

## Energy

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Industry Brief

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**Alternative Energy - Alternative Power: Industry Tidbit**

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**Solar Tower Technology Moves Toward Commercialization in Arizona**

- ◆ On October 27, 2009, we published an industry brief, “Solar Tower Technology Makes Its U.S. Debut,” about a unique new entrant into the utility-scale solar arena. The two principal categories, of course, are photovoltaics (PV) and concentrating solar power (CSP). The third category is called the “solar tower,” with our 2009 brief highlighting the first solar tower contract signed by a U.S. utility. The solar tower developer is an Australian-based company, EnviroMission Ltd., which is listed on both U.S. and Australian exchanges. The purchaser is the Southern California Public Power Authority (SCPPA), which brings together eleven municipal utilities in the region, the largest of which is the Los Angeles Department of Water and Power.
- ◆ While this clearly remains an early-stage project, in recent months there has been a flurry of progress toward the U.S. commercialization of solar tower technology, and project visibility has been improving as a result. In October 2010, one year after originally signing the power purchase agreement (PPA) with EnviroMission, SCPPA’s board formally approved the contract. The PPA represents an offtake agreement for a 200 MW solar tower plant in Arizona, with EnviroMission planning a second plant of equal size as part of the same project. In November, EnviroMission hired Arup, a major engineering firm, to provide front-end engineering and design (FEED) for the project. That same month, EnviroMission began the regulatory process – which tends to be quite lengthy for large solar projects such as this – by applying for an environmental certificate from Arizona regulators. In January, EnviroMission raised a A\$30 million hybrid debt/equity funding facility to support FEED and other working capital needs. Finally, just last week, the company received an independent valuation of \$60 million for its technology’s intellectual property and development rights (as compared to the company’s current market cap of ~\$17 million).
- ◆ To be sure, there is plenty of work ahead for the solar tower to become commercialized. As noted before, the permitting process is rarely easy (though Arizona is certainly better than California!). Project financing must still be secured. And, of course, the actual construction process carries execution risk. All that being said, we are hesitant to forecast a specific timeline for project completion, other than to say that 2013/2014 seems like the earliest plausible date.
- ◆ We would encourage investors to read our 2009 brief for details on how the solar tower works, including a diagram and a comparison vs. CSP. In a nutshell, the concept is very straightforward, being based on the law of physics that hot air rises. The tower uses solar insolation and radiation to heat air beneath a large collector (greenhouse) that creates a constant flow of air to drive conventional turbines. The turbines are located at the base of the tower in the center of the collector, and the movement of the heated air through these turbines is caused by the updraft effect created by the tower. The process is passive, needing no outside energy input to start or maintain it. The only moving components in the system are the rotors of the turbine.
- ◆ As U.S. utilities individually decide which technology to use in their large-scale solar projects, the solar tower is set to join PV and CSP as a third commercially viable option. All three are part of the same long-term trend, which is an expansion of solar’s market share – from levels that are currently minuscule – within the overall electric power market. This trend is driven by (1) steadily improving project economics; (2) government incentives, such as the federal Investment Tax Credit (ITC) and the recently extended Treasury grant program; and (3) renewable portfolio standards (RPSs), currently at the state level and potentially at the federal level as well.

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