

HECA and the Environment



Low Emissions, Reliable Power

Hydrogen Energy California (HECA) has been designed and will be constructed and operated to meet or exceed the strictest local, state and federal environmental, safety and health standards. The U.S. Department of Energy has said of HECA:

*"The project will be among the cleanest of any commercial solid fuel power plant built or under construction and will significantly exceed the emission reduction targets for 2020 established under the Energy Policy Act of 2005."*¹

The facility will produce lower overall air emissions than any conventional power plant of its size, including natural gas plants. In addition, by incorporating carbon capture and storage into its design, HECA will prevent more than 3 million tons of greenhouse gas emissions from entering the atmosphere per year, which is the equivalent of taking 650,000 cars off the road.

HECA will provide a much needed clean and stable source of energy to California. Our demand for electric power is constant — every minute of every day. Further, electricity cannot be readily stored to be used later, so demand must be met instantaneously by supply. Therefore, we can only rely so much on renewable energy sources such as wind or solar that are only available some of the time. As California continues to develop its robust renewable energy portfolio, HECA will help the state achieve its goals of reducing greenhouse gas emissions from power generation while providing a reliable source of energy that will be available 24/7.

Preserving Valuable Fresh Water Resources

Protecting fresh water resources in the Central Valley is of utmost importance. HECA will protect and conserve California's valuable fresh water resources by using brackish, non-potable water to operate the plant, and by eliminating any wastewater discharge. HECA will actually improve the local water supply by participating in the Buena Vista Water Storage District's (BVWSD) Brackish Groundwater Remediation Project (BGRP).

HECA's main water supply will be delivered by the BVWSD, a local water district with impaired water. Brackish groundwater in BVWSD's service area negatively impacts crop yield, and prohibits the selection of higher-value, less salt-tolerant crops in the affected areas. The purpose of BVWSD's BGRP is to improve these lands for agricultural use by extracting the poorer quality groundwater and enhancing the flow of good-quality groundwater. By using elevated-salt content water for its process water needs, HECA will help BVWSD achieve its objectives to remediate local groundwater, as well as refrain from using fresh water that can be better used by others.

HECA will further protect the local water supply by not discharging any industrial wastewater and storm water run-off through the use of Zero Liquid Discharge (ZLD) technology.

Positive Reuse and Recycle

HECA will recycle petroleum coke, a low value by-product of oil refining, and use it as one of the project's main feedstocks. Currently, petroleum coke is shipped from California refineries to other nations where it is burned, releasing CO₂ and other harmful pollution directly into the atmosphere. In contrast, HECA will convert the petroleum coke into clean-burning hydrogen and capture over 90 percent of the CO₂ in the process. HECA will turn a dirty by-product into a source for clean hydrogen power.

¹ U.S. Department of Energy, HECA Project Facts, November 2011

HECA will also find productive uses for its waste streams. Two by-products from HECA's processes, sulfur and gasification solids, will be recovered and sold as commercial products. HECA has studied the beneficial reuse of gasification solids in a variety of industrial applications. Areas being evaluated include the production of cement, roofing granules and sandblast grit.

Most importantly, CO₂ from the fossil fuels used by HECA will be captured, utilized in enhanced oil recovery, and simultaneously stored in underground oil reservoirs. Through carbon capture and utilization, HECA will help extract millions of additional barrels of oil from California's oilfields, while eliminating over 90 percent of the project's greenhouse gas emissions.

The Future of Clean Manufacturing and Power Generation

HECA will be a flagship project in the creation of a hydrogen economy and in the commercial demonstration of carbon capture and storage. HECA's main objective is to convert fossil fuels into hydrogen and to use that hydrogen fuel in the most economically efficient and environmentally beneficial manner possible. HECA will generate a clean supply of hydrogen fuel that can be used to generate clean power and produce low-carbon fertilizers. The project will aid in increasing the supply of hydrogen available to support the state's goal of energy independence and diversification of energy sources as expressed in California Executive Order S-7-04, which mandates the development of a hydrogen infrastructure and transportation system in California.

Many scientists, academics, and policy makers acknowledge that carbon capture and storage must play a large role in decarbonizing electricity and that it is critical for California to meet its 2050 GHG-reduction goals. HECA will demonstrate that permanently capturing carbon is a safe and viable strategy for mitigating global climate change in the power and manufacturing industries.

Through the combination of hydrogen fuel production and carbon capture and storage, HECA will set a new environmental standard for these industries.

For more information please visit our website at www.heca.com

