SAME FUEL — NATURAL GAS — FOR DIFFERENT WHEELS

Guess what these strikingly diverse vehicles have in common: Heavy duty UPS trucks in Southern California; school buses in Long Beach, NY; AT&T’s new Ford vans; NYC Parks Department cars; Washington DC transit buses; refuse trucks serving Hamilton, NJ; and taxis planned for Chicago, New Haven and Puget Sound.

The answer may surprise you. Largely unheralded as the pioneers they are, these vehicles exhibit the wide variety of trucks, buses, vans, and cars that now come equipped with natural gas engines, or can be retrofitted to burn natural gas fuel. (See photos, pages 4 and 5)

Vehicles powered by domestic natural gas achieve independence from foreign oil, a 20-30% reduction in greenhouse gas emissions, and the virtual elimination of health-damaging soot. Beyond realizing these immediate benefits, every vehicle that runs on natural gas can, supplies permitting, tank up with a fully sustainable fuel that is starting to be produced commercially in the US—biomethane. Biomethane is chemically identical to natural gas. However, because it is produced from organic wastes, e.g., at landfills, it is renewable and carbon-neutral and is, in fact, the first commercially viable sustainable fuel in the world.

At last, ample on-the-road evidence shows that natural gas—and its “green twin” biomethane—can meet the wide-ranging commercial and performance needs of US trucks and buses of all classes, while at the same time advancing national energy and environmental goals. Moreover, a vast web of underground pipelines is already distributing natural gas to almost every corner of the country, ready to supply fueling stations as fast as these are built. And, although the lack of fueling facilities still impedes widespread conversion to natural gas fuel (see below),

NEW JERSEY GETS ON BOARD WITH ALTERNATIVE FUELS

Hamilton Township, a community of 92,000 residents, took a bold step when it went out for bids on its waste hauling contract in 2009. It was the first town in New Jersey to specify haulers using the cleanest trucks available.

In the fall, the Township celebrated the arrival of nine shiny black compressed natural gas (CNG) refuse trucks operated by the winning bidder, Central Jersey Waste & Recycling Co. (CJW). Community residents, according to Michael Fiumefreddo, Vice President of CJW, were “excited and pleased. Some stopped the new trucks to ask drivers how they work and to comment on how much quieter they are than the diesel trucks.”

Hamilton Gets Fuel Security and Cleaner Air

With the nine CNG trucks, there will be no more worries about the unpredictable price of diesel fuel.

Network of CNG Refueling Stations across the US

Source: US DOE Environmental Information Administration

This map shows the locations (displayed overlappingly) of the 803 fueling stations that supply compressed natural gas fuel (CNG). Of the 97 stations in NY State, the large majority are used exclusively by public agency or utility vehicles. Within 50 miles of Manhattan, 16 stations that are owned by National Grid (7), Con Edison (4), Clean Energy (3), and BP (1) provide station access to the public.
A LETTER FROM THE PRESIDENT
Joanna D. Underwood

Energy Vision opened its doors in 2007 with a focus on moving this country’s transportation systems away from their costly, oil-addicted ways to the cleaner petroleum-free fuels of the future. Since then, we have made exciting progress. Our research identified the area of greatest opportunity to be a shift for local bus and truck fleets from petroleum-based diesel fuel to natural gas: cleaner, lower in carbon, and domestically plentiful, freeing these fleets from their risky reliance on foreign oil and its volatile prices.

From a starting point of “0” new-generation natural gas refuse trucks in the Northeast, we worked to educate communities in New York, New Jersey and Pennsylvania about making this shift and connected communities with alternative fuel industry leaders. So far, eleven cities and communities, including Philadelphia, PA, Smithtown and Brookhaven on Long Island, NY, and Newark and Hamilton Township in NJ either own or ordered more than 700 of these vehicles. And the momentum is growing.

“[The time has come to go all out in advancing what we see as the first phase of the US green fuels revolution.”

EV’s research also found natural gas to be an important first step toward even better gaseous fuels, especially to a renewable and carbon-neutral form of this gas, called “biomethane,” which is made by collecting and refining the gases generated in landfills and in other organic waste sites. Biomethane is in growing use in Sweden, Germany, France and Switzerland. EV’s challenge is to promote its use in the US.

Looking ahead, we believe that the time has come to go all out in advancing what we see as the first phase of the US transportation revolution: Convert to natural gas the 9 million or so trucks and buses that consume 20% of US highway fuel, emit 26% of highway greenhouse gases, and heavily pollute urban air, contributing to elevated asthma, cardiovascular and cancer rates. Elsewhere in the world, the natural gas revolution in transportation is accelerating. The number of vehicles has skyrocketed globally since 2000 from half a million to more than 10,500,000. Countries as disparate as Argentina, Pakistan, Iran, Brazil, India, Italy and China are in the vanguard. Ironically, while much of the technology was developed first in North America, the US has only about 100,000 natural gas vehicles, not even 1% of the world total.

In 2010 EV seeks to move the US toward a leadership role in this crucial transportation arena. We will advise leaders in the Northeast, especially in the NYC metropolitan area, on plans to shift municipal fleets to natural gas. And we will intensify our policy-related outreach, with a particular focus on strengthening the federal incentives for vehicle conversions to natural gas, beginning with the passage of the Natural Gas Act, now pending in Congress.

Using just a fraction of the already developed natural gas supplies in this country could power all of our urban bus and truck fleets. As the refueling network expands, more fleets in ports and in the long haul trucking sector will be able to get on board. Most important, as municipal fleets convert, markets and incentives for building the biomethane industry will expand, opening the door for use of a sustainable fuel that involves no drilling at all.

EV’s Board of Directors, staff and I thank the members and donors whose support has made our work possible and will enable EV to contribute more broadly in 2010 to a healthy sustainable energy future.

J.D.U.

EV ON THE ROAD

Sept. 18th. EV comments on the New York State Energy Plan urged a stronger focus on transportation since New York relies on foreign oil (88%) more than any other state and projects a 40% rise in greenhouse gases by 2025 mainly due to an increase in vehicles. Vehicles are also a key reason why 70% of New Yorkers live in areas where air quality violates health standards. (See full comments on EV website.)

Oct. 23rd. EV President Underwood gave an opening talk on “Ending the Era of Oil in Transportation,” and EV Vice President Gail Richardson, spoke on biomethane’s benefits at the 13th annual “Advancing the Choice” Conference, sponsored by the Greater Long Island Clean Cities Coalition.

Nov. 10th. EV celebrated the opening of the Clean Energy natural gas refueling station in Trenton, New Jersey which will refuel the first 100% CNG refuse fleet in the State (in Hamilton). (See page 1)

Nov. 12th. Dr. Gail Richardson (below) made the case for a natural gas-to-biomethane strategy for urban service fleets on Long Island, as a speaker on a biofuels panel at the annual conference of Stonybrook University’s Advanced Energy Research & Technology Center (AERTC), attended by 1000 business, science and government leaders.

EV IN THE PRESS

Refuse trucks are heavy fuel consumers because of their “stop and start” mode of operation, and the CNG trucks will replace 112,320 gallons of diesel a year with a secure domestic fuel. The trucks will reduce greenhouse gas emissions by 23%. Further, because natural gas is mostly hydrogen, the CNG trucks emit virtually none of the particulates (soot) or toxic contaminants related to petroleum-based diesel and much lower levels of smog-forming nitrogen oxides. So Hamilton residents and the drivers of CJW’s trucks will be breathing much healthier air.

**Federal Funds Jump Start More Action in NJ**

Additional good news for CJW: Because of the 2009 federal stimulus funds which covered 100% of the higher cost of each new natural gas truck ($42,000), CJW decided to replace not just nine but 36 more of its 80 diesel trucks with natural gas models so it could offer the cleanest refuse service to other communities. Federal funds also enabled California-based Clean Energy, a leading natural gas refueler, to build not only a “time-fill” station on CJW’s property in nearby Trenton to refuel the Hamilton trucks overnight but a second station (“fast-fill”) on the same site which can fuel 50 to 100 more trucks. The public availability of fuel at this station may inspire more nearby towns, corporations, bus transit companies and taxi fleets to consider natural gas vehicles.

Four 2009 natural gas fleet initiatives, in addition to Hamilton Township’s, were launched in New Jersey, to take advantage of the stimulus funding. New Jersey won centrally located refueling hubs serve increasing numbers of urban fleets, and strategically sited stations along some Western interstates, including I-5, I-80, and I-15, support long distance trucking by natural gas powered tractor-trailers.

In short, the means are now available to carry out the first stage of a green revolution in heavy duty transportation—namely, to convert diesel trucks and buses in the country to natural gas, beginning with urban fleets. Of the approximately 250 million vehicles on US highways, only about 9 million (less than 4%) are diesel trucks and buses. Yet this tiny minority of engines burns 20% of oil-based highway fuel and emits about 26% of CO2 from mobile sources. City by city and town by town, communities across the country can now achieve the measurable and economically realistic goal of converting local fleets to natural gas and thus, step by step, open up markets that will drive the commercial development of biomethane made from organic wastes.

**A Surge in Taxi Fleets**

Federal stimulus funding of $300 million was recently awarded to 25 of the US Department of Energy’s Clean Cities Coalitions, including those on Long Island, in upstate New York, and in New Jersey. Of the 9,000 vehicles to be partially financed with these funds, 3000 will burn natural gas, more than 1500 of which are taxis. The surge of investments in natural gas taxis may signal the beginning of a significant trend. In contrast to personal cars, taxis like other light and heavy duty fleets in metropolitan areas, often travel routes that can be served by one or more fueling hubs, thus making new infrastructure development affordable. The greater the number of urban natural gas fleets, the larger the markets for natural gas fuel; and the larger these fuel markets, the more quickly local entrepreneurs will have financial incentives to turn local organic waste streams into the renewable form of natural gas, biomethane.

**287 CNG Refuse Trucks and Buses and 4 Refueling Stations in NJ Supported by Federal Stimulus Funds**

<table>
<thead>
<tr>
<th>Natural Gas Initiatives</th>
<th>CNG Vehicles</th>
<th>Diesel Fuel Displaced/ Year</th>
<th>New CNG Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamilton Township, CJW</td>
<td>40 CNG trucks</td>
<td>499,200 gals</td>
<td>1*</td>
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<tr>
<td>Newark</td>
<td>25 CNG trucks</td>
<td>130,000 gals</td>
<td>1*</td>
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<tr>
<td>Camden, Waste Management</td>
<td>17 CNG trucks</td>
<td>137,700 gals</td>
<td>1*</td>
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<tr>
<td>Atlantic Cy. Utility Authority</td>
<td>15 CNG trucks</td>
<td>156,000 gals</td>
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<tr>
<td>Atlantic City Jitney Assn</td>
<td>190 CNG buses</td>
<td>969,000 gals</td>
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</tr>
<tr>
<td>Total:</td>
<td>287 Vehicles</td>
<td>1,891,900 gals</td>
<td>4</td>
</tr>
</tbody>
</table>

* Public access stations
NATURAL GAS VEHICLES HIT US ROADWAYS: MANY SIZES AND TYPES

Long Beach School District Gives Students a Break from Sooty Fumes

Long Beach School District on Long Island added 20 CNG buses to its fleet in 2004, which have eliminated the need for almost 50,000 gallons of diesel fuel a year. Eight more were added this year, and its “slow fill” refueling station is being expanded for the new buses. According to a District leader “No more phone calls about the smoke and smell from the exhaust of our older buses. The drivers, students, and teachers enjoy the new style and comfortable ride, and athletic trips staff always request the CNG buses.”

CNG Hondas at NYC Parks and NY-NJ Port Authority

The NYC Parks Department owns 80 Honda Civic GX cars that refuel at Parks’ facilities in Central Park and Queens and use ConEd stations in Manhattan as a backup. The NY-NJ Port Authority bought its 16 CNG vehicles in 2003 and nine Honda GXs this year, getting a $4,000 tax credit toward the higher cost ($6,830) of each. Rochester and Syracuse, NY, and Trumbell, CT are buying nine, with stimulus funding covering 100% of their higher costs.

New Jersey’s First Community Gets a Green Refuse Fleet

The 9 CNG trucks that went into service in Hamilton Township, NJ, in 2009 were a “first” for the state. But nationwide more than 2200 such trucks now provide clean quiet service to more than 70 cities and towns. While the refuse truck sector is shifting to natural gas more rapidly than any other fleet sector, with 200,000 of these trucks operating in the US, its shift has just begun.

Our Nation’s Capital Greens Its Transit Buses

The Washington Metropolitan Area Transit Authority (WMATA) has 461 CNG transit buses, which make up about 1/3rd of its fleet. Having had good success with its CNG buses, WMATA made its most recent addition in 2009 of 22 new 60-foot Bus Rapid Transit (BRT) buses with Cummins Westport engines. The BRTs carry passengers in the District of Columbia and suburban Maryland. They were manufactured by North American Bus Industries (NABI).

Smithtown, on Long Island, Goes to CNG for All Its Municipal Vehicles

Since becoming the first East Coast town to shift its refuse collection trucks (22) to CNG in 2007, Smithtown has purchased 64 more CNG vehicles including street sweepers (right), cars, vans, snowplows, and dump trucks. It’s policy now? “Buy CNG” for all government vehicles possible.
**Liquefied Natural Gas (LNG) Powers a New Generation of Heavy Duty Tractors**

A new generation of heavy duty tractors now ply the highways of Southern California, serving more than a dozen public agencies and private companies, including the City of Anaheim and Pepsi. With the help of stimulus funding, UPS will soon purchase 48 Kenworth trucks similar to the one pictured here, which are equipped with 15 liter Cummins Westport engines, bringing to 209 the number of LNG trucks in the UPS regional fleet. As part of the same stimulus award, UPS will build a new publicly accessible LNG station in Las Vegas to complete the 700-mile LNG fuel corridor from Ontario, CA, to Salt Lake City, UT, on Interstate 15, one of the most heavily trafficked truck routes in the nation.

**Dairy Products May Get a Green Ride on Derle and Bartlett CNG Trucks**

Derle Farms and Bartlett Dairy are each considering purchase of 20 CNG trucks (pending a refueling option) for delivering dairy products and speciality items to supermarkets, delis, etc. in the NYC Metropolitan area. To help finance these purchases, the federal Congestion Mitigation and Air Quality (CMAQ) Program administered by the New York State Energy Research and Development Authority has awarded each company a $1.2 million grant ($60,000 per truck).

**National Grid Drives with the Fuel It Also Sells for Heating**

National Grid, a large electric utility and natural gas distributor to customers located primarily in New York and New England, has a fleet of 900 natural gas vehicles including the dump truck (right). With stimulus funding the utility will add 11 M-2 freightliner medium-duty trucks, 31 vans, and two CNG refueling stations in Albany and Syracuse, NY.

**AT&T Converts Ford Vans to Run on CNG**

At the end of December 2009, AT&T put in an order to BAF Technologies, a Clean Energy subsidiary, to convert 463 Ford E-250 vans, like the one pictured at the left, to run on CNG fuel. Over the next five years, AT&T plans to convert 8,000 vans to CNG, at a total cost of $350 million, with the goal of reducing both fuel costs and greenhouse gas emissions.

**San Francisco CNG Taxis Save Drivers Money and Time**

Yellow Cab Cooperative, San Francisco’s largest taxicab operator, has 100 CNG taxis. The cabs, Ford Crown Victorias “upfitted” with CNG engines by the Dallas-based BAF Technologies, consume more than 350,000 gallons of CNG fuel annually. Fleet General Manager Hal Mellegard says “the Crown Vic is a great car for a cab. It can really take a hit from other cars and abuse from cab drivers. Most drivers like the CNG cabs. They save money on fuel, get diamond lane use when returning alone from Oakland Airport along with free bridge tolls, and the SF Airport allows them one time per shift to go to the head of the line and avoid a 45 minute to one hour wait for a fare.”
MEET EV’S DIRECTORS

HOWARD HARDESTY  Howard Hardesty has brought to EV a distinguished career in the energy arena. A West Virginia native, he receiving his B.A. in business administration from Duke University, served as a naval officer in World War II, and graduated from the West Virginia University College of Law. He became a partner in the law firm, Furbee & Hardesty, and was both the youngest tax commissioner and president of the state bar ever in West Virginia.

In 1963 he joined Consolidation Coal Company as Senior Vice President and General Counsel. He became Executive Vice President and a Director. With the merger of Consolidation Coal and Continental Oil, he became Conoco’s Vice Chairman and a Director. A former Director of seven New York Stock Exchange companies, Howard now serves as Trustee Emeritus of Duke and The West Virginia University Foundation, where he established a student research fellowship.

Howard is working on cleaner ways to burn coal by removing CO2 from the process stream, as one option for “reducing US dependence on Arab oil.” He sees EV as “a major force in bringing cleaner fuels to the transportation sector.”

DORCAS MCDONALD  Dr. Dorcas McDonald joined Energy Vision with a long history of concern about the environmental challenges this country faces and the ability of young people to tackle these challenges. She pioneered in driving one of the first natural gas cars in the 1990s, and her interest in the fuels and vehicles of the future lead her to EV.

A Cornell University graduate, with a PhD in Education in Human and Organizational Development, Dorcas founded and is Executive Director of the Learning for Living Institute in Boulder, Colorado. LFL develops life skills trainings for college students. Its curriculum areas include creating healthy relationships, career planning, stress and time management, and living in harmony with the environment. LFL will be introducing these trainings into universities. Dorcas believes “we are at a turning point,” and LFL aims to encourage the leaders of tomorrow to “seize this opportunity to build strong core values and work personally and professionally for a sustainable future.”

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EV is a national non-profit organization that analyzes and promotes ways to make a swift transition to pollution-free renewable energy sources and to the clean, petroleum-free transportation fuels of the future.

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138 East 13th Street
New York, New York
10003

Printed on 100% post-consumer recycled paper with vegetable-based ink.