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COMING TO YOUR NEIGHBORHOOD?

AN ALTERNATIVE TO THOSE NOISY, FUEL-GUZZLING GARBAGE TRUCKS

By Joanna D. Underwood

Nearly every day, hundreds of refuse and recycling trucks lumber through the cities and communities of the Hudson Valley region. Hardly noticed by most citizens (unless, of course, they don't pick up the garbage on time!), they perform one of the most essential of services. Without them many homes and businesses in Dutchess and Ulster Counties would be overrun with trash and subjected to unhealthy sanitary conditions.

The diesel garbage trucks in the Hudson Valley region are part of an enormous fleet of almost 136,000 that operates nation wide. In the last few years, these trucks have been increasingly recognized as among the most significant air pollutors and fuel guzzlers. They emit exhaust that contains soot, smog-forming nitrogen oxides and a variety of carcinogens as they move through communities.

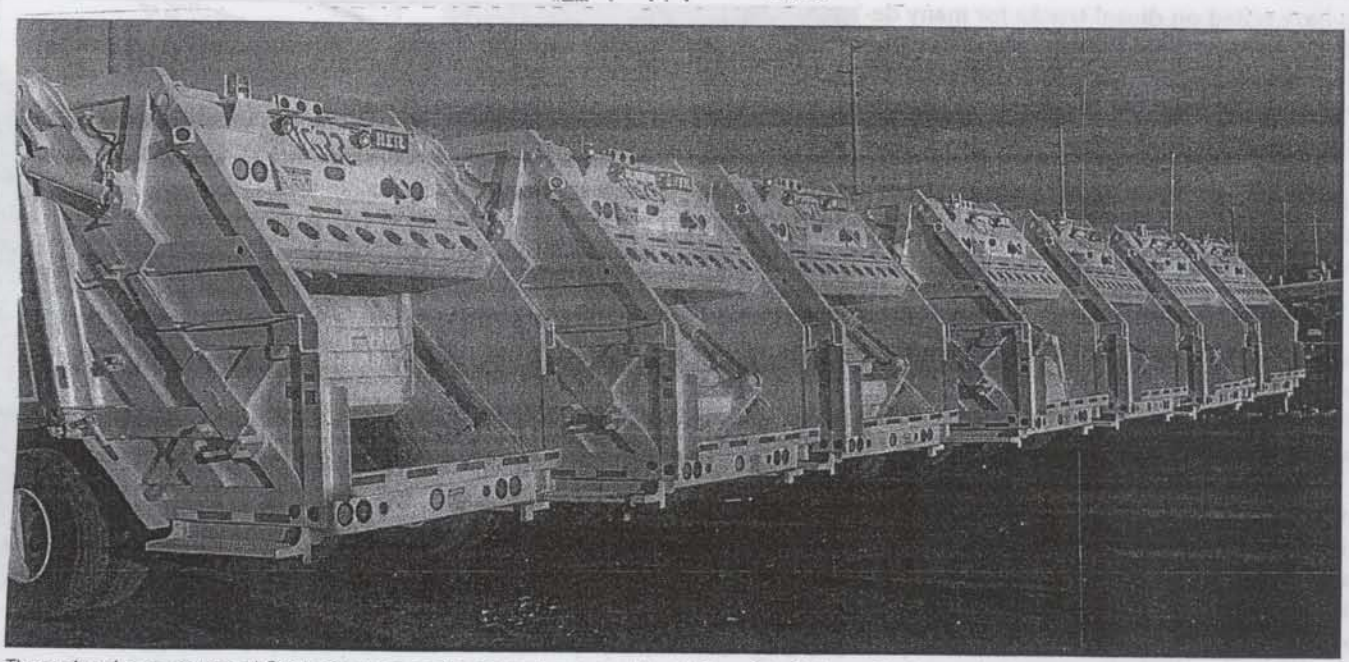
Nationally, they are one of the reasons that at least 150 million Americans live in areas where the air quality violates health standards set by the United States Environmental Protection Agency (EPA). Locally, they contribute to the low grades given by the American Lung Association in its *State of the Air: 2006* report to Ulster County (a "C") and Dutchess County, (an "F") for high ozone readings, which have contributed to an estimated 50,000 residents in these counties suffering from asthma, bronchitis, emphysema and other respiratory illnesses.

Diesel refuse and recycling trucks also generate significant greenhouse gases and are one reason why vehicle emissions are the largest source of these gases in New York State, making up 39 percent (21.6 out of a total of 56.1 million metric tons of carbon equivalent in 2004).

In addition, given the concerns about imported oil, it is important to note that refuse and recycling trucks are among the most inefficient fuel-using vehicles. Because of their start and stop operations, they get less than 3 miles per gallon, and each consumes on average 8,900 gallons of diesel fuel a year.

Today's New Choices

The good news is that options for change in this sector are available here and now. Those refuse and recycling trucks in operation today that are relatively new and have years of life left on the roads can use bio-diesel fuel (from 2 to 20%) made from a renewable resource (from soy or other agricultural or waste oils) to reduce their emissions and dependence on a petroleum-derived fuel. Fleet owners operating the oldest and most polluting trucks have an opportunity to replace them with today's new natural gas models. Here, the benefits have proven to be enormous.



The natural gas-powered fleet of seven garbage trucks owned by V. Garofalo & Sons Carting, which recently won a bid to serve the Long Island community of Smithtown.

All new heavy-duty diesel vehicles will be getting cleaner beginning in 2007 because of the new federal emissions standards for particulates and nitrogen oxides. However, the new natural gas engines produce only one-sixth of the smog-causing nitrogen oxides as the cleanest diesel engines and generate on average 12 to 15 percent lower levels of greenhouse gas emissions.

Natural gas trucks are much quieter, improving the quality of life in communities where they operate in the early morning. They also protect the hearing of sanitation workers as well as their health by ending the daily assault of diesel fumes.

For every natural gas truck in operation, reliance on foreign oil is not just reduced, it is eliminated. While 64 percent of the oil consumed in the US is imported (mostly from politically volatile parts of the world), 97 percent of the natural gas consumed is produced in North America. In the near future, another gas fuel, bio-methane, may supplement this supply. It is beginning to be produced from the gases generated by landfills, sewage plants and municipal and agricultural wastes, which both reduces a current stream of greenhouse gases and turns wastes into a clean transportation fuel.

Use of natural gas and bio-methane in trucks (as in other natural gas vehicles) also lays the groundwork for a future shift to vehicles that will be powered by renewable pollution-free hydrogen–which could be an ultimately sustainable solution. Natural gas is the pathway to the hydrogen era because of the many similarities between the two gaseous fuels and the technologies needed to refuel and to operate them. When hydrogen trucks finally become available, the fleets operating natural gas trucks will be poised to make that shift. Natural gas (which is 80 percent hydrogen compared to oil, which is only 61 percent) will probably be the primary source of hydrogen for vehicles until hydrogen made from water using renewable energy becomes affordable.

The Costs of Change

Fleet operators have relied on diesel trucks for many decades to deliver their critical services, and are understandably concerned about something new and different. Yet, even for those willing to make the shift to natural gas, a major deterrent has been cost. While a shift to bio-diesel requires no large expenditures or new vehicles, a shift to natural gas trucks is a different matter. New natural gas trucks have had a price tag that is $55,000 to $65,000 higher than that of a comparable diesel truck, and their use requires new refueling infrastructure. The economics are now undergoing a significant shift, however.

Of particular importance is legislation enacted by Congress in 2005 providing financial incentives covering most of the incremental costs of buying and using alternative fuel vehicles. The energy bill included tax credits covering up to 80% of the higher costs of alternative fuel vehicles, including refuse and recycling trucks (up to $32,000), and up to $30,000 toward the cost of new refueling infrastructure. Further state incentives also exist.

Private sector enterprises have also emerged that offer to absorb the up front costs of building infrastructure relieving both communities and fleet owners of this burden. At least one of these firms, California-based Clean Energy, provides financial planning services for alternative fuels projects as well.

In addition, while natural gas is cheaper than an equivalent gallon of diesel fuel, the federal government has now made it an even better bargain. The federal transportation bill, also passed in 2005, provides a 50 cent excise tax credit for every gallon of alternative fuel used, making natural gas for refuse trucks much cheaper than diesel.

The costs of buying and using diesel trucks are also rising. In order to comply with the EPA's 2007 emission standards, new diesel vehicles have to be equipped with sophisticated pollution control equipment, which has raised their price by thousands of dollars. (Diesel fuel commonly contains a stew of nearly 200 chemicals, and its molecular structure, as noted above, is more than one-third carbon.) By contrast, trucks powered by the new natural gas engines can already meet the 2007 emission standards without such equipment. In fact, many of these trucks meet the even stricter 2010 emissions standards. Furthermore, international competition for the world's remaining oil supplies is driving the price of diesel fuel upward, eating into the profits of fleet operators. Fuel supply disruptions could also be on the horizon.

Pioneers in the Fuels Revolution

Since 2002, when refuse and recycling trucks were first put in the spotlight for their potential to use cleaner fuels, the use of natural gas trucks has seen impressive growth with the help of expanding economic incentives. A 2006

Mario Garafolo (right), owner of the fleet, Eleterio Martinez (center), fleet manager, and Greg Hallahan (left), of Hallahan Truck Sales who represents Autocar (the truck manufacturer) and who orchestrated this first deal to put the first Autocar natural gas trucks in service.

report, *Greening Garbage Trucks*, written by James S. Cannon, a leading authority in the field, found that between 2002 and 2005, their numbers had doubled from 692 to almost 1,500, and the number of communities using them more than doubled from 26 to 57. While the report found fleet operators, drivers and communities from around the country largely enthusiastic about these trucks, most of the fleet innovation was on the West Coast. Almost 85% of the natural gas trucks were operating in California, with the balance in New York City, Texas, Washington DC, and Boston. Greening Garbage Trucks also found this shift to be international, identifying fleets in Japan and the Netherlands in 2002 and, by 2005, new fleets in Paris, France (300), Madrid, Spain (397), and in Gothenburg, Sweden (15).

This year, thanks to the innovative spirit of the leaders of the Town of Smithtown on Long Island (a community of 116,000), the U.S. movement is gaining broader momentum. Smithtown's leaders made a historic decision in mid-2006 that by January, 2007, *all* the refuse and recycling trucks serving the town were required to be powered by natural gas instead of diesel fuel. The Town put out specifications for a seven-year contract, not knowing if fleets would even bid for the work since it meant purchasing new trucks and building adequate natural gas refueling equipment. To their surprise, many bids came in. The four winning contractors now have their new Crane Carrier and Autocar trucks with Cummins Westport natural gas engines in operation. These contractors include: Brothers Waste Services (5), De Jana Industries (2), Jody Enterprises Inc. (8) and V. Garofalo & Sons Carting (7).

The owner of Garofalo Carting, Mario Garofalo, said he was at first very resistant to the idea. "What is CNG?" he asked. "Where would we get it? And why should we have to use it?" But after he started learning about the fleets on the West Coast and doing some homework, he became interested. With his seven brand new trucks performing well, his enthusiasm has expanded. "The drivers think the quieter trucks in which they are free from diesel exhaust are terrific," he said. "This seems to be the way of the future."

The Town forecast that over the seven-year life of the town's new contract, the natural gas trucks will give residents cleaner air, reducing emissions of nitrogen oxides and particulates by about 177 and 15 tons respectively. Costs will be reduced, insulating taxpayers from the price rises and volatility of diesel fuel. More than 2.5 million gallons of foreign oil will be replaced with domestic natural gas.

The Town Environmental Protection Director, Russ Barnett, said that support for the initiative has been almost universal and that a local newspaper and Rotary Club have even given awards to the town leaders for the initiative. "Only one citizen has been irate," Barnett added. "This was because the truck on his route was so quiet he didn't hear it and so he didn't put his garbage out in time for it to be collected!"

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Making the Hudson Valley Region a Leader

For leaders and residents of the Hudson Valley Region, the time is ripe to get on board the vehicles of the future. While refuse and recycling trucks are surely prime candidates, it is worthwhile looking at other fleets as well, such as the Loop Buses in Dutchess County and the UCAT buses in Ulster County. Even light duty municipal and taxi fleets can get into the act by shifting to natural gas taxis or to the Honda Civic GX natural gas vehicle.

Embracing the exciting economic, health, energy security and environmental benefits of what will surely be one of the greatest technology revolutions of this new century will mean a big step forward in helping shape a sustainable future for the Hudson Valley Region.

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