

Technical Assistance Request

The Next Phase Energy Team anticipates requiring technical support from the American Made Network for the development efforts/challenges described below. Upon receipt of the Ready! Contest funds, the Team will pursue partnerships with strategic Network members.

1. Prototype Construction and Testing

The Team believes that Sandia National Labs, perhaps taking advantage of NSTTF (the National Solar Thermal Test Facility), will be the ideal candidate to support construction, testing, and independent test validation for the Next Phase Energy prototype.

1.1. Set! Demo Day prototype

Team will require support to construct and test the one-third-scale Next Phase Energy modular unit (2m x 2m reflector) with a gas phase HTF system and a heat sink device that mimics a heat exchanger linking to a power block.

1.2. Go! Demo Day prototype

Construct and test full scale solar collector module assembly (6m x 6m reflector) and test loop to allow for T_{exit} operation at 550° C and above. We will also show receiver and window with exterior anti-reflective coating and inner hot-mirror coating.

2. Materials

2.1. Heat Transfer Fluids

The Team anticipates requiring technical support to find the HTF's that will meet the temperature and phase-change requirements of the Go! Demo Days prototype test loop as well the final Polaris generation. The Team believes the expertise for this support likely resides at Sandia.

Dowtherm-A is planned as the HTF for the Set! Demo Day prototype, which will have a maximum operating temperature of approximately 400° C.

The Go! Generation Next Phase Energy prototype is planned to have an operating temperature in the 550° C range. Preliminary analysis shows that the optimal, maximum temperature for the final Next Phase Energy generation will be in the 650-750° C range. Sodium will be the working fluid.

2.2. Thin Film

The Next Phase Energy collector thermal reflector coating will need to be applied to the parabolic reflector plates. We anticipate seeking advice and recommendations from D2 and Sandia and are open to additional recommendations from other Network members.

3. Due Diligence

The Team will reach out to Network members, including but not limited to Sandia and D2, for due diligence on simulation analysis and design.

4. Manufacturing

The Team will reach out to Sandia, D2 and other Network members for support on manufacturing the Next Phase Energy demonstration units and to recommended design modifications supporting design for manufacturability and low cost manufacturing.

5. Business and Funding

The Team will reach out to Network members for business development and funding, likely during the Set! Demo Day prototype testing. Network members under consideration the following:

- Elemental Accelerator for business support and funding
- Power House – Clean energy seed fund in Oakland
- Clean Energy Trust – Chicago