Our aim is to create a consumer product that can be installed by anyone without the need for an electrician. Making solar available to the masses at a reasonable cost.

Motivations/Objectives

- **Motivations**
  - Sunlight is an abundant and renewable source of energy.
  - Solar is very economical and can be installed easily.
  - Solar is a great source for energy in remote areas.

- **Objectives**
  - Design combiner box with DC:DC Conversion.
  - Create a consumer package with panels, DC:DC converters, DC:AC inverter, and AC integration.

How to safely integrate to the home or load with little cost.

Finding parts that meet our design requirements for the prototype.

Scaling our final 1kW product from our prototype.

How to overcome power loss.

Product Results

- It would take less than 5 years (in NJ) for the $2,500.00 system to pay for itself, with the avoided electricity cost, tax incentives, and SRECs [4].
- Across the 15 year life of the array the return on investment would be over $6,000.
- Present Worth (assuming MARR 1.48%, the current rate of US treasury I Bonds) is $880, its future worth is $280. The projects Internal Rate of Return is 7.3%. [4][5]
- We would offer two product types: home integrated and stand alone.

The stand alone would have a battery and charge controller to control the flow of power. This offering would be ideal for the remote areas without a grid. No electrician aid would be needed.

Acknowledgement

THANK YOU TO:
- SPS for the discounted solar panels
- Labern Machine Products, for helping with structural needs
- Remaly, Anthony Remo, Yitao Wang, for plug n’ play
- Phone jack connectors installed on solar panels, for plug it stay
- Phone plugs, ¼” mono
- DC:DC Converters, DC:AC inverter, and AC integration
- Data from NREL, for ease of install
- Phone jacks for connectors
- Social Impacts

Solar will be affordable enough to be on homes nationwide lowering dependence on non-renewable resources, such as coal. 100 homes in NJ with a MASS Solar product would offset 72 tons of CO₂ a year, and 1,080 tons across the products’ 15 year life. [3]

References