

Solana



Project benefits

Solana benefits the State of Arizona and the entire country by:

- Providing **clean, sustainable power** for approximately 70,000 homes in Arizona.
- Increasing **Arizona's electricity generation reliability by energy source diversification.**
- Providing more than **\$ 2 billion of direct and indirect investment** in 2011-2013 throughout the United States.
- Creating a **national supply chain** the spans 29 states with \$ 1 billion in components and services ordered from 165 companies.
- Creating **over 2,000** construction jobs during a 3-year period.
- Creating over **85 full-time, high-paying jobs** for plant operation.
- Generating approximately **\$ 420 million in tax revenues** over 30 years.

Solana is a 280-MW (gross) utility-scale solar thermal electric plant with six hours of molten-salt thermal energy storage built by Abengoa near Phoenix, Arizona. Solar thermal electric technology uses mirrors to concentrate solar energy to drive a conventional steam turbine power plant.

The molten-salt thermal energy storage system allows energy to be dispatched as needed during cloudy periods and before sunrise or after sunset. Therefore, Solana is able to generate electricity when the utility needs it most. Solana delivers enough electricity to supply approximately 70,000



ABENGOA

Project details

Plant size: **280 MW** (gross) solar output from two 140 MW steam turbine generators.

Power purchase agreement with Arizona Public Service.

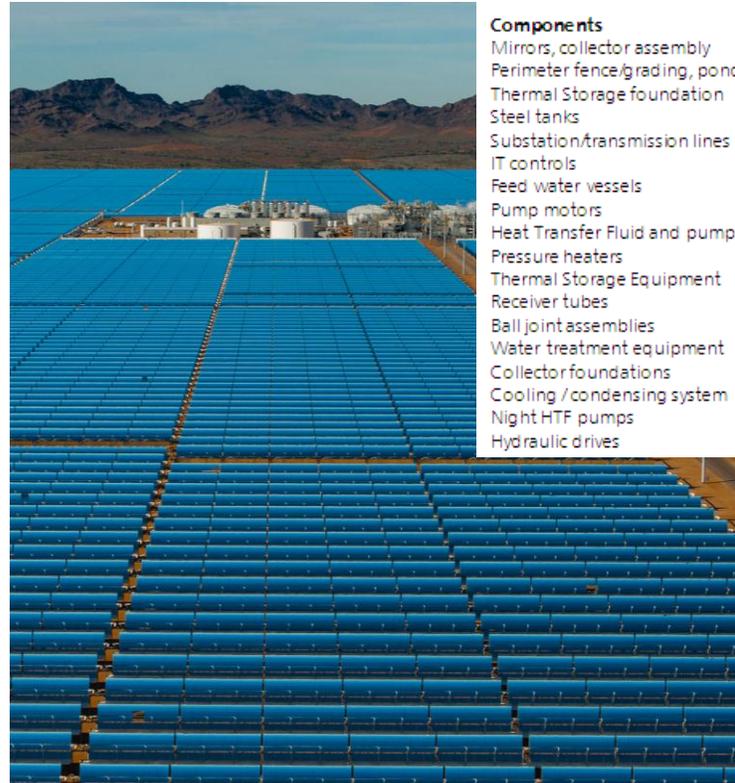
Solar field covers **3 square miles** with 3,200 mirrored parabolic trough collectors and 2.2 million square meters of reflective area.

Collectors concentrate **the sun's energy** onto receiver tubes which deliver the heat to the central power plant via a heat transfer fluid.

Electricity is generated with **conventional steam turbines**.

Thermal energy storage provides **6 hours of dispatchable energy** to be used during cloudy periods and before sunrise or after sunset.

75% less water is consumed than previous agricultural use at the site.



Components
Mirrors, collector assembly
Perimeter fence/grading, pond
Thermal Storage foundation
Steel tanks
Substation/transmission lines
IT controls
Feed water vessels
Pump motors
Heat Transfer Fluid and pumps
Pressure heaters
Thermal Storage Equipment
Receiver tubes
Ball joint assemblies
Water treatment equipment
Collector foundations
Cooling /condensing system
Night HTF pumps
Hydraulic drives

Who is Abengoa?

Abengoa (MCE: ABG.B/P SM /NASDAQ:ABGB) applies innovative technology solutions for sustainability in the energy and environment sectors, generating electricity from renewable resources, converting biomass into biofuels and producing drinking water from sea water.

With US headquarters in Colorado and offices in California and Arizona, Abengoa's solar business develops and applies proprietary solar thermal electric and PV solar energy technologies to foster sustainable development and energy independence.

Abengoa continuously improves product manufacturing and installation through rigorous research and development and is one of the world's pioneers in the construction of commercial solar thermal electric and PV solar plants through technological advances and financial investments.

Abengoa has two commercial solar power towers, thirteen 50-MW trough plants, a solar-gas combined-cycle plant and five PV plants in commercial operation worldwide. Abengoa has solar thermal electric plants under construction in the United States, South Africa, Spain, and the United Arab Emirates, with a total capacity of 810 MW.



Thermal energy storage tanks

www.abengoa.com