

PROJECT OBJECTIVES

Goal: Typical costs for a concentrator (heliostat or parabolic dish) can range between 40-50% of the total costs. To meet SunShot cost target of 6c/kWh, the concentrator costs need to be reduced from ~ \$150-200/m² to \$75/m² or less

➤ *This project seeks to address the SunShot cost target by development of a low-cost, light-weight mirror module and reducing overall system costs*

Innovation:

➤ *Mirror module with metallized film reflective surface on structural polyurethane substrate significantly enhance SOP from 6 kg/m² vs > 15 kg/m² and \$16/m² vs > 26/m²*

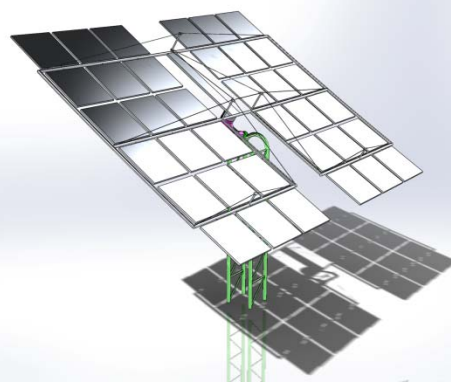
Milestones: 1. Select thin film material 2. Select structural foam 3. Develop facet/heliostat design

APPROACH

- Mirror module development has been approached with the goal of being applicable to all types of CSP systems
- Several heliostat design options being considered to address driving requirements:
 - Facets that are compliant to winds > 35 mph
 - Deep structures for optimizing structural efficiency
 - Pointing accuracy achieved with mechanism design
 - Simple precision components
 - Easy on-site assembly with pre-fab components
- Structural foam properties and strengthening trades being conducted to reduce overall costs with FEM models

KEY RESULTS AND OUTCOMES

- Two prime thin film candidates – ReflecTech and 3M samples have been procured for further testing
- Five foam candidates have been identified for further evaluation
- Heliostat designs with advanced features for tolerating high winds and stowing capabilities have been developed



NEXT MILESTONES

Milestone	Expected Date	Risks/Challenges/Mitigation
Foam selected based on strength, CTE mismatch	4/30/13	None
15 reflective panels tested for reliability	7/18/13	Foam material not strong enough for hail. Protective scheme envisioned
Drive and electronics cost targets met	7/19/13	Multiple small heliostats vs fewer large heliostats trade uncertain.