



## Natural Gas Refuse Trucks: Driving Change in New York City

How can using “greener” refuse trucks help clean the air, curb noise pollution, and make New York City’s energy supplies more secure?

### Why “Greening” Refuse Trucks Is Important

Every day, more than 6,000 public and private refuse collection trucks lumber along the streets of New York City.<sup>1</sup> As they pick up household and commercial trash, they leave behind toxic air pollutants and soot in neighborhoods while generating as much as 100 decibels of noise.<sup>2</sup> In New York City, children are hospitalized for asthma at twice the national average<sup>3</sup>, refuse and delivery trucks are the eighth leading source of noise complaints<sup>4</sup>, and the potential risk of cancer from diesel exhaust is greater than anywhere else in the US.<sup>5</sup> For these reasons, the refuse truck sector in its current state poses a major quality of life problem.

#### Exhausted from Diesel

- Nearly 100% of New York City refuse trucks run on diesel fuel.
- New York state imports 85% of its oil, with most coming from the politically unstable Middle East.
- Refuse trucks are the most fuel inefficient vehicles on the roads, consuming one gallon of diesel fuel every 2.8 miles.
- Diesel exhaust contains more than 40 toxic substances, including known and probable human carcinogens as well as reproductive toxins.
- Fine particulates in diesel exhaust are a major trigger of asthma attacks.
- Refuse trucks are among the oldest vehicles in the country—41% of them have been in service for more than 10 years. Their deteriorating pollution controls allow higher levels of pollutants to enter the air than those on newer vehicles in other fleet sectors.

Sources: INFORM, Inc., *Greening Garbage Trucks*, New York, NY, 2003; INFORM, Inc., *New York City’s Commercial Waste Hauling Fleets*, New York, NY, Feb. 2006; INFORM, Inc., “Opportunities for Change: A Clean Fueled Future for New York,” Jan. 2004

### What Are the Benefits of Using Natural Gas Refuse Trucks?

Refuse trucks that run on natural gas rather than on diesel fuel can improve the quality of life for communities and benefit fleet operators. Using natural gas as a fuel also increases energy security in the city and the state.

<sup>1</sup> INFORM, Inc., *New York City’s Commercial Waste Hauling Fleets*, New York, NY, Feb. 2006; New York City Department of Sanitation, “About DSNY,” [www.nyc.gov/sanitation](http://www.nyc.gov/sanitation).

<sup>2</sup> INFORM, Inc., *New York City’s Commercial Waste Hauling Fleets*, New York, NY, Feb. 2006.

<sup>3</sup> New York City Department of Health and Mental Hygiene, “Asthma Facts,” second edition, 2003.

<sup>4</sup> Baruch College with Council on the Environment of New York City, “Neighborhood Noise and its Consequences,” Dec. 2004.

<sup>5</sup> Environmental Defense, “Hazardous Air Pollutants,” [www.scorecard.org](http://www.scorecard.org).

## Benefits for Communities

### CLEANER AIR

Natural gas is a cleaner fuel than either diesel or biodiesel, which means natural gas creates less pollution. Clean air is important for everyone, especially children, whose developing bodies are more vulnerable than adults to the adverse effects of diesel exhaust. Compared to conventional diesel, natural gas use results in:

- 67 to 94% less particulate matter, which means fewer asthma attacks
- 32 to 73% fewer nitrogen oxides, which leads to less smog
- 69 to 83% fewer nonmethane hydrocarbon emissions, which means inhaling fewer toxins<sup>6</sup>

### LESS NOISE

Natural gas refuse truck engines are significantly quieter than those of diesel refuse trucks.

- The noise reduction alongside the truck is 79.5 to 69.3 decibels.
- The noise reduction behind the truck is 72.2 to 66.9 decibels.<sup>4</sup>

Less noise means quieter streets, quieter nights, and more peaceful sleep.

### SECURE FUEL

Natural gas is a domestically plentiful fuel that doesn't use a drop of oil. Every truck powered by natural gas enhances our energy and economic security by reducing our reliance on foreign oil. Natural gas can also put this country on the path to using completely sustainable, pollution-free hydrogen fuel. Hydrogen can be made from natural gas. Also, the refueling equipment used to deliver natural gas - a gaseous fuel - can be converted to deliver hydrogen, another gaseous fuel, in the years ahead.

## Benefits for Refuse Haulers

Using an intrinsically cleaner fuel is important for truck operators who inhale the exhaust while doing their jobs. The US Environmental Protection Agency (EPA) estimates that occupational exposure to diesel exhaust increases the risk of lung cancer between 20 and 50%.<sup>4</sup>

Natural gas refuse trucks already achieve the EPA's emissions standards for 2007 and the stricter standards set for 2010. Diesel vehicles will incur increasing costs as they add the pollution controls needed to meet these clean air standards.

Diesel refuse trucks have been known to generate noise levels of 100 decibels,<sup>2</sup> which is high enough to cause permanent hearing damage. Quieter natural gas trucks protect workers from the risk of hearing loss.

Natural gas refuse trucks also offer a noise reduction of 82.8 to 71.3 decibels inside the cab.<sup>4</sup> This allows workers to listen to the radio or talk to each other, improving the quality of their work day.

Using natural gas saves waste hauling companies money by lowering fuel costs. In September 2005, for example, the average national price for a gallon of diesel was \$2.81, while an equivalent amount of compressed natural gas (CNG) cost only \$2.12.<sup>7</sup> Because natural gas is domestically plentiful, the threat of price spikes or fuel supply disruptions is reduced, which ensures that waste hauling companies can provide continual service to their customers.

<sup>6</sup> INFORM, Inc., *Greening Garbage Trucks*, New York, NY, 2003.

<sup>7</sup> US Department of Energy, "Clean Cities Alternative Fuel Price Report," Sept. 2005.

## How Can Waste Hauling Companies Purchase Natural Gas Refuse Trucks?

A number of companies manufacture natural gas refuse trucks, including Amrep (roll-off trucks), Autocar (formerly Volvo), Craine Carrier, Kenworth, Mack, and Peterbilt. Manufacturers of natural gas engines include Cummins Westport, Mack, and John Deere.

The cost of a typical natural gas refuse truck ranges from \$200,000 to \$250,000—15 to 25% more than a comparable diesel refuse truck. However, natural gas trucks will become more cost competitive as diesel engine manufacturers add costly pollution controls needed to meet the EPA's tighter emission standards set for 2007 and 2010. A study conducted by TIAX, an independent research firm, estimated that the systems need to meet the new emissions requirements will erase the cost advantage that diesel refuse trucks have over natural gas trucks within a few years.

Moreover, government funding can help defray the additional costs of buying natural gas refuse trucks.

### Economic Incentives for Purchasing Natural Gas Refuse Trucks

#### TAX SAVINGS

1. The federal government offers a tax credit of up to 80% of the incremental cost of purchasing a natural gas refuse truck, with a cap at \$32,000. The incremental cost is the difference between the selling price of a conventional diesel truck and what the more expensive natural gas truck costs. For more information, visit [http://www.eere.energy.gov/afdc/progs/view\\_ind\\_mtx.cgi?in/TAX/US/0](http://www.eere.energy.gov/afdc/progs/view_ind_mtx.cgi?in/TAX/US/0).
2. New York state provides a partial sales and use tax exemption for the incremental cost of purchasing new natural gas vehicles. This exemption is effective through October 1, 2006. (Reference New York Tax Law Article 28, Section 1115.)
3. The federal government offers sellers of CNG fuel a tax credit that amounts to 36.6 cents per gasoline gallon equivalent (GGE). If the refueling station owner is tax exempt, he or she receives 50 cents per GGE. (Reference H.R. 3: Section 11113.)

#### GOVERNMENT GRANTS

1. The NYC Private Fleet Alternative Fuel/Electric Vehicle Program, administered by the New York State Energy and Research Development Authority in cooperation with NYC Clean Cities Coalition can fund 80% of the incremental cost of purchasing natural gas refuse trucks. Grants are awarded to private companies on a competitive basis. For more information, visit <http://www.nyserda.org/Programs/transportation/AFV/NYCPublicFleet.asp>.
2. Stakeholders of the Clean Cities Coalition can apply for the US Department of Energy's (DOE's) Special Projects grants. Becoming a stakeholder is as simple as filling out an application and costs nothing; contact NYC Clean Cities Coordinator Lou Calcagno at [lcalcagno@dot.nyc.gov](mailto:lcalcagno@dot.nyc.gov) for more information. These grants, awarded competitively, can be used to cost-share up to 75% of the proposed project. They can cover the incremental cost of purchasing natural gas vehicles and the cost of installing fueling equipment. For more information, visit <http://www.nyserda.org/Programs/transportation/AFV/FDEnergySpecial.asp>.
3. Stakeholders of Clean Cities who own 10 or more vehicles can also apply for grants under the DOE's Clean Cities Challenge, which is offered more sporadically than the Special Projects grants. Clean Cities Challenge grants, awarded competitively, can be used to cost-share up to 75% of the proposed project. They can cover the incremental costs of purchasing natural gas vehicles and the cost of installing fueling equipment. For more information, visit <http://www.nyserda.org/Programs/transportation/AFV/CCchallenge.asp>.
4. The US Department of Transportation's Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds projects and programs that reduce transportation-related emissions in areas, such as New York City, that do not meet the EPA's standards for healthy air. CMAQ has been authorized at a level of \$1.5 million for 2006 and \$1.6 million for 2007–2009. In New York City, the NYC Clean Cities Coalition distributes CMAQ money. For more information about current funding opportunities, contact NYC Coordinator Lou Calcagno at [lcalcagno@dot.nyc.gov](mailto:lcalcagno@dot.nyc.gov).

## Where Can Natural Gas Refuse Trucks Refuel?

A number of public refueling facilities are located in and around New York City. Not all have the capacity to fuel heavy-duty vehicles, so it is important to call ahead. Also, INFORM can help fleets find refueling stations that meet their needs (see contact information below). For a comprehensive list of natural gas refueling stations in New York state, visit

<http://www.ogs.state.ny.us/supportServices/vehicles/cleanfuel/cngFuelingGuide.pdf>.

The costs of installing an on-site fueling station vary greatly, from \$10,000 on the low end to several million dollars. Prices depend on the size of the facility, the fleet being serviced, and the services offered. A number of companies install refueling facilities and deliver natural gas fuel. Many offer financing through fuel sales or station-lease payments to reduce or eliminate the upfront costs of infrastructure development.

In addition, the federal government provides a tax credit equal to 30% of the cost of purchasing a natural gas refueling property, with a cap at \$30,000. A similar New York state tax credit is also available for purchasing natural gas refueling property within the state. The New York tax credit is equal to 50% of the cost of the property and includes property used for storing or dispensing natural gas. (Reference New York Tax Law Section 187-b and Senate Bill 5565-A.) Also, NYSERDA's Private Fleet Alternative Fuel/Electric Vehicle program can help fund the costs of purchasing refueling or recharging station equipment and the costs of installing this equipment.

### About INFORM

INFORM is a national nonprofit organization whose research identifies innovative business practices, technologies, and products that prevent damage to natural resources and safeguard public health. INFORM publishes its objective findings and practical solutions in reports (over 100 to date) as well as in newsletters, articles, fact sheets and on the Internet. INFORM's outreach and technical assistance helps government, businesses, community groups, educational institutions, and environmental leaders reduce pollution and waste, promote sustainable product designs, and convert to cleaner-fueled transportation.

Since 1986, INFORM has been a leader in analyzing the cleaner fuels and advanced vehicle technologies of the future. INFORM has researched the steps that can be taken today to produce the most direct and efficient transition to the era of pollution-free hydrogen transportation. For more information about INFORM's Sustainable Transportation program or INFORM's publications on natural gas vehicles, please visit [www.informinc.org](http://www.informinc.org) or contact

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