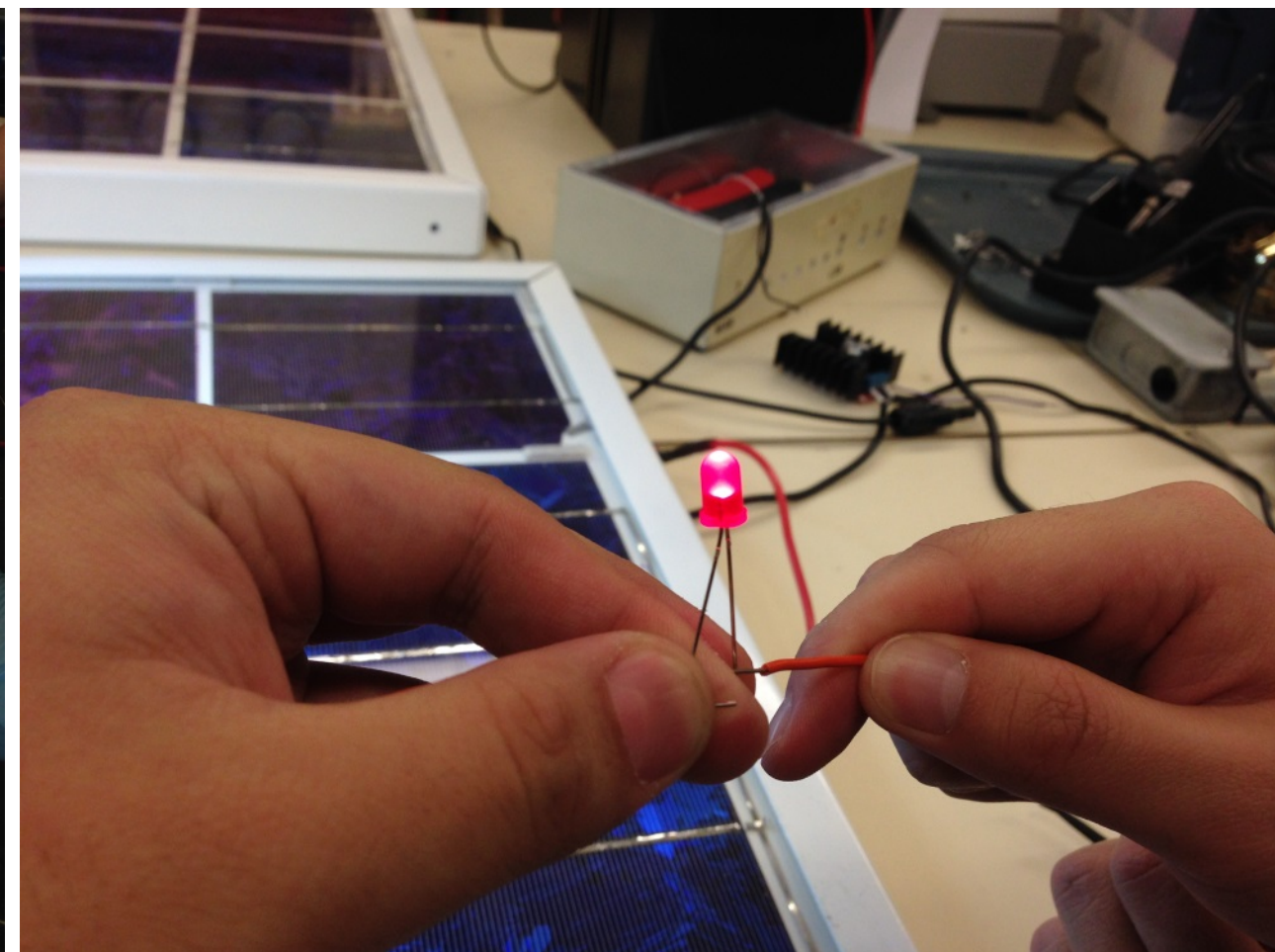
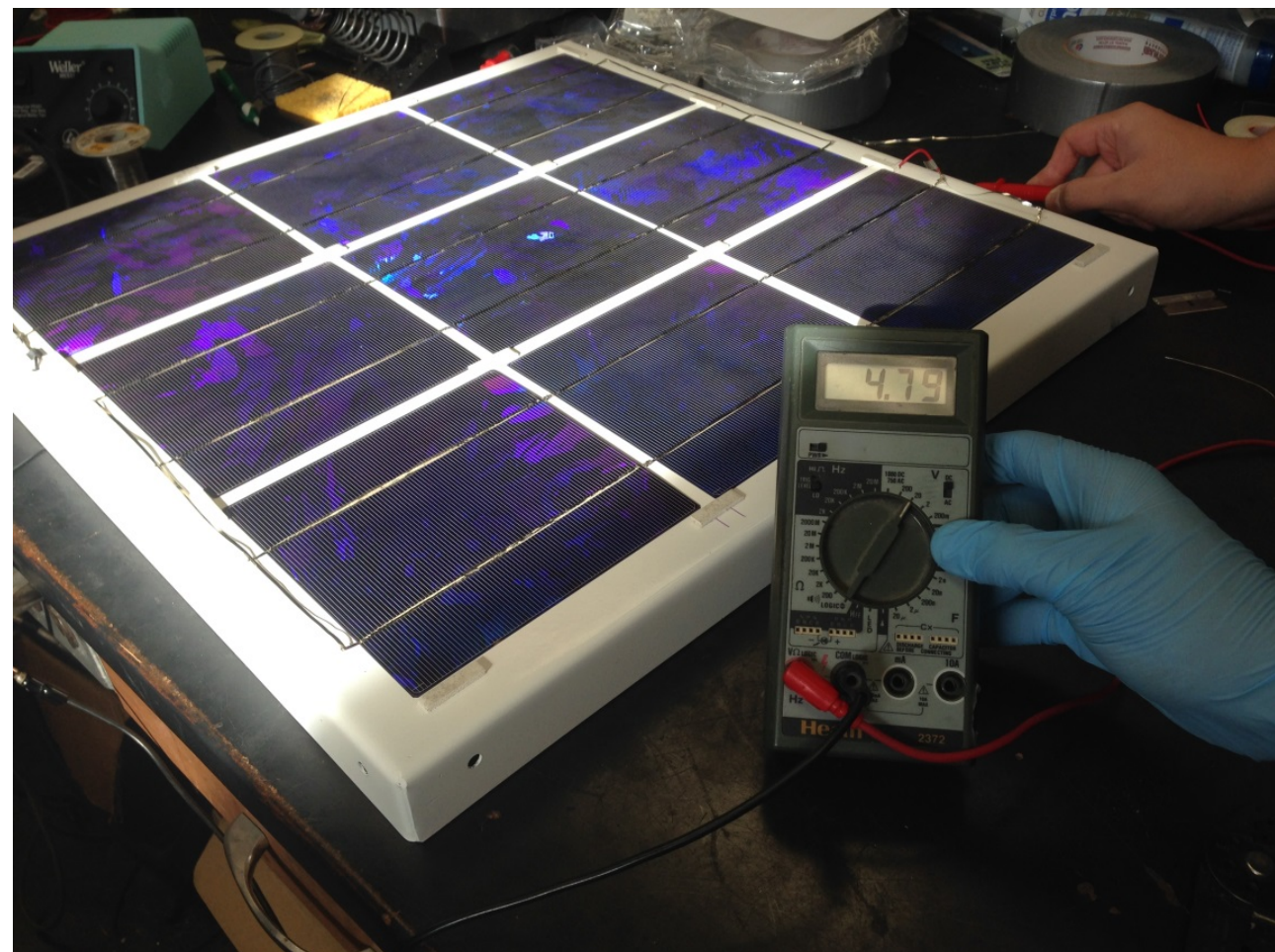
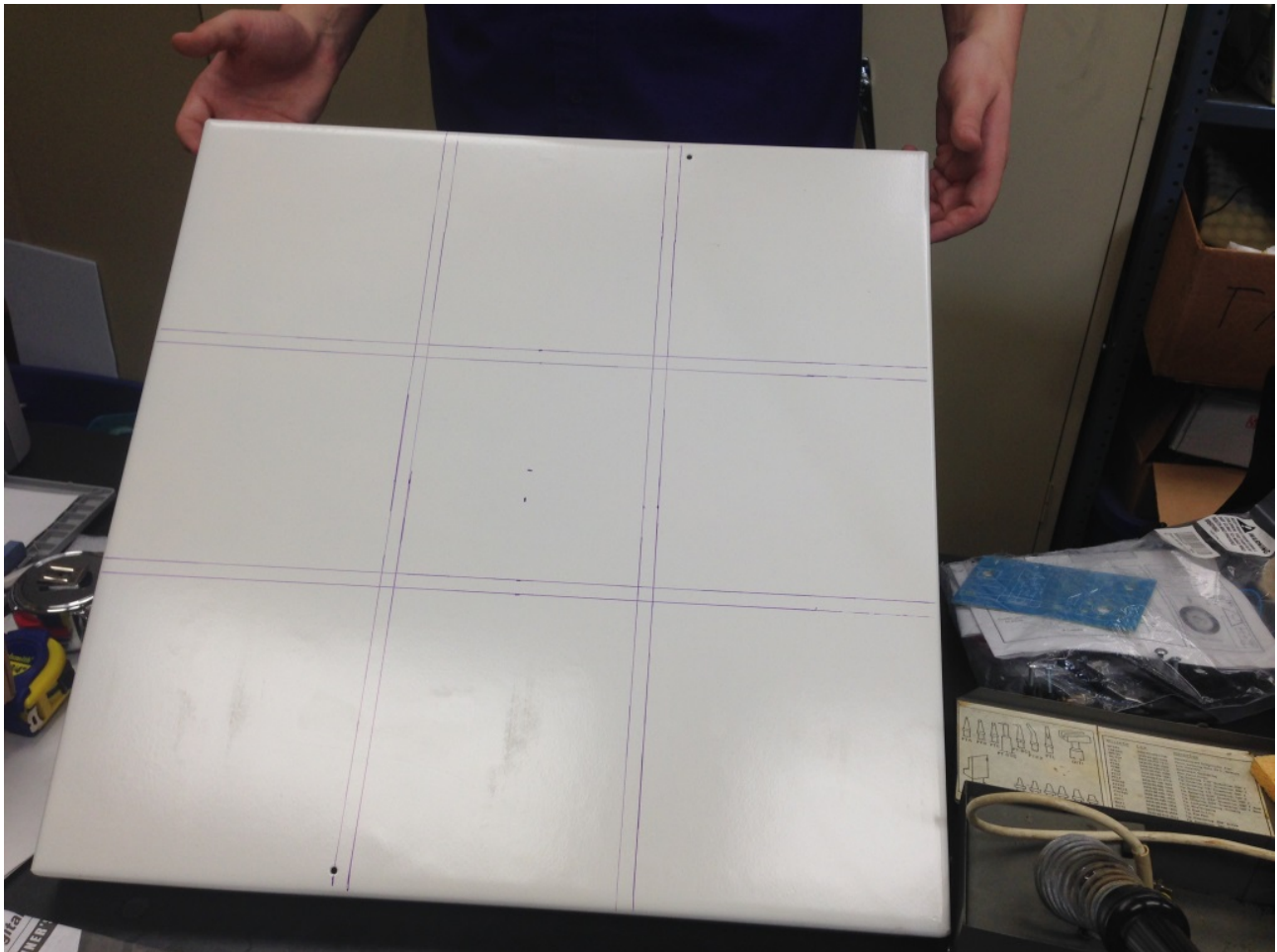




Expandable Power Storage System

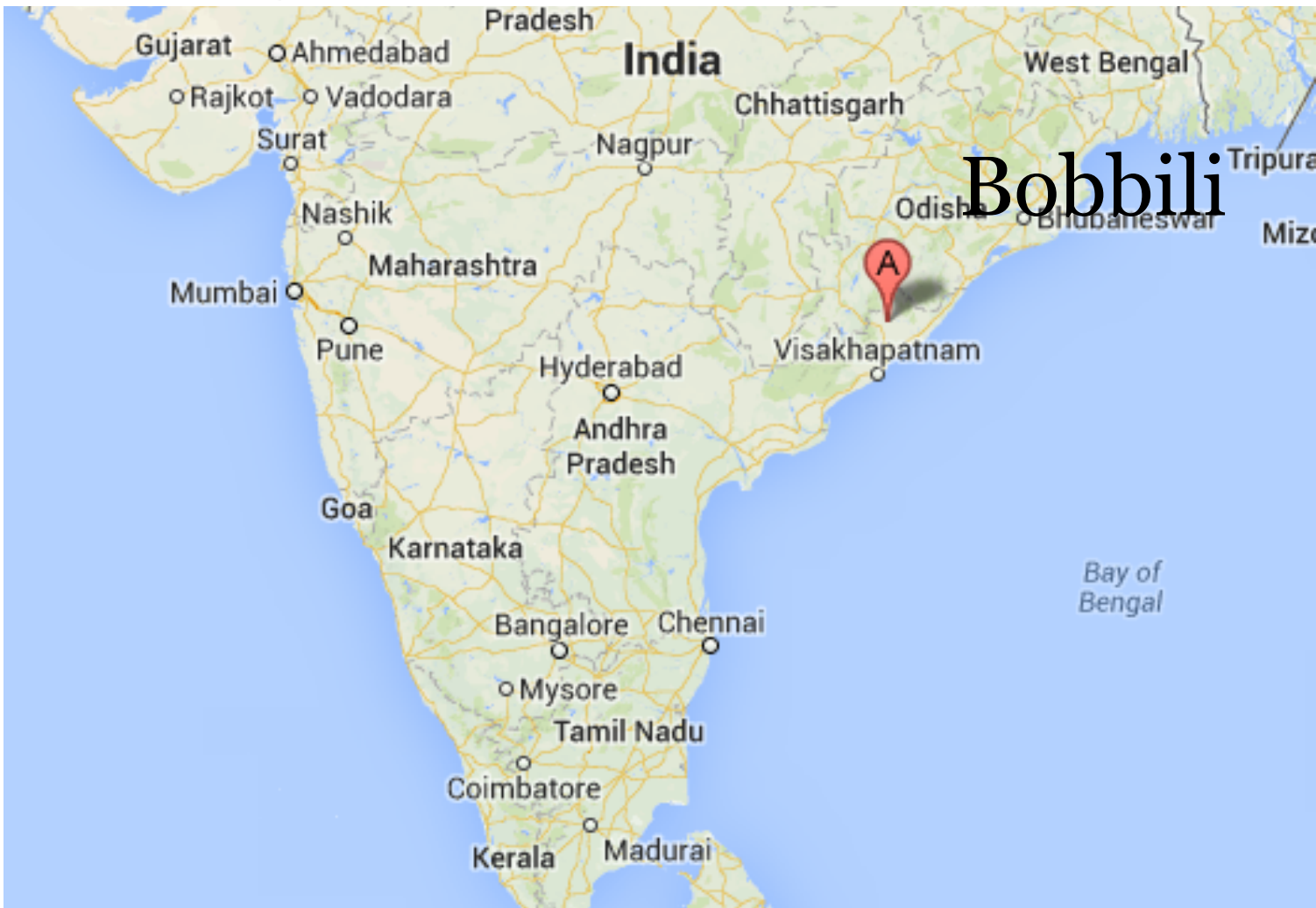
Sponsor: MSU Resource Center for Persons with Disabilities

Team Member : Tim Wang, Tommy MacBeth, Alan Everdeen, Leon Liang



Project Background

India's power grid is archaic and poorly maintained. Power outages due to high energy demand and broken power lines are common occurrences throughout the area. Since the existing power grid is unreliable at best, there needs to be an external energy supply in order to make the system completely independent from the power grid.

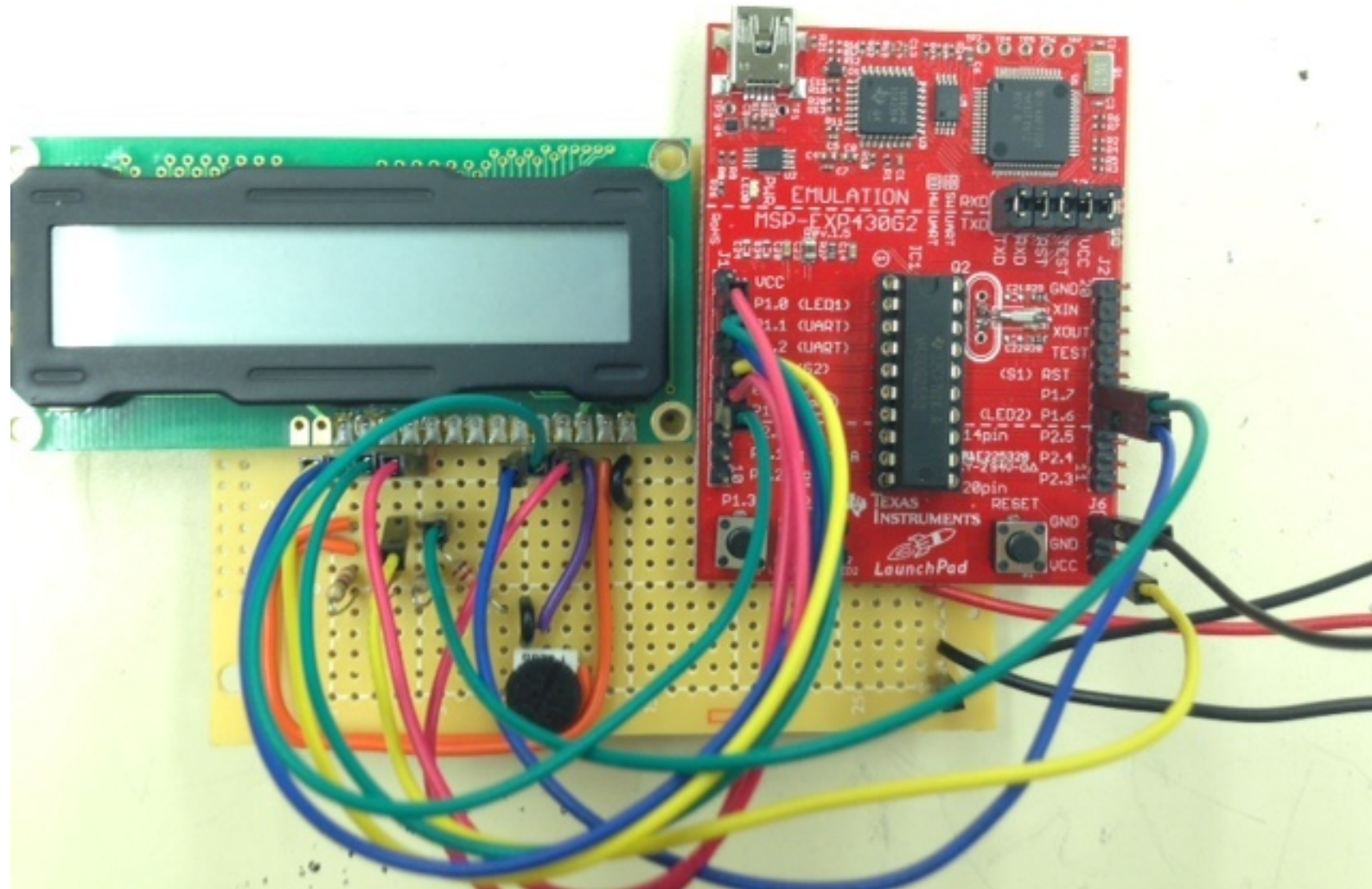


Project Requirement

- Acceptable Battery Life
- Battery Life Display
- Simple Expandability
- Components should be easily obtainable in India
- System Independence (Does not use Power Grid)
- User Safety
- Cost Effective Design
- Solar Power
- Durability

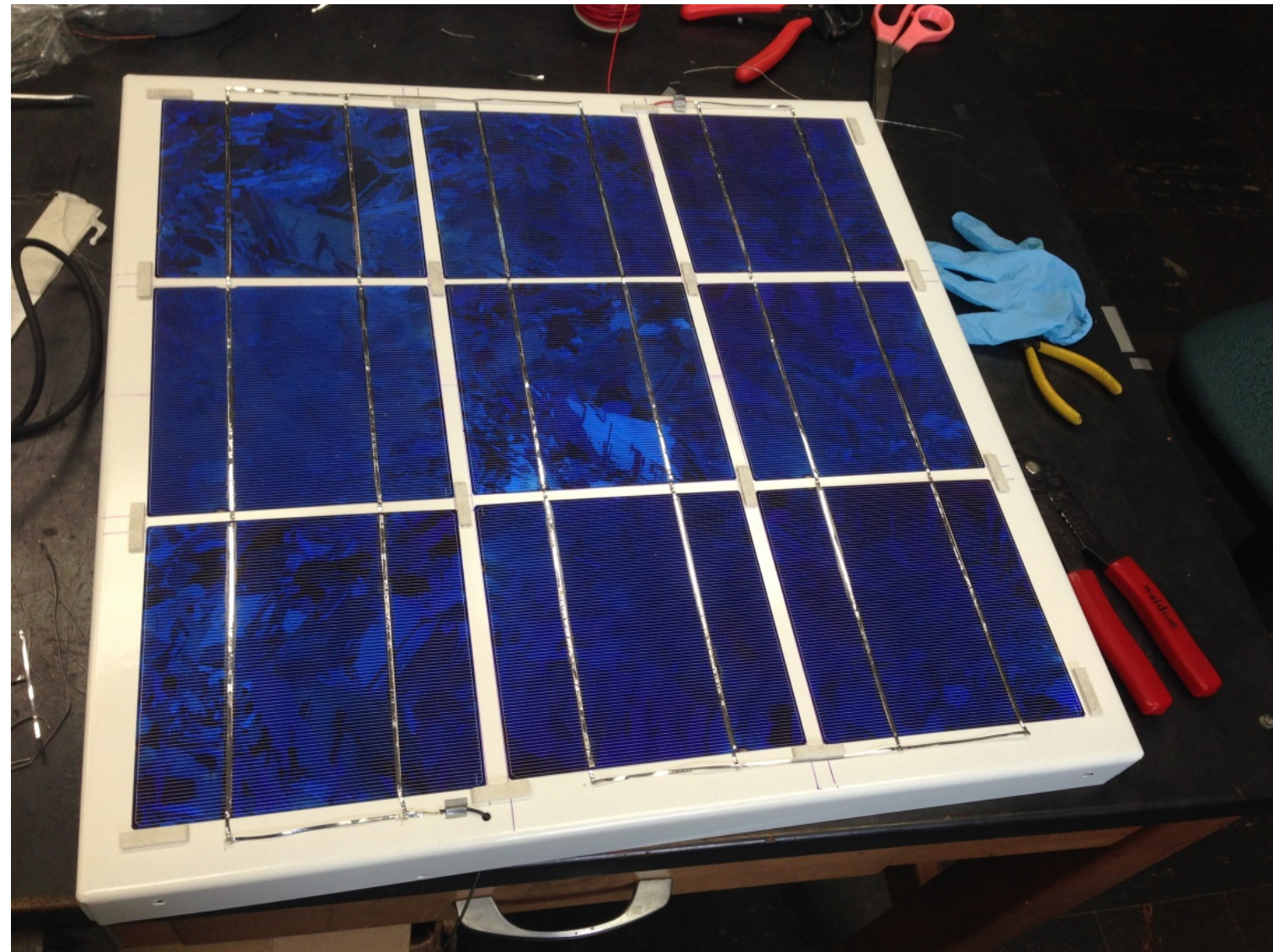
System Components

Battery Life Monitor



- MSP430 Launchpad
- LCD Display
- Designed Power Supply

Solar Panels



- 0.55V Solar Cell
- 8 Amp Maximum Current
- 4.8V Output under full sun.
- Protected from Different weather Conditions

Sunforce Solar Charging Controller

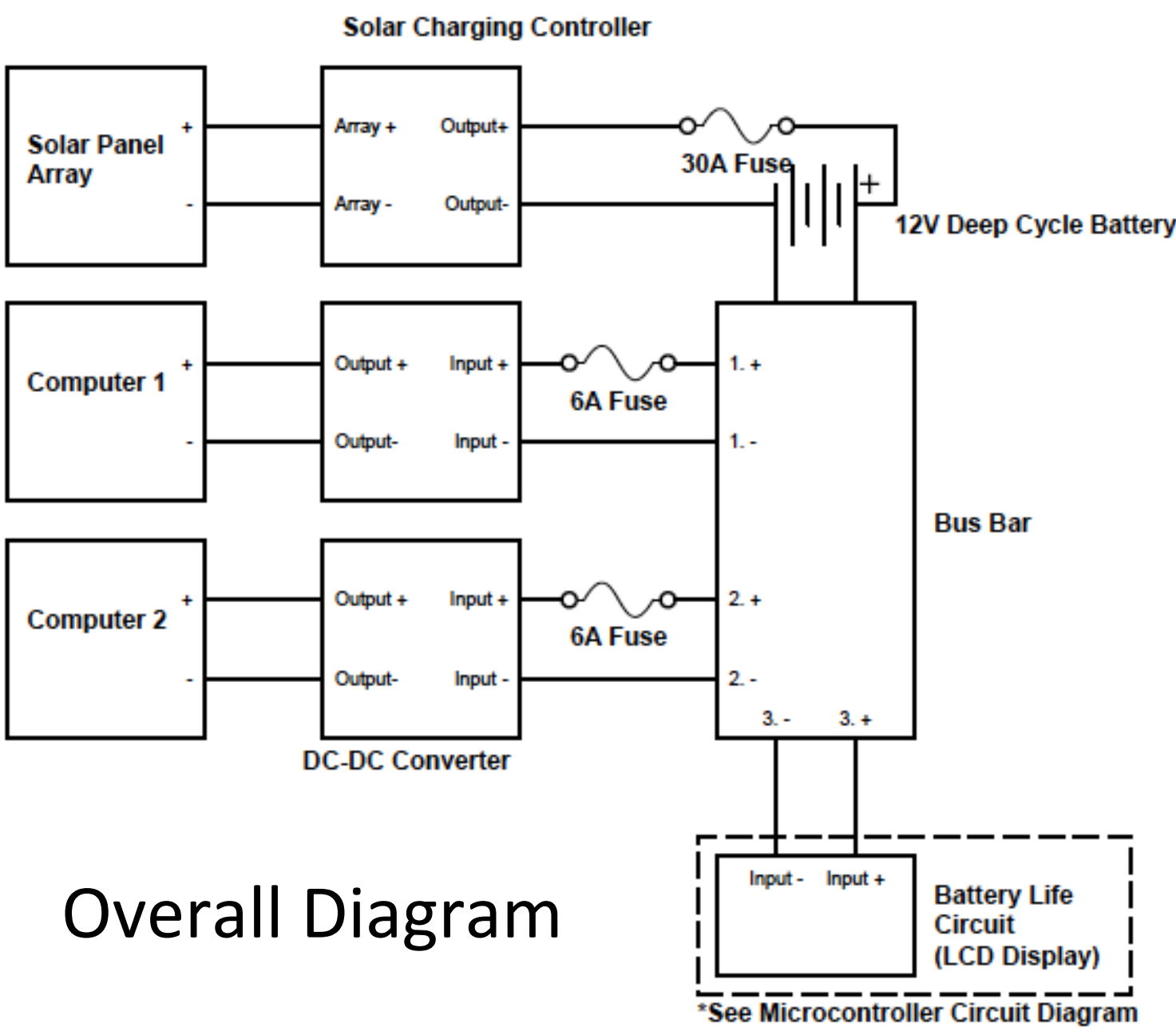
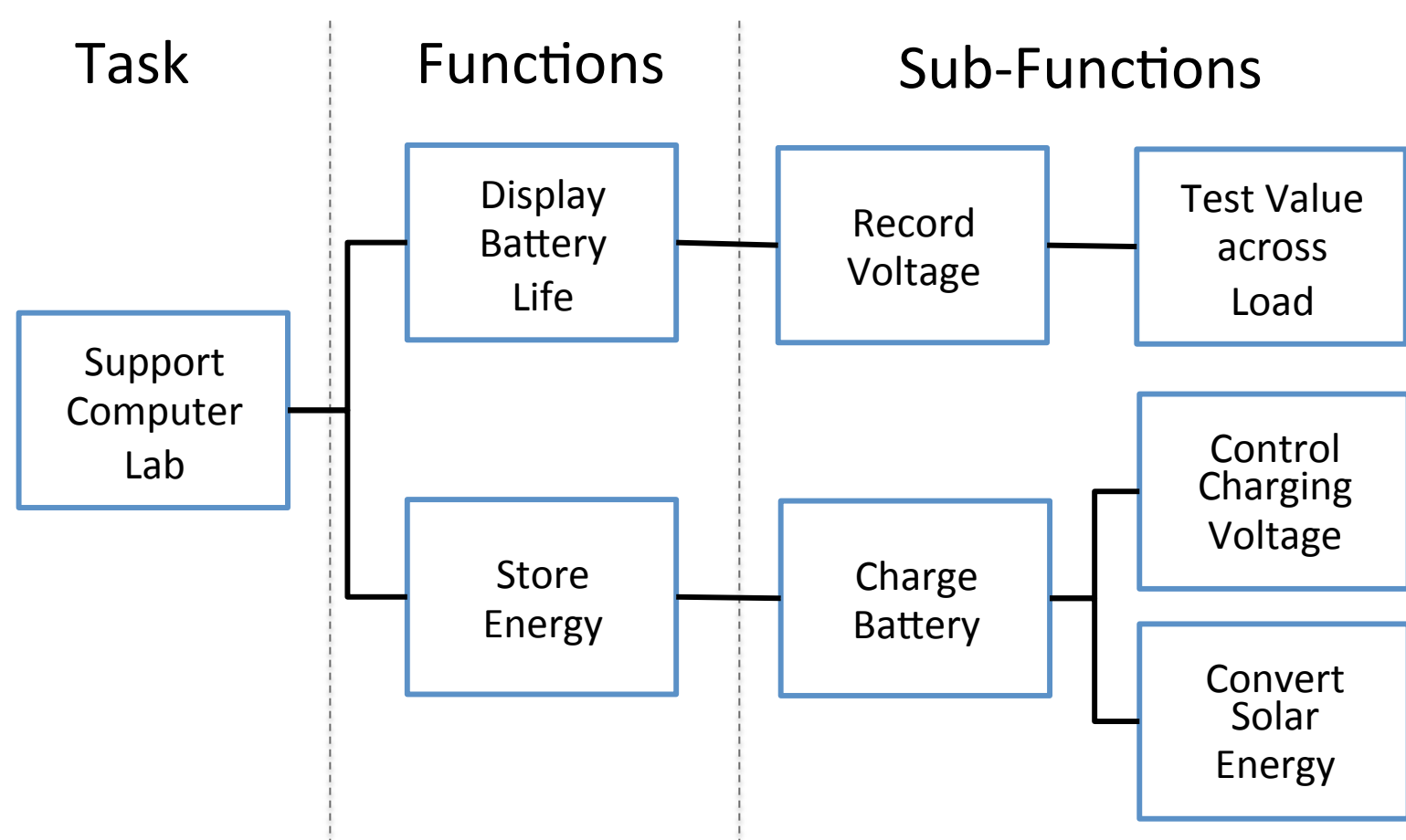


- 25V, 30A Maximum Input
- Maximum Power Point Tracking

Cost Table

Component	Quantity	Price
Solar Panels	2	\$225.97
Charging Controller	1	\$87.69
Microcontroller + LCD Screen	1	\$0.00
DC to DC Boost Converter	4	\$36.68
Misc. Integration Components		\$76.49
Deep Cycle Batteries	2	\$0
		Total Price = \$426.83

Design Concept



The team was able to successfully design a system that is capable of powering multiple laptops for long periods of time using lead-acid deep-cycle batteries and a solar panel array. The status of the battery is displayed on an LCD by means of a microcontroller. The team's design is also expandable through the addition of more deep-cycle batteries and laptop power plugs.