Provide a two-page description of the unique challenges and needs a national lab, private facility, and/or member of the American-Made Network could potentially help you resolve. The Prize Administrator will make this request broadly available so members of the American-Made Network can understand your needs and assist you through the voucher program or otherwise.

Our idea is a rechargeable solar cell bag with flexible thin films of dye-sensitized solar cells incorporated into the bag. The bags, specifically backpacks, typically carry portable devices such as laptops and tablets which frequently need to be charged. The solar films absorb sunlight and create electric power to charge the portable devices. The dye-sensitized solar cells have been created and characterized already. The merit of these solar cells are that they are easy to make, economical and ecofriendly. The team need support to complete the next phase of the project.

The first major challenge that needs to be addressed is technical in nature. The dye-sensitized solar cells were first fabricated using fluorine-doped tin oxide (FTO) glass slides. The glass based dye sensitized solar cells were characterized via current and voltage measurements. These glass materials cannot be directly used in the bags and in lieu of that we are currently testing the use of heat resistant flexible films. The engineer in the team, Dr. Kang is currently working with our partnering company for a seamless incorporation of the dye-sensitized solar cells into the backpacks. Our partner is Treason Toting Company – a successful local company that manufacture and sell bags that usually carry portable devices. Once the solar cells are successfully integrated into the backpacks, we would need help to accurately measure the efficiency of the solar cell inside the backpack. A national lab that specializes in the measurement of the solar cell efficiencies could be of great help to the team.

The team also need help with the business side of the operation. The idea was birthed and is being developed at the center of nanotechnology at Coppin State University. Most of the team members are scientists with little or no knowledge in business. We will therefore need a group with expertise in the business planning and budgeting to come alongside the team to help in the business side of the project. With our limited knowledge, the team has put together a business plan that has been incorporated into the proposal being submitted but we require external partner to help polish the business plan to make it appealing to potential investors.

As mentioned above, the team is currently collaborating with Treason Toting Company for the production of the backpacks. However, it is midsize company and we are looking forward to dramatically increasing our production and for which reason, we would appreciate an organization that will help put us into contact with a big bag manufacturing company to usher us into the mass production of solar backpacks. The current partnering company is local and thus a convenient means of getting started but once we successfully launch production of the bags, we would like to see an exponential increase in the production. The company does not need at that point to be local. A bid will even be made for international companies as well.

Finally, we would need help collaborating with funding agencies who will help us relocate the company from the university setting to an industrial setting. The team will require financial help in acquiring a space and equipment needed to keep up with the much-anticipated increase in the production of the bags.