Nevada's Huge Solar Plant

THE PROMISE OF PARABOLIC MIRRORS

GUEST OPINION

By Alex Marker

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POWER INDUSTRY PLAYERS are paying close attention to the deployment of a large solar power plant in Nevada. Experts say that the cost of power produced at such plants could fall dramatically in the next 15 years.

Developers earlier this year broke ground in Boulder City, Nevada, for the third largest solar power plant in the world — Nevada Solar One.

The 64-megawatt Nevada Solar One power plant will use an established, but often overlooked, type of renewable energy to generate electricity called solar thermal parabolic trough. Such plants use parabolic mirrors to focus solar radiation onto solar receiver tubes carrying a heat transfer fluid. This fluid is heated to 750 F, and then used to turn water into steam, which drives a turbine to generate electricity.

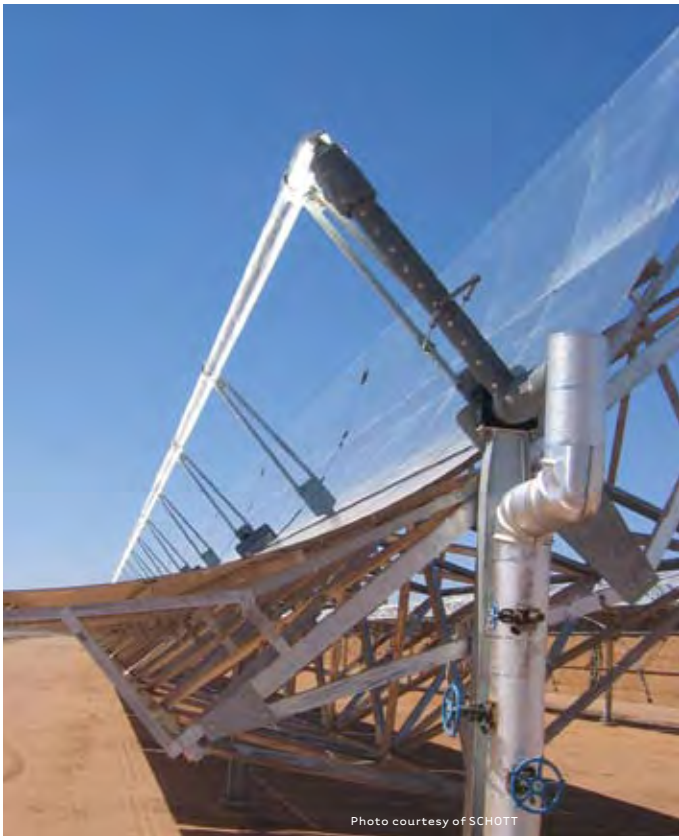
Although parabolic trough power plants require direct sunlight, limiting their location to the world's sunbelts, they have many advantages when compared to other forms of renewable energy. They can deliver a steady supply of electricity during daylight hours, when utilities usually see peak demand for electricity. And they can be located close to where the electricity is needed most, reducing utilities' transmission costs.

In addition, recent technological advancements will enable the new solar power plant to be more efficient and reliable than earlier parabolic trough power plants, such as the 354-megawatt SEGS power plants built in California's Mojave Desert more than a decade ago.

Solargenix, the plant's builder, will use new technology that lead to more efficient conversion of solar radiation into electricity and increased reliability during operation of the power plant.

Solargenix will also leverage other technological advancements to improve the parabolic trough power plant's efficiency and reliability. Improved insulation will enable the plant to use only 2 percent natural gas backup, as opposed to the 25 percent used at the California SEGs. In addition, the frames used to hold the parabolic mirrors in place employ lightweight aluminum rather than galvanized steel, making them cheaper to manufacture and easier to assemble.

While all of these technological improvements increase the plant's reliability and efficiency over previous parabolic trough solar power plants, they will not enable the new plant to immediately generate electricity as cheaply as natural gas, oil or other fossil fuels.



Technology similar to the parabolic trough solar thermal system, above, operated by Arizona Public System 30 miles north of Tucson, will be used in the larger Nevada One project, slated for completion next spring.

Initially, solar thermal power experts believe that the plant will generate electricity at a cost of 9 cents to 15 cents a kilowatt hour. However, Solargenix believes this price could be driven down to as low as 7 cents per kilowatt hour in the near future.

A report from the National Renewable Energy Laboratory predicts that parabolic trough power plants could generate energy at a cost between 6.2 cents to 4.3 cents per kilowatt hour by 2020 — costs which are competitive with fossil fuels costs today.

Dr. Alex Marker is a research fellow with SCHOTT North America Inc., which will produce components for Nevada Solar One.