

# NATURAL GAS FUEL

THE GREEN STANDARD FOR SUSTAINABILITY



# NATURAL



World's largest LNG truck fueling station



IN A WORLD WHERE ABSOLUTES ARE ELUSIVE, this is not in question: we use far too much oil. So much, in fact, that the disparity in petroleum-based fuel consumed in North America and the amount produced here is a considerable drag on the economy...at a time when the economy can ill afford the challenge. Dependence on imported oil is a substantial contributor to U.S. balance of trade deficits and an increasing energy security concern.

Beyond this are serious health implications. According to the American Lung Association's *State of the Air 2010* report, more than 175 million Americans – a full 58 percent of the population – live in areas with unhealthful levels of air pollution. With transportation the single largest contributor to poor air quality, it's clear that a change in strategy is long overdue. Clean Energy Fuels (NASDAQ: CLNE) is committed to facilitating that change.

## CLEAN, GREEN, AND RENEWABLE

The growing interest in cleaner, low emission fuels has taken many forms in recent years. One of the most important is an increasing focus on natural gas, the cleanest alternative fuel available and, importantly, a fuel found in abundance in the United States. Seal

Beach, California-based Clean Energy Fuels, the largest provider of natural gas fuel for transportation in North America, is working on many levels to support increasing numbers of natural gas powered vehicles on our highways.

The U.S. Department of Energy's National Renewable Energy Laboratory points out that natural gas vehicles produce up to 95% less particulate matter (PM) and carbon monoxide (CO) emissions than diesel and gasoline-powered models, and up to 80% less nitrogen oxide (NOx) emissions. Plus, natural gas fuel reduces CO<sub>2</sub> greenhouse gas emissions in cars by 30 percent and in medium- to heavy-duty vehicles by 23 percent, according to the California Energy Commission's Well to Wheels study.

Presently, it's estimated there are 110,000 natural gas vehicles on U.S. roads with more than 12 million NGVs operating worldwide. Light-duty natural gas vehicle choices in the United States are much more limited than in many regions of the world, although this is expected to change as more automakers make natural gas-ready models available to the market.

A primary emphasis in the U.S in recent years has been the transition of heavy-duty vehicles to natural gas. This is a logical move with

# GAS

## DRIVING A CLEANER AND MORE SECURE FUTURE



IMW compressors in Alexandria, Egypt



BAF van conversions in Dallas, Texas

huge potential for petroleum displacement, and it's in process now. In fact, Clean Energy fuels over 20,000 natural gas vehicles daily at over 200 locations in the U.S., ranging from transit buses and commercial trucks to solid waste haulers and airport shuttles.

The natural gas choice gets even more compelling with renew-

ing stations, and owns and operates LNG production plants in Willis, Texas and Boron, California. These plants have a combined capacity of 260,000 LNG gallons per day and are designed to expand to 340,000 LNG gallons per day as demand increases.

To assist in the expansion of light- and medium-duty natural gas

## CLEAN ENERGY'S POSITION AS A GLOBAL LEADER IN THE EXPANDING NATURAL GAS VEHICLE MARKET IS STRENGTHENED BY THE DIVERSITY AND INTEGRATION OF ITS OPERATIONS.

able gas, which Clean Energy provides with a landfill gas facility it owns and operates in Dallas, Texas. Here, the company produces renewable methane gas, also known as biomethane, that's available to Clean Energy stations through the nation's gas pipeline network.

### STRATEGIC ACQUISITIONS FUEL GROWTH

Clean Energy's position as a global leader in the expanding natural gas vehicle market is strengthened by the diversity and integration of its operations. The company constructs and operates liquefied natural gas (LNG) and compressed natural gas (CNG) vehicle fuel-

vehicles, in 2009 Clean Energy acquired its wholly owned subsidiary, BAF Technologies, Inc., a leading provider of natural gas vehicle systems and conversions. Examples of BAF's recent activities include a conversion order for 500 Ford E-Series Vans to CNG for Verizon Communications and conversion of over 2,000 Ford E-Series Vans to CNG for AT&T.

A major expansion into the world market was made in 2010 with the acquisition of Clean Energy's wholly owned subsidiary, IMW Industries, Ltd., a leading Canadian-based supplier of compressed natural gas equipment for vehicle fueling and industrial applications. IMW has more than 1,000 installations in over 20 countries.

# MOVING FORWARD

## SMARTER AND MORE AFFORDABLE WITH NATURAL GAS



Shuttle buses at Sky Harbor Airport, Phoenix



A SMARTER PUBLIC/MASS TRANSIT SYSTEM starts with a smarter fuel. From Washington DC to Santa Monica, California, transit systems are benefitting from the many advantages of natural gas as a superior fuel for moving people in city and urban environments. Clean Energy currently fuels more than 5,000 natural gas buses each day in America. This logical, domestically sourced alternative fuel choice is growing at an impressive pace, and today 25 percent of all the new transit buses on order are natural gas powered.

Natural gas is less expensive than petroleum, reducing fuel costs for natural gas transit operators. Depending on location, transit operators often save between 50 cents to \$1 per gallon compared to the cost of fueling with diesel. Natural gas is a widely available domestic fuel with current supply estimates of 120 years or more. This long-term outlook and domestic availability provides natural gas fleet operators the confidence to budget their operating costs with less concern caused by unstable and at times unpredictable world petroleum markets, which have brought wild price fluctuations and historically high diesel and gasoline costs to the pump in recent years.

### 'GREEN' TRANSPORTATION

When it comes to moving people around an urban landscape, a clean, efficient transit bus is hard to beat. One bus can displace dozens of commuter cars, relieving congestion and greatly reducing pollution. Combining this efficiency of movement with an inherently clean-burning domestic fuel brings significant benefits.

Both CNG and LNG burn exceptionally clean in transit operation. Natural gas buses emit far less CO<sub>2</sub> greenhouse gas than internal combustion engines that are typically fueled by diesel. The prospect of meeting more stringent clean air standards has many transit agencies converting their fleets over to natural gas powered vehicles.

Among the many major metropolitan transit systems working with Clean Energy to operate natural gas public transportation is the Los Angeles Metro Public Transit Agency (METRO). In a new 10-year contract with this Southern California transit agency, Clean Energy will upgrade, operate, and maintain CNG stations that service bus fleets in four additional METRO divisions, making Clean Energy the sole supplier for METRO's fleet. METRO operates 2,500 natural gas buses in its fleet, the nation's largest, and its fuel usage is expected to exceed 40 million gasoline gallon equivalents (GGE) annually.

# ORWARD

## WAYS TO TRAVEL



Airport parking shuttles at Dallas, Texas



LNG trucking at Houston, Texas

Another example of transit going 'green' is the City of Phoenix Public Transit Department in Arizona, which has contracted with Clean Energy to supply the city's Valley Metro Transit Fleet with LNG fuel. Clean Energy is supplying some six million GGE of fuel annually to three fueling sites to power the transit agency's fleet of more than 400 natural gas buses. Phoenix deploys the largest fleet of clean-burning LNG transit buses in the U.S. to cover its 517 square miles of area plus neighboring cities.

### MORE HEALTHFUL ENVIRONMENT

Low emission, natural gas transit buses represent an ideal transportation solution because of their regular operation in confined and often

vehicles operating in airport corridors and requirements for running on clean alternative fuels.

Many airport-related transit operations contract with Clean Energy for natural gas fleet services. One recent example is SuperShuttle International, a leading shared-ride ground transportation operator that services 33 major airports nationwide. The five year fuel agreement calls for SuperShuttle vans to fuel at existing and future public access Clean Energy natural gas stations at airports including Dallas/Fort Worth, Denver, New York City, Phoenix, and the California cities of Los Angeles, Burbank, Ontario, Orange County, San Francisco, and San Diego.

The trend toward greater use of alternative fuels in mass transit is

## THE TREND TOWARD GREATER USE OF ALTERNATIVE FUELS IN MASS TRANSIT IS SURE TO CONTINUE AS AIR QUALITY, ENERGY DIVERSITY, AND QUALITY OF LIFE ISSUES REMAIN TOP-OF-MIND.

densely populated cities where localized emissions are a very real issue. Air quality impacts are also magnified in areas around airports because of the non-stop nature of airport support vehicle operations, plus the passenger shuttles, taxis, and buses that continually circle an airport's perimeter. This has prompted increasing regulation of transit

sure to continue as air quality, energy diversity, and quality of life issues remain top-of-mind. Urban settings where transportation's environmental impacts are under greater scrutiny present an opportunity for natural gas to aid fleets in meeting tighter regulations while fostering environmental stewardship at the same time.

# GREENER



Taxis in San Francisco, California



IT IS DIFFICULT TO COMPREHEND the reach that fleet vehicles and the trucking industry have on our daily lives. From the raw materials used to produce products to the food that lines our grocery store shelves, everything moves by fleet vehicles at least once – and often several times – before it reaches us. Clearly, a fundamental energy shift for these vehicles can have a great impact on the environment and our over-dependence on foreign oil.

Nearly all heavy over-the-road trucks and many shorter run fleets are powered by compression ignition diesel engines. There are important reasons for this. These engines are by design efficient, durable for the long haul, and offer operating characteristics like substantial low-end torque that allows transporting heavy loads with ease.

The imperative to create 'greener' commercial trucks should not require displacing this proven engine design, but rather improving it to allow operation on a better and cleaner-burning fuel... one that's domestically sourced rather than transported from half-a-world away. Natural gas is the obvious choice. That's why engine manufacturers have developed natural gas variants of popular diesel engines to accomplish the job.

Clean Energy focuses on providing natural gas fuel, CNG and LNG stations, and related services to the strategically important commercial truck segment, bringing solutions that allow operation on clean, domestically produced natural gas. No transportation segment can have a larger and more direct impact than fleet operations and the trucking industry.

## MAINSTREAM FLEET SOLUTIONS

An example of the importance of natural gas vehicles as an emissions reduction strategy is found at the Ports of Los Angeles and Long Beach, California, which handle 40 percent of all container exports and imports to the United States. Older diesel powered trucks operating here have been a major contributor to smog and air pollution in the greater Los Angeles Basin. To remedy this, the ports are requiring the replacement of nearly 17,000 trucks with ones offering lower emissions, such as those powered by clean-burning natural gas.

Supporting the goals of the San Pedro Bay Ports' Clean Air Action Plan (CAAP) and Clean Truck programs is the world's largest natural gas truck fueling station, designed and built by Clean Energy, located adjacent to the Ports of Long Beach and Los Angeles. The

# FLEETS

## REDUCING PETROLEUM USE AND CO<sub>2</sub>



Refuse hauling in Ft. Lauderdale, Florida



LNG truck fueling at Port of Long Beach

24-hour public access station features two 25,000-gallon LNG storage tanks, six LNG dispensers, and two CNG dispensers. Natural gas powered trucks have been a major contributor to the impressive improvements in air quality at the ports and a key reason they have been able to reach an 80 percent reduction in air pollution two years ahead of schedule.

## NO TRANSPORTATION SEGMENT CAN HAVE A LARGER AND MORE DIRECT IMPACT THAN FLEET OPERATIONS AND THE TRUCKING INDUSTRY.

With results like these, it's no wonder that major medium- and heavy-truck manufacturers are now offering EPA-compliant CNG and LNG models right from the factory. This growing availability of natural gas trucks is finding major regional and national trucking fleets increasingly choosing the natural gas option.

Clean Energy has made a major commitment to build, own, and operate CNG and LNG fueling facilities at specific Pilot Flying J truck travel centers nationwide to service this growing need. Pilot Flying J is the largest truck fueling operation in the United States with over 550 locations in 43 states and six Canadian provinces.

### LOWER OPERATING COSTS

Fleets across the nation are adopting natural gas fuel for both environmental and economic reasons, among them solid waste hauler providers and municipalities. One example is major solid waste operator Republic Services, which has contracted with Clean Energy to support its rapidly growing natural gas fleets with turnkey LNG

fueling solutions for several Republic divisions in California. The LNG fuel requirement to support these operations is expected to exceed 3.5 million LNG gallons annually.

Switching to a natural gas powered fleet offers environmental benefits and also provides long-term fuel savings that go directly to the bottom line. Natural gas powered trucks deliver excellent performance, so there is no loss of productivity in fleet operations. Plus, natural gas is cleaner to handle than petroleum fuels, which makes a fleet's entire operation a healthier environment for everyone.

# FUELING CHANGE

USING AN ABUNDANTLY AVAILABLE DOMESTIC FUEL



CNG government fleet trucks in New York



Fueling CNG van in Seattle, Washington

THE FUTURE FOR NATURAL GAS TRANSPORTATION in the United States appears brighter than ever, driven by the need to meet increasingly stringent emissions standards and the very real potential to decrease dependence on petroleum fuels. Over-reliance on petroleum was underscored in the most high-profile way not long ago with historically high gasoline and diesel prices that shocked consumers and placed additional stress on businesses already dealing with a challenged economy.

## THE BUSINESS CASE FOR NATURAL GAS

The natural gas option can be implemented today. CNG and LNG technology is mature and available without the need for extensive, and expensive, research and development, in stark contrast to some other alternatives that require technology breakthroughs and the need to accept significant operating limitations.

Clean Energy actively works with fleets in the transition to natural gas as a strategy to achieve more environmentally compatible operations and decrease operating costs. Many clients have turned to Clean Energy to design, build, operate, and maintain their private fueling sites, enabling them to remain focused on their core fleet activities.

The Clean Energy model works, as experience with major clients across the country bears out. The transition to natural gas can be seamless, and for qualifying fleet clients it may be possible at no capital invest-

ment. Clean Energy has worked with many qualifying fleets to provide 100 percent of the cost to design, build, and construct natural gas fueling stations in exchange for affordable, long-term fueling contracts. CE Finance, a wholly-owned Clean Energy subsidiary, also provides creative financing solutions for natural gas fleet customers in the refuse, transit, trucking, shuttle, taxi, and limousine industries. Assisting customers with

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accessing potential Federal and local tax credits is part of the service.

Enabling a straightforward switch to clean natural gas is Clean Energy's mission. Removing obstacles by offering everything from station construction and long-term fuel contracts to natural gas vehicle conversions and assistance with fleet vehicle financing is part of the plan. This is why Clean Energy is the industry leader in natural gas for transportation.



For additional information about natural gas and Clean Energy Fuels, visit [cleanenergyfuels.com](http://cleanenergyfuels.com)

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