

ISES Solar Charging Station

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Final System Design

- 2000W Sunny boy inverter
- Sunny-Beam display system
- Square D disconnect switch. 240v ac NEMA 3R, 2pole, 30 amp



Final System Design

- MidNite Solar PV combiner box
- Digital utility meter
- Square d meter socket
- #12 AWG Single conducting wire



Design Schematic



Tyler Faulkner

Final Cost

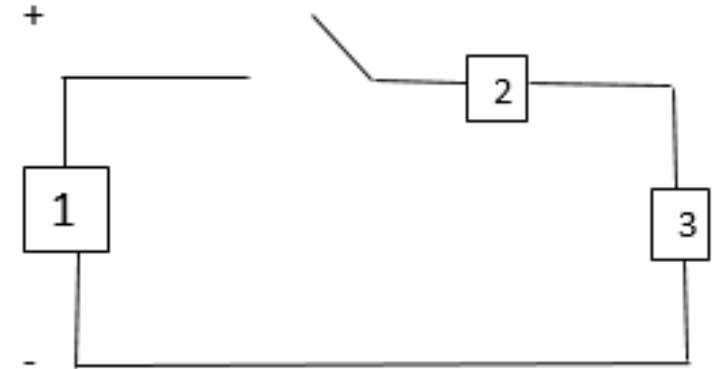
Item	Cost Per Unit	Quantity	Total Cost	Application
Sunny-Boy inverter	1597	1	1597	High frequency inverter, 240 VAC, 2000 Watts, 10 year warranty
Sunny-Beam	236.93	1	236.93	Wireless System monitor with Bluetooth. Will display consumption information for educational purposes.
sqd-du221rb-30a	58.67	1	58.67	Square D disconnect switch. 240v ac, NEMA 3R, 2pole, 30 amp
Copper wire	0.9	50	45	Copper wire to wire the whole system
Fuse	3.05	1	3.05	Required by Arizona code, protects the system from having a power surge
Fuse holder	4.65	1	4.65	Required by Arizona code, protects the system from having a power surge

Final Cost

Combiner box	73.75	1	73.75	MidNite solar Pv combiner box, protects the system from overcurrent
Digital utility meter	156	1	156	Bidirectional meter for utility reasons
Square d meter socket	121.04	1	121.04	The main plug for the system
Charging sockets	3.25	6	19.5	Where students can charge their electronic devices.
12 gage single conducting wire	0.5	25	12.5	Connecting electrical components of the system
Labor	7.5	80	600	At \$7.50 an hour for about 80 hours of total labor
Total			2928.09	

Testing materials

- Solar Panels
- Connectors for the solar panels
- A kicker switch to allow variable loads
- A shunt resistor
- Two 10 ohm variable resistors
- At least 16 gage copper wire
- A digital multimeter
- A computer and DAQ (Possible)



1: Solar panel that is being tested.

2: Shunt resistor that is place after the switch

3: Variable resistance.

Panel Testing

Procedure:

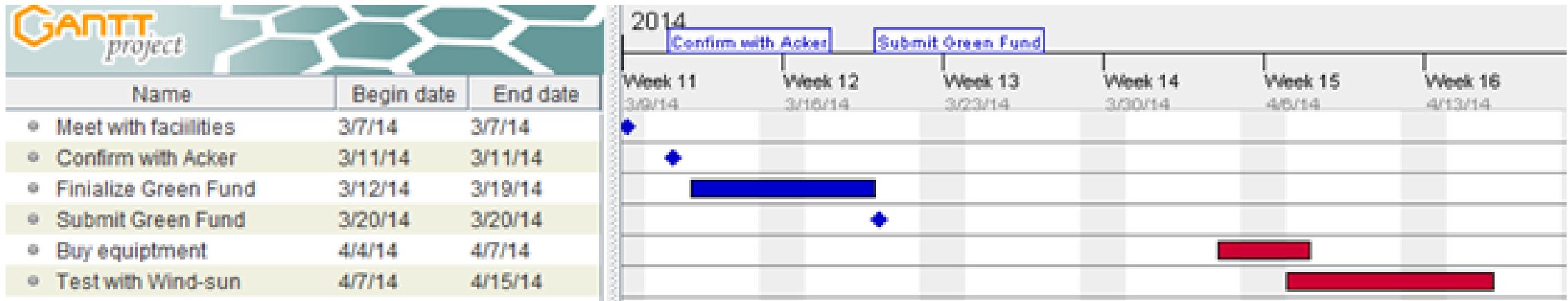
- Connect the positive end of solar panels to kicker switch
- Connect the kicker switch to shunt and variable resistors
- Connect variable resistors to negative end of solar panels
- Use a digital multimeter to record voltage across variable resistor

Green Fund Application

- Met with Dr. Acker to review first draft of application
- Made suggested corrections and additions to application
- Contacted Agnes Drogi at facilities to discuss building possibilities

Updated Project Plan

Gantt Chart



Next Steps

- Meeting set up with Agnes Drogi at facilities
- Complete solar panel testing
- Submit Green Fund application

References

[1] <http://www.solar-electric.com/>