Shine's SMART goals for April 2021 (continued from narrative response):

- Achieve $500 per unit cost for JuiceBox 3.0 production at scale (target sale price at **$1000**)
- Demonstrate scalable stockpile-rack prototype for regional warehousing.
- Demonstrate ability for remote charging, battery & unit health monitoring.
- Determine feasibility of storing grid power and selling it at peak times, generating passive income for stockpilers.
- Prototype off-grid kiosks for individual use in city centers and rural areas to charge portable (electronic) devices. These kiosks can be used by (tourists), locals and homeless individuals on a routine basis and serve as emergency charging & communications hubs during disasters. Kiosk can be used to store and charge 6-24 JuiceBoxes and Telescoping Solar Arrays for emergency distribution, using their integrated batteries and inverters as the foundation of a larger-scale solar microgrid when JuiceBoxes are not deployed.

With a $100,000 prize + $75,000 in vouchers, Shine plans to allocate:

- $10,000: Work-study stipends for Claremont Colleges students eager to work on JuiceBox **production**. We are looking into asking the Claremont Colleges to match this program. Our team members take no salary — we are full-time students.
- $5,000: Continued research and development of our third proof-of-concept, including purchase of components and any necessary fabrication supplies.
- $25,000: Work with Grape Solar and Locally Grown Power to develop JuiceBox Telescoping Solar Array. Evaluate patent eligibility. Begin manufacturing engineering process, including necessary production of samples or mfg. equipment. Travel if possible to factory, learn from partners.
- $15,000: 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 a $500 price for JuiceBox + PV.
- $10,000: Develop scalable stockpile rack for easy integration into both small community distribution sites and larger regional stockpiles. Include passive charging & battery bank capacity to add shelf stability and generate passive income for stockpilers.
- $15,000: Contribution to PDX Main Streets for prototyping of off-grid kiosks with applications in major cities and rural areas as a tourist guidepost, homeless services hub, and (most importantly) emergency resilience meeting place and communication outpost (see above and letter of support). Deployable cargo truck-transportable hygiene/cooking/remote energy hub for disaster response also under development.
- $10,000: Organizational development (for website host, food for corporate fundraisers and community outreach, promotional materials. Snacks for hungry teenagers, etc.
- $10,000: Procurement of JuiceBox component inventory and sampling, specialized fabrication equipment, P.O. Box or office space leasing, etc.
- $75,000 (voucher funds): Work with Andy Walker of NREL to perform comprehensive testing of JuiceBox system using complex computerized modeling software, field evaluation, and safety & performance exercises. Learn in-depth from Mr. Walker and his team about the testing and solar evaluation process, and apply findings to R&D work on JuiceBox and other innovative Shine products. Integrate and evaluate new technologies.

Technical Assistance Requested to Meet These Goals:
We have developed a comprehensive plan to conduct in-depth **modeling and prototype evaluation** at the National Renewable Energy Laboratory with the close mentorship and guidance of Dr. Andy Walker, a Senior Researcher of Mechanical Engineering. We will harness Dr. Walker's strengths and interests, focusing our work at NREL on quantitative performance testing, situational modeling, dynamic optimization, cost balancing and **safety stress-testing**. Should we win the Set! Phase of the Solar Prize, NREL will likely be the primary recipient of our voucher funding.

In addition to our planned work at NREL, we wish to partner with National Labs and NREL's Connectors for testing and improvement of our products. This work will be focused on different aspects of product development that require alternative expertise not widely available at NREL in Colorado. We also look forward to the opportunity to develop close professional relationships with potential mentors at National Labs and American Made connectors. We are willing to disburse additional prize funds if necessary to facilitate this work.

- We would like to partner with the Pacific Northwest National Laboratory to develop JuiceBox to incorporate 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. As our Claremont, California-based team transitions back to campus this fall (hopefully!) we will resume our localized work.
- We look forward to continued support from our existing partnership at University of Arizona's Center for Innovation, where we will continue to develop the JuiceBox business plan, identify potential sources of seed funding including government research grants, Department of Defense contracts, private-sector integration opportunities like those offered by Forage Design + Planning and PDX Main Street's KIOSK PROJECT, nonprofit service contracts from local, regional, national and international organizations and others.
- We are eager for support in evaluating the eligibility of our JuiceBox Telescoping Solar Array for patent protection, additional support through the process of becoming a Certified "B Corp" public benefit corporation, media promotion of our work and team, and development of future Shine product lines.
- **Our software development and prototyping** teams working on ShineNet would benefit from experts in integrated systems hardware & software development. We specifically seek support with **backend data input, data visualization, intelligent electronics performance modulation, and integrated hardware control.**
- 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. 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.

Thank you for your time!