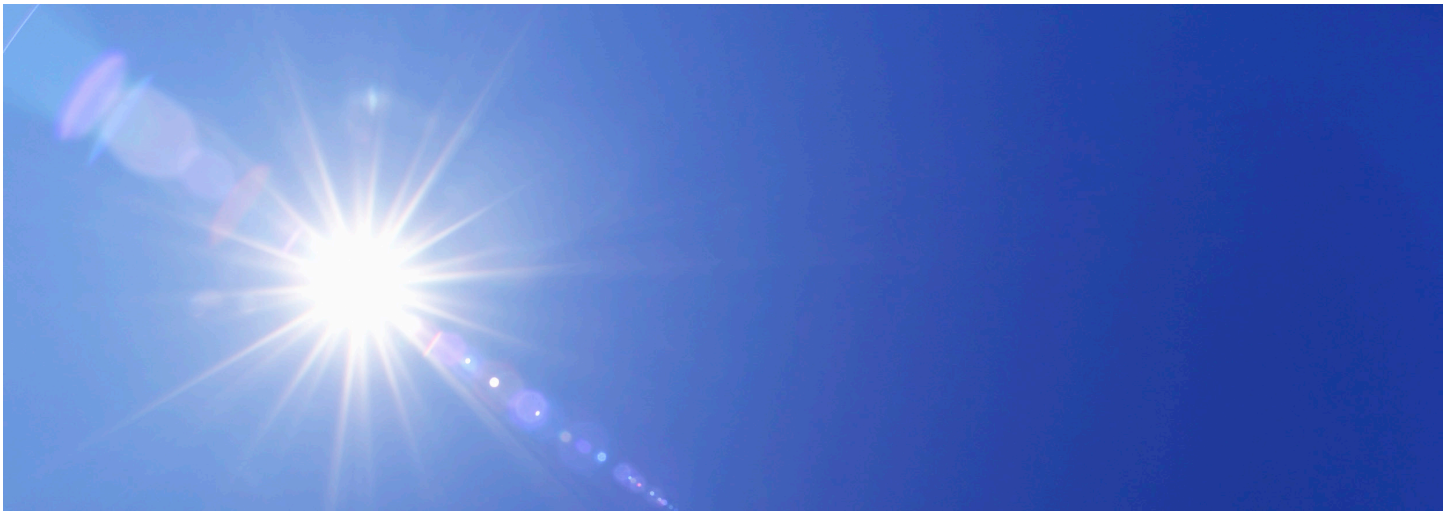
SOLARRESERVE

# RICE SOLAR ENERGY PROJECT



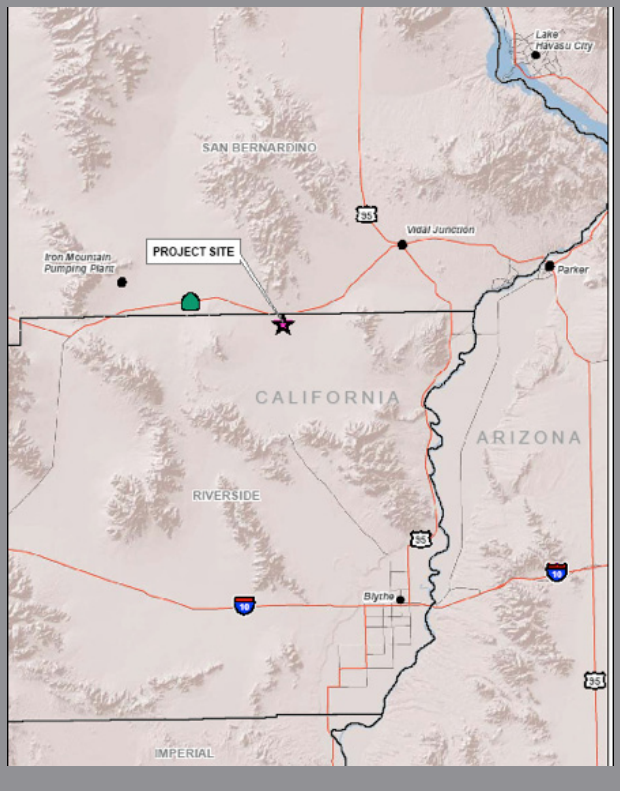
## Rice Solar Energy Project Fact Sheet | August 2010

The Rice Solar Energy Project is a solar power project proposed to be located in a remote region of eastern Riverside County, CA. The project will utilize SolarReserve's innovative concentrating solar power technology with storage, and have the capability to produce a nominal 150 megawatts (MW) of energy. If all permits are received by December 2010, the plant would be available for operation in 2013. The project will help meet the increasing demand for clean, renewable electrical energy in the US and help reduce reliance on fossil fuels and associated greenhouse gas emissions.

The proposed facility will use concentrating solar power (CSP) technology, and be equipped with an integral storage system. The technology generates power from sunlight by focusing energy from a field of sun-tracking mirrors called heliostats onto a central receiver. Liquid salt, which flows similar to water when melted, is circulated through the receiver, collecting the energy gathered from the sun. The heated salt is then routed to an insulated storage tank where it is stored with minimal energy losses. When electricity is to be generated, the hot salt is routed to heat exchangers to produce steam used to generate electricity in a conventional steam turbine cycle. The salt is then sent to the cold salt storage tank, ready to be reheated by the sun and reused the following day. The salt storage technology was demonstrated successfully at the U.S. Department of Energy-sponsored 10-MW Solar Two project near Barstow, California.

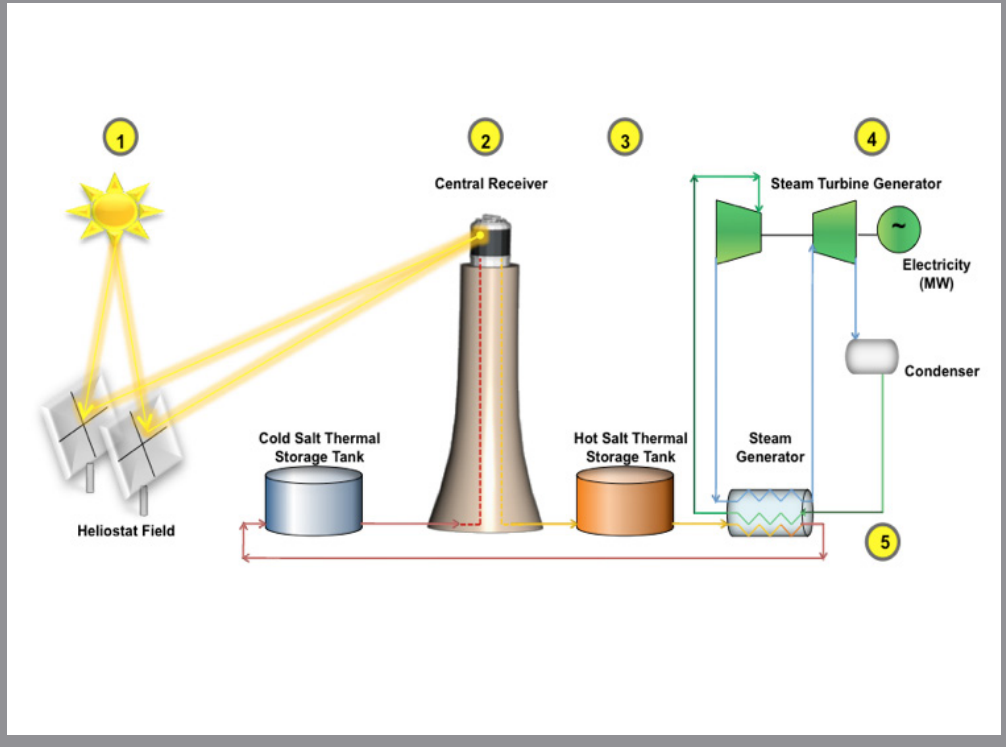
SolarReserve's unique CSP technology offers several important benefits. First, our technology stores renewable energy and can extract it on demand. The stable electricity supply reduces grid reliability impacts from other intermittent renewable energy sources. Second, the stored energy in the salt can be used to produce electricity even when there is no sunlight, if needed. This is beneficial in California where peak electricity demand can continue after the sun goes down and other solar resources can no longer operate. In addition, with highly efficient heat transfer properties, the liquid salt provides a cost-effective way to store renewable energy. Finally, SolarReserve's CSP technology does not require the use of natural gas and associated combustion emissions to maintain operating stability as some other solar technologies do.

## Map of Site




The Rice Solar Energy Project site is located on previously disturbed private property that was formerly used as the Rice Army Airfield and abandoned in the 1950's.

## How a Solar Thermal Plant Works




1. Sunlight is concentrated and directed from a large field of heliostats to a receiver on a tall tower.
2. Liquid salt from the cold salt tank is pumped through the receiver where it is heated to 1050 °F.
3. The heated salt from the receiver is stored in the hot salt tank.
4. Hot salt is pumped from the hot salt tank through a steam generator to create steam, which drives a steam turbine, generating electricity.
5. Cold salt at 525 °F flows back to the cold salt tank.

# Frequently Asked Questions

"...we should be using Nature's inexhaustible source of energy - sun, wind & tide... I would put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we can tackle that."

*– Thomas Edison*

### Why is this project important?

The project is being developed to provide a sustainable, renewable, cost-effective source of electricity using a unique technology which can capture solar energy throughout the day, store the energy, and schedule electricity production to occur whenever it is needed-during hours of peak electricity demand, or during evening or nighttime hours. The storage system allows the project to generate a stable power supply that will enhance electricity grid stability and facilitate wider use of intermittent renewable sources such as wind energy.

### Why here?

California has some of the best solar resources available in the world. Solar energy can supplement other resources to serve the country's need for clean, affordable domestic energy supplies and help sustain continued economic development. This site is located on previously disturbed private land in a largely undeveloped area with good site access. The nearest residences are located 15 miles to the west of the proposed project site. A new 10-mile long transmission line will interconnect the project to Western Area Power Administration's existing transmission system. The transmission line will be located on lands administered by the Bureau of Land Management. BLM manages the public lands for multiple uses but recognizes that a significant number of public lands have levels of solar radiation suitable for utility-scale solar power plant development. Development of renewable energy resources is considered a beneficial public use of these lands and BLM's policy is to facilitate environmentally responsible renewable energy development, consistent with national and state leadership goals for renewable energy.

### What will the new power plant look like?

The project will have a large circular field of mirrors (heliostats). At the center of the field will be a tall, central receiver tower and the power block. The tall tower increases the efficiency of the plant and ensures that the large array of heliostats can focus the solar energy onto the receiver mounted on top of the tower. As part of the environmental review process, visual simulations have been prepared and submitted to the regulatory agencies to show how the project will look to viewers from several locations.

### How tall will the tower be?

The tower will be a concrete structure, approximately 538 feet high, on which a receiver approximately 100 feet tall is mounted. A maintenance crane will be mounted on top of the receiver, for an overall height of 653 feet. The proposed tower height was established by an economic optimization study to determine the lowest cost of electricity production. As the tower grows taller, the plant efficiency increases.

### Will I be able to see the tower at night?

During the day, the receiver (which is mounted on top of the tower) will glow as it absorbs solar energy. There will be no solar energy at night, so the receiver will not operate. The plant will be designed with downcast lighting to minimize light pollution and will be limited at night only as necessary for worker safety. The FAA will require lighting systems on the tower (similar to those required by the FAA for communication towers).

### What approvals are needed to construct the project?

Rice Solar Energy (RSE) has submitted an Application for Certification (AFC) to the California Energy Commission (CEC) requesting approval to construct, operate and maintain the proposed Rice Solar Energy Project. The CEC is responsible for licensing solar thermal projects with a capacity of more than 50 MW, and its permitting process satisfies the requirements of the California Environmental Quality Act (CEQA). In order to deliver the project's power to the California electrical grid, a new transmission line will be constructed on BLM-administered land to interconnect with Western's transmission system. BLM and Western's involvement triggers the need for the project to be reviewed for compliance with the provisions of the National Environmental Protection Act (NEPA).

## Quick Facts

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| **Location** | 15 miles Southwest of Vidal Junction |
| **Technology** | Concentrating Solar Thermal with Storage |
| **Size** | 150 MW |
| **Site** | ~ 1,500 acres, private land |
| **Water Use** | Up to 180 acre-feet/ year |
| **Transmission** | 10 miles (BLM land) |
| **Fuel** | Sunlight |

The CEC along with BLM and Western will coordinate their review of the project's potential impacts to the environment and prepare a joint Staff Assessment/ Environmental Impact Statement (SA/EIS). During the EIS process, all potential project impacts to land, water, air, and biological species will be evaluated. Project alternatives as well as social, cultural, and economic factors will also be considered. The public and interested stakeholders will be given several opportunities to comment during the joint state/federal review process. If the SA/EIS is approved, a Record of Decision is prepared to document the selected alternative to be developed and any measures required to mitigate environmental impacts. In addition, a long-term Right-of-Way (ROW) Grant will be issued for the new transmission line.

To learn more about how to participate in the joint environmental review process for the Rice Solar Energy Project, please visit the CEC's webpage at: www.energy.ca.gov/sitingcases/ricesolar/ or email the CEC Project Manager, Mr. John Kessler, at jkessler@energy.state.ca.us

## KEY PROJECT BENEFITS:

- Help meet growing demand for clean, renewable energy.
- Incorporate energy storage whcih provides operating stability for the electricity grid and a cost-effective way to meet California's peak electricity demand profile.
- Boost the local economy by creating up to 450 construciton jobs and up to 50 permanent operating jobs.
- Create significant property tax and sales tax revenues that will benefit the local community and the region.

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