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Can Sanitation go green?

The agency tasked with keeping the city clean is among its biggest polluters. One environmental group wants to change that.

MATTHEW FLAMM | September 18, 2018

Corcino of Manhattan Beer Distributors switched 150 of the company's trucks from diesel to natural gas,but it wasn't easy. *Buck Ennis*

About 20 years ago, as childhood asthma was raging in the South Bronx, Juan Corcino found it hard to breathe on the way to his job in Hunts Point. The culprit was all around him: diesel exhaust–spewing delivery trucks, including those belonging to his employer, Manhattan Beer Distributors.

So when the company's chief executive, Simon Bergson, gave him the task of converting the trucks to much cleaner natural gas—with the help of federal clean-air incentives—he was ready. He had just one problem: Nobody manufactured natural gas trucks.

Eventually Corcino, the head of fleet operations for Manhattan Beer, found the company's vehicles could be retrofitted to upgrade 15 trucks, but he quickly hit another roadblock: no filling stations.

That's when Corcino decided to build one.

"This takes dedication," said the Bronx native and father of three—two of whom have suffered from asthma. "You have to be committed."

These days Manhattan Beer Distributors has 150 of its 400 trucks running on compressed natural gas and expects to become entirely diesel-free in seven to eight years.

Then there's the Department of Sanitation. With almost all its 4,000 heavy vehicles burning diesel, it has the dirtiest fleet of any city agency. Clean-air advocates say the department should be able to match the beer distributor's efforts—exceed them, in fact, by running its trucks on renewable natural gas, also known as biomethane, which has a carbon footprint that can be described as negative. Advocates hope the city's example will encourage more of private industry to shift to near-zero-emission natural gas trucks, which are cleaner and less expensive to maintain than those burning diesel.

"Manhattan Beer started down this path 20 years ago," said Matt Tomich, president of the sustainable-energy advocacy group Energy Vision. "Our hope is the Department of Sanitation can start out doing demonstrations of renewable natural gas and near-zero-emissions engines in those communities that are most affected" by diesel pollution.

Energy Vision has seen other cities adopting natural gas and thinks New York is missing out on a technology that could help it meet the de Blasio administration's goal of cutting 80% of greenhouse gas emissions from the city's fleet by 2035.

Around the country, as much as 60% of orders for new garbage trucks are for natural gas vehicles, according to figures from the Natural Gas Vehicle Association. One of its members, Waste Management, operates nearly 7,000 compressed natural gas trucks and plans to convert its entire 18,000-vehicle fleet. Los Angeles converted its 2,200 buses to natural gas six years ago and is taking steps to use renewable gas, which environmentalists favor over gas extracted from the ground.

Biomethane holds promise

Compared to ordinary diesel, biomethane, when produced from food waste or cow manure, can cut greenhouse gas emissions from 125% to 300%. That's because it diverts waste that would otherwise give off methane—a potent greenhouse gas—as it decomposes.

By contrast, conventional natural gas—a fossil fuel released by fracking rock deep in the earth—reduces climate-changing emissions by 29%. Either form of natural gas cuts nitrogen oxide and particulate matter by 90% or more; those tailpipe pollutants are a major reason asthma afflicts 13% of New Yorkers under the age of 18, twice the national average.

"With RNG [renewable natural gas], you're not only reducing pollution from the truck; you're actually cleaning the air of greenhouse gas emissions by cleaning up the dump site," said James Cannon, the former editor and publisher of *The Clean Fuels Report* and a longtime energy consultant. Energy Vision, with the New York League of Conservation Voters and the environmental justice group We Act, has met in recent months with the City Council and other government officials to advocate a shift away from diesel, but it has made little headway. Tomich, however, insists that if the Sanitation Department simply replaced the 200 to 300 diesel garbage trucks it retires each year, it would be fighting asthma and climate change while gradually developing fueling and maintenance infrastructure.

"We're talking about such a huge reduction in health-threatening emissions," he said. "The garages need to be modified to handle compressed gas, but on an almost annual basis [Sanitation] is updating one to two of its facilities. That seems to us the most logical time to consider garage modification."

He points out that the Sanitation Department already owns 42 CNG refuse trucks and has its own fueling station, at its Woodside, Queens, depot. He says the agency knows the technology works.

But city officials say they have more practical, less expensive ways to meet the same goals. For the past seven years, Sanitation and other city agencies with heavy-duty vehicles have been using biodiesel, which is 20% plant-based fuel and reduces greenhouse gas emissions about 10%. After a pilot program ends next month, some of those vehicles will soon begin using renewable diesel, which is 99% plant- and animal-fat-based and cuts emissions 60%. Unlike compressed natural gas, biodiesel and renewable diesel work with existing trucks and facilities.

"A renewable natural gas program would require a whole new fleet, a whole new fueling infrastructure, a complete new maintenance program," said Keith Kerman, the city's chief fleet officer and a deputy commissioner at the Department of Citywide Administration Services, which oversees purchases. "Renewable diesel is a really great alternative for getting out of diesel and fossil fuels," he said.

The administration sees renewable diesel as a bridge to when agencies can begin a shift to zero-emission, electric, heavy-duty trucks, possibly within the next couple of years.

Tomich and other advocates see problems with the city's approach, starting with its reliance on diesel alternatives. A report last year on renewable diesel in California found the fuel, when used in diesel engines with the most advanced emissions control systems, has little to no impact on the release of particulate matter and may even increase tailpipe emissions of nitrogen oxide. It runs $1.35 more per gallon than conventional diesel. RNG advocates envision New York one day using natural gas produced from its own waste stream, something that Sacramento and Vancouver are already doing.

BATTERY VS. BIOMETHANE

For some sustainability advocates, renewable natural gas, made from food or agricultural waste, is a miracle fuel. It reduces greenhouse gas emissions from 70% to 300% compared to conventional diesel and uses waste that would otherwise emit global-warming methane as it decomposes.

Others say those claims are overstated. “This whole idea of negative emissions is a policy construct,” said Jimmy O’Dea, senior vehicles analyst for the Union of Concerned Scientists. “If you do capture methane from the landfill and it goes into a vehicle, what comes out of that tailpipe is CO2.”

Electric vehicles are the greener choice, even when counting emissions from power plants that charge the battery, O’Dea said. Using renewable natural gas to fuel those power plants would be even greener.

But would electric vehicles be a better option for Sanitation, whose trucks must double as snowplows in winter? Biomethane advocates are skeptical that electric trucks have enough power, but EV manufacturers say they’re ready.

Next year Sanitation will test Mack Truck’s new electric garbage truck. Hourslong recharging times might be another problem, but Los Angeles–based manufacturer BYD says it can recharge a truck in an hour. Sanitation would say that’s too long in a snowstorm.

O’Dea said the agency might have to rethink logistics. “I would ask the Sanitation Department if all of its vehicles are in line to be deployed on a moment’s notice with a snowplow.”

An Administrative Services spokesman said the department expects renewable diesel prices to fall. Citing figures from a study of the fuel's performance in older vehicles, he said renewable diesel will cut nitrogen oxide by 10% and particulate matter by 30%. The city already uses more-efficient trucks that have cut particulate matter by 85%, he added. (Tomich, citing a University of California at Riverside study, said that the cleaner diesel technology was still 10 times more polluting than the latest natural gas engines.)

An electric heavy-duty vehicle, while promising, is about double the price of a diesel-powered truck,

or at least $200,000 more, Tomich said. A CNG truck costs about $50,000 more than a diesel model and offers savings in fuel costs and maintenance that can offset the higher price over time, he said. (Electric-battery advocates also say their vehicles are a good deal in the long term.)

Electric vehicles would require new maintenance and charging facilities and take hours to recharge. That's a critical issue for Sanitation, which maintains that not even compressed natural gas trucks can be refueled fast enough, although they can take just minutes more than a diesel truck.

Indeed, Sanitation Commissioner Kathryn Garcia rules out CNG trucks, saying they won't work in a city where trash trucks double as snowplows.

"CNG is fine if you only do garbage collection and you have plenty of time to refuel your trucks," Garcia said. Getting 2,100 trucks refueled and back on the street to clear snow would require fast-fueling facilities, which need room for gas compressors and ventilation, making them difficult to build in the cramped quarters of most Sanitation garages, she said. A CNG fleet would require fueling facilities at every one of the agency's 59 garages, said Garcia, who refuses to rely on private fueling stations.

"That is an enormous expense," she said, adding CNG is not appropriate for managing emergency situations. She doesn't think the agency could shift to natural gas a few hundred trucks at a time without having filling stations citywide.

Tomich of Energy Vision and Victor Diaz, a driver for Ferrara Brothers Concrete, at a compressed natural gas refueling station. *Buck Ennis*

Energy Vision, whose board includes two of Garcia's predecessors, argues that she overplays the logistical challenges. "There are issues, but they are certainly solvable," said Brendan Sexton, an environmental consultant who was Sanitation commissioner from 1986 to 1990. "The department spends tens of millions of dollars in a typical year rebuilding or building garages. Maybe you spend a million equipping the next garage over from the one in Woodside that already has natural gas. If you do a couple of hundred trucks a year, you make a huge difference as far as environmental impact."

Norman Steisel, a Koch administration Sanitation commissioner, called Garcia's logistical issues "low-probability events."

Not a 'huge inconvenience'

Clean Energy, the company that operates the department's Woodside fueling station, has four stations of its own dispensing CNG in the city, including one occasionally used by Sanitation in Greenpoint, Brooklyn. It will soon open a fifth, at Hunts Point. "The Department of Sanitation has depots within a mile or two of all of our stations," said Mike Cecere, Clean Energy's eastern region

manager. "Whether they fill up at their Bronx yard or at our station, which is a couple of blocks away, we're not talking about a huge inconvenience."

Clean Energy has promised to provide the city with renewable natural gas at the same price as conventional natural gas, which right now would save the city between 50 cents and $1 per gallon-equivalent compared to diesel.

Some advocates say the city is being shortsighted in focusing on near-term costs, when a transition to biomethane could cut down on asthma-related emergency room visits, which are eight times higher in poor neighborhoods than in affluent ones.

"When you look at the cost of asthma and other diseases that are caused by diesel exhaust," switching means massive savings, said Dr. Philip Landrigan, who has studied the impact of diesel exhaust.

Not all of the benefits of natural gas trucks are environmental, which Manhattan Beer's Corcino has found while progressing from jerry-rigging natural gas trucks to buying Volvo tractors with Cummins "near zero" engines. The vehicles run cleaner and last longer. Because Manhattan Beer has its own filling stations, his fuel costs are about half what they would be with diesel. Best of all, the CNG engine barely makes a peep compared to a diesel truck's.

"Drivers love it. People love it," Corcino said. "They can't believe how quiet it is."