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NATURAL GAS VEHICLES

A CASE STUDY FROM SOUTHERN CALIFORNIA GAS COMPANY

MANY BUSINESSES AND GOVERNMENTAL AGENCIES ARE DISCOVERING THE ADVANTAGES OF ADDING NATURAL GAS VEHICLES (NGVS) TO THEIR FLEETS. SUCH VEHICLES HAVE A POSITIVE IMPACT ON AIR QUALITY, PUBLIC HEALTH AND TRANSPORTATION ECONOMICS SINCE NATURAL GAS BURNS MORE CLEANLY THAN OTHER FOSSIL FUELS AND TYPICALLY COSTS LESS AT THE PUMP THAN GASOLINE AND DIESEL.

CNG technology paves the way for higher learning

The University of California San Diego (UCSD) is one of the nation's most accomplished research universities, widely acknowledged for its local impact, national influence and global reach. With a majestic view of the Pacific Ocean, this distinctively beautiful campus is both a magnet and a catalyst for world-famous institutes and Nobel Laureates. With a burgeoning population, the school's public transit system serves millions of people each year. In fact, UCSD campus shuttles carry over 2.9 million passengers per year. Currently, three of the 41 buses in the transit fleet are powered by compressed natural gas (CNG). UCSD has recently ordered five new all electric hybrid CNG-fueled turbine buses with expected delivery in November 2009. The new buses will not only reduce the university's dependence on imported petroleum, but the fleet will also be able to operate with fast charging technology in all electric mode for extended periods of time. During all electric operation the bus will produce zero tailpipe emissions. When the auxiliary power unit (turbine) kicks in to charge the batteries, it will burn CNG.

University committed to sustainability

UCSD first purchased four CNG vehicles in 1995 in an effort to reduce emissions and utilize domestic fuel sources. Since then, UCSD has implemented green practices at all levels of campus operation, and has been recognized for its energy-efficient new construction, renovation and retrofit projects, energy conservation and alternative transportation programs.

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According to Jim Ruby, UCSD Fleet Manager, the campus' alternative transportation program plays an important role in the university's commitment to energy and environmental conservation.

"Sustainability is a huge issue on this campus," Ruby said. "CNG technology is a large part of this; it is a cleaner burning fuel that meets the environmental goals of UCSD." UCSD is building an on-site CNG station with completion planned for 2010.

Initial learning curve offset by long-term advantages

When the original CNG buses were purchased, there were a number of obstacles to overcome, including vehicle maintenance and performance.

"Many of the drivers felt that the vehicles were underpowered, and the up-front costs were very high," Ruby said. "To solve this, we purchased newer models with higher performance engines, and the results were significant."

Ruby and his team quickly found that the higher initial purchase price of the vehicles was offset by the advantages of CNG's domestic availability and reduced tailpipe emissions.

"My biggest goal, besides cleaning up the air, is to keep our fueling domestic," said Ruby. "Nearly 95 percent of all natural gas is domestic, or at least within North and South America." "It is cheaper, it is cleaner, and we are not relying on other nations to obtain it."

UCSD looks forward to the delivery of the new all electric hybrid CNG buses. They will provide a "rolling laboratory" for data collection concerning the best of two technologies: full electric operation with fast chargers for the lithium ion battery packs and the natural gas fired turbine for electrical generation for mileage range extension.

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