Appendix 8I

New York City's PlaNYC

- PlaNYC Air Quality Chapter

  View the PlaNYC full report at:
  http://www.nyc.gov/html/planyc2030/downloads/pdf/full_report.pdf

  View the PlaNYC home web page at:
  http://www.nyc.gov/html/planyc2030/html/home/home.shtml

- 2008 PlaNYC 2008 Air Quality Progress Report

  View the full PlaNYC 2008 Progress Report at:
  http://www.nyc.gov/html/planyc2030/downloads/pdf/planyc_progress_report_2008.pdf

Despite decades of improvement, New York City still fails to meet Federal air quality standards—and we have no way of measuring the air quality in individual neighborhoods.

That's why we will create a comprehensive program to reduce emissions from a variety of sources within the city, including vehicles, power plants, and buildings. Natural solutions such as planting one million trees will bring us the rest of the way towards cleaner air for all New Yorkers. To track our progress and target our solutions to the areas of greatest need, we will launch the largest local air quality study in the United States.

Together, these initiatives will enable every New Yorker to breathe the cleanest air of any big city in America.

Air

Air Quality

Achieve the cleanest air quality of any big U.S. city

Air Quality

Credit: © Rob Howard/Corbis

Achieve the cleanest air quality of any big U.S. city

Trucks begin entering the Hunts Point neighborhood hours before sunrise. They arrive by the hundreds under expressways, over highways.

By sunset, more than 15,000 trucks have driven through the peninsula, virtually all powered by diesel fuel. The trucks rattle down alternate routes, of 10 slipping down side streets, past houses and apartment buildings, as they search out the Produce Market, the Fulton Fish Center, the meat market.

Fifteen million people eat food distributed through the center every day. Facilities like the Produce Market were built in the 1960s, when the demand for produce was significantly less. Now there is not enough storage space to meet the need. The trucks help solve this problem. Up to 1,000 act as refrigerators every day, engines gunning for hours to keep the cool air pumping into the back so the produce can stay fresh in its stacked boxes.

Trucks are a fraction of the traffic through the South Bronx. More than 77,000 vehicles pass through the neighborhood daily, spewing exhaust and gasoline fumes. The area is served by only one bus route and the nearest subway can be a significant walk. But with the work of the Hunt's Point Task Force, the opportunity for change is beginning to be realized.

Not so long ago, incinerators, industrial factories, and the rise of traffic and diesel fuels lent most images of our city a blurred, gray edge. The pollution from these sources hurt our city's air quality—and had harmful consequences for the health of New Yorkers.

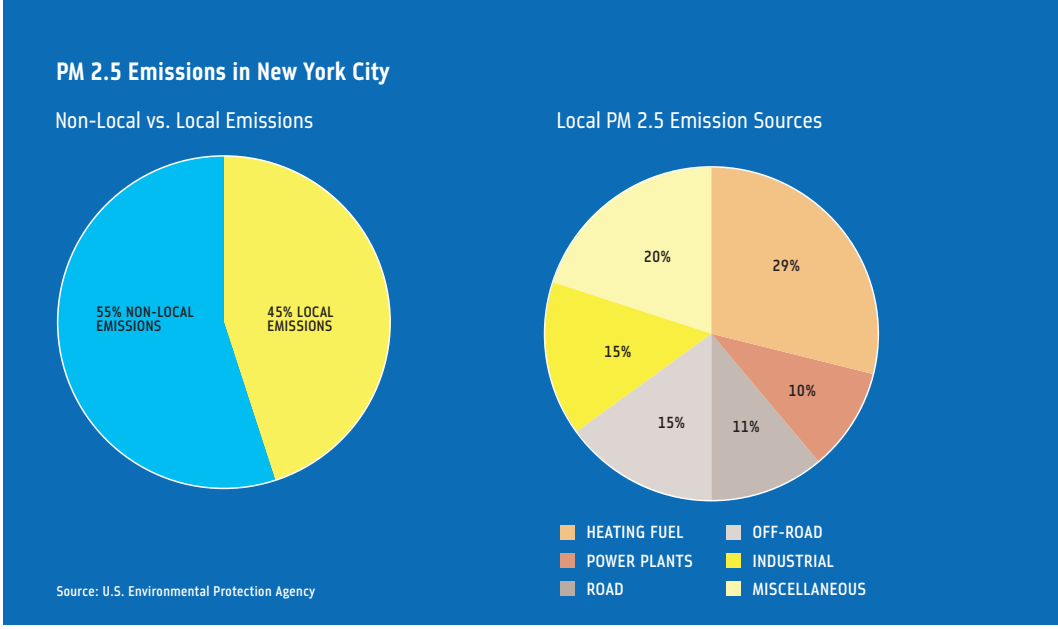
That has changed. Over the past two decades, Federal, State, and local governments have recognized the need for action. In addition to the Federal Clean Air Act, the City has lobbied—and, when necessary, litigated—all levels of government to strengthen these standards. Within the five boroughs, local programs and legislation—such as the retrofit program for City school buses and Metropolitan Transportation Authority (MTA) buses, the City's purchase of hybrid and Compressed Natural Gas (CNG) vehicles, and new construction standards—have all combined to give New York its cleanest air in half a century.

Still, the improvements that have occurred citywide are not felt equally among our neighborhoods. In some communities, the impacts of exposure to local air emissions have likely contributed to higher asthma rates and other diseases. Citywide, air quality fails to meet all of the Federal standards, in large part because of air pollutants that travel here from other states.

The New York City metropolitan area has not yet fully attained Federal air quality standards for two of six ambient air pollutants designated by the Environmental Protection Agency (EPA): ozone, and soot (PM 2.5). This puts us behind all but one of the largest cities in America.

Despite our progress, there is more to be done.

View over Central Park



In the 37 years since the passage of the Clean Air Act, our understanding and awareness of pollution has continued to increase. As our knowledge has evolved, the focus of air quality efforts has shifted. Three main considerations have shaped our approach to improving air quality in every neighborhood.

First, it is becoming clearer where the real dangers lie. Although the EPA tracks six criteria pollutants, among the most dangerous is PM 2.5—more commonly known as soot. Its small size lets it drift deeper into the lungs, where it can cause inflammation and other damage. According to the EPA, exceedances of the PM 2.5 standard cause up to 15,000 premature deaths annually. Estimates from the City's Department of Health and Mental Hygiene show that a 10% decrease of current levels in New York City would result in hundreds fewer deaths annually.

PM 2.5 is a by-product of burning fuel in trucks and buses, factories and power plants, and boilers. Other criteria pollutants—sulfur dioxide (SO_2), nitrogen dioxide (NO_X), and volatile organic compounds (VOC)—form additional PM 2.5 through chemical reactions. In fact, according to the State's Department of Environmental Conservation (DEC), somewhere between 45% and 60% of PM 2.5 levels in New York City comes from sulfate transformed in the atmosphere from SO_2 emissions. *(See charts above: PM 2.5 Emissions in New York City)*

Second, we have also learned what we do not control. More than 50% of New York's PM 2.5 originates outside the city. Some pollution drifts in from other states, mostly from mid-western power plants and factories; more is expelled from airplanes. The wind catches exhaust from the west and carries it into the city. Depending on the time of year, up to 70% of particulate matter measured in the city comes from somewhere else.

Some of these polluters can be held accountable. In 2003, the City joined several states and municipalities in a successful lawsuit challenging the EPA's plans to change regulations to enable older, more polluting facilities to increase air pollution emissions, which would have impacted New York City's air quality. The City also joined a number of states in a public nuisance action designed to force the five largest United States power plant CO_2 polluters to reduce their emissions.

Finally, it is clear we need to re-examine the methods we use for measuring pollutants to more accurately reflect their local impact.

The EPA began addressing regional air pollution issues as part of a broad, interstate approach. The EPA and DEC deliberately placed most monitoring systems away from highways, power plants, and heavily-trafficked roads so that their emissions wouldn't skew the results. The intent was not to record the output of an individual smoke stack, but to understand how that smoke affected the region.

Today, the EPA still largely measures its success by looking at overall area concentrations; the cumulative pollution gathered over a given region. But implicit in that decision is the acknowledgement that the closer one gets to an actual polluter, the greater the exposure to that pollution. In cities like New York, where roads, power plants and highways are interwoven through communities, the ambient measurements are inadequate indicators of actual exposure. Virtually all of us live, work, or walk near heavily trafficked streets. And we are learning that those are the highest risk zones.

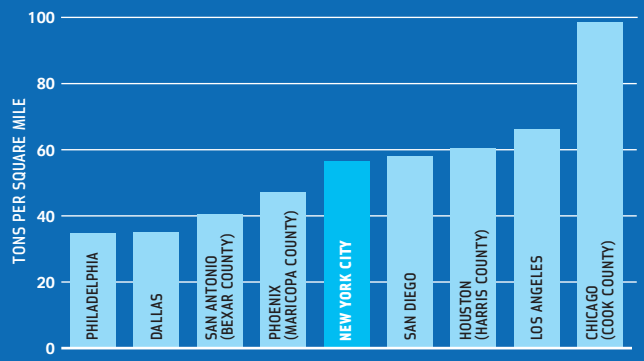
Recent studies have begun to measure local pollution exposure correlated with health impacts of the surrounding communities. This is the next front of air quality science. It is also an area where the City can have an enormous impact. When the issue is solving regional ambient air quality, the impact on any neighborhood is uncertain. But when the focus is on local exposure and community health, there are various opportunities to decrease environmental disparities.

In the South Bronx, where asthma rates are particularly high, the City has worked with local communities to begin installing a network of parks. We are exploring an alternative fuel station for drivers, a program to retrofit and upgrade trucks, and conversion of entire fleets to Compressed Natural Gas, which has 90% lower carbon monoxide and particulate matter emissions than diesel. And there's a lot more we can do.

The findings of these local exposure studies are compelling. We must build on these efforts to gain an accurate understanding of the air quality variations across New York City. Meanwhile, we can begin moving forward on policies designed to reduce our biggest known polluting sources—diesel fuels, gasoline exhaust, building heating oil, and aging power plants with outmoded technology—while promoting natural solutions like trees.

We will also support an air quality plan being developed by New York State to meet Federal standards. This plan will be released in 2008.

PM 2.5 in U.S. Cities*



Source: U.S. Environmental Protection Agency

In cases where city-level data is unavailable, county-level data is provided

PM 2.5 Air Quality Improvement Plan

CATEGORY OF EMISSION SOURCES	PM 2.5 EMISSION IMPROVEMENT
On-road Vehicles	9%
Off-road Vehicles	7%
Electricity And Heating Fuels	23%
Natural Strategies	≈1%
TOTAL	**40%**

Source: NYC Mayor's Office of Long-Term Planning and Sustainability
Calculations based on U.S. Environmental Protection Agency 2001 National Emissions Inventory

Our Plan

We must continue pressuring the states and Federal government to reduce air emissions nationwide. But even as we seek to hold others more accountable, we can begin targeting the sources in New York City even more aggressively. *(See charts above: PM 2.5 in U.S. Cities and PM 2.5 Air Quality Improvement Plan)*

Based on current emissions levels, we will need to reduce our local PM 2.5 by 39% per square mile to achieve the cleanest air of any big city in America. But as other cities take steps to improve, we must keep pace. That means we must be continually re-evaluating our goal and benchmarking it against other cities.

We have chosen PM 2.5 as our standard because of its significant impacts—and because we lag behind our peer cities in stemming its release into the air. But other pollutants such as SO_2, NO_X, and VOCs also contribute to our PM 2.5 levels, so achieving further reductions in those emissions will also be essential.

In order to achieve this goal, we have developed a four-pronged strategy. Transportation accounts for more than 50% of our criteria pollutant emissions. That's why we will reduce emissions from cars, trucks, and buses by promoting fuel efficiency, cleaner fuels, and cleaner or upgraded engines. We will also increase the use of exhaust filters and reduce the added pollution caused by congested streets and idling.

Second, we will apply similar strategies to off-road vehicles, including ferries, construction equipment, and planes. By partnering with the Port Authority, the MTA, New Jersey Transit, and private operators, we can achieve substantial reductions across all transportation sectors.

Third, the electricity and heating fuels used to power and heat our buildings accounts for over a third of emissions. As described in our energy plan, we must tackle old, outdated power plants and exchange them for modern, more efficient models; we must also switch to cleaner burning fuels and remove polluting boilers from schools, prioritizing sites where children suffer from higher rates of asthma and other diseases.

And finally, we must increase natural areas within the city to act as filters to further improve air quality. Trees, plantings, and landscaping serve multiple environmental and aesthetic ends—improving water quality, reducing carbon emissions, and enhancing quality of life in neighborhoods.

But we have an opportunity to do even more. In addition to improving air quality across the city, we can begin understanding how air quality impacts the health of New Yorkers in every neighborhood. That's why we will launch the largest local air quality study ever in the United States and develop an approach for tracking local emission levels. By advancing efforts to understand the real scope of the problem, we can direct our resources to the areas of greatest need.

Through these strategies, we will accelerate air quality improvements so that every New Yorker can depend on the promise that they are breathing the cleanest air of any big city in America.

Our plan for air quality:

Reduce road vehicle emissions

1 Capture the air quality benefits of our transportation plan
2 Improve fuel efficiency of private cars
3 Reduce emissions from taxis, black cars, and for-hire vehicles
4 Replace, retrofit, and refuel diesel trucks
5 Decrease school bus emissions

Reduce other transportation emissions

6 Retrofit ferries and promote use of cleaner fuels
7 Seek to partner with the Port Authority to reduce emissions from Port facilities
8 Reduce emissions from construction vehicles

Reduce emissions from buildings

9 Capture the air quality benefits of our energy plan
10 Promote the use of cleaner burning heating fuels

Pursue natural solutions to improve air quality

11 Capture the benefits of our open space plan
12 Reforest targeted areas of our parkland
13 Increase tree plantings on lots

Understand the scope of the challenge

14 Launch collaborative local air quality study

Reduce road vehicle emissions

In 2005, vehicles traveled 18.6 billion miles throughout the five boroughs, approximately 48 million miles per day. Each year, these trips generate about 11% of our local PM 2.5 emissions, as well as 52% of NO_X and 32% of VOC emissions, both of which contribute to PM 2.5 levels.

There are four main ways to reduce transportation-related emissions: use fewer vehicles by shifting to mass transit; decrease the amount of time vehicles spend stuck in congestion and idling; use less and cleaner fuels; and filter exhaust before it is released into the air.

To fund these efforts, a variety of sources exist: the Port Authority, the Federal Transit Administration (FTA), and the Congestion Mitigation and Air Quality (CMAQ) program. CMAQ grants are awarded in areas that currently or recently failed to meet Federal standards. They are funded by Congress through Federal highway funds and are intended to mitigate any impacts associated with road development.

All of these are necessary to **reduce overall PM 2.5 emissions across the city by 9% by 2017.**

INITIATIVE 1

Capture the air quality benefits of our transportation plan

We will address a significant source of harmful emissions by promoting the use of mass transit

The most effective way to use less fuel is to reduce the number of cars on the road. But this has not been easy over the past 25 years. Although our subway system improved dramatically, the percentage of drivers has remained essentially unchanged. It is clear that improvements to mass transit will not be enough to achieve a significant mode shift among New York drivers, an imperative for our economy and public health. Without intervention, traffic conditions will continue to deteriorate. By 2030, rush hour could last 12 hours every day.

That's why we will seek to implement congestion pricing, a system that charges drivers to enter a city's central business district. Already used in London, Stockholm, and Singapore, New York City's system will assess Manhattan drivers in the designated zone an $8 charge between 6am and 6pm. This charge will result in a 6.3% reduction of vehicles miles traveled in the area, which could yield a 3.7% reduction in VOC, a 2.8% reduction in NO_X, and a 2.8% reduction in carbon monoxide emissions across the city. *(See case study on facing page: Congestion Pricing's Air Quality Impact)*

INITIATIVE 2

Improve fuel efficiency of private cars

We will promote wider use of clean vehicles

In addition to using fewer vehicles, we can also make the ones we have more efficient. Already, New York State has adopted some of the newer vehicle emission standards enacted by California. This alone will reduce New York City's total CO_2 emissions by over 6% by 2030. But there is still room to be more ambitious; we will encourage the state to follow new fuel standards established by California that would reduce carbon emissions from all gasoline sold in New York State.

The City can also do more to reduce emissions of both criteria pollutants and CO_2 by encouraging the purchase of the cleanest, most efficient cars, and increasing the efficiency of taxis and for-hire vehicles.

We will waive New York City's sales tax on the cleanest, most efficient vehicles

In a five-year pilot program, the City will waive its portion of the New York State sales tax on the purchase of the cleanest and most efficient vehicles, including hybrids, according to the highest performance ratings in criteria set by the EPA.

On average, qualifying vehicles attain roughly twice the fuel efficiency and reduce air emissions by half. If 10% of the city's gas vehicles were efficient hybrids, it would reduce our citywide CO_2 emissions by 1%, and by 2030, if market trends accelerate, this will result in more than a 3% PM 2.5 emissions reduction citywide.

We will work with the MTA, the Port Authority, and the State Department of Transportation (State DOT) to promote hybrid and other clean vehicles

In other cities, toll discounts, preferential lane access, and other privileges have been granted to owners of hybrid cars to encourage people to buy them. Such incentives must be applied cautiously; for maximum effect, a single, region-wide approach would need to be adopted. The City will work with the other operators of the region's transportation network to identify approaches for promoting the most efficient vehicles that would make sense for New York.

We will pilot new technologies and fuels, including hydrogen and plug-in hybrid vehicles

The City was an early convert to hybrid vehicles and helped build a broader market for this technology. Over 1,700 hybrids have been added to the City's vehicle fleet in the past five years. By 2006, hybrids represented nearly 7% of the City's total fleet, as compared with less than 1% of the private vehicles registered in New York City.

To maintain our position as a leader in clean transportation technologies, the City will construct a hydrogen fueling station and pilot six hydrogen vehicles starting in 2008. Hydrogen cars emit little more than water vapor upon combustion. As a result, they are essentially zero emissions vehicles.

The three-year demonstration project will introduce the city to the possibilities and potential challenges of this technology. Through this pilot, we will establish a permitting process for hydrogen refueling and vehicle operation within the city and partner with the New York City Fire Department to develop safety standards for operating and refueling. By testing and refining these procedures, we will be able to accelerate a broader transition to hydrogen as soon as the technology becomes more readily available.

The fueling station will be owned and operated by Shell Hydrogen, a division of the Shell Group. Two sites in the Bronx and Staten Island are currently under consideration to be the first hydrogen fueling location in the city. To fund the $820,000 project, the City has applied to the New York State Energy Research and Development Authority (NYSERDA) for a grant.

In addition to hydrogen, we are carefully tracking the development of plug-in hybrid technology. A plug-in hybrid functions like a regular hybrid, but its battery can be charged by plugging into a standard outlet, instead of relying exclusively on the car's gasoline-fueled engine. Drivers can run on the electric mode to achieve 100 miles per gallon, consuming significantly less petroleum and emitting fewer air pollutants and greenhouse gases.

INITIATIVE 3

Reduce emissions from taxis, black cars, and for-hire vehicles

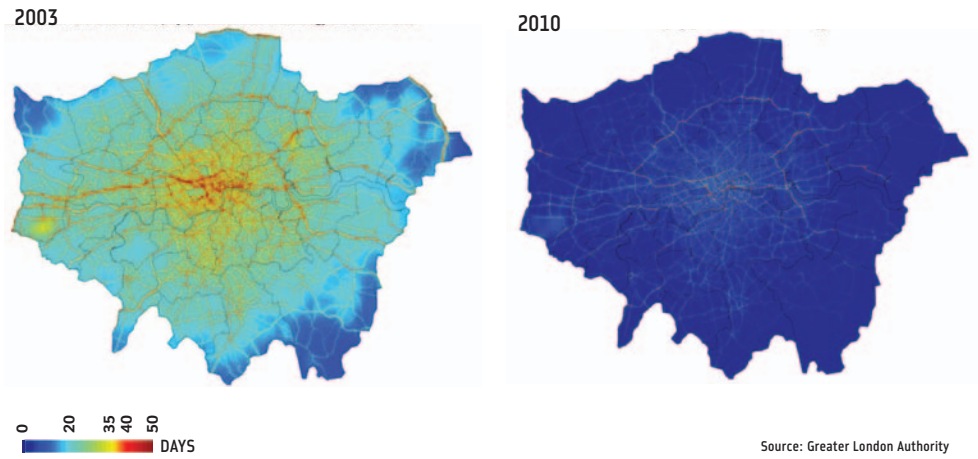
In New York City, there are currently over 13,000 yellow taxi cabs, 10,000 black cars, and 25,000 for-hire vehicles. Because taxis travel tens of thousands of miles per year and the current fleet is so fuel inefficient, taxis account for a substantial share of city emissions: 4% of all ground transportation CO_2 emissions and 1% of all city CO_2 emissions. This initiative will reduce citywide CO_2 emissions by 0.5% while also improving air quality.

We will reduce taxi and limousine idling

Idling is the continuous operation of a vehicle's engine while it is stopped. Many of the city's yellow taxis and black cars spend significant time idling in order to maintain access to their air conditioning and heating. Although there is currently no way to keep air conditioners reliably running with the engines off, emerging technologies have it made it possible to keep a car heated without idling.

In 2007, the City will complete an evaluation of different anti-idling technologies with the black and yellow car industries and select the best option. We will implement this $6 million program between 2008 and 2010 to equip cars with the chosen anti-idling solution, bolstered by a $4.8 million CMAQ grant. We will also launch a citywide anti-idling campaign to reduce idling of all vehicles even more.

Days in London and Surrounding Areas with Excessive PM 10 Levels



Source: Greater London Authority

Models based on 2003 meterology and London atmospheric Emissions Inventory. The daily mean PM 10 is set to an objective level of 50 micrograms per cubic meter, allowed to be exceeded up to 35 days a year.

CASE STUDY

Congestion Pricing's Air Quality Impact

In addition to Buckingham Palace and Trafalgar Square, visitors to London can now take advantage of a new attraction: cleaner air.

As a result of an ambitious congestion pricing experiment aimed at reducing traffic in the city's central business district, congestion fell by 30% and bus use rose by 38% during the morning peak in the first year—this, in a section of the city once infamous for its maddening bumper-to-bumper traffic. And the program is literally a breath of fresh air.

Smog-causing nitrogen oxide emissions and soot in the city have declined by 12%. In addition, carbon dioxide emissions are estimated to have declined by 20%, along with fossil fuel consumption. Region-wide concentrations of particulate matter are also falling.

Congestion pricing programs, which also have been implemented globally in places like Stockholm and Singapore, charge motorists a fee to drive into the densest business districts, providing an incentive for drivers to find other methods of transportation or to carpool.

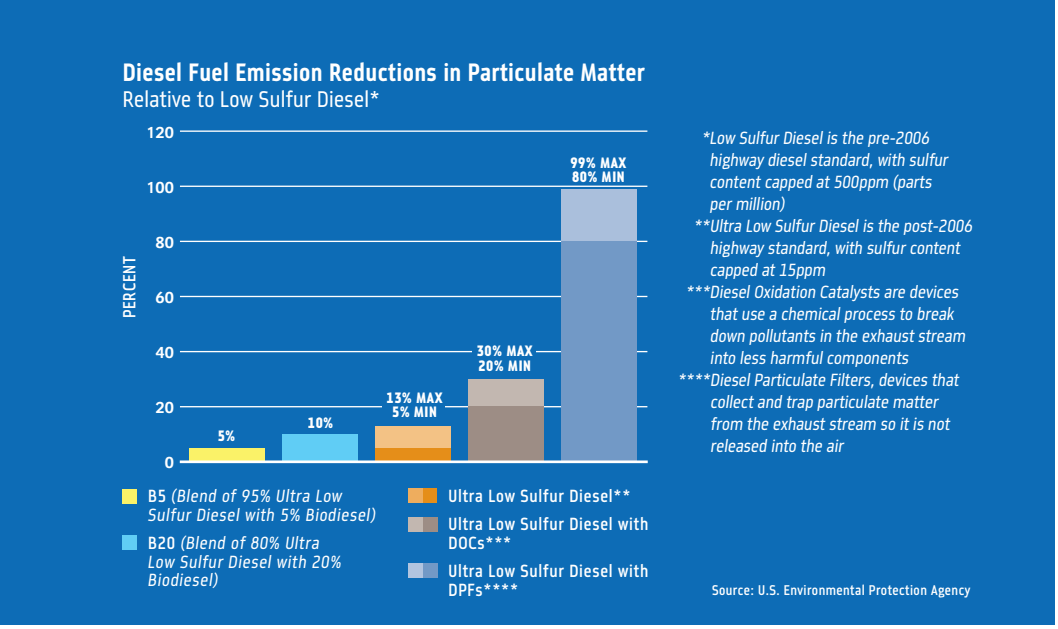
Wherever they have been implemented, these programs have had similarly positive results on both traffic and air quality.

For example, Singapore has seen a 176,400 pounds-per-day reduction in carbon dioxide emissions and a 22-pound reduction in soot.

These pollutants have been linked to increased rates of asthma, emphysema, cancer and heart disease—a fact that has not gone unnoticed in New York City, where child hospitalization rates for asthma are more than twice the national average. In the South Bronx, where more than 77,000 vehicles pass through each day, it is almost four times as high.

"The fumes from those cars and trucks make asthma-triggering pollution commonplace," said Andy Darrell, New York Regional Director for Environmental Defense.

"London already has used congestion pricing to reduce traffic congestion by 30% and pollution by 12% to 20%," said Darrell. "There's no reason why New York—the greatest city in the world—can't do it."



We will work with the Taxi and Limousine Commission (TLC) and the taxicab industry to double the taxi fleet's efficiency

The dominant taxi vehicle today achieves only 10 to 15 miles per gallon (mpg). More fuel-efficient vehicles are used in limited numbers today, including hybrid-electrics and even a lithium-ion battery powered vehicle. These vehicles are in the first years of use and questions regarding their durability as 24-hour, seven-day-a-week vehicles have yet to be fully answered. We will aim to double the efficiency of new taxis by 2012. Achieving the stated goal will require aggressive work on the part of the TLC to push the automotive industry and the taxicab industry towards answering these questions and ensuring that the vehicles used as taxicabs meet the high safety, service, and sustainability standards of New Yorkers.

This Plan could result in the entire fleet being converted to more fuel-efficient vehicles within eight to 10 years.

We will work with stakeholders to double the fuel efficiency of black cars and for-hire vehicles

In addition, we will work with the TLC to set new standards for additions to the fleet. By 2010, we will require that new cars achieve double the fuel efficiency of today's non-hybrid vehicles. The city's black car industry includes generally late-model luxury sedans that serve a largely corporate clientele through long-term contracts. After several years of use, many of these cars are transitioned to use as community car service vehicles. There are more than 25,000 for-hire vehicles in the city, and many are recycled black cars or law enforcement vehicles. Therefore, cleaner black cars today means cleaner community car service vehicles tomorrow.

This commitment would result in the entire black car fleet being converted to cleaner vehicles within five years, with a 50% decrease in CO_2e emissions from this sector, or 0.8% of the city's overall CO_2e emissions, while also improving air quality.

In addition, TLC will begin working with the community car services, vehicle owners, and lenders to improve awareness of the public benefits and cost savings of running clean vehicles with good gas mileage over old vehicles with poor gas mileage. This will help us work towards a goal of reducing CO_2e emissions from these fleets by 50% by 2017.

INITIATIVE 4

Replace, retrofit, and refuel diesel trucks

We will reduce diesel emissions through City investment and incentives

A substantial amount of the pollution from on-road vehicles is concentrated in one mode; according to a 2002 study, 25% to 50% of the city's local overall criteria pollutant emissions can be traced to heavy duty diesel-trucks.

Significantly reducing emissions from diesel vehicles requires either buying new trucks or employing a range of alternate strategies to improve performance. With the new Federal diesel regulations that went into effect in 2007, all new trucks will release 90% fewer emissions. But diesel vehicles tend to operate for many years; as a result, immediate air quality benefits will require improving the performance of older vehicles. Strategies include retrofitting trucks with diesel oxidation catalysts (DOC) or diesel particulate filters (DPF), upgrading engines, using cleaner fuels, and reducing idling.

A DOC is installed on the tailpipe of the truck to convert CO (carbon monoxide) and HC (hydrocarbons) to H_2O (water) and CO_2. DOCs are often used when equipment is too old to accept the modern retrofits, and range from $2,000 to $5,000 each. A DPF includes the DOC converter but also incorporates a ceramic honeycomb-like structure to capture additional diesel soot or small particles. That means that it can capture a substantially higher amount of PM 2.5, but can be three times as expensive. The cost of a DPF ranges from $10,000 to $15,000, depending on the type and age of the vehicle on which it is installed.

In conjunction with Ultra Low Sulfur Diesel (ULSD), it is possible to reduce PM 2.5 emissions from a single truck by 85% to 90% using these strategies.

We will introduce biodiesel into the City's truck fleet, go beyond compliance with local laws, and further reduce emissions

In 2005, the City Council required the retrofit or replacement of most heavy-duty City highway vehicles with the "best available retrofit technology" and the use of ULSD by 2012. *(See chart: Diesel Fuel Emission Reductions in Particulate Matter)*

The City is in the process of retrofitting its heavy duty vehicles to achieve and exceed compliance thresholds. While compliance can be reached through the use of DOCs or DPFs, some agencies are going above and beyond the requirement with purchases of new compressed natural gas (CNG) trucks. For example, the Department of Sanitation (DSNY) will purchase 10 new CNG trucks in 2007. Similarly, the Department of Parks & Recreation (DPR) purchased 20 CNG sedans this fiscal year and plans to purchase 20 more in the next fiscal year.

With alternative fuels, we will go beyond the legislative requirements and explore even more ambitious options. Biodiesel is an alternative diesel fuel that is produced from animal fats or vegetable oils (including recycled restaurant oils). It can be used alone, but is more commonly mixed with regular diesel. B5 fuel combines 5% biodiesel with 95% regular diesel, while B20 mixes 20% biodiesel with 80% diesel.

Biodiesel has significantly lower emissions than petroleum diesel. DSNY and DPR have already established B5 biodiesel fueling stations for their heavy duty vehicles. During the summer, DPR uses B20 when the fuel is not at risk of gelling from the cold weather.

The City will introduce biodiesel throughout its heavy-duty vehicle fleet. For example, in spring 2007, the City's Department of Transportation (DOT) will begin using B5 biodiesel. The City will gradually increase the percentage of B20 biodiesel as the higher mixtures are proven to work under different conditions and there is an adequate and reasonably priced supply.

We will accelerate emissions reductions of private fleets through existing CMAQ programs

In addition to the City's efforts to improve the environmental performance of its own fleet, we will also work to reduce emissions from private fleets. Private delivery fleets log thousands of miles a year on New York roadways. Since 2000, we have worked with NYSERDA to manage a Federal CMAQ-funded initiative that helps private sector companies and non-profit entities retrofit their vehicles or switch to alternative fuels. Program participants can convert to either CNG or hybrid vehicles or retrofit their diesel vehicles. To date, the City has reached approximately 90 trucks, spending roughly $4 million. And we will do more. *(See case study: FedEx)*

Over the next five years, we will significantly expand this program through $20 million in CMAQ funding. Depending on the type of upgrade and the vehicle, this will allow us to possibly reach more than 450 trucks.

We will work with stakeholders and the State to create incentives for the adoption of vehicle emission control and efficiency strategies

To achieve our air quality goal, we need to reduce emissions from an even greater number of diesel vehicles. The City will work with the State and other stakeholders to create a fund to support costs for retrofits and anti-idling technologies for at least 1,200 more vehicles in the city over five years.

California has developed a program that can serve as a strong model for New York State. The California Carl Moyer Program offers over $140 million a year to fund retrofits to diesel trucks. Over the first six years, the fund has resulted in retrofits of about 7,000 vehicles and emission reductions of 14 tons of NO_X and over one ton of PM per day. In addition, this program has lead to wide-scale adoption of tailpipe controls and the use of lower carbon fuels such as ethanol, biodiesel or natural gas. Another state with a similar programs is Texas, while Massachusetts and Pennsylvania will be unveiling rebate programs by the end of 2007. It is time for New York State to join them.

We will improve compliance of existing anti-idling laws through a targeted educational campaign

Idling releases pollutants into the air, increases engine operating costs for fleets, and shortens engine life. The best anti-idling strategies include a mixture of incentives for retrofits, laws and enforcement of those laws, and education. The CMAQ-funded program and the proposed State incentive mentioned above will play a significant role in reducing emissions from truck idling. But there is even more we can do locally.

Anti-idling technologies are already explored and implemented when feasible, including cold plating (allowing the vehicle to stay refrigerated when the engine is turned off for short periods of time). The City is evaluating these technologies as solutions for our local refrigerated delivery and long-distance trucking fleets. Once the most effective strategies have been identified, we will use CMAQ funding to incentivize owners to incorporate the technologies.

New York also limits the amount of time a vehicle can idle. New York City has a three-minute idling limit that targets all vehicles, including trucks and buses. New York State established an anti-idling law in 1990 that set a five-minute idling limit for heavy-duty diesel vehicles, excluding marine vehicles.

To achieve the widest compliance, the City will partner with community organizations and businesses to launch a series of public service announcements, signage, and other marketing strategies in 2008 to educate the public on the anti-idling laws and the environmental and economic benefits of reduced idling. In addition, the city and its partners will employ a more targeted outreach to drivers, business owners, fleet operators, and unions. A similar program launched by Toronto cost $100,000 to $300,000 and, in some specific locations, resulted in more than a 60% reduction in idling.

CASE STUDY
FedEx

For 36 years, a battalion of diesel-powered FedEx trucks have made their way through our city's streets.

That began to change, though, in 2004, when FedEx began delivering cleaner air as part of a City initiative to reduce emissions from private fleets. Since then, the company has rolled out 48 low-emission, hybrid electric trucks in New York City.

Emblazoned with FedEx's ubiquitous logo, the environmentally-friendly vehicles decrease particulate emissions by 96% and travel 57% farther on a gallon of fuel, reducing fuel costs by over a third.

The project began when FedEx applied for Congestion Mitigation and Air Quality (CMAQ) funds administered by the City's Department of Transportation and New York State Energy Research and Development Authority (NYSERDA). The funds, which are targeted to fleets that will see the greatest emissions and fuel reductions, allowed FedEx to purchase newly-designed vehicles that blended conventional and electric technology.

"New York City is a dynamic economy with many trucks on its streets essential to keep commerce moving," said John Formissano, FedEx's Vice President of Global Vehicles. "It is important that we continue to develop innovative solutions to reduce vehicle emissions."

Indeed, if 10,000 hybrid electric vehicles were on the road rather than current standard vehicles, annual smog-causing emissions would be reduced by 1,700 tons—the equivalent of taking all passenger cars off our roads for 25 days. Carbon dioxide emissions would be reduced by 83,000 tons—the same as planting two million trees. And diesel fuel usage would be cut by 7.2 million gallons, which requires one million barrels of crude oil to produce.

INITIATIVE 5

Decrease school bus emissions

We will retrofit both large and small school buses and reduce their required retirement age

In 2005, the City Council passed Local Law 42, which mandated the use of ULSD and Best Available Technologies (BATs) in school bus transportation. Approximately 3,800 buses are subject to the law. The Department of Education (DOE) is currently working with private school bus companies to retrofit all full-size school buses. To meet BAT requirements, buses will receive DPFs, DOCs, and other filtration systems.

But several thousand smaller school buses were not considered under this local law. The majority of these buses (approximately 2,700 of over 3,000 buses) are diesels.

The City will retrofit all buses with the best available retrofit technology, including DPFs. DPFs would eliminate at least 85% of the small particulate matter. State DOT, which controls the CMAQ funds, has stated that it is willing to provide $20 million for this project and the City will fund the remaining $5 million.

In addition, in the new or extended contracts with the private bus owners, DOE will require that all buses are retired earlier than the existing 19 year limit. Over the next several months, the City will evaluate the appropriate retirement age based on cost and environmental performance.

While private school buses are not covered by the local law, the City will challenge private schools to encourage similar environmental performance.

Reduce other transportation emissions

The EPA separates vehicles that drive on roads and other forms of transportation into two separate categories of study. These "off-road" vehicles include airplanes, trains, ferries, outdoor power equipment, and construction machinery such as dozers, loaders and cranes.

With a growing ferry network and a construction boom, these off-road vehicles contribute almost 15% of the city's PM 2.5 emissions.

The methods to reduce emissions from some of these vehicles are similar to those used for on-road vehicles: improve efficiency, burn cleaner fuels, and filter emissions. By employing these strategies, we will reduce citywide PM 2.5 emissions by 7%.

INITIATIVE 6

Retrofit ferries and promote use of cleaner fuels

We will retrofit the Staten Island Ferry fleet to reduce emissions

Staten Island ferries carry over 19 million passengers annually on a 25-minute, five-mile ride. But these diesel-fueled boats each contain two or three propulsion engines that release significant emissions of PM 2.5, NO_X, hydrocarbons, and sulfur.

The Port Authority is currently funding replacement or retrofits of engines, reducing the eight-boat fleet's total NO_X emissions by an estimated 40%, or 570 tons per year. The replacement/retrofit program will also have a positive effect on PM 2.5. But to further target the PM emissions, the City will install DOCs on each propulsion engine, at a cost of $75,000 to $90,000 per engine.

The City will reduce emissions from the ferries even more with the use of Ultra Low Sulfur Diesel 2 (ULSD2), once a usable form is locally available.

We will work with private ferries to reduce their emissions

Already, we have been working with regional private ferry companies to reduce their emissions. All 41 private ferry boats that serve New York City have agreed to install DOCs in 2007, under a fully-funded Federal program.

But there is an opportunity for even greater reductions. Because they use a different type of engine than the Staten Island Ferries, the private ferry engines are able to operate on Ultra Low Sulfur Diesel 1 (ULSD1), which is available in the region. Although this will increase fuel costs by a few cents per gallon, the emissions reduction is substantial. Therefore, the City will join with the City Council in proposing this conversion. The use of ULSD1 would reduce PM 2.5 by 5% to 10% beyond the reductions expected when DOCs are installed on the city's 41 private ferries in 2007.

INITIATIVE 7

Seek to partner with the Port Authority to reduce emissions from Port facilities

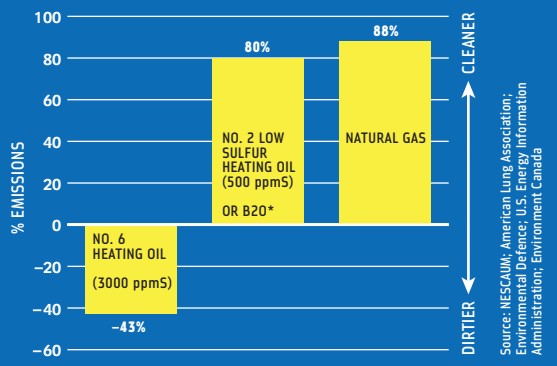
We will seek to work with the Port Authority to reduce emissions from the Port's marine vehicles, port facilities, and airports

Airports and port-related equipment contribute substantially to our local emissions: 11% of particulate matter and 23% of our locally-generated NO_X come from these sources.

This infrastructure is largely controlled by the Port Authority. We will seek to partner with them to position the region's ports as environmental leaders by developing a comprehensive air quality and greenhouse gas emissions plan.

Possibilities for improvements at airports include the use of electric plug-ins at gate ports, clean auxiliary power units, or towing to move planes to and from the gate. The Federal Aviation Administration operates a program to reduce emissions at airports and could be a source of funding for these initiatives.

Comparison of Heating Fuel Emissions
Percentage Reduction in Particulate Matter Emissions Relative to No. 2 heating oil (2000–2500 parts per million Sulfur)



Source: NESCAUM; American Lung Association; Environmental Defence; U.S. Energy Information Administration; Environment Canada

*B20 is a blend of 80% No.2 Low Sulfur Heating Oil with 20% Biodiesel

INITIATIVE 8

Reduce emissions from construction vehicles

We will accelerate adoption of technologies to reduce construction-related emissions

Construction equipment significantly impacts local emissions, accounting for as much as 13% of NO_X and 30% of PM from off-road vehicles. In 2003, Local Law 77 required that City construction projects use the best available technologies on-site to reduce emissions, such as DPFs, DOCs, and emerging plug-in technologies that allow vehicles to run on electricity instead of combusting fuel. More than 800 City-owned vehicles are subject to the law, along with an additional 115 pieces of leased equipment. Upgrades by City contractors will also impact emissions in private development projects, as the contractors use these new tools for other projects.

The City will accelerate compliance with the law by requiring a consultant to work with all City agencies on implementation. That includes cataloguing every piece of relevant equipment, analyzing possible technologies, and developing standards for construction sites. The consultant will help agencies navigate this process and avoid duplication of effort.

In addition, in City Requests-for-Proposals and the resulting contracts, we will go beyond Local Law 77 and require certain on-road vehicles involved with City projects, such as trucks that remove debris, to meet the same standards. City contractors will be able to meet the terms of the contracts either through retrofits or through new vehicle purchases.

Reduce emissions from buildings

Buildings and industry are responsible for roughly 55% of our PM 2.5 emissions. Improvements in efficiency, as targeted for our energy and carbon goals, will result in a 15% reduction in PM 2.5 for this sector, for a reduction of approximately 6% of overall city PM 2.5 emissions. Further reductions in these sectors will require the use of cleaner fuels. The switch to more natural gas burning power plants or biodiesel blends along with the clean fuel initiatives outlined below will result in an additional 17% reduction in PM 2.5.

INITIATIVE 9

Capture the air quality benefits of our energy plan

We will reduce energy-related emissions by cutting energy consumption and cleaning our energy supply

As described in the energy chapter, there are currently 23 large power plants in New York City; the oldest was constructed in 1951. By 2030, more than 50% of our power plants will be more than 70 years old. These older plants can use as much as 50% more fuel than new technologies such as combined cycle gas turbines (CCGT). In addition, the fuel in older plants tends to be dirtier than the natural gas used in newer plants or the biodeiesel recently piloted by NYPA.

As part of our comprehensive energy plan, we will aggressively improve the energy efficiency of our buildings to reduce electricity and heating fuel consumption. We will also facilitate the repowering, replacement, and retirement of the out-of-date turbines of older plants through long-term contracts for new, clean energy supply. Finally, we will expand clean on-site generation and incorporate more renewable energy. All three strategies reduce the emissions of pollutants and, at the same time, they cut CO_2.

INITIATIVE 10

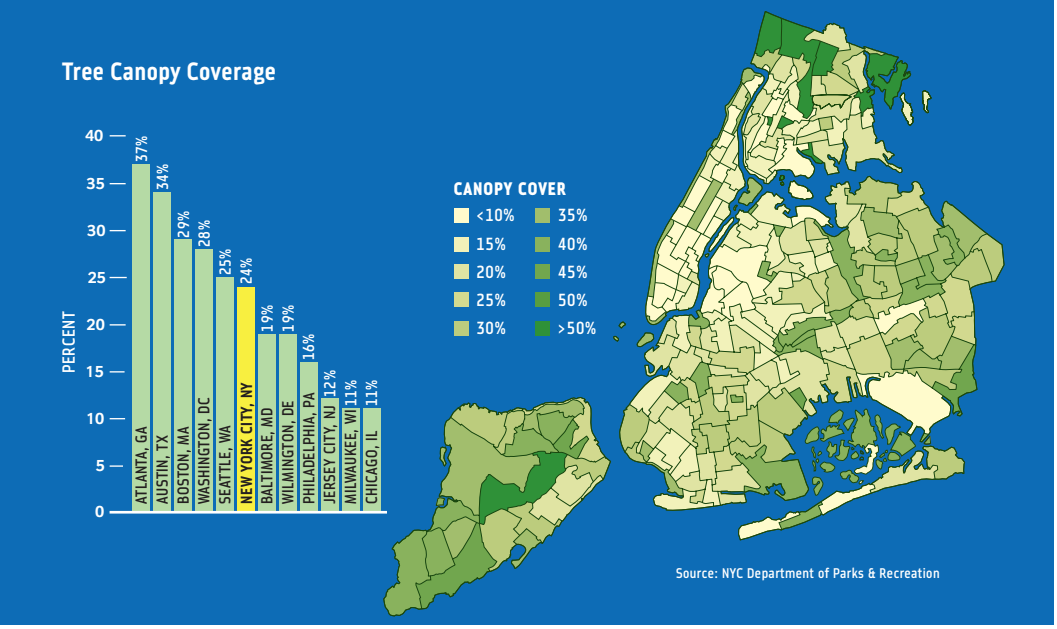
Promote the use of cleaner burning heating fuels

We will pursue multiple strategies to reduce heating fuel usage and enforce stricter emission standards in buildings

Our energy strategy aims to reduce greenhouse gas emissions from heating fuel by 17% through promoting efficiency and improving building insulation. This will also lead to significant reduction in SO_2, NO_X, and PM 2.5 emissions. But we can reduce these emissions further by improving the environmental performance of the fuels we use. *(See chart above: Comparison of Heating Fuel Emissions)*

Heating oil is classified into six types, numbered one through six, based on its boiling temperature, composition, and purpose. The higher numbers are heavier, more viscous, and tend to emit more pollutants when burned. They are also the least expensive. Fuel oils No. 1, No. 2, and No. 3 tend to burn more cleanly and are more costly to purchase. Each of these fuels can have higher or lower concentrations of sulfur, which also impacts the pollution they produce.

Currently, buildings have the option of using either a standard home heating oil—No. 2 fuel with 2,000 sulfur parts per million (ppm)—or a heavier No. 6 fuel. Other cleaner fuel options exist, including natural gas bio-diesel, and cleaner grades of heating oil.



We will lower the maximum sulfur content in heating fuel from 2,000 ppm to 500 ppm.

Currently the sulfur content in No. 2 heating oil—the most commonly used heating oil in the city—is capped at 2,000 ppm. Lowering that cap to 500 ppm, a grade also known as "low-sulfur" that until recently was used for on-road diesel, would result in significant reductions in criteria emissions, with little impact on fuel cost. The City will work with the State to lower the maximum sulfur content permitted in No. 2 fuel used for heating buildings to 500 ppm, creating significant air quality improvements with a modest increase in fuel cost. This grade is readily available and is the current standard in much of New England.

This reduction in the maximum sulfur content in No. 2 heating oil will result in 85% reductions of SO_2 and roughly 50% reductions in PM 2.5. This alone will reduce overall PM 2.5 emissions in the city by 5%. This change will also improve burner efficiency, thereby reducing the amount of fuel consumed. In addition, furnaces burning cleaner fuel do not have to be serviced as frequently. This will reduce operating costs for the customer, generating savings that outweigh the increased cost of the fuel.

We will reduce emissions from boilers in 100 city public schools

Currently, 478 city schools burn No. 4 or No. 6 heating oil; many of these are in neighborhoods where the asthma rates are over three times higher than the national average. By 2017, the City will modify the boiler systems of 100 of these schools, to enable the boilers to burn a cleaner fuel. Schools located in neighborhoods with the highest asthma hospitalization rates—generally rates greater than seven per 1000—will be prioritized in order to achieve the maximum local benefits. These neighborhoods are concentrated in the Bronx, Harlem, Central Brooklyn, and along Jamaica Bay. On average, boiler replacement will cost $5.7 million per school. The cleaner burning boilers will emit 44% less PM 2.5 emissions. Additional benefits will be lower maintenance expenses and CO_2 reductions in the range of 50% because of fuel switching and increased efficiencies, as well as reduced maintenance expenses.

Pursue natural solutions to improve air quality

Trees and other natural areas confer tremendous benefits on the city, including improvements to air and water quality, retention of greenhouse gases, reduced energy costs, and a more inviting streetscape. Trees in particular are effective at cleansing the air. They do this by absorbing pollutants—sulfur dioxide, nitrogen dioxide, and carbon monoxide—through their leaves and intercepting airborne particulate matter on leaf surfaces. Every year, New York City trees remove an estimated 2,200 tons of criteria pollutants from the air. They also take in 42,300 tons of carbon each year. *(See graphic above: Tree Canopy Coverage)*

Indirectly, trees further reduce air pollution by shading buildings, thereby reducing the need for air conditioning during the peak electricity demand periods. In addition, shaded streets have lower temperatures in the summer, slowing the formation of ground-level ozone from NO_X and VOCs. Trees also block wind in the winter, slightly reducing the need for heating. Finally, trees make neighborhoods more beautiful and have been shown to raise property values.

The city's 5.2 million trees cover 24% of the city, 3% below the average for major American cities. Approximately half those trees are located within City-owned parks and along our streets; the other half are largely located on private property. By 2030, we will add an additional one million trees to the city. To achieve this goal we will pursue three main strategies.

INITIATIVE 11

Capture the benefits of our open space plan

We will rely on accelerated tree plantings to help remove harmful emissions as we improve the public realm

As mentioned in our public realm plan, we will ensure that every New York street is fully lined with trees by 2030. Achieving 100% "stocking" for these street trees will require almost tripling the number of trees planted every year in the city.

To achieve this accelerated tree planting schedule, we will revise the zoning code to require new construction and major redevelopment projects to plant one street tree for every 25 feet of street frontage. Private development is projected to provide 3,000 to 5,000 trees a year, with an additional 3,000 per year generated through major capital construction projects.

The City will also plant an additional 12,500 per year at an annual cost of $17 million. We will prioritize plantings in neighborhoods with the lowest stocking levels and highest air quality concerns.

INITIATIVE 12

Reforest targeted areas of our parkland

We will reforest 2,000 acres of parkland

The City will expand efforts to reforest approximately 2,000 acres of parkland by 2017, without compromising space for existing ballfields. Reforestation will take place in Fresh Kills Park in Staten Island, Cunningham Park in Queens, Van Cortlandt in the Bronx, Highbridge in Manhattan, and other parks around the city at a cost of $118 million.

INITIATIVE 13

Increase tree plantings on lots

We will clean our air while we safeguard our water quality

To increase our tree canopy cover, we must increase coverage beyond our parks and sidewalks. That will require more trees on public and private lots, including parking lots, private housing, institutional properties such as schools and university campuses, and City-owned land.

We will capture the benefits of our water quality strategy

According to the Department of City Planning, parking lots comprise almost 2,000 acres or approximately 1% of the city's land area. The dark asphalt pavement contributes to the heating of the urban area on hot, sunny days, which accelerates the formation of ground-level ozone. In addition, the hard, smooth surfaces contribute to rain runoff that inundates sewer systems during storms. Currently, 10% of the land area of parking facilities in New York City is covered by tree canopy.

The proposed zoning regulations will require perimeter landscaping of commercial and community facility parking lots over 6,000 square feet as well as street tree planting on the adjacent sidewalks. Parking lots over 12,000 square feet would also be required to provide a specified number of canopy trees in planting islands within each lot. This change will not only support cleaner air, it will also mitigate the visual impact of large asphalt lots while more effectively managing storm water runoff and the urban heat island effect.

We will partner with stakeholders to help plant one million trees by 2017

The City will work with community, non-profit, and corporate partners on a 10-year goal to plant trees on private residential, institutional, and vacant land properties in order to achieve our goal to plant one million trees. The City and its partners will focus on areas whose natural environments have borne the brunt of past City policies, and neighborhoods with few green spaces.

Understand the scope of the challenge

The existing air quality monitoring network is designed to track concentrations of the EPA's six criteria pollutants over large geographic areas. This is helpful for identifying broad trends, but does not let us understand the exposure New Yorkers experience every day in their neighborhoods.

That's because there are only 24 monitors for the entire city—and they are located on roof tops, away from the traffic, people, and sidewalks. As a result, we cannot focus our reduction efforts on the areas of greatest need—or track our successes with any precision.

To develop a comprehensive plan that will protect the health of New Yorkers in every neighborhood, we must develop new tools to understand the real nature of the challenge we face.

INITIATIVE 14

Launch collaborative local air quality study

We will monitor and model neighborhood-level air quality across New York City

Over the next 12 months, the City will work with experts in the academic, medical, and private sectors to develop one of the largest local air quality studies ever in the United States. Starting in 2008, the City will begin to study, monitor, model, map, and track local pollution and local adverse impact across New York City, with an emphasis on traffic-related emissions. *(See chart above: Asthma Hospitalizations)*

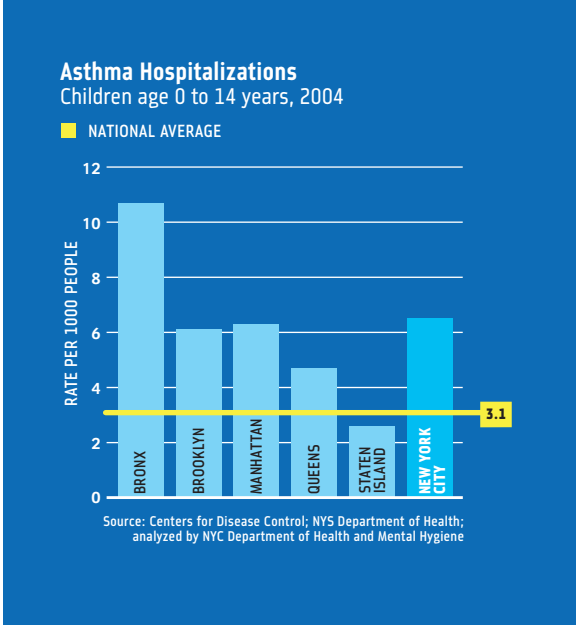
This enhanced monitoring system in New York will:

- Measure the variation in air quality across all neighborhoods over time
- Assess the impact of development, infrastructure changes, traffic changes, and traffic mitigation measures in our communities
- Provide guidance for future efforts to improve neighborhood air quality

Although a study of this scale is almost unprecedented, our effort will build on recent successful projects to track local emissions. For example, exposure to certain pollutants at schools in the South Bronx have been correlated with hourly truck traffic on nearby highways, and students with asthma had more symptoms on high traffic pollution days.

This research has employed a variety of cost-effective approaches that we can adapt for understanding air quality in all 188 neighborhoods. Strategies will include periodic monitoring at a range of sites and developing statistical models that correlate the impact of traffic and land-use patterns with air quality.

The study findings will establish priority neighborhoods for improvement and provide baseline data to track the impact of development, policy, and transit changes over the coming decades.



Conclusion

These initiatives are designed to provide everyone in our city with healthier air to breathe. We should expect no less than the cleanest air of any big city in America, given the track record we have set in becoming the country's safest large city.

By working to reduce emissions both nationally and locally, we can surpass the air quality of the nation's other largest cities, including Los Angeles, San Antonio, Phoenix, San Diego, Dallas, Chicago, Philadelphia, and Houston.

But these cities will not stop trying to achieve cleaner air for their citizens—and we won't either. That's why we will pioneer a process to track changing pollution levels in every New York neighborhood. As our knowledge improves, we will be able to target our efforts more precisely, and calibrate them to achieve the greatest gains for public health and environmental justice.

Achieve the cleanest air quality of any big U.S. city

Despite improvements since the passage of the Clean Air Act of 1970, New York City's air quality still fails to meet federal standards. Trucks and cars, boilers, power plants, and construction equipment continue to emit pollutants that trigger asthma attacks and contribute to disease. New York City is second only to Los Angeles among U.S. cities for the poor quality of its air.

Our plan for the future of air quality includes the following initiatives:

Reduce road vehicle emissions

1 Capture the air quality benefits of our transportation plan

2 Improve fuel efficiency of private cars

3 Reduce emissions from taxis, black cars, and for-hire vehicles

4 Replace, retrofit, and refuel diesel trucks

5 Decrease school bus emissions

Reduce other transportation emissions

6 Retrofit ferries and promote use of cleaner fuels

7 Seek to partner with the Port Authority to reduce emissions from Port facilities

8 Reduce emissions from construction vehicles

Reduce emissions from buildings

9 Capture the air quality benefits of our energy plan

10 Promote the use of cleaner-burning heating fuels

Pursue natural solutions to improve air quality

11 Capture the benefits of our open space plan

12 Reforest targeted areas of our parkland

13 Increase tree plantings on lots

Understand the scope of the challenge

14 Launch collaborative local air quality study

Air Quality

OUR PROGRESS

Imposed higher standards on taxis and ferries and pursued cleaner-burning fuels

The PlaNYC initiatives we launched this year start us toward the goal of cleaner air. We have adopted policies to convert all yellow taxis to clean vehicles, proposed similar improvements to black cars, began retrofitting on the Staten Island Ferry fleet, continued retrofitting private trucks, invested in energy efficiency upgrades for City-owned buildings, and began to switch to cleaner-burning fuels. We have planned a local air quality study that will measure the variation in street-level air quality across different neighborhoods. This year, we will focus on approaches to reduce school bus emissions even more, expand cleaner vehicles to the livery fleet, and cut pollutants from construction equipment.

Reduce road vehicle emissions

Road vehicle emissions are one of the three main local sources of air pollution. They generate about 11 percent of our local direct emissions of PM 2.5, as well as 52 percent of nitrogen oxide emissions and 32 percent of volatile organic compound (VOC) emissions, both of which contribute to ozone and PM 2.5. Reducing emissions from cars, trucks, and buses requires several strategies: fuel efficiency, cleaner fuels, cleaner or upgraded engines, and the retrofit of diesel exhaust systems with filters and catalysts. The City has been a leader in these approaches; even before PlaNYC, we owned the largest single fleet of hybrid cars in the United States, and were exploring alternative fuels such as Compressed Natural Gas (CNG) and biodiesel in the City's fleet of over 6,800 heavy-duty vehicles.

Over the past year, the City has expanded its use of sulfur-free biodiesel, CNG, diesel-electric hybrid, and other alternative technologies for its vehicles. As part of its effort to reduce the greenhouse gas emissions of City operations by 30 percent by 2017, the City has launched an extensive study of its fleet operations to look at lower-emission, higher mileage vehicles and operational changes to reduce the City's use of vehicles.

The John F. Kennedy Staten Island Ferry awaits retrofit

Credit: NYC Department of Transportation

The largest fleet of automobiles on New York City roads is the more than 48,000 taxis, black cars, livery cabs, and limousines regulated by the Taxi and Limousine Commission (TLC). PlaNYC included an initiative to require high-efficiency vehicles in those fleets, and TLC unanimously passed landmark regulations in December 2007 to require all new yellow taxis to be high-efficiency vehicles starting in October 2008. In February 2008, Mayor Bloomberg proposed a similar set of requirements for the black cars. *(See case study: Efficient Yellow Taxicabs and Black Cars)*

While fewer than half of all New York City households own an automobile, New Yorkers still own nearly 2 million vehicles. To encourage those buying new cars to choose hybrid vehicles, PlaNYC proposed to exempt hybrids from the 4 percent City sales tax. Although the State Legislature failed to adopt this proposal in 2007, it has been reintroduced by State Senator Andrew J. Lanza and Assembly Member Adriano Espaillat as Senate Bill 7023/ Assembly Bill 042581A, and the City will be working with the State Legislature to support its passage.

Reduce other transportation emissions

We have partnered with the Port Authority of New York and New Jersey (PANYNJ) to reduce emissions from the eight Staten Island ferries by upgrading engines, installing exhaust control devices, and switching to ultra-low-sulfur diesel fuel. Two small boats will receive a catalyst for soot reduction and a selective catalytic reduction system that is highly effective for reducing nitrogen oxide. Larger boats will

"From reducing traffic and asthma-inducing pollution and improving public transportation options…the mayor's plan will put New York City on a path to an even greener and greater future." Bronx Borough President Adolfo Carrión, June 15, 2007

receive upgrades to their engines so that they meet the current EPA standard. Newer boats will be upgraded to meet more stringent EPA Tier 2 standards.

These measures will reduce the eight-boat fleet's total nitrogen oxide emissions by an estimated 40 percent, and will also reduce direct PM 2.5 emissions on each vessel by 79 percent. We are also working with the New York State Energy Research and Development Authority (NYSERDA) to reduce exhaust emissions from private ferries operating in New York Harbor. This program involves testing technologies on boats owned by several operators and installing catalysts to reduce their impact on local air quality.

Reduce emissions from buildings

The use of heating fuel contributes 29 percent of the local emissions of PM 2.5—due to our dependence on heating oil in apartment buildings, and the use in some large buildings of cheaper grades of oil that are highly polluting. One reduction approach is to use sulfur-free biodiesel. In 2007, Mayor Bloomberg announced that the City would burn blends of 5 percent biodiesel in its boilers that use lighter and cleaner distillate (No. 2) heating oil. This commitment will produce air quality benefits and will allow the City to assess whether the blends will cause any operational problems. The City is also planning pilot projects to test the feasibility of using blends of 20 percent biodiesel in some of its No. 2 boilers, as well as in some of its boilers that use heavier and dirtier residual (No. 6) oil. We are also assessing potential citywide requirements for biodiesel and other cleaner fuels, taking into account local health benefits, greenhouse gases, land use, and global food prices.

We committed $285 million, which would qualify for a State machinery matching grant, to convert more than 100 school boilers from high-sulfur No. 6 oil to cleaner fuels. Over the past year, we launched a study of conversions to clean up the most boilers in neighborhoods with the worst asthma rates. Two school boilers are currently under construction, three have been put out for bid, three others are in design, and the determination of scope is underway for nine more.

Pursue natural solutions to improve air quality

Trees clean the air. The MillionTreesNYC campaign, launched last October, has already planted 33,501 trees on sidewalks, parkland, and private property. Our effort will ramp up even further in 2008, to reach the rates required to expand New York City's tree population from five million to six million by 2017. *(See case study: MillionTreesNYC on page 10)*

Understand the scope of the challenge

Because existing routine air monitoring focuses on region-wide trends and does not capture street-level data or air quality variation among neighborhoods, we are launching a local air quality study. Each season over the next two years, the City will collect air samples at over 130 locations throughout the five boroughs. The locations represent a wide range of traffic and local environments. This baseline data will be used to establish priority neighborhoods for improvement and track changes over time as development, policy, and transit initiatives proceed.

Next Steps

To cut road transportation pollution emissions, we plan to pilot hydrogen fuel cell and battery all-electric vehicles in the City fleet, and implement recommendations from the ongoing City fleet study to achieve the lowest level of vehicle use feasible. We will work to introduce cleaner vehicles into the livery cab fleet. We will work to encourage private auto buyers to choose hybrids by passing Senate Bill 7023/Asembly Bill 042581A. And we will launch the anti-idling campaign promised in PlaNYC.

We will continue to address non-road pollution emissions, including piloting technologies to clean up private ferries, and to develop new approaches to reduce emissions from construction vehicles. We will also seek out partnerships with the PANYNJ, the Metropolitan Transit Authority, New Jersey Transit, and private operators to identify and implement policies for additional reductions in airplane, locomotive, and marine sources.

Over the past year, our efforts to enact a broader oil heating policy were deferred as we learned of concerns about the lifecycle and secondary land impacts of certain biofuels, as well as certain operational concerns. But we will lay the groundwork for a comprehensive heating oil policy in the next year.

Mayor Bloomberg, Council Member Yassky, and Yahoo VP Marketing Patrick Crane introduce new hybrid taxis

TLC Commissioner Matthew W. Daus introduces a hybrid black car

CASE STUDY: EFFICIENT YELLOW TAXICABS AND BLACK CARS WILL BRING CLEANER AIR AND A 0.75 PERCENT REDUCTION IN CITYWIDE CO_2 EMISSIONS

In December, the Taxi and Limousine Commission (TLC) unanimously passed regulations requiring new yellow taxicabs to achieve a city mileage rating of 25 miles per gallon (mpg) in October 2008, except for handicap-accessible taxicabs. In October 2009, the standard will rise to 30 mpg. Almost 380 hybrids were on the road when the proposal was announced in May; now, as owners convert ahead of schedule, we have over 800. They have proven their reliability during the three annual inspections, and the first 18 hybrids in the fleet have already logged over 200,000 miles each. The regulations will save $11,000 per car, each year, in gasoline, for industry-wide savings of roughly $140 million per year. By 2012, when the entire fleet has converted to the 30 mpg standard, it will clean the air and reduce the City's greenhouse gas emissions by 296,000 tons annually, or by 0.5 percent.

In February 2008, the Mayor proposed that TLC require new black cars—those that serve corporate clients—to meet fuel efficiency standards of 25 mpg in 2009 and 30 mpg in 2010. The proposal also mandates vehicle retirement and provides protection for black car operators against competitors who operate non-clean vehicles. To help drivers, the City has worked with the financial sector, auto dealers, and black car fleets to develop solutions that will finance the higher down payment. By 2013, nearly all black cars will meet the new standards, improving air quality and reducing carbon emissions by 136,000 tons annually, or 0.25 percent. Mayor Bloomberg indicated the City's intention to complete the PlaNYC clean taxi initiative by working with the livery industry, again taking into account the unique aspects of that industry.

"...a broad, complicated and exciting blueprint."
The New York Times, April 23, 2007

Air Quality Progress

	INITIATIVE	LAUNCHED*	PROGRESS SINCE APRIL 22, 2007	IMPLEMENTATION MILESTONE FOR DECEMBER 2009
1	**CAPTURE THE AIR QUALITY BENEFITS OF OUR TRANSPORTATION PLAN (SEE TRANSPORTATION INITIATIVES, PAGE 25)**			
2	**IMPROVE FUEL EFFICIENCY OF PRIVATE CARS**			
	Waive New York City's sales tax on the cleanest, most efficient vehicles	✓	On February 27, State Senator Lanza and Assemblyman Espaillat introduced the hybrid sales tax legislation to the State Assembly. The City will seek approval by the end of June	Offer incentive
	Work with the MTA, the Port Authority, and the State DOT to promote hybrid and other clean vehicles		Started to explore expansion of the State's Clean Vehicle Pass program. City will initiate meetings with PANYNJ and the MTA to discuss this and other options for providing incentives to promote hybrid and other clean vehicles	Release assessment of policy options and begin implementation
	Pilot new technologies and fuels, including hydrogen and plug-in hybrid vehicles	✓	In October, Shell Hydrogen, City, and General Motors reached an agreement to locate 2 pilot hydrogen fueling stations in the city. Shell is finalizing a lease agreement with DSNY and then will submit the stations for review	Have an operational hydrogen station in New York City
3	**REDUCE EMISSIONS FROM TAXIS, BLACK CARS, AND FOR-HIRE VEHICLES**			
	Reduce taxi and limousine idling		The Taxi and Limousine Commission (TLC) and DOT to offer rebates through State funding to black car and for-hire vehicle owners who install anti-idling technologies. Anti-idling technologies allow drivers to heat their vehicles when stopped without running the engine. Will begin piloting potential anti-idling technologies in spring 2008	Equip participating yellow taxis and black cars with anti-idling equipment
	Work with TLC and the taxicab industry to double the taxi fleet's efficiency	✓	On December 11,TLC unanimously passed regulations requiring all yellow taxicabs coming into service as of October 1, 2008 to achieve a city mileage rating of 25 miles per gallon (mpg), with the exception of accessible taxicabs: in October 2009 standard increases to 30 mpg	Work toward completing new standards for taxis
	Work with stakeholders to double the fuel efficiency of black cars and for-hire vehicles	✓	On February 27, Mayor Bloomberg proposed resolutions to require new licensed black cars to achieve a fuel efficiency standard of 25 mpg in 2009 and 30 mpg in 2010. Includes a requirement for vehicle retirement	Work toward completing new standards for for-hire vehicles by 2010
4	**REPLACE, RETROFIT, AND REFUEL DIESEL TRUCKS**			
	Introduce biodiesel into the City's truck fleet, go beyond compliance with local laws, and further reduce emissions	✓	In March, DPR expanded use of B20 to 10 fuel sites and to 800 operated vehicles and equipment. DSNY expanded B5 and piloted B20 at one depot. In July, DOT introduced B5 to heavy trucks. In November, DEP introduced B5 to maintenance fleet and has expanded the use of B5 to 9 other sites	Dispense a biodiesel blend at all city-owned diesel fueling stations
	Accelerate emissions reductions of private fleets through existing Congestion Mitigation and Air Quality (CMAQ) programs	✓	NYSERDA awarded $3.2 million to private fleets in New York City in summer 2007. New round of funding totalling $6 million will be released by mid-2008	Upgrade additional vehicles
	Work with stakeholders and the State to create incentives for the adoption of vehicle emission control and efficiency strategies		NYS DEC released the State Implementation Plan (SIP) for fine particulates and credited PlaNYC initiatives for helping to achieve air quality standards. However, the SIP does not propose the creation of a statewide retrofit fund	Draft proposed parameters of fund
	Improve compliance of existing anti-idling laws through targeted educational campaign	✓	Partnered with NYSDEC and DEP to carry out an enforcement action to address urban air pollution in East Harlem, culminating in a press conference on November 16. Convening agencies to address enforcement challenges and barriers and beginning discussions with potential partners to plan a comprehensive public education campaign	Launch anti-idling campaign
5	**DECREASE SCHOOL BUS EMISSIONS**			
	Retrofit both large and small school buses and reduce their required retirement age	✓	DOE installed a combination of DOCs and crankcase filters on 2,300 large buses, and 750 large special education buses. In 2007, DOE began testing active and passive diesel particulate filters (DPFs) on 9 buses. In January 2008, DOT and DOE applied for $29 million in CMAQ funds for DPFs and an accelerated retirement program for school bus fleet	Begin retrofits on smaller school buses
6	**RETROFIT FERRIES AND PROMOTE USE OF CLEANER FUELS**			
	Retrofit the Staten Island Ferry fleet to reduce emissions	✓	Retrofitted engines on three ferries with pollution control equipment and the JFK went into dry dock on October 10. Retrofit plan incorporated into LL 3, signed in February 2008. Due to delays at Port Authority, JFK not yet upgraded. Upgrade of JFK and Molinari expected in 2008. January 2008, fueled fleet with ULSD and B5	Complete engine upgrades to Staten Island Ferry fleet
	Work with private ferries to reduce their emissions	✓	DOT reached preliminary agreement with NY Waterway to retrofit one ferry in the next few months, with an agreement to retrofit the whole fleet once operational concerns are met	Install DOCs in ferries; pass legislation promoting the use of ULSD
7	**PARTNER WITH THE PORT AUTHORITY TO REDUCE EMISSIONS FROM PORT FACILITIES**			
	Seek to work with the Port Authority (PANYNJ) to reduce emissions from its marine vehicles, port facilities, and airports	✓	Met with EPA to explore nationwide Port Initiative, funding sources, and opportunities for reducing PANYNJ's emissions. Teamed up with EPA and PANYNJ to bring a national conference called Faster Freight Cleaner Air to New York City on July 8–9, 2008, to explore options for reducing pollution for ports and their related activities	Begin creating a plan
8	**REDUCE EMISSIONS FROM CONSTRUCTION VEHICLES**			
	Accelerate adoption of technologies to reduce construction-related emissions	✓	The City has amended its rules for selecting Best Available Technology for construction equipment in order to allow contractors to use a wider range of technology that can eliminate even more pollution	Require, through contracts, applicable on-road vehicles used in city construction projects to follow requirements of Local Law 77
9	**CAPTURE THE AIR QUALITY BENEFITS OF OUR ENERGY PLAN (SEE ENERGY INITIATIVES, PAGE 29)**			
10	**PROMOTE THE USE OF CLEANER-BURNING HEATING FUELS**			
	Lower the maximum sulfur content in heating fuel from 2,000 parts per million (ppm) to 500 ppm	✓	On June 11, Mayor Bloomberg announced a commitment to introduce B5 into the heating oil for City boilers. Contract has been released. The City is also formulating a broader policy to reduce harmful air pollution from heating fuel, by analyzing the most cost-effective methods for reducing pollution	Draft new sulfur content requirements for State Code
	Reduce emissions from boilers in 100 City public schools	✓	With PlaNYC funds, the SCA has begun construction on two boilers. Three have been put out to bid, three are in design, and nine are in scope development phase. The SCA is working with the City to develop a strategy to target additional schools toward the goal of converting 100 boilers in City schools	Begin replacing boilers
11	**CAPTURE THE AIR QUALITY BENEFITS OF OUR OPEN SPACE PLAN (SEE OPEN SPACE INITIATIVES, PAGE 11)**			
12	**REFOREST TARGETED AREAS OF OUR PARKLAND**			
	Reforest 2,000 acres of parkland	✓	On October 20, the City added 10,000 new trees on Its My Park Day and planted almost 30,000 trees in the fall planting season. Convened an Urban Reforestation Advisory Conference in November 2007 to enhance reforestation efforts and secured consultant design services for future planting. April 2008 will see over 20,000 trees planted	Begin reforesting 2,000 acres of parkland
13	**INCREASE TREE PLANTINGS ON LOTS**			
	Partner with stakeholders to help plant one million trees by 2017	✓	On October 9, the City launched the MillionTreesNYC Initiative in partnership with the New York Restoration Project, and since then has planted over 33,501 trees. An Advisory Committee has been convened to coordinate a strategic plan. Conducted extensive community outreach and launched a website (www.milliontreesNYC.org)	Launch partnership and begin planting trees
14	**LAUNCH COLLABORATIVE LOCAL AIR QUALITY STUDY**			
	Monitor and model neighborhood-level air quality across New York City	✓	DOHMH, with Queens College and other partners, finalized a design for the New York City Community Air Survey (NYCCAS), to include measurements at a minimum of 130 locations in each season each year. Building and testing of monitoring instruments will continue through spring 2008. NYCCAS to begin first air sampling campaign in summer 2008	Launch Study

* Initiative begun by City, including planning or advocacy stages