Technical Assistance Request (2 pages PDF, including images, Will Be Made Public)

Provide a two-page description of the areas where you need assistance to realize your solution. Consider the unique capabilities the national labs, a private facility, and/or members of the American-Made Network could provide to you to resolve these barriers. The Prize Administrator will make this request broadly available so members of the American-Made Network can understand your needs and assist you, with the potential to earn Recognition Rewards for that assistance.

Page 1: Introduction and Project Overview

Solar energy is a promising source of renewable power with the potential to significantly reduce greenhouse gas emissions and dependence on fossil fuels. However, the efficiency of solar panels remains a crucial factor in making solar power more accessible and affordable for a wider range of applications. As a new solar innovator, our goal is to develop a small and cost-effective device that enhances solar panel efficiency by enabling precise tracking of the sun's movement throughout the day.

Our project focuses on designing and developing an operational Nanofluid-Based Solar Panel Cooling System (ONSCS), an innovative, low-cost, and easy-to-implement technology that significantly boosts the efficiency of solar panels by actively cooling them. The innovative solar panel cooling system will be designed to address the critical issue of solar panel efficiency reduction in high-temperature environments. This project aims to develop a cooling system that incorporates a heat conductive plate, heat sink, cooling air, and thermal sensors to keep solar panels operating optimally, even in regions with scorching temperatures production. To achieve this, we need to address several technical and financial challenges.

Technical Assistance:

Heat Conductive Plate and Heat Sink: We need assistance in developing a reliable and cost-effective mechanism that is small in size and easy to install. National labs can provide expertise in advanced materials and precision engineering to design and test such a mechanism.

Cooling Fluid or Air: A small pump or fan is used to circulate a cooling fluid (like water) or air through the heat sink. This fluid or air absorbs the heat from the panel and carries it away, maintaining a lower panel temperature.

Micro-Tracking Technology and Thermal Sensor and Control System: We need assistance in developing a reliable and cost-effective micro-tracking mechanism that is small in size and easy to install. National labs can provide expertise in advanced materials and precision engineering to design and test such a mechanism.

Durability and Weather Resistance: Solar panels are exposed to various weather conditions. We need assistance in ensuring that the micro-tracking mechanism is durable and can withstand harsh environments. National labs can conduct extensive durability testing and offer insights into materials that can withstand outdoor conditions.

Testing and Validation:

1. Performance Testing: To ensure the effectiveness of our micro-tracking mechanism and sensor, we need access to testing facilities. National labs can offer state-of-the-art testing infrastructure and expertise to validate our technology's performance.

2. Field Testing:*Real-world conditions are essential for validating our device. Collaborating with the American-Made Network and private facilities with field-testing capabilities will be crucial for assessing the device's performance under various environmental conditions.

Regulatory Compliance:

1. Certifications and Standards: Solar energy products must adhere to industry standards and certifications. Collaboration with national labs can help us navigate the regulatory landscape and ensure that our device complies with safety and performance standards.

Market Research and Commercialization:

1. Market Analysis: To bring our device to market successfully, we need assistance in conducting market research and identifying potential customers and partners. Private facilities with experience in market analysis can guide us in commercialization strategies.

2. Business Development: Collaborating with members of the American-Made Network with expertise in business development can help us establish partnerships, secure investment, and create a sustainable business model.