargers, and a volt meter. A 12 V power inverter could be used to allow devices with the standard AC plug to be powered.

Multiple 12 V deep cycle batteries would work with this design. For this project a 106 Amp Hour battery was chosen to allow for multiple days of use without charging. Smaller or larger batteries could be substituted depending on the expected load.