

# Fertilizer



In addition to generating low-carbon, baseload power, Hydrogen Energy California's (HECA) multipurpose design will enable the production of a much needed local source of low-carbon fertilizer. HECA will be the cleanest commercial-scale fertilizer facility not only in California but in the entire United States. Carbon emissions will be significantly lower than would otherwise be produced by traditional fossil-fueled facilities, including those powered by natural gas. Agricultural end-users will benefit from this new, readily available domestic source of reliable, accessible, high-quality fertilizer.

## Reliable Fertilizer to Match Demand

The HECA Manufacturing Complex offers flexibility in products and production quantities. This flexibility enables HECA to rapidly respond to changing market conditions, and enhances reliability for consumers facing unpredictable weather conditions and time-sensitive application windows. The proximity to existing truck and rail infrastructure allows for timely product delivery throughout the region.

## A Green Method of Fertilizer Production

HECA will have significantly lower carbon emissions than traditional fertilizer manufacturing plants. This is important because carbon dioxide (CO<sub>2</sub>) is a greenhouse gas that has been linked to global warming. HECA will permanently capture more than 90 percent of the CO<sub>2</sub> from its processes, and will transport it for use in enhanced oil recovery and simultaneous storage in nearby oilfields. Based on this capture rate, HECA fertilizer production will prevent the release of approximately 1 million tons per year of CO<sub>2</sub> emissions as compared to natural gas fertilizer production facilities.

## A Much Needed Domestic Supply

Over the last 30 years, U.S. demand for nitrogen fertilizer has exhibited moderate, stable growth due to the relatively constant increase in demand for U.S. production of key agricultural products, such as wheat and corn. Compared to other countries, the cost to produce fertilizer in the U.S. is high. As a result, the portion of total U.S. demand met by U.S. production has decreased significantly. Today, the U.S. struggles to produce 50 percent of its current demand for nitrogen-based fertilizer. As demand grows, this U.S. production share is expected to decline, causing an ever increasing dependence on imports. By 2020, U.S. demand for fertilizer is projected to be approximately 27 million tons per year, while U.S. production is anticipated to reach only 12-13 million tons per year. This increasing reliance on imports is expected to stress the transportation infrastructure necessary to import and deliver these rising volumes to market.

Regional markets currently rely on imported fertilizers to meet demand. In California alone, nitrogen-based fertilizer demand totaled approximately 1.3 million tons in 2010. Approximately 32 percent of California's supply came from foreign imports<sup>1</sup>, which typically incur higher transportation costs. Production by HECA of a domestic, nitrogen-based fertilizer producer is likely to benefit local consumers through increased competition and the lowering of transportation costs.

## High Quality Product

The HECA fertilizer production process is designed to produce a consistent, high-quality product. The effectiveness of HECA's operating procedures and level of attention to quality controls will ensure that inert "carriers" such as clay, sand and silts are minimized in product streams.

HECA will provide an adaptable supply of high quality, low-carbon fertilizer for California's key agricultural markets, while maintaining the capability to produce clean hydrogen power.

For more information please visit our website at [www.heca.com](http://www.heca.com)



<sup>1</sup> U.S. Nitrogen Markets, prepared by Blue Johnson for SCS Energy, October 2011.