ENERGY VISION HOLDS ITS SECOND WORKSHOP ON ALTERNATIVE FUELS

By Jenna Rae Carlson

On October 29th, at Brooklyn College in New York City, Energy Vision held its second workshop of the year on alternative fuels. Experts from around the country gathered with representatives of local waste hauling fleets, city officials, and environmentalists to discuss the fuel option that promises the greatest economic and environmental benefits for haulers - natural gas – as well as a fuel of the future, biomethane.

New York City Councilmember Lewis Fidler congratulated Energy Vision for hosting a workshop on an issue of such importance to New York.

Points of greatest interest to the haulers:

David Manning, from National Grid (US), emphasized that natural gas provides greater energy security than petroleum-based fuels. It is more plentiful in the US, with vast new sources recently discovered in shale deposits in Texas and the Northeast, and its distribution worldwide is broader than that of oil and in areas more friendly to this country. (See charts comparing the distribution of oil and natural gas reserves globally on page 5).

According to Tony Ciafolo from Autocar Truck, a manufacturer

U.S. Container Ports and Air Pollution: 2009 Challenges

By James S. Cannon, President, Energy Futures

The 2,600 container ships plying international waters deliver over 80% of the goods purchased in America. Although people worry about losses of U.S. jobs and labor conditions overseas, they have paid little attention to the air pollution caused by globalization. But this is changing. Reducing air pollution from container shipping has become an important goal.

A recent University of Delaware study calculated that particulates in ship exhaust are causing some 64,000 annual premature deaths in coastal populations, mainly from cardiopulmonary diseases or lung cancer. In addition, ocean going ships emit 1.1 billion metric tons of carbon dioxide a year, about 12% percent of emissions from all transportation sources.

Emissions from the ships and the more than 50,000 trucks fueled almost entirely by diesel that service ports daily create

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On November 4, Americans endorsed a new vision for this country at one of our most challenging times. A priority of the President-elect, in addition to righting our economy, is to launch one of the greatest technological revolutions in human history: replacement of fossil fuels with renewable, clean sources of energy. Even as the nation focuses on these issues, a project in Franklin County, Ohio, is showing one major way to address both.

**Biomethane is not revolutionary or experimental. It is exactly like natural gas but derived from renewable sources.**

This fall FirmGreen, a California company, opened a new refueling station at the Franklin County landfill, one of the first commercial plants in the US to turn “trash into gas.” It is now fueling cars, trucks and vans. But FirmGreen, in a public/private partnership, plans more: to create a corridor through Ohio from Cleveland, to Columbus, to Cincinnati lined with similar “trash to gas” refueling facilities.

The fuel being made, biomethane, is not experimental. As described in this newsletter’s “workshop” article, this fuel is exactly like natural gas but derived from renewable sources – the biogases produced in landfills or other sites where organic wastes break down. Biomethane fuels trucks and buses in several dozen European cities today, and within two decades its production potential in Europe is pegged at about 20% of vehicle fuel demand.

Oil, coal, and natural gas, the fossil fuels on which Americans have depended for a century, are all major sources of climate-changing greenhouse gases. However, only oil simultaneously degrades our environment while jeopardizing our economy and our energy security. That is why Energy Vision’s program, launched in 2006 to identify and promote strategies for sustainable energy, zeroed in on finding cleaner renewable replacements for petroleum-based fuels.

This choice led us directly to the transportation sector, which accounts for 70% of all oil consumed in the US. It is the main reason why we spend 300 million dollars a year on foreign oil and hundreds of millions more for war aimed at assuring our access to Middle Eastern oil, without which our economy would grind to a halt. Vehicle emissions are also the main cause of 60 to 90% of the health-threatening pollution blanketing our cities and one-third of the greenhouse gases we generate.

US leaders are currently focused on how to address gasoline use in passenger vehicles (with plug in hybrids and electric vehicles highest on their agenda) and on how to reduce use of cars by such measures as expanded mass transit. Excluded from this critical discussion is the 20% of transportation fuel consumed by the hundreds of thousands of continua on Page 6
a perfect storm of environmental dangers for residents in coastal communities. A 2008 report by the California South Coast Air Quality Management District revealed that in the port areas of Los Angeles and South Long Beach the lifetime cancer risk soared to 2,900 in 1 million - more than double the average risk in the Los Angeles basin, the most polluted urban area in the country.

**Ocean going ships emit 1.1 billion metric tons of carbon dioxide a year, about 12% percent of carbon dioxide emissions from all transportation sources.**

In February 2008, an Energy Futures’ report, *U.S. Container Ports and Air Pollution*, revealed that several U.S. ports are conducting innovative pollution control programs by using natural gas, biodiesel or hybrid electric vehicles. New research reveals that in 2008, the busiest year yet for new cleanup efforts at ports, regional truck programs were launched at the three California ports most likely to deploy thousands of natural gas powered trucks during the next few years. Also new in 2008 were several hybrid electric vehicle projects, including yard tractors and rubber tire gantries in New York City and Long Beach ports.

In October 2008, new fuel quality requirements by the International Maritime Organization, an arm of the UN, rocked the global shipping industry. Until now, the IMO has allowed ships to burn bunkerfuel, a dirty byproduct of oil refining that contains up to 45,000 parts per million (ppm) of sulfur, a key air pollutant. Bunkerfuel is thousands of times more polluting than the diesel fuel allowed in on-road trucks in the U.S., which can contain no more than 15 ppm of sulfur. The new IMO rules will gradually reduce the maximum sulfur content in fuel burned on board ships to 5,000 ppm when at sea, and to as low as 1,000 ppm in coastal waters.

The new IMO rules could place bunkerfuel off limits to the shipping industry, requiring the industry to find replacements - probably distillate fuels similar to diesel truck or jet fuel. However, this would increase demand for already strained supplies of distillate fuels, and require an increase in global oil production of 6.6 million barrels per day - more oil than is produced in the U.S. today. The effect on fuel prices from this new market demand could be catastrophic.

Other alternatives such as natural gas already exist for the shipping industry. But their use would be new to most shipping companies. So these companies would be wise to expand portside pollution control programs to gain experience in use of these fuels and be prepared for the tough choices they will face in several years. Those working in ports or living in port communities would be the major beneficiaries.
of both diesel trucks as well as natural gas models, the new compressed natural gas (CNG) technology has greatly improved the durability and performance of these trucks. Moreover, the new warranties on natural gas trucks are now effective for two years or up to 100,000 miles.

Greg Bianco, the CEO of Metropolitan Paper Recycling, one of the first private haulers to buy CNG trucks in New York City said, “Performance of our CNG trucks on New York City streets is as good if not better than diesel trucks. We liked the trucks so much we just ordered another three.”

Russ Barnett from Smithtown, Long Island, reporting on the 100% natural gas refuse fleet in his community, the first on the East Coast, said that the money Smithtown has saved in the cost of fuel has more than offset the higher costs of the trucks. Their performance is so good that Smithtown is now buying only CNG vehicles for its municipal fleet.

Ray Burke from Clean Energy in California, a leader in building natural gas refueling infrastructure, cited natural gas as having had a .25 to .61 cent per gallon advantage over diesel fuel in the last decade. This year Clean Energy has also seen an overall 5% reduction in operating costs of CNG over diesel trucks. The morning ended with a panel on biomethane, which Gail Richardson an Energy Vision consultant, noted, is chemically identical to natural gas (one carbon atom and four hydrogen atoms =

**NATURAL GAS HAS HAD .25 TO .61 CENT PER GALLON ADVANTAGE OVER DIESEL FUEL DURING THE LAST DECADE**

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<th>Biomethane potential as % of all vehicle fuel in Europe</th>
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KEY: Potential (sustainable) sources of biomethane in European countries:
- Organic wastes
- Energy crops
- Trees and forest wastes

Peter Boisen, Chairman of the European Natural Gas Vehicle Association at an EV luncheon, January 2008.
CH4). However it is derived from a variety of renewable sources such as gases generated in landfills and sewage treatment plants and from agricultural wastes. “Europe is already using biomethane technology,” Richardson said. Madrid has more than 500 garbage trucks running on biogas; Lille, France uses biogas to power 300 city buses while Sweden fuels more than 800 city buses and trucks in 16 cities. Moreover by 2020, Germany aims to produce more biogas than all the natural gas the EU currently imports from Russia.

Steve Wilburn, Chairman and CEO of FirmGreen in California is setting the pace in the US biomethane industry. FirmGreen has teamed up with SWACO, the Solid Waste Authority of Central Ohio, which operates the fifth largest landfill in the US, to open a facility that now produces biomethane being used to refuel its first vehicles. “Compared to the recent cost of $3.60 a gallon for diesel fuel,” Wilburn said, “FirmGreen’s alternative fuel represents a saving of 40% a day for fleets such as waste haulers, municipal transit buses and school buses.” And this is not the end of FirmGreen’s project in Ohio. In a public/private partnership, a “biomethane highway” is planned to extend across the state from Cleveland, to Columbus to Cincinnati.

Wilburn added that the largest 600 landfills in the US can produce biomethane equivalent to about 1.9 billion gallons of diesel fuel a year. He estimated that this technology could “help every city in America achieve cleaner air, lower vehicle fuel costs and provide well paying jobs in the emerging green energy marketplace.”

Jaime Stein of Sustainable South Bronx
heavy-duty diesel vehicles. They range from 18-wheel interstate haulers, to refuse and produce delivery trucks, transit and school buses, and shuttles that provide essential services to every city and community, airport and shipping port in the country. Yet Energy Vision’s research has found a solution here facing no major technology or scientific barriers.

The solution making possible the momentous 100 percent transition away from petroleum for heavy duty vehicles is converting them to natural gas – still a fossil fuel but one with multiple near term advantages and one that paves the way for its identical “green” substitute, biomethane.

Natural gas vehicles, commercial today and affordable thanks to federal tax incentives, are not only much cleaner than their diesel counterparts. The fuel is also plentiful in North America and can play a major role in freeing us from oil, hedging our bets against dizzying gyrations in oil prices and against fuel supply disruptions that may well occur as competition for this dwindling fuel grows worldwide.

The network of natural gas refueling stations needs to be expanded – first in urban centers and then along interstates, tapping into the 1.5 million miles of natural gas pipelines and distribution systems that crisscross our country. Most important, the refueling infrastructure built for natural gas vehicles (heavy and light duty) will be able to carry increasing quantities of transportation fuel-grade biomethane.

Aggressively building this refueling network, trading in diesel for natural gas trucks, buses, etc., and expanding biomethane production, would be “bold action.” Complementing the renewable power generation and electric car proposals of Al Gore and others, this strategy would deliver healthier urban air, fuel security, freedom from the high costs of oil, while creating thousands of “green” jobs.

This year, Energy Vision’s research has spurred just the kind of heavy duty fleet conversions that are possible to natural gas – projects in Pennsylvania, New Jersey, and New York that will replace more than 200 diesel refuse trucks with natural gas models, increasing our region’s energy security, and opening the door to the phase-in of biomethane. And we have recommended this course in US policy debates and in debates in Canada and Mexico.

In 2009 we plan broader outreach, media, and workshops to support more of the changes our country needs – on the ground, where they count!

We are grateful to our supporters who have enabled Energy Vision to build its program. We hope many others will become our partners in 2009, helping us broaden EV’s contribution to a sustainable energy future for our country and our world.

- J.D.U.