SunShot CSP R&D 2012

June 12, 2012

www.solar.energy.gov/sunshot/csp_sunshotrnd.html

Awardee Name	City	State	Award Amount	Brief Project Description
3M Company	St. Paul	MN	up to $4.9 million	Project will develop high-reflectivity films and high-rigidity structures that can replace current solar collectors that use heavy glass mirrors.
Argonne National Laboratory	Argonne	IL	up to $1 million	Project will demonstrate the use of chemically reacting working fluids (CRWFs) as heat transfer fluids (HTFs) in concentrating solar power (CSP) applications.
Boston University	Boston	MA	up to $800,000	Project will develop a new method to keep solar collectors dirt- and dust-free and thereby maintain higher optical efficiencies.
Brayton Energy	Hampton	NH	up to $1.6 million	Project will build and test a new solar receiver that uses supercritical carbon dioxide (s-CO_2) as the HTF.
BrightSource Energy	Oakland	CA	up to $4.9 million	Project will develop an automated collector assembly platform and a more efficient installation process that has the potential to drastically reduce construction time and cost for utility-scale CSP facilities.
Jet Propulsion Laboratory	Pasadena	CA	up to $2.3 million	Project will design an optimized solar thermal collector using a light-weight structure capable of lowering costs, simplifying installation, and leading to mass-manufacturability.
Massachusetts Institute of Technology	Cambridge	MA	up to $1 million	Project will develop concentrated solar thermoelectric generators (CSTEGs) that contain no moving parts, convert heat directly into electricity, and can be integrated with thermal storage.
National Renewable Energy Laboratory	Golden	CO	up to $8 million	Project will demonstrate a multi-megawatt power cycle using s-CO_2 as the working fluid.
National Renewable Energy Laboratory	Golden	CO	up to $3.8 million	Project will develop a novel receiver with near-blackbody (NBB) absorptive performance that uses falling particles instead of liquid for the HTF.
Norwich Technologies	Norwich	VT	up to $300,000	Project will work to design an advanced CSP receiver that incorporates novel materials and design features to achieve lower cost, higher efficiency, and greater reliability.
Oregon State University	Corvallis	OR	up to $800,000	Project will reduce the size, weight, and thermal loss from high-temperature solar receivers by applying microchannel heat transfer technology to solar receiver design.
Pacific Northwest National Laboratory	Richland	WA	up to $3.5 million	Project will develop a CSP system based on parabolic dish concentrators and thermochemical reaction systems that provide a solar thermochemical augment to a chemical fuel for use in a modified natural-gas-combined-cycle (NGCC) power plant.
Pennsylvania State University	University Park	PA	up to $300,000	Project will demonstrate a scattering solar concentrator with state-of-the-art optical performance and the added benefits of immunity to wind load tracking error, more efficient land use, and elimination of the need for movable heat transfer elements.

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San Diego State University	San Diego	CA	up to $3.8 million	Project will demonstrate a new receiver design that uses an innovative small particle heat exchange receiver (SPHER) with carbon particles to enhance performance and achieve higher thermal efficiency.
Sandia National Laboratories	Albuquerque	NM	up to $4.4 million	Project will develop a falling particle receiver and heat exchanger system to increase efficiency and lower costs.
Southwest Research Institute	San Antonio	TX	up to $6.8 million	Project will develop an s-CO_2 power cycle that combines high efficiencies and low costs for modular CSP applications.
Southwest Research Institute	San Antonio	TX	up to $3.1 million	Project will develop an external combustor that is capable of operating at much higher temperatures and allows for the mixing of CSP-heated air with natural gas in hybridized power plants.
Stanford University/SLAC	Stanford	CA	up to $900,000	Project will design and test an innovative high-temperature power cycle for CSP systems that does not require any moving parts and can integrate with conventional CSP cycles to create ultra-efficient plants.
Thermata	Pasadena	CA	up to $1 million	Project will demonstrate a heliostat system using innovative closed-loop optical tracking technology that provides real-time information to adjust the location of the reflected sunlight.
University of Arizona	Tucson	AZ	up to $1.5 million	Project will optimize and validate a novel rapid glass molding technique that creates very precise mirrors in a variety of shapes.
University of California San Diego	La Jolla	CA	up to $1 million	Project will develop a new low-cost and scalable process for fabricating spectrally selective coatings (SSCs) to be used in solar absorbers for high-temperature CSP systems.