

NATURAL GAS FOR TRANSPORTATION

| *The cleaner, cheaper, domestic alternative fuel choice* |



NATURAL GAS

THE PROVEN 'ALTERNATIVE' FUEL



this as well. Expensive fuel brings higher operating costs that ultimately get passed along to consumers, either in the form of fuel surcharges or greater costs for goods and services. Whether it's cultivating crops, transporting groceries to market, or delivering packages across country, the effect of high fuel cost reverberates throughout the economy in ways that are felt by us all.

Even as the cost of fuel is top of mind, another longstanding transportation imperative is also at play – the need to lessen environmental impact. Improving air quality has long been a major focus as the federal government, states, and cities have sought to meet federal air quality standards, in large part through cleaner transportation. This has gathered even more momentum in recent years with the growing concern about transportation-related CO₂ greenhouse gas (GHG) emissions and their potential impact on climate change.

CHANGING THE DYNAMIC

The need to act is clear. But in what ways? To many, the necessity of dealing with high gas prices has prompted changes in driving habits. Driving less – whether consolidating a day's activities into sequential trips, carpooling, or using mass transit – has been widely embraced. According to the Department of Transportation (DOT), Americans drove 15 billion miles less in August 2008 than the same month year before. Total vehicle miles traveled in 2008 are projected to be down 67 billion miles from 2007.

Driving fewer miles has a direct environmental impact as well. As tailpipe emissions decrease, air quality naturally improves. DOT also estimates that GHG emissions fell by about 9 million metric tons during the first three months of 2008.

Clearly, conservation and intelligent planning make a difference. But where conservation leaves off there must be a cohesive plan, a vision. Times will change and the downturn in vehicle miles traveled will certainly correct itself in a growing economy. Energy options are needed that allow businesses to operate in profitable ways, for cities to stay within budget while providing essential services and limiting environmental impact,

WE LIVE IN A TIME OF CHANGE, when much of the energy we've taken for granted to power our cars, our public transportation systems, and the needs of industry no longer comes with an assurance of reasonable cost. Simply, the cheap oil that has fueled the nation's growth is now a footnote in history. This fundamental change is underscored by the wildly fluctuating price of petroleum along with historic highs in the cost of a gallon of gasoline and diesel, all influenced by growing worldwide demand, tight refinery capacity, and diminishing supplies.

To the average consumer this means an unwelcome and sustained strain on the budget. Fleets of all types experience

and families to live their lives without transportation costs holding them hostage.

A CLEAN ENERGY VISION

Clean Energy Fuels, Inc. has such a vision. For the past decade, Seal Beach, California-based Clean Energy has focused on bringing the benefits of clean air transportation to commercial fleets, taxis, small businesses, and consumers. The nation's largest provider of natural gas for CNG (compressed natural gas) and LNG (liquefied natural gas) vehicles, Clean Energy designs, builds, operates, and maintains the latest in natural gas fueling stations at 180 strategic locations in the U.S. and Canada. Offering more affordable and cleaner-burning natural gas motor fuel to these areas has also brought recognition and



CLEAN ENERGY OPERATES SEVEN STATIONS IN THE SAN FRANCISCO BAY AREA THAT NOT ONLY SERVE BUS AND COMMERCIAL FLEETS, BUT ALSO OFFER PUBLIC ACCESS.

awards from business and environmental organizations alike – proving that environmental goals are achievable in ways that also benefit the bottom line.

An example of Clean Energy's focus includes its activities in the San Francisco Bay Area, where the company operates seven stations that not only serve bus and commercial fleets, but also offer public access. While light-duty natural gas vehicles represent but a small percentage of the 14,000 vehicles fueled daily at Clean Energy stations, consumer interest in this clean-burning alternative fuel is growing. Increased demand for Honda's Civic GX natural gas vehicle – the cleanest internal combustion production model on the market – is proof of that.

Although considered an alternative fuel, natural gas is much more mainstream than 'alternative.' After all, it's been widely used in homes for heating and cooking for quite some time. Natural gas is also an abundant fuel in America and its widespread use is not dependent on breakthroughs of any kind to prompt widespread use. There are now about 150,000 natural gas vehicles in the U.S., a small number compared to the over 8 million natural gas vehicles in Europe, the Middle East, South America, and Asia. With the right momentum and vision, that's a situation poised for change.



MOVING US IN CLEAN AND EFFICIENT WAYS



THE BENEFITS OF ALTERNATIVE FUEL TRANSPORTATION can be appreciated in unexpected ways, like renting an alternative fuel vehicle during a business trip or noticing a large commercial truck marked “clean natural gas” pass by with no apparent exhaust. Often, first-hand experience comes while riding in an airport shuttle, a transit bus, or a cab that just happens to be operating on clean natural gas. In most cases, riders are unaware they’ve contributed toward cleaner air simply by taking a ride. Natural gas operates so seamlessly in these vehicles there are simply no clues this alternative fuel is being used in place of gasoline or diesel, other than the absence of any visible tailpipe emissions.

Buses of all types – urban mass transit, school buses, and shuttle buses – are an ongoing natural gas success story. Fuel costs are lower than that of gasoline and diesel counterparts, presenting one compelling reason why so many agencies and fleets operate

their buses and other vehicles on this clean fuel. For many, clean air benefits are an even bigger factor. In fact, many agencies and fleets have chosen natural gas as the most economical way to meet federal, state, and local environmental mandates.

Industry estimates are that over 10,000 natural gas transit buses are now operating with 125 transit agencies in the U.S., about 17 percent of all transit buses in service. Today, about 22 percent of new buses ordered are natural gas powered.

IDEAL FOR AIRPORTS

Considerable transportation activities occur in support of airport operations seven days a week as travelers move about between flights, hotels, rental car agencies, and points beyond. This can bring substantial air quality challenges and mandates for agencies and fleets involved in these operations. For this reason, natural gas

is fast becoming the fuel of choice for many fleets operating at and around many of the busiest airports around the country.

One example of how natural gas is being implemented at airports is presented by Oakland International Airport, where 26 new CNG-powered AirBART and rental car shuttle buses will be deployed beginning in 2009, replacing older diesel-powered models. The CNG buses will support the airport’s Rental Car Center shuttle service and also transport airport users between the Bay Area Rapid Transit (BART) Coliseum/Oakland Airport Station and airport terminals. These vehicles will be fueled at Clean Energy CNG stations at Oakland International Airport’s North Field and its nearby San Leandro Street locations. An additional station is located near Oakland’s Jack London Square. Replacing diesel-powered buses with CNG models will continue to decrease air pollution and greenhouse gas emission levels in the airport area.

In the Atlanta area, Clean Energy has been contracted to design, construct, and manage a public access CNG fueling station near the entrance to Atlanta’s Hartsfield-Jackson International Airport, among the busiest in the world. The station will serve a range of light, medium, and heavy duty vehicles, including airport parking, hotel, and employee CNG shuttle buses. Clean Energy is also building and managing a large-scale public access CNG fuel station at Will Rogers World Airport that will serve CNG-powered airport transit and shuttle



vehicles along with other natural gas fleets in the area. This trend is growing across the country as airports and the cities surrounding them seek solutions to lessen the environmental impact of the fleets operating in the region. Already, Clean Energy is now providing natural gas fueling for vehicles at 20 major U.S. airports.

CLEAN SCHOOL BUSES

Natural gas school buses are now widely used around the country as an alternative to diesel buses. A distinct advantage is operation free of the diesel exhaust that has been found to be especially harmful to children. Natural gas school buses emit 90 percent less soot than conventional new diesel-powered buses and are more than 98 percent cleaner than older diesel buses. Many fleets have found that the lower operating costs of natural gas school buses can help recoup their initial investment in transitioning to natural gas.

A CLEANER PATH FOR GOODS AND SERVICES



IN CLEAN ENERGY'S VIEW, the path to bringing large numbers of natural gas vehicles to U.S. highways is clear. It begins with commercial fleets because that's where the biggest difference can be made now in displacing petroleum use and achieving meaningful emissions reductions. This is also where market demand is highest. Fleets have very specific timetables for replacing older vehicles and every reason to update their operations to natural gas to meet clean air mandates. Plus, the growing move toward decreasing carbon emissions also speaks to the advantages of natural gas. In fact, vehicles fueled by natural gas emit about 30 percent fewer greenhouse gas emissions than diesel fueled vehicles, according to the California Energy Commission.

The high price of gasoline and diesel fuel is prompting many commercial operators to incorporate natural gas vehicles into their

fleets. Natural gas is historically lower in cost than gasoline or diesel. This past summer in Southern California, for example, a gallon-equivalent of natural gas at public stations was about \$1.40 to \$1.80 less than a gallon of gasoline or diesel. The cost per gallon for fleets with natural gas fueling contracts was even less. This disparity provides a powerful incentive for natural gas fleet vehicles.

WASTE HAULERS CLEAN UP

Refuse trucks operate in our cities every day and are a familiar sight in our neighborhoods. With their continuous stop-and-go operation, waste haulers are an obvious source of diesel exhaust pollution amid the homes and businesses along their routes. These trucks operate along defined routes and are refueled at a central refueling facility, which means that an extensive infrastructure is

not required. This presents an ideal application for natural gas.

Municipalities across the nation are finding that cleaner, quieter natural gas refuse trucks and recycling collection carters fit their needs. From Sacramento, Fresno, and Los Angeles in California to Brookhaven, New York, San Antonio, Texas, and Seattle, Washington, refuse operators in increasing numbers have turned to Clean Energy to provide long-term natural gas fueling for their LNG and CNG waste collection trucks. The impact is significant. In Brookhaven alone, the Long Island town estimates that over the first seven years of operation, using natural gas to power its trucks will displace 4.9 million gallons of imported diesel fuel, reduce nitrogen oxide emissions by 304 tons and particulate matter by 12 tons, and reduce greenhouse gases by over 20 percent.

PORTS GO "GREEN"

The country's major ports are hubs of activity that not only generate economic growth, but substantial air pollution as well. This has prompted a close look at how port operations can be modified to have less environmental impact on the communities that surround them.

Setting the pace is the San Pedro Bay Ports' Clean Air Action Plan (CAAP), which aims to reduce harmful diesel emissions from port sources in the greater Los Angeles area by nearly 50 percent in five years. The CAAP anticipates the replacement of more than 16,000



older diesel trucks with several thousand new LNG trucks, as well as new or converted diesel trucks that meet specifications for reduced particulate matter and nitrogen oxide emissions. The move to cleaner LNG trucks will significantly decrease harmful greenhouse gas (CO₂), NO_x, and particulate emissions. Clean Energy has already opened the first of several major new LNG fueling stations specifically to support these new port drayage trucks.



NATURAL GAS PROVIDES SOLUTIONS TODAY

THE ADVANTAGES OF NATURAL GAS VEHICLES are clear: Extremely clean tailpipe emissions, fewer greenhouse gas emissions, lower operating costs, petroleum displacement, and the ability to run on abundant natural gas. As the nation continues to depend on imported oil to a greater degree every year and air quality challenges loom, these vehicles promise to become an even more important part of the solution. Similarly, so will a growing network of stations to refuel them like those provided by Clean Energy.

“We are making this strategic investment to help bring new, efficient, clean natural gas vehicles to the market in the United States,” says Andrew Littlefair, Clean Energy President and CEO.

NATURAL GAS VEHICLES ARE PLAYING AN IMPORTANT ROLE IN MOVING TRANSPORTATION TOWARD A MORE SUSTAINABLE FUTURE.



Andrew J. Littlefair
*President and CEO
Clean Energy
Co-Founder with T. Boone Pickens*

“Demand for natural gas vehicles is surging, particularly with the high cost of petroleum fuel and the savings to be gained by using natural gas fuel.”

Clean Energy provides its customers with an array of options including turnkey fuel agreements, fixed and stable natural gas fuel prices, financing of new and existing stations, and the design and construction of stations. The company aids customers with a grant writing service to help the transition to natural gas vehicles.

Looking ahead, natural gas vehicles are also playing an important role in moving transportation toward a more sustainable future. For example, biomethane – a renewable methane gas

that comes from landfills, wastewater treatment facilities, and agricultural operations – can be converted into natural gas to power vehicles.

“Use of biogas as a vehicle fuel has enormous potential to both reduce carbon emissions and reduce our dependence on foreign oil by displacing the use of petroleum fuel,” says Littlefair. Refuse companies, in particular, are seeking help from Clean Energy in making the connection between the methane gas from their landfills and its use for transportation fuel for their truck fleets.

Beyond biogas, natural gas serves as a bridge to hydrogen transportation. In a project with General Motors, Clean Energy has developed a hydrogen filling station at its natural gas facility at Los Angeles International Airport. Drivers will refuel Chevrolet Equinox fuel cell vehicles here as part of this automaker’s “Project Driveway” market test. GM and Clean Energy are also exploring other opportunities to expand the hydrogen infrastructure, a move that fits well with Clean Energy’s overall strategic vision.

“Clean Energy has dedicated itself to being a leader in the energy supply chain for fleets across the U.S.,” says Littlefair.



For additional information about natural gas and Clean Energy Fuels, visit www.cleanenergyfuels.com

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