



EMERGENCY LIGHTING SYSTEM

The Emergency Lighting System (ELS) was designed to provide a valued Prepper Link member with a lighting system that can be remotely activated, that utilizes energy efficient lights, and provides a “base” solar power system. Additionally, the system was designed so the user can add more components over time. When we designed the ELS, we took the concepts and lessons learned from the \$150 Solar Kit, put the components and wiring methods into a different enclosure, and added additional capability. The result is a modular emergency lighting system, which is turned on/off by a keyless entry remote type switch, is charged by the sun, and can be easily expanded.

Why We Built the System

If we look only at casualties related to Hurricane Sandy, nearly 10 percent of the fatalities were attributed to elderly individuals that had accidents (falling down stairwells, etc.) during the initial power outage. These fatalities may have been avoided if they had access to emergency lighting, which was not dependent upon utility power.

The system also posed a challenge; how do we make it in such a way that it can be turned on/off remotely, and how do we make it on a budget?

Lastly, we wanted to give back to the preparedness community, and build something for one of our valued Prepper Link family members.

Components - ELS

The ELS utilizes most of the components from the \$150 Solar Kit project. We used a charge controller, power posts, and 12 volt outlets. We did not use the small 10 AH battery, and elected to purchase a larger solar panel. The only major thing we added was the 12 volt DC on/off remote switch. Aesthetically, the system appears to be different. But, the ELS and \$150 Solar Kit follows the same wiring method (as will most solar power systems). Additionally, by adding the 12 volt DC on/off switch and an additional 12 volt outlet, you could transform the \$150 Solar Kit into the ELS. Here are the ELS components (does not include battery):

- 1 x Conduit/Combiner/Junction Box, 12" x 12" - \$22 (purchased from our local Lowes)
- 1 x **10 Amp Charge Controller** (the **7 Amp Sunforce** used in the other project would suffice) - \$14
- 2 x Power Posts (1 x **red** and 1 x **black**) - \$16
- 1 x **12 Volt DC on/off Remote Switch**, with two remotes - \$15
- 1 x **10 gauge 2 Pole Connector pair** - \$6.29
- 1 x **30 Watt Solar Panel** - \$58
- 2 x **12 Volt Outlets** - \$17.86

Misc. Parts - Wire, fuse, terminals, screws, and battery clamps (your preference) - \$20

Total Cost - \$170 (does not include battery)

The difference in cost, when compared to the \$150 solar project, is due to the larger solar panel, increased price for the 12 volt outlets, and the 12 volt DC on/off remote switch. Again, the price does not include a battery; you can use any 12 volt car battery for this system. I use **UPG 100 AH** batteries with my personal solar power system).



Wiring Method

- 1. Charge Controller** - The Charge Controller has a two pole connector which connects to the solar panel/s (solar panel input). The charge controller is also wired directly to the power posts (power output terminals).
- 2. Solar Panel** - The solar panel has a 10' of cable (positive and negative), with one end running directly to the solar panel and the other end spliced to a two pole connector (which will plug into the Charge Controller 2 pole connector).
- 3. Battery** - The battery cable, which consists of positive and negative eight gauge wires, connects directly to the power posts. On the opposite end, we included optional battery clamp terminals. Ideally, you would want this cable securely mounted to your battery; the clamp terminals are the last option, but provide the most plug-and-play flexibility.
- 4. 12 Volt DC on/off Switch** - The switch consists of five wires; two for positive/negative source, two for positive/negative load, and one for the antenna (blue cable). The positive and negative cables for the source are connected to the power posts. The positive and negative cables for the load are connected to the 12 volt outlet (lights only outlet). We included this separate outlet so that only the lights were powered on/off by the switch. Additionally, the switch has a maximum load of eight amps, and since some devices may require more than eight amps, we did not want to blow the switch. To ensure you do not exceed the eight amp maximum, you could also install an inline fuse holder and a 7.5 amp, or less, fuse.
- 5. General Power 12 volt outlet** - This outlet is for general power consumption, and is not limited by the switch. We included an optional inline fuse for this outlet.

The Light System

Since this also functions as an emergency lighting system, we provided 100' of 18/2 gauge irrigation wire, so that the recipient could install the lights around his home. For lights, we included two of the 2.1 watt LED light bulbs mounted in clamp lights that we discussed in the **DIY Budget LED Light Project**. The combination

SPONSOR

RECOMMENDED PRODUCTS

Become a member of
PrepperLink.com



of the 18/2 gauge wire and the low power requirements of the 2.1 watt LED bulbs; ensure a small battery bank can provide power to the lights even at a distance of 100'. Additionally, the 2.1 watt LED clamp lights cost around \$15 to make, and more can be added as your budget allows.

In the video, we demonstrate a 40' strand of primary power cable, using the 18/2 irrigation wire. Every five feet, we installed two **T-Taps** (one on the positive and one on the negative). This allows you to plug lights in every five feet, or can act as a branch for additional power cables. The T-Taps provide the easiest wiring method, and makes the overall wiring system more modular. Note: Match the T-Tap size to your wire gauge; we used 22-18 gauge T-Taps. You do not have to use the 5' T-Tap rule when designing your primary cable. The goal is to be able to place lights throughout your home, so install T-Taps where needed.

When using T-Taps, the T-Tap clamps on the power cable, and forms a female connector. To connect a device, light, or additional power string you will need to use two male quick disconnects (one for positive and one for negative).

Components – Light String

Note: We recommend purchasing the bulk packs as indicated in the links so that you can use them for multiple projects. We find that purchasing these electrical components from Amazon is much cheaper than purchasing locally.

100' of **18/2 Irrigation Wire** - \$20 (product link is for 250', cut to length required)

20 x **T-Taps**, size 22-18 gauge - \$2.10 (product link is for 100 pieces)

20 x **Male Quick Disconnects** - \$2.04 (product link is for 100 pieces)

Lights – **DIY Budget LED Lights** - \$15 each

Conclusion

So there is our emergency lighting system / solar power system. Please let us know what you think, and feel free to ask any questions.

RECOMMENDED PRODUCTS

S1 SOLAR LED LANTERN





Dual-Charging, Solar & AC
High-Efficiency Solar Panel
1-Year Warranty

Click to purchase from Amazon.com





- ✓ **ULTRA-FAST BOILING**
- ✓ **DURABLE**
- ✓ **BURNS NATURAL FUELS**
- ✓ **PERFECT FOR CAR CAMPING**

Click to purchase from Amazon.com



Black Diamond



Apollo Lantern

- ◆ 3 watt LED with dual reflectors
- ◆ 15 hours of battery life at 80 lumens
- ◆ 60 hours at 10 lumens

Click to purchase from Amazon.com

Become a member of

PrepperLink.com

for FREE to get downloads, win prizes, meet other preppers, and start your own group.

