
2008 Solar Annual Review Meeting

Session: CPV

Company or Organization: Soliant Energy

Funding Opportunity: SAI TPP

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SOLĪANT
ENERGY*

Budget and Solar America Initiative Alignment



Project Beginning Date	FY07 Budget	FY08 Budget	Total Budget
9/1/2007	265,091	3,430,000	8,772,960

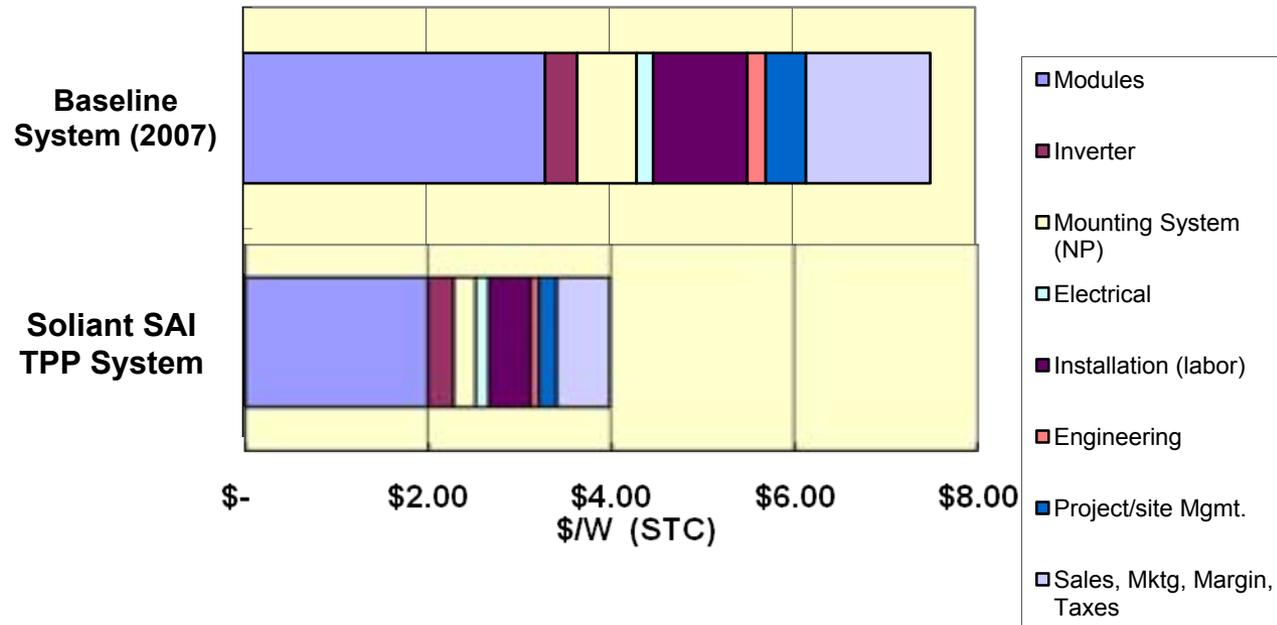
- This project supports the Solar America Initiative by:
 - Delivering triple junction cell performance to the commercial rooftop to achieve grid parity
 - Peak commercial electric rates make grid parity within practical reach
 - Delivering CPV performance in a module that uses industry-standard installation practice, for rapid market penetration
 - Delivering a rapidly scalable product to market
 - Manufacturing easily replicable - \$5-7M for a 30 MW line

Project Overview: High-Power Flat-Plate CPV Modules Designed to Reduce System Installation Costs



- High efficiency modules deliver more energy production from the same roof footprint
 - More energy, fewer modules
 - Less racking required
 - Reduces engineering, system design costs

Total Installed Cost



The Result:
Soliant modules can deliver a lower system cost than comparable silicon modules

Project Alignment with Technology Roadmap



Activities

Need	Significance
Establish reliability of prototypes	Needed for market entry. Address at all levels, from detailed understanding of individual failure mechanisms through field testing of systems.
Optimize design of overall system	Many opportunities for cost reduction; system-level approach needed.
Reduce system cost	Address cell, optics, and tracker; cell cost reduction alone could reduce system cost by 10%–15%.
Increase system efficiency	Reduce system losses from optics; increase cell efficiency; increase of cell efficiency from 35% to 39% could reduce the ¢/kWh by 10%.
Develop more-efficient and more-forgiving optical systems	Improve efficiency; simplify manufacturing; ease operation and maintenance
Understand system performance as a function of solar resource	Specify performance of system to customers for market entry

- Operational prototype delivered to Sandia March 2008
- Ongoing reliability testing
- Full-system cost modeling by third party
 - Use to optimize concentrator element spacing, size.
- Use very high power density to reduce overall system cost
- Developed wide-acceptance angle optics
- Have developed detailed physics-based model of concentrator performance in presence of shadows, etc.
- Have developed rating system that customers understand

Project Update



Past
Future

Planned work since last Program Review	Status
Heliotube Gen2 Prototype delivery	Completed 3/31/08
Heliotube Gen2 Manufacturability	Dec-08
Heliotube Gen2 Commercialization	Dec-09
Multijunction Receiver Packaging	On schedule
Process Innovation	Started Mar-08
Collaborative Activities	Ongoing
Heliotube Gen2a Development	Planned start Sep-08



- March 2008 prototype delivered to Sandia met its performance goals
- Main obstacles are business and/or manufacturing-related
 - Uncertainty in monetary exchange rates
 - Uncertainty in commodity prices (e.g. aluminum)
 - Uncertainty in market entry environment
 - High volumes are necessary to meet DOE LCOE targets.
 - Must ensure supply of triple junction cells
 - Must ensure high-quality manufacturing
 - This amounts to millions of free-space (i.e. not on a PCB) solder joints per year
 - RoHS concerns
 - Planned additional equity capital raise must go as planned.