

JuiceBox Technical Assistance Request

High-level budget:

With a \$50,000 prize, we would allocate:

- \$0: Team salaries (we are a group of student volunteers)
- \$5,000: Research and development of first prototype, including purchase of components and any necessary fabrication supplies (our schools have full fabrication labs already, but minimal specialized equipment may be needed)
- \$40,000: Funding of inventory for off-grid tiny house communities for people transitioning out of homelessness, and for working prototypes for demonstration to FEMA and other emergency response organizations. We will work towards \$1,000 price for JuiceBox (including one solar panel & expanded 100Ah battery)
- \$5,000: Savings for organizational development (paying for website host, purchasing food for volunteers, printing banners and promotional materials, etc.)

Our goals by Spring 2020 (Set! contest)

- Negotiate with Locally Grown Power to arrange for use of their factory for production of JuiceBox and attachments for a percent of all units built to cover their operational and administrative costs.
- We are currently fiscally sponsored as a 501(c)(3) by a nonprofit based in Portland, OR. We aim to incorporate as a California LLC, and work towards B-corporation or independent 501(c)(3) status.
- Collaborate with Locally Grown Power and/or Grape Solar of Eugene, OR to attain specially sized PV panels that will fit into our collapsible panel attachment for maximum durability. Our current panel costs are \$75/unit for a 100W polycrystalline panel from the Oregon-based company, a 40+% discount off MSRP we have attained through negotiation & partnership. Because of the additional complexity of the collapsible panel, we aim for a cost of \$100 per 100W unit (comprising three 33.3 watt panels)
- Finalize design of JuiceBox prototype (3.0 version, as we have already created 100 1.0 and 2.0 prototypes and deployed them to the field for use and life-cycle testing in off-grid tiny house communities)
- Secure committed interest from at least two municipal emergency management organizations for a trial run of 2-10 JuiceBox units for integration into their stockpiles of emergency supplies.

Our goals by Summer 2020 (Go! contest)

- Reach out to Tesla and Panasonic to inquire about use of their American-made (outside Reno, NV) 18650 lithium cells in our products.
- Quantify environmental impact of JuiceBox production, and create direct comparison between gas generators and JuiceBox.
- Work with energy engineering staff and students at Harvey Mudd College to do life-cycle analysis of JuiceBox prototype. Achieve 8 year predicted lifespan under daily use, 10-12 year under intermittent use.
- Secure path to partnership with Federal Emergency Management Agency
- Leverage existing contacts with Lemelson Foundation, MercyCorps, American Red Cross to establish path to partnership and their use of JuiceBox.

Our goals for Demo Day 2020

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- Confirm partnership and funding from FEMA, MercyCorps, and other partners
- Begin manufacturing processes with finished prototype
- Achieve \$100,000 in total funding, excluding potential prize winnings from American Made Solar prize.

Technical Assistance Requested to Meet These Goals:

- We wish to partner with several of NREL's National Labs and Power Connectors for future testing and improvement of our products
 - We'd like to partner with the Pacific Northwest National Laboratory to develop JuiceBox with the latest in lithium-ion battery technology. Their Battery500 program is an exciting innovation frontier in solar technology and partnership with their organization would allow for effective, low-cost and easy field testing for them and access to revolutionary battery technology for victims of natural disasters and people transitioning out of homelessness.
 - Washington Clean Energy Testbeds would be another great partner in our work — their work on second-hand battery use would allow us to significantly reduce the price of JuiceBox and allow for environmentally-friendly reuse of perfectly viable cells in our products.
 - Any partner with capacity to do accelerated life-cycle testing would be hugely useful in analyzing how JuiceBox performs in real-world conditions. We believe that Washington's Clean Energy Testbeds have this capability and are looking for more partners in California, Oregon and Washington.
 - Los Angeles' Cleantech Rising partner would be able to help us jumpstart our ideas in a local setting. They bring a unique understanding of the sociopolitical and geographical characteristics of Southern California and we are eager to work with them to best understand how to bring JuiceBox to the Los Angeles area in a broad, efficient and impactful way.
- We have already reached out to and established dialogue with NREL's Power Connector Greentown Labs. We wish to continue this partnership and leverage their unique expertise to improve our design, model for expansion, and approach to manufacturing. Shine is a team of students, and we are eager to learn from the experts in our community and excited for the opportunity to access resources potentially available to use through NREL and the American Made Solar prize.