

## Technical Assistance Request

### 1. Technical Assistance Request: Feasibility of Product Design

- Challenge: We have created a design that allows a mobile automated farming unit to navigate around the racking system of a solar array. Our design necessitates several adaptations to existing racking infrastructure. One such adaptation is a different layout for the pile system. We need to assess the feasibility of these changes and evaluate the cost and structural performance of our design.
- Request: Consultations with engineering and design experts on solar racking. We have identified several corporations and connectors, such as NEXTracker, that specialize in racking and can help to assess the feasibility of our design. We believe that there is the potential for partnerships with some of these corporations to combine their defining design principles with ours.

### 2. Technical Assistance Request: Recommendations of Optimal Materials and Mechanics

- Challenge: We have created our design with an emphasis on form and functionality. The mechanical components of our design already exist in numerous other applications. However, we need to focus on optimizing materials and mechanical components to the costs and demands of our specific environment.
- Request: We seek technical support from NREL's advanced manufacturing facility and corporate engineering firms to select the best materials and mechanical components to use in our prototype. While we believe in the fortitude of our design, we eagerly await the advice and comments of engineering experts so we can address their recommendations for our product. The expertise of outside advisors will supplement that of our internal engineering team and enable us to bring a more reliable product to market at a lower cost.

### 3. Technical Assistance Request: Details on Measurement Needs of Agrivoltaic Researchers

- Challenge: We have designed a tool set capable of providing measurements on many critical farming characteristics with feedback from a future agrivoltaic farmer, Byron Kominek of Jack's Solar Garden. Our product includes implements that can measure soil moisture, temperature, and humidity, among other things.
- Request: We need to better understand the accuracy, precision, and frequency of these measurements that agrivoltaic researchers require. NREL and the University of Arizona have agrivoltaic research teams that can answer our questions about monitoring demands.

### 4. Technical Assistance Request: Farm Design



- Challenge: The design of our system needs to be compatible with the demands of farmers operating the farm under a photovoltaic array.
- Request: We need to consult agricultural researchers in order to engineer ideal crop planning for both agrivoltaic environments and agrorobotic applications. As solar-sharing agriculture is still highly experimental, knowledge areas of interest include: selecting optimal crops for agrivoltaic farming, developing a plant spacing strategy to accommodate solar racking infrastructure, identifying the most urgently needed robotic gardening implements, and tackling irrigation limitations of our new model. The University of Arizona, Colorado State University, and the University of Massachusetts have built active agrivoltaic farm experiments that can inform these questions.

5. Technical Assistance Request: Expanded Research Network and Business Plan Refinement

- Challenge: Our business plan involves an evolution of the client from public research institutions to private solar and agricultural companies. Marketing to researchers is a nuanced task that requires a strong network of relevant scientists and an appropriate pricing model. We have made initial contact with individuals involved in agrivoltaic research, but need broader exposure and more connections. Later, we will need to pitch the expertise we've gained by collaborating with researchers as a reason why private customers should choose to invest in our product.
- Request: NREL and the University of Arizona are leading institutions in agrivoltaic research and are both members of the American-Made Solar network. We hope to include members of these agrivoltaic research groups on our advisory committee. Furthermore, we plan to partner with these research institutions to implement our first large-scale installation. In addition to connections with researchers, we seek assistance in bringing our research tool to commercial operations. The NREL Energy I-Corps program and the Colorado Innovation Corridor have expertise in transitioning research products to the marketplace. Their advice will propel us forward along an accelerated development timeline.