

Item #9
March 23, 2010
Energy Commission Business Meeting

Linde, LLC

Grant Agreement ARV-10-038
for
Linde West Sacramento and Laguna Niguel
Hydrogen Refueling Stations

Summary

Linde, LLC will use this grant to construct new hydrogen fueling stations at existing gasoline retail stations in Laguna Niguel and West Sacramento. At full demand, each station will be able to provide approximately 240 kilograms per day which is enough to fuel approximately 240 fuel cell vehicles per day.

Based on surveys of automakers, more than 1,200 fuel cell vehicles are expected to be deployed in the greater Los Angeles area and 200 in Northern California by 2014. The lack of available hydrogen fueling infrastructure is a major hurdle in promoting the deployment of fuel cell vehicles. This is due, in part, to the high station cost and the large footprint of hydrogen fueling stations. The hydrogen fueling concept developed by Linde offers an opportunity to resolve these issues by their modular approach. The Linde concept uses a centralized hydrogen production system that places equipment at the central filling facility instead of at each fueling station, reducing the footprint and cost of individual stations. The fuel is then liquefied, delivered to the stations and vaporized on demand.

The Energy Commission is providing \$3,396,209 in Alternative and Renewable Fuel and Vehicle Transportation Program funds and Linde will provide match funding of \$1,110,721.

Benefits

This project, along with other hydrogen fueling stations in the greater Los Angeles area and Northern California, will create a network of hydrogen fueling stations that will enable automakers to accelerate their deployment of fuel cell vehicles in the both regions. Fuel cell vehicles produce zero tailpipe emissions and will reduce lifecycle greenhouse gas emissions by 44 percent¹ compared to a conventional gasoline vehicles. Based on

¹ Based on central steam methane reforming production of 33.3% renewable hydrogen, liquefaction and use in a light duty fuel cell vehicle. (LCFS/GREET)

estimated vehicle throughput through 2020, these Linde hydrogen fueling stations will reduce greenhouse gas emissions by 1,933 metric tons and displace 357,375 gallons of gasoline.

Additionally, more than one-third of the hydrogen fuel that Linde will deliver to this station will be produced from renewable feedstocks.

It is estimated that the project will create approximately 57 Jobs in California.

Participants

Linde is a global leader in hydrogen production, distribution and supply, with more than 100 years of experience in industrial gas. Linde has extensive experience in the installation and upkeep of hydrogen fueling stations worldwide, including several projects in California.

The fueling station will be located at an existing gasoline retail station.

Project Milestones

Station construction is expected to begin July 2011 with completion by Fall 2012.