

Solana

Solana is a 280-MW (gross) utility-scale concentrating solar power (CSP) plant that has been built by Abengoa outside of Phoenix, Arizona. CSP is a technology that uses mirrors to concentrate the thermal energy of the sun to drive a conventional steam turbine.

Financed in part by a Department of Energy loan guarantee, Solana delivers enough electricity to supply approximately 70,000 Arizona households, with over 70 percent of the construction components, products and services sourced from companies here in the USA.



Aerial view of the solar field
Photo taken July 2013



Parabolic trough collector



Solana's power block

Project benefits

Solana benefits the entire country by:

- Making over **\$2 billion of direct and indirect investment** in 2011-2013 throughout the United States.
- Creating a **national supply chain** that spans 29 states with approximately \$966 million in components and services ordered for 165 companies.
- Job creation peaking at **over 2,000 construction jobs** during a 3-year period.
- Creating over **65 full-time, high-paying jobs** for plant operation.
- Generating about **\$420 million in tax revenues** over 30 years.
- Providing **clean, sustainable power** for approximately 70,000 homes in Arizona.
- Increasing **Arizona's electricity generation reliability by energy source diversification.**

ABENGOA

Project details

Plant size: **280 MW** output

Abengoa has a signed power purchase agreement with Arizona Public Service to purchase all electricity produced.

Solar field covers **3 square miles** with approximately 3,200 mirrored parabolic trough collectors.

Collectors are about 25 feet wide, 500 feet long, and 10 feet high.

Collectors concentrate the sun's energy onto receiver tubes that contain heat transfer fluid.

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

Thermal storage will provide up to **6 hours of dispatchable energy** to be used after sunset or if cloudy.

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

The plant **started to operate** on October 2013.

Abengoa's Solana project is spurring economic benefits from coast to coast through the CSP supply chain. The supply chain from Solana spans 29 states with approximately \$966 million in components and services ordered for 165 companies.



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) 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 CSP 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 CSP 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 CSP plants under construction in the United States, South Africa, Spain, and the United Arab Emirates, with a total capacity of 810 MW.

www.abengoa.com



Thermal energy storage tank