



Heliogen plans to set up a fuel cell electric vehicle grade liquid hydrogen production facility in Brenda, Arizona. The solar energy zone provides ideal conditions for concentrated solar installations, allowing Heliogen to produce low-cost, carbon-free hydrogen to meet growing demand in transportation and distribution sectors, 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 heat, steam, and green hydrogen for round-the-clock operations. We are developing and commercializing our concentrating solar-thermal energy (CST) infrastructure for the economical production of green hydrogen at scale.

Why Heliogen?

Heliogen's team of experts and unique IP in CST, coupled with hydrogen technology partners and high solar resource locations, give the company the edge to build a scalable green hydrogen 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

Small, factory-built mirrors

Heliostats, are easy to install and do not require calibration, reducing installation time.

AI-Enabled Performance

Closed-loop control adjusts heliostats to ensure maximum efficiency and high-temperature output.

Highly automated manufacturing and testing

Ensures consistency and reliability.

Modular Design

Offers rapid, flexible, scalable deployment, and high-quality engineering, delivering competitive return on Capex.

Thermal Energy Storage (TES)

Provides dispatchable energy to enable the high utilization rate of hydrogen processing equipment, hence producing hydrogen more cost effectively.

The Brenda Green Hydrogen Project

Heliogen plans to establish a commercial-scale fuel cell electric vehicle (FCEV) grade (based on SAE-J2719) liquid hydrogen production facility in Brenda, a federal Solar Energy Zone in La Paz County, Arizona. Heliogen has secured a 30-year lease from the Bureau of Land Management (BLM) for the 3,348-acre site, which is conveniently located near the I-10 Corridor, providing easy access to the growing hydrogen demand in southern California and the southwest region. The Brenda site boasts high solar potential (DNI >2670 kWh/m²/year) and has access to sufficient water resources to support the facility's operations. The site's proximity to the Port of Los Angeles (280 miles away) offers the potential to supply hydrogen for heavy port operations equipment and heavy transportation between the port and other points across the region.

Potential Capacity

Heliogen's Brenda Green Hydrogen Project is anticipated to produce approximately 20,000 metric tons per year, with opportunity to optimize, of FCEV-grade green liquid hydrogen. This amount would significantly increase the supply of zero-emissions fuel in the Southern California area.

Project Development

Heliogen has contracted with local and industrial experts to conduct environmental permit application and front-end engineering design. The Project intends to use a phased construction and commissioning approach to leverage the lesson learnt from each phase in engineering design and project execution. Tentatively, mechanical completion of the project is set to satisfy Southern California's imminent hydrogen demand.



Heliogen's Innovative technology supports efficient hydrogen production

Heliogen's unique architecture, utilizing small mirrors, AI optical control systems, and high-efficiency solid oxide electrolyzers (SOECs), is a game changer in green hydrogen production. This approach presents technical advantages over wind and solar alternatives, especially with low-energy consumption solid oxide electrolyzer cells, due to the CST byproduct of low-cost steam and base load-equivalent capacity factor when coupled with TES. These advantages allow for continuous operation of downstream hydrogen processing equipment and low-cost, carbon-free hydrogen production, eliminating the need for expensive batteries or dealing with intermittency issues.

Environmental and Community Impact

The Brenda Green hydrogen Project will produce green hydrogen by electrolysis using green electricity generated primarily by CST, with the end effect of reducing or eliminating CO₂, NO_x, SO_x, and PM emissions, which supports the creation of a strategic clean energy hub in the American southwest.

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.

Gray hydrogen accounts for more than 95%¹ of global hydrogen production today and is responsible for emitting around 830 million tonnes² of carbon dioxide per year. Green hydrogen, produced using renewable sources and generating only hydrogen and oxygen, is expected to be critical to meet 2050 net zero climate goals.

Green hydrogen is a clear path towards a carbon-free future, and with Heliogen's attractive technology, unlocking its potential is just a step away.



To learn more, contact us at:
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¹ https://www.energy.ca.gov/sites/default/files/2021-06/CEC_Hydrogen_Fact_Sheet_June_2021_ADA.pdf

² <https://www.iea.org/reports/the-future-of-hydrogen>