Hero-X3
Technical Assistance

1. Outfitting a manufacturing facility. We'll be buying roll metal stock in 2 ton rolls. Equipment will be needed to handle this as well as other manufacturing materials.

2. There will be certifications required for affixing a solar array to a roof.
   A. Underwriters laboratories (UL). MiaSole` and Enphase each have these certifications for their own products, but when combined onto one panel will the panel itself need a certification.
   B. Help with National Electric Code compliance.
   C. Factory Mutual (FM). Installed system will probably need approvals.

3. MiaSole: Sheet metal rolls come in 24" & 48" widths. The width of the MiaSole Flex-02WS Series CIGS Module is 39.1". The male and female lock on my panel plus nailing fin is 3.123". To minimize metal waste the solar module would ideally be 44.8" wide. Convincing MiaSole to change their production widths will take some help from an outside source. Vouchers would help here.

4. MiaSole: To figure module width/length/wattage requirements. Ideally, I would like to have panels of 250 & 500watts. I will need MiaSole to figure out the watt densities of the various sized panels so optimum lengths could be calculated. These variations I believe will be necessary to get optimal coverage on Hip roofs placing panels between hips and valleys so as not to waste the roof real estate in those areas.

5. Eastside Machine Co. Roll Forming Machine Manufacturer, I will need three machine designs. Initial estimate obtained 3 years ago was mid $ 70,000 for the main panel roll forming machine. Would vouchers apply here?

6. Enphase: Micro-Inverter Manufacturer. Flexible Thin-Film CIGS produce different electrical outputs than that of Polycrystalline Silicone. For that reason, micro-inverter manufacturers are going to have to be enticed to spend the time to make inverters for this particular application. Flexible Thin-Film Modules to date have only been used in commercial applications with string inverters. This is a whole new application and I'll need help convincing them of that Plug & Play quantities will be worth their while. Would vouchers apply here.
   A.To get maximum output I would suspect a Micro-Inverter for each panel would be optimal. This will assure that Maximum Power Point Tracking (MPPT) levels will be at their optimal values. It's also possible that 2 or 3 panels could be supported by 1 Micro-Inverter. This needs to be determined by an electrical engineer.

7. Fraunhofer USA holds the key to Plug & Play Solar. I will immediately be reaching out to them for help with the installation, permitting, inspection, and interconnection processes they have put together for the SunShot Initiative.

8. Web design. Mine certainly needs an upgrade. Will need an e-commerce site whereby panels can be ordered as well as Solar Site Location design work. Would a voucher apply here?

9. GreenLancer Engineering and Design Service. Once module width, length and wattage is determined they'll have to plug that info into their software for the shading studies and panel layout estimates.

Historically a crew of highly trained NABCEP professionals was needed to Design, Build and Commission a PV Solar Array. The Department of Energy set out over 9 years ago to change that with the SunShot Solar Initiative. This mounting panel along with what Fraunhofer USA has developed will allow the DOE to reach their Plug & Play goal by 2020 as scheduled.