

## Appendix I: Design Project Abstract

### Product Description: Sun Tracking and Stable Base for Light Concentrating Mechanisms

A single or dual sun tracking mechanism and fixed base will hold and turns the sun concentrator mechanisms (to be developed by other teams).

#### Abstract:

As part of the EverGreen project (<http://www.evergreen.txstate.edu/>) plants will grow in an enclosed environment (a reefer shipping container) using hydroponic method. Natural light needs to be delivered to them accessible to different racks and trays. It is intended that thick fiber optics cables (0.7 inch in diameter) to be used as the media for the light delivery. To maximize the efficiency of the process, light concentrator systems are being designed to collect sun light beyond the cable's thickness (e.g., using a modified solar cooker: solar reflectors to reflect and concentrate the light into the entry point of the fiber optics cable(s)). However, such system is more useful if it is always toward the sun. This project intends to design and build (or adopt and modify a commercial) sun tracking system that holds and rotates the concentrating mechanisms always toward the sun during the day and returns to original position during night. The system should be compatible with either Large single concentrator (project 1) or Batch of small concentrators (project 2) or preferably both.

The system should be durable for an outdoor environment and will be installed on top of the shipping container. It should look professional and design should contain enough information to be expandable for reproducing several similar products.

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