Team SUNSPOT™ Technical Assistance Request

www.sunspotpv.com
Lead contact: Doug Danley
doug.danley@gmail.com
+1.240.462.6554

Project Objective

American-Made Solar Prize funding will be used to develop and test prototypes of three modules for the second-generation SUNSPOT™ Solar Electric Cooking Appliance:

- 2 kW DC-DC Bost converter optimized to run electric cooking appliances such as induction cooktops and multi-function electric pressure cookers. This device will replace the inverter used in the first-generation design and will lead to increased efficiency and improved reliability, as well as lower costs. We have already done a detailed design and bill-of-materials on this module and will focus on layout out the circuit board then building and testing prototypes of the circuit.
- Dedicated MPPT charge controller sized to the specifications of the current and expanded PV array. We currently have a reference design which needs to be modified to support the specific array configuration of the SUNSPOT™. We will finish the design, then build and test a prototype.
- System controller – we currently use a basic metering circuit to evaluate system operation and performance. We will design and program a full system controller which will include: monitoring and logging of DC circuit data including energy consumption, Pay-As-You-Go functionality (we are in discussion with Angaza on PAYG integration), user interface, advanced control functionality.

Using funding from additional phases and/or additional funding sources we will integrate these three modules into a single dedicated component which will be used in future devices.

Proposed Tasks for Connectors / Partners

Task	Description	Connector
1	Circuit board layout and fabrication for boost converter, MPPT controller and control circuit modules.	Bob Coggshall @ Small Batch Assembly (located at NOVA Labs)
2	Design and fabrication of custom low-cost enclosure – emphasis on manufacturability in target countries. Includes the outer enclosure, top work surface, internal frames, wiring harnesses, and user access panels.	ETI, LLC (Arkansas) or NOVA Labs (VA) or equivalent private connector
3	Assistance with pitch for SET! Demo Day	NationOfMakers, Greentown Labs, PowerHouse
4	Assistance in developing formal business plan and in identifying opportunity to meet potential investors	NationOfMakers, Greentown Labs, PowerHouse
5	Assistance with identification of market opportunities in the US and around the world	Sandia, NREL