SunShot
U.S. Department of Energy

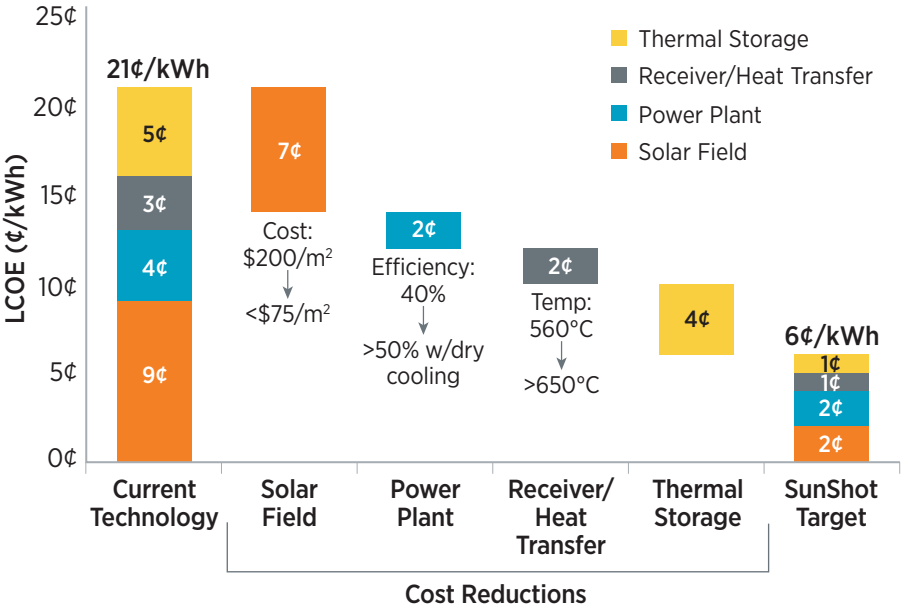


SunShot Concentrating Solar Power Research and Development

Motivation

The current cost of concentrating solar power (CSP) without economic support is estimated to be approximately $0.21/kWh. Significant improvements across all four major CSP subsystems—solar fields, power plants, receivers, and thermal storage—are necessary to achieve the SunShot cost goal of $0.06/kWh.

The 2012 SunShot CSP Research and Development (R&D) program addresses the technical barriers for solar fields, receivers, and power plants. Combined with other CSP programs focused on thermal storage improvements, the SunShot Initiative targets all major subsystems to put them on a pathway toward achieving grid parity.



"This funding will help unleash the vast potential of solar energy to diversify our energy portfolio, create clean energy jobs, and re-establish U.S. global leadership in this fast growing industry."

—Energy Secretary Steven Chu

By the Numbers

21 projects

$54.7 million total investment

>16% operating temperature increase for receivers

>25% efficiency gain for power cycles

>60% cost reduction for collectors

Program Description

The SunShot CSP R&D program supports 21 different projects at companies, universities, and the national laboratories of DOE as well as other federal agencies. Each project looks beyond incremental advances to innovate transformative concepts with the potential to overcome today's performance and cost barriers. To support the development of next-generation CSP technologies, DOE anticipates investing up to $54.7 million over three years in these projects.

Impact

By innovating the next generation of CSP technologies, this program will lead to subsequent system integration, engineering scale-up, and eventual commercial production for this renewable and dispatchable electricity generation application. Achieving the SunShot cost target is projected to result in the cumulative installation of approximately 28 gigawatts of CSP by 2030, which would be able to meet about 3% of the total U.S. annual demand.

Projects awarded under this program include efforts to:

- Significantly reduce the solar field cost from about $200/m^2 to < $75/m^2 while improving optical efficiency
- Increase receiver operating temperature to >650°C while improving thermal efficiency
- Increase power cycle conversion efficiency to >50% with dry cooling.

Contacts

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