Heliogen | Brenda Hybrid Power Project

Heliogen plans to set up a Hybrid Renewable Energy facility in Brenda, Arizona. The Solar Energy Zone provides ideal conditions for concentrated solar installations, allowing Heliogen to produce low-cost, carbon-free power to meet growing demand while reducing emissions.

Meet Heliogen

Heliogen is a California-based renewable energy technology company on a mission to decarbonize industry, using concentrated sunlight and thermal energy storage to deliver carbon-free power and steam for round-the-clock operations. We are developing and commercializing our concentrating solar-thermal energy (CSP) infrastructure integrated with Solar PV and Long Duration Energy Storage (LDES).

Why Heliogen?

Heliogen's team of experts and innovative CSP technology, integrated with solar-PV and Long Duration Energy Storage give the company the edge to build dispatchable renewable energy infrastructure serving Southern California and the Southwest US. Field-tested since 2019 at our Lancaster, CA facility, Heliogen continues to optimize its technology for full-scale industrial production.

Our Approach

- ✓ **AI-Enabled Performance**
  Closed-loop control adjusts heliostats to ensure maximum efficiency and high-temperature output.
- ✓ **Modular Design**
  Offers rapid, flexible, scalable deployment, high-quality engineering, while delivering competitive returns on Capex.
- ✓ **Thermal Energy Storage (TES)**
  Provides dispatchable energy for availability around the clock.

The Brenda Renewable Power Project

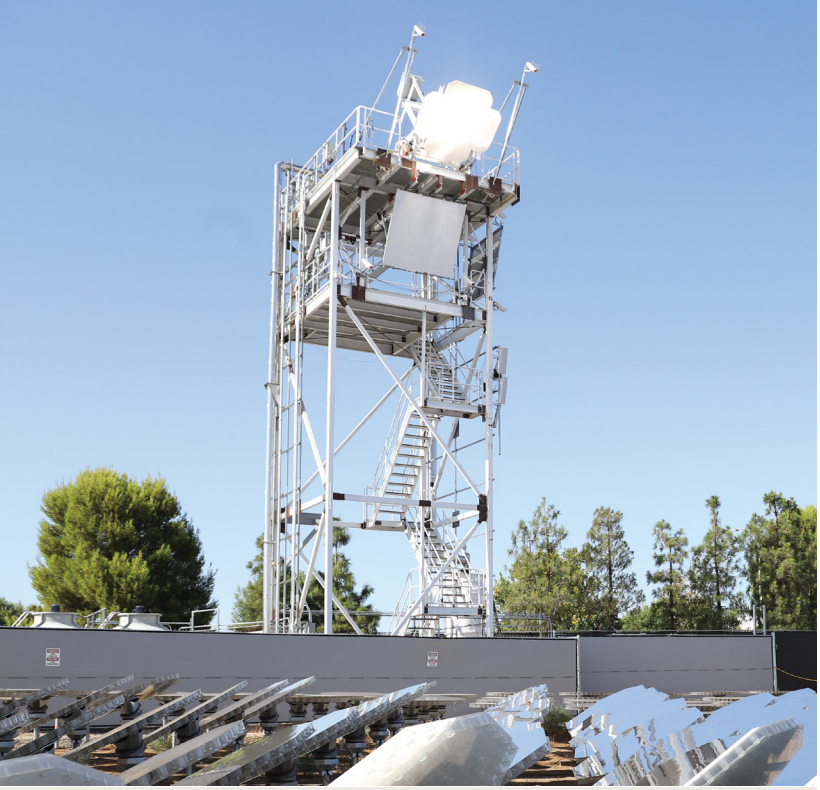
The Brenda project, located in La Paz County, Arizona, will be a clean power plant that combines concentrated solar power (CSP), solar PV, and thermal energy storage using molten salt. This “hybrid” approach of CSP+ PV + molten salt storage is already commercially mature and globally deployed at large scales.

Heliogen has secured a 30-year lease for the 3,343-acre site from the Bureau of Land Management (BLM), which has designated the site as a federal Solar Energy Zone. This designation certifies that it will prioritize solar energy and associated transmission infrastructure development on the site. In addition to being a Solar Energy Zone, the location also falls within the parameters of being a designated energy community, allowing Heliogen to maximize IRA credits, including the ITC.

The Brenda site boasts high solar potential (2670 kWh/m2/year) and is conveniently located near the I-10 Corridor and existing transmission infrastructure. In Jan. 2023, the Ten-West Link Transmission line began construction and will run adjacent to the Brenda location. The Ten-West Link is a 125-mi long 500kW transmission line, specifically developed to support the transmission of renewable energy assets to the Arizona and California energy markets. This line gives system operators in both the California and Arizona markets the ability to re-route power flows in predictable and irregular circumstances.

Potential Capacity

The Brenda project is anticipated to produce up to 190 MW of nameplate electricity with a capacity factor of 80%. The installed capacity of PV is expected to be 300MW and CSP is expected to be 190 MW to meet this production target with high capacity factor. The project aims to supply a reliable base load requirement for industrial consumers, providing a base load of up to 30 MW with 97% availability without a natural gas configuration, and 100% with a gas backup source.



Heliogen's innovative technology supports efficient power production

Our hybrid power system combines concentrated sunlight and thermal energy storage with traditional PV solar. It's designed to deliver efficient, carbon-free power to support 24/7 operations. It overcomes the challenges of intermittency to provide dispatchable clean energy. Our closed-loop AI computer-vision calibration and positioning system meaningfully improves the efficiency of the CSP portion of the plant, as validated by Sandia National Laboratories.

Heliogen's concentrating solar power system is the next-gen solution to harnessing sun and heat to create an on-demand renewable energy solution without the use of lithium-ion batteries. Mirrors are arrayed in front of receiver towers to point the sun and generate heat in the receiver aperture, which powers long-duration thermal energy storage for round-the-clock energy that can support industrial processes.

Heliogen's CSP system is designed in modules — a marked departure from the traditional heliostat array fields surrounding a massive (250–260 m) receiver tower. Instead, each module is self-contained: a smaller grouping of heliostats with a smaller-sized (approximately 100 m) receiver tower. Far simpler and faster to construct, the modular system reduces installation and maintenance expenses substantially.

Project Development

Heliogen has completed the site due diligence to confirm the groundwater is sufficient to support facility operations. Local and industrial experts have been contracted to conduct environmental permit applications and front-end engineering designs. The project intends to use a phased construction and commissioning approach to incrementally bring parts of the plant online for optimized delivery.

How Industries Benefit

The Brenda project can provide dispatchable clean energy to support data centers, utilities/independent power producers, heavy industries, the transportation sector, and producers of green fuels. Our hybridized solution architecture can support both *load following* availability and *constant load* requirements.

- ✓ Customers benefit from streamlined deployment and improved performance, versus traditional CSP.
- ✓ The modular design ensures consistent up-time and scalability for increasing energy needs.
- ✓ Reliable operations extend the lifecycle of plant infrastructure and guarantees pricing.
- ✓ Certain configurations can supply 100% capacity factor energy availability when paired with a natural gas or grid integration.

Heliogen plans to work with the local government and engage area residents, potentially employing workforce training, and improving access to clean energy for surrounding communities. Additionally, the project mitigates pollution risk and eliminates air quality degradation associated with fossil fuel-generated electricity.

Heliogen's hybrid power solution is a clear path towards a carbon-free future.

Heliogen

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