Air Quality

Credit: NYC Economic Development Corporation

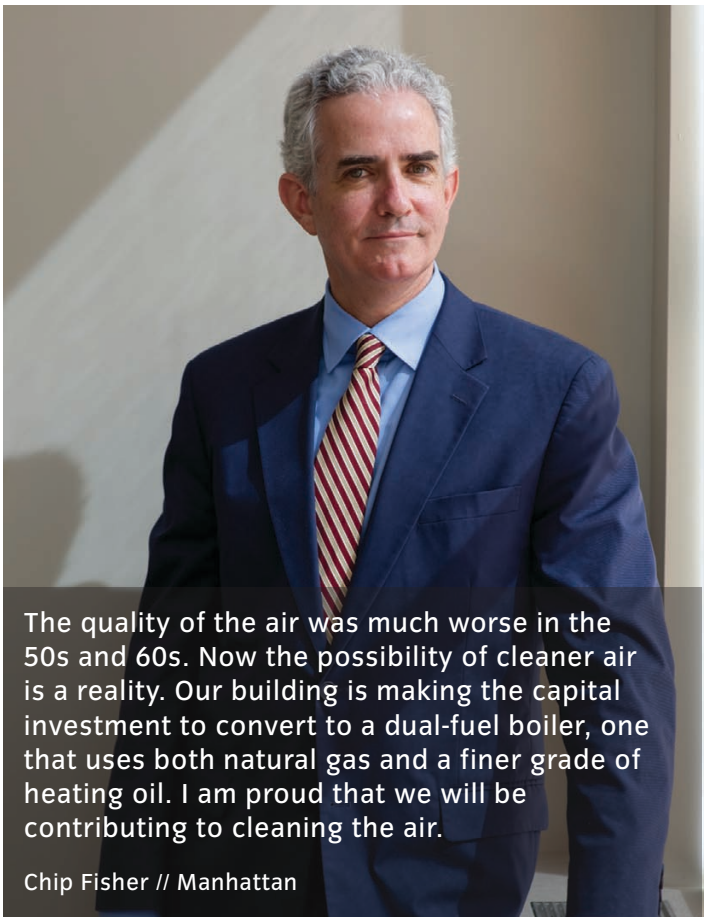
Together we can

Understand the scope of the challenge

Reduce transportation emissions

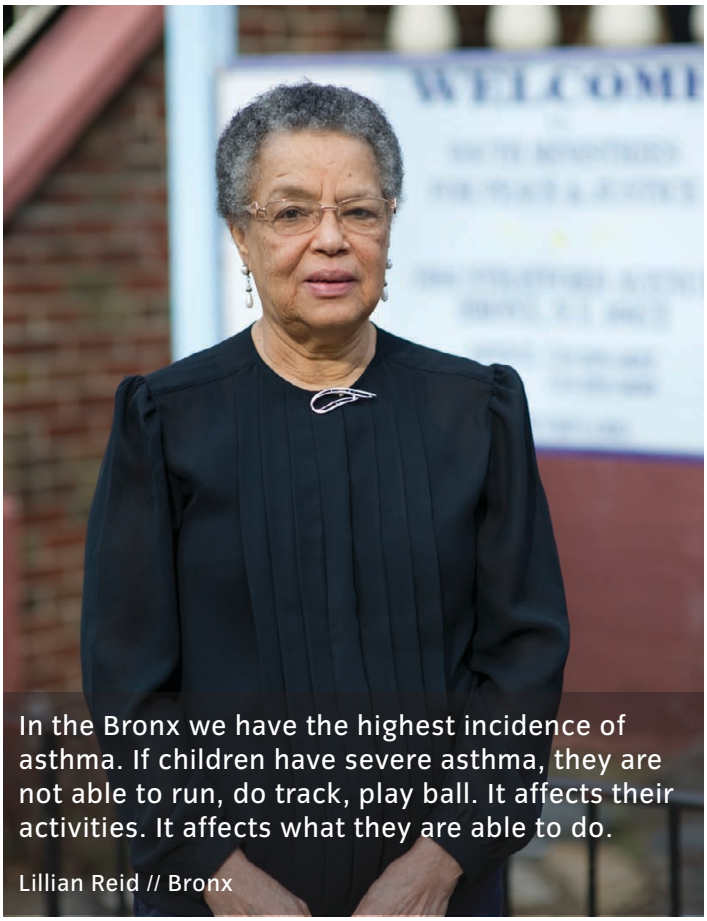
Reduce emissions from buildings

Update codes and standards



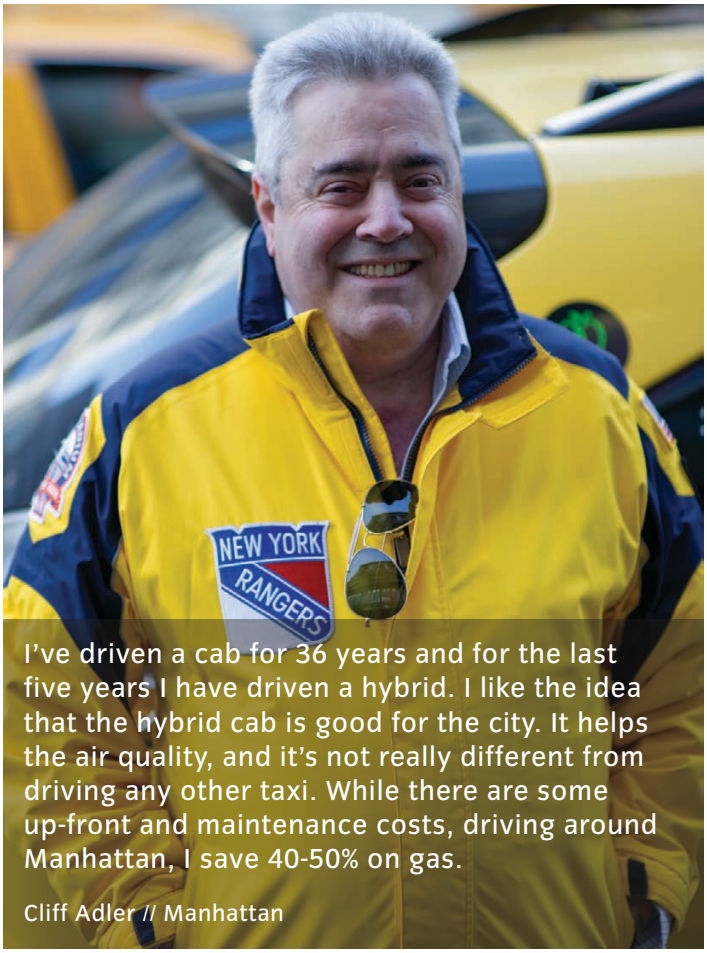
The quality of the air was much worse in the 50s and 60s. Now the possibility of cleaner air is a reality. Our building is making the capital investment to convert to a dual-fuel boiler, one that uses both natural gas and a finer grade of heating oil. I am proud that we will be contributing to cleaning the air.

Chip Fisher // Manhattan



In the Bronx we have the highest incidence of asthma. If children have severe asthma, they are not able to run, do track, play ball. It affects their activities. It affects what they are able to do.

Lillian Reid // Bronx



I've driven a cab for 36 years and for the last five years I have driven a hybrid. I like the idea that the hybrid cab is good for the city. It helps the air quality, and it's not really different from driving any other taxi. While there are some up-front and maintenance costs, driving around Manhattan, I save 40-50% on gas.

Cliff Adler // Manhattan

New York is growing in population, so we need to do things to keep our air clean and healthy and safe for all of us to breathe. And we need to do it now, not later. If we don't, especially in a large city like ours, it's going to cost us in the long run.

Mustaqeem Abdul-Azeem // Brooklyn

Air Quality

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

Over the past two decades, as federal, state, and local regulations have strengthened air quality standards, New York City's air quality has dramatically improved. We have undertaken numerous actions to reduce emissions from local sources of pollution. Despite these efforts, our air quality still fails to meet federal standards for ozone and fine particle matter (PM 2.5). Many of our communities experience pollution levels significantly higher than the citywide average. Many of these same neighborhoods have high rates of asthma and other health conditions exacerbated by air pollution. In addition, future regulations from the U.S. Environmental Protection Agency (EPA) are likely to result in the city being in non-attainment for nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) standards.

PM 2.5 is a by-product of burning fuel in trucks and buses, factories, power plants, and boilers. Each year, PM 2.5 pollution in New York City causes more than 3,000 deaths, 2,000 hospital admissions for lung and heart conditions, and approximately 6,000 emergency department visits for asthma in children and adults.

We have chosen PM 2.5 as our standard because of its significant health impacts—and because we lag behind other big cities in the levels in our air quality. To meet our goal of achieving the cleanest air quality of any big city in the U.S., we estimate that we need to reduce average PM 2.5 concentrations by 22% below 2005 levels. The City's Department of Health and Mental Hygiene (DOHMH) projects that if we meet this goal, we could prevent more than 750 premature deaths and almost 2,000 hospital admissions and emergency room visits.

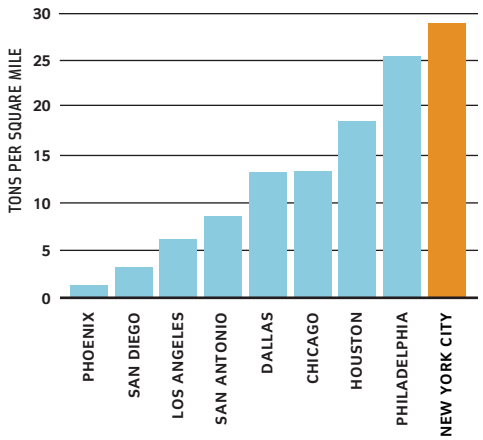
Other primary pollutants such as SO_2, NO_2, and volatile organic compounds (VOCs) also have impacts on our health, as does ozone, which is formed through chemical reactions of primary pollutants. Further reducing those emissions will be essential to meeting our goal of achieving the cleanest air quality of any big city in the U.S. These reductions are also critical to protect the health of New Yorkers. Air pollution is one of the most significant environmental threats we face, contributing to approximately 6% of annual deaths in New York City each year.

Over half of our PM 2.5 originates outside the city. Some pollution drifts in from neighboring jurisdictions, including from traffic, industry, and power plants. Other sources are more distant, such as mid-western power plants and factories. Depending on the time of year, up to 70% of particulate matter measured in the city comes from somewhere else. Because of these inter-state impacts, we will continue to ask our Congressional delegation to keep federal laws strong.

But a significant portion of our pollution comes from local sources. New studies undertaken by the City put real numbers to what we have long known—neighborhoods in close proximity to heavily-trafficked roadways or buildings burning Numbers 4 and 6 heating oil have annual average PM 2.5 levels that are 30% higher than areas with less traffic or fewer buildings burning those dirty fuels.

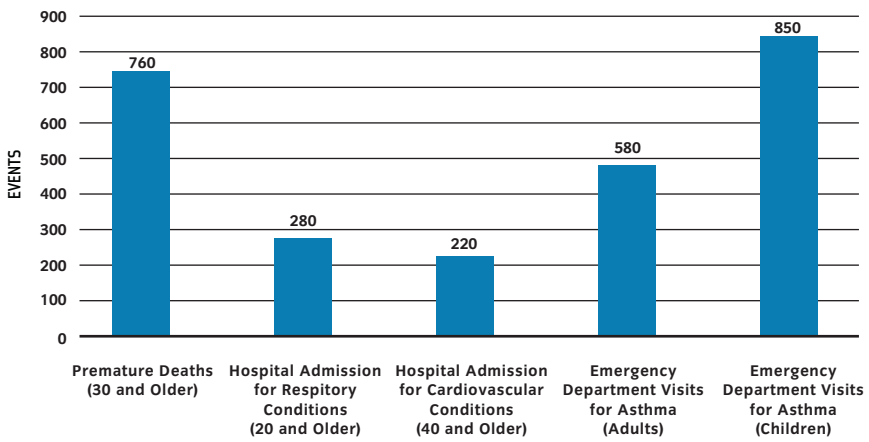
This information—the most comprehensive effort of its kind undertaken by a major city—is allowing us to strategically identify neighborhoods with the worst air quality as well as local sources to reduce emissions citywide. We successfully sought a state law that reduced the sulfur content in Number 2 heating oil by 99%. We enacted a local law that requires the use of 2% biodiesel in heating oil and created the new low sulfur Number 4 oil classification. We are investing hundreds of millions of dollars to convert school boilers that burn Numbers 4 and 6 oil in schools to cleaner fuels. We have already completed boiler conversions at 13 schools—and will phase out Number 6 heating oil at more than 200 school buildings by 2015. We worked with the City Council to lower the retirement age for school buses and require the installation of indoor air filters for bus cabins. We launched

PM 2.5 per Square Mile in U.S. Cities With Over 1 Million Residents



Source: U.S. Environmental Protection Agency; NYC Dept. of Health and Mental Hygiene

Number of Events Avoided Annually if PlaNYC Air Quality Goal Met



Source: NYC Dept. of Health and Mental Hygiene

the most comprehensive ground-level air quality monitoring program undertaken by a city. And, focusing on many of our neighborhoods with the highest asthma rates and fewest trees, we planted more than 430,000 trees, which help remove pollutants from our air.

Yet more remains to be done to achieve the cleanest air quality of any big city in the U.S. We must continue to reduce our biggest known polluting sources—motor vehicle exhaust, building heating oil, and aging power plants with outdated technology. We will continue to partner with other levels of government, private businesses, and building owners to increase the use of alternative fuels. These actions will improve our air quality, enhance public health, and in many cases, save New Yorkers money.

Our Plan

Our air quality has improved in recent years. Our three-year average of PM 2.5 concentrations has decreased since 2007. Similarly, PM 2.5 concentrations have continued a gradual decline on a national and regional level. But New York City still fails to meet all of the federal air quality standards and many of our neighborhoods have significantly higher concentrations of PM 2.5 than the citywide average.

As other cities also take steps to improve air quality, our efforts will have to be even more dramatic to keep pace. That means we must continually reevaluate our goal and benchmark it against other cities.

We will aggressively reduce emissions from cars, trucks, and buses by promoting fuel efficiency, cleaner fuels, and cleaner or upgraded engines. We will seek federal legislation to explicitly allow state and local governments to provide incentives for fuel-efficient vehicles. We will use federal funding to continue converting diesel vehicles to cleaner fuel sources. We will apply similar strategies to other vehicles, including ferries and planes. By partnering with the Port Authority of New York and New Jersey (Port Authority), we can achieve substantial reductions across all transportation sectors.

The electricity and heating fuels used to power and heat our buildings account for a quarter of local PM 2.5 emissions. We will enact regulations to reduce pollution caused by the dirtiest heating oils used in buildings, and reduce the indoor air quality risks posed by building materials.

We will also reap the benefits of our Parks and Public Space plan, which is planting more than one million trees throughout the city and creating pedestrian zones separated from the worst traffic. Our Transportation plan will better manage traffic congestion and improve the flow of freight, which affects our air quality. As part of our Solid Waste plan we will continue to shift the export of our waste from long-haul trucks to railcars and barges. And our Energy plan is replacing old, outdated power plants with modern, more efficient models and transitioning our energy supply to cleaner fuels.

These strategies will accelerate air quality improvements so that one day, every New Yorker will breathe the cleanest air of any big city in America.

Our plan for air quality:

Understand the scope of the challenge

1 Monitor and model neighborhood-level air quality

Reduce transportation emissions

2 Reduce, replace, retrofit, and refuel vehicles
3 Facilitate the adoption of electric vehicles
4 Reduce emissions from taxis, black cars, and for-hire vehicles
5 Reduce illegal idling
6 Retrofit ferries and promote the use of cleaner fuels
7 Work with the Port Authority to implement the Clean Air Strategy for the Port of New York and New Jersey

Reduce emissions from buildings

8 Promote the use of cleaner-burning heating fuels

Update codes and standards

9 Update our codes and regulations to improve indoor air quality
10 Update our air quality code

CASE STUDY

New York City Community Air Survey

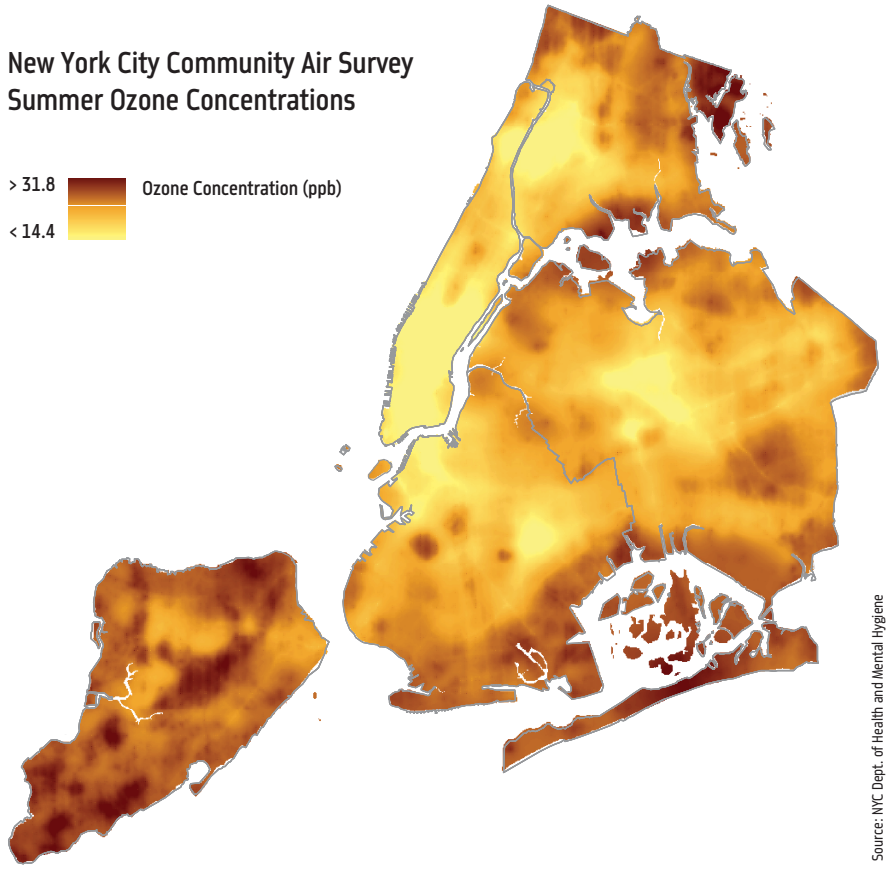
New York is a city of neighborhoods, each with its own unique history, character, and physical environment. These distinctive features extend to local air quality. Until 2008, relatively little was known about how air quality varied between neighborhoods in New York, what contributed to poor air quality, or how to best target policies to reduce local emissions.

As part of PlaNYC, the New York City Department of Health and Mental Hygiene, in partnership with Queens College of the City University of New York, launched the New York City Community Air Survey (NYCCAS) in 2008. NYCCAS is the first-ever comprehensive survey of street-level air quality in New York City. The program is designed to understand how average air pollution levels vary from place to place within the city.

The survey collects one air sample every two weeks, in each season, from more than 100 locations throughout the five boroughs. NYCCAS air samples are collected at street level, where people walk along sidewalks, and where traffic-related pollution is usually higher. Monitoring locations are in areas with high or low traffic and building densities, various mixes of commercial, residential and industrial properties, and in areas with dense or sparse tree cover. These locations reflect the variety of urban environments found in New York City.

NYCCAS monitors air samples for fine particles (PM 2.5), elemental carbon (EC), other elements in particles, nitrogen oxides (NO_x), sulfur dioxide (SO_2) in the winter months, and ozone (O_3) in the summer. The sampling results from each location are analyzed for statistical correlation with dozens of land-use factors such as the density of boilers and truck traffic. The results are then projected to other locations to create air-quality maps for the entire city.

By showing where air-quality levels are better or worse and identifying the most important local sources of harmful air pollutants, particularly diesel fuel and heating oil, NYCCAS can help focus our efforts on actions that can reduce air pollution and improve our health.



Source: NYC Dept. of Health and Mental Hygiene

Understand the scope of the challenge

Launched in 2008, the New York City Community Air Survey (NYCCAS) is one of the largest studies of urban air quality to date. The survey measures street-level concentrations of pollutants year-round at more than 100 locations throughout the city. NYCCAS then uses these pollution measurements—and the distribution of known pollution sources such as traffic and oil-burning boilers—to estimate concentrations of air pollutants throughout the city.

The first NYCCAS report on winter air quality documented large geographic differences in the concentration of PM 2.5, NO_2, and elemental carbon. It demonstrated for the first time that many neighborhoods of all income levels in the city suffer from high levels of street-level pollution. Furthermore, it identified the main drivers of street-level air pollution in the winter to be high traffic volume and the use of residual fuel in buildings. This information is already informing strategies to reduce emissions and neighborhood variability in air quality.

NYCCAS has produced several more reports. A winter supplement reported on the wide disparities in nickel concentrations in air associated with the use of residual fuel boilers. The summer air quality report demonstrated that ozone, a secondary pollutant caused by the reaction of primary pollutants with sunlight, is greatest outside Manhattan, especially in southeastern Queens and southern Staten Island.

INITIATIVE 1

Monitor and model neighborhood-level air quality

Through NYCCAS, we have a better understanding of the drivers of local PM 2.5 emissions in the city and the impact these sources have on neighborhood variability. This has allowed us to effectively target our policy efforts at the sources most responsible for our local PM 2.5 emissions and in those communities that are most impacted.

Based on what we have learned from the first year of monitoring, we have identified 100 sites that represent a range of local emissions with significant impacts on neighborhood air quality. This smaller network will allow continued monitoring at lower cost, using the same pollutants to evaluate changes as local emission reduction initiatives are implemented. We will maintain a street-level air monitoring network to track neighborhood air quality differences over time.

Using the existing NYCCAS infrastructure, we will expand the methods and pollutants measured to look more closely at specific types of emission sources and exposure settings. We will

Credit: City of New York

A NYPD hybrid patrol car in Willets Point, Queens

enhance monitoring and modeling to examine pedestrian exposures in different traffic configurations and at different times of day, emissions from the commercial cooking sector, and exposures to additional toxic air pollutants.

Reduce transportation emissions

In 2005, motor vehicles traveled 18.6 billion miles throughout the five boroughs. Each year, these trips generate about 11% of our local PM 2.5 emissions. They also generate 28% of nitric oxide (NO_x) and 17% of VOC emissions, both of which contribute to ambient PM 2.5 levels.

Areas in the city with the greatest traffic density have much higher levels of PM 2.5, NO_x, and NO_2 than areas with lower traffic density. But ozone is different. Ozone results from chemical reactions among other pollutants, NO_x and VOCs, in the presence of sunlight. As a result, high ozone levels often occur in locations downwind from emission sources including locations such as the Rockaways in Queens and in southern Staten Island. Therefore, our efforts to reduce emissions from transportation have a benefit for all neighborhoods, not just those along congested roadways.

INITIATIVE 2
Reduce, replace, retrofit, and refuel vehicles

The City owns and operates a fleet of more than 26,000 vehicles and motorized equipment. Through several strategies—increasing use of public transit, reducing the number of City vehicles used for commuting, and pursuing car-sharing opportunities—we will reduce our fleet by 5%. This reduction of light-, medium-, and heavy-duty vehicles will reduce fuel use by City vehicles and associated PM 2.5 and greenhouse gas emissions.

We are taking aggressive steps to make our fleet, which is already the largest clean-fuel municipal fleet in the country, even more efficient. More than 6,000 City-owned vehicles, or 25% of our total fleet, are already hybrid or other alternative-fuel vehicles, including garbage trucks, police cars, and heavy loaders.

To continue this transformation, we will implement the Clean Fleet Transition plan, a vehicle-by-vehicle plan to convert the City's fleet to cleaner vehicles, including hybrid and electric vehicles. We are among the first government fleets to receive Chevrolet Volts off the initial production line. To prepare for the expansion of our plug-in fleet, we will install more than 60 electric vehicle charging units at City-owned facilities and garages. We will also pilot other new technologies.

In addition to changing the make-up of our vehicle stock, we are piloting new, low-emission fuels. The Department of Parks and Recreation uses a 20% biodiesel blend (B20) in all of its diesel vehicles and equipment and is now piloting B50 blends. Other agencies, including the departments of Sanitation, Transportation, and Environmental Protection, use B5 in their diesel fleets, and will switch to B20 during the summer. All of these agencies' fueling stations dispense at least B5 fuel. To reduce emissions, we will expand the use of biodiesel in the City's fleet.

In addition to the City's efforts to improve the environmental performance of its own fleet, we aim 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 the New York State Energy Research Development Authority (NYSERDA) to manage a federal Congestion Mitigation and Air Quality (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 clean natural gas (CNG) or hybrid vehicles, or retrofit their diesel vehicles. To date, the City has spent roughly $15 million to retrofit, replace, or repower approximately 280 trucks, eliminating 63 tons of PM 2.5. We will complete upgrades of 400 vehicles through existing CMAQ and other funding sources.

We are currently working with private school bus companies to retrofit all full-size school buses to reduce emissions. Using CMAQ and Federal Transit Administration funding, we will install Diesel Particulate Filters (DPFs), which reduce particulate matter emissions by at least 85%, on 685 buses.

INITIATIVE 3
Facilitate the adoption of electric vehicles

We can reduce emissions in the city not only by reducing vehicle miles traveled, but also by making vehicles more efficient.

In recent years, automotive manufacturers have made great strides in producing vehicles that use less energy, emit fewer emissions, and burn little or even no gasoline. Among the most promising of these technologies are those that rely on electricity—either to enhance the distance a vehicle travels before consuming gasoline, or to produce an entirely electric operation relying on battery storage technology. For New Yorkers who will continue to rely on automobiles for their mobility needs, electric vehicles

CASE STUDY

Northeast Regional Electric Vehicle Partnership

For years, people have dreamed about quiet, exhaust-free cars. That dream is now becoming a reality with electric vehicles. But making electric vehicles work for every day driving requires planning and collaboration among cities, utility companies, and the private sector. In November 2010, Philadelphia, Boston, and New York City kicked off this collaboration by launching the Northeast Regional Electric Vehicle Partnership (NREVP) to help all three cities serve early electric vehicle adopters now and build for the future.

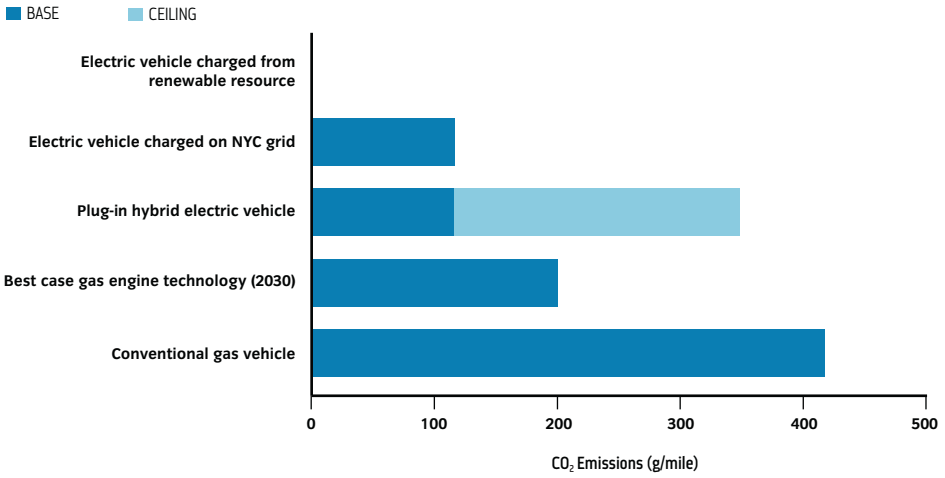
Electric vehicles benefit all city residents. Their owners will never have to fill up at a gas station or go in for an oil change. The cost of driving will become more stable since electricity prices are less volatile than those of gasoline. Non-owners will enjoy a city with quiet vehicles that don't contribute to local smog and create fewer greenhouse gases. Yet without the appropriate codes and regulations, the right cost of electricity, and a network of chargers, electric vehicles won't succeed.

That is why this tri-city partnership is vital. The partnership's initial goals include getting information to consumers and facilitating construction of an electric vehicle infrastructure. The partnership's websites will contain information consumers can't find in any one other place, such as: how each city is using electric vehicles, car availability, and local charging costs. We are sharing knowledge, exchanging information on curbside charging, the cost of prime and off-peak electricity, and on how to design building codes to accommodate electric vehicles.

Finally, we are educating our building owners. By installing chargers, offices and commercial parking facilities will supply key electric vehicle infrastructure. Through our close work with them, we are enabling the private sector to build a widespread charging network.

Boston, Philadelphia, and New York form the spine of one of the most important and densest transportation regions in the country. Together we play an important role in ensuring that electric vehicles are nationally successful. Yet, electric vehicles require us to reinvent our rules and infrastructure. In cities as old as ours, this is an even greater challenge. Pooling our resources helps us tackle these challenges and realize the dream of clean, quiet cars.

Emissions: Gas-powered Auto versus EV



Source: IEA; IAEA; AG Energiebilanzen; U.S. Dept. of Energy; McKinsey; Oak Ridge National Laboratory

offer an improvement over gasoline vehicles in reducing both urban pollution and greenhouse gas emissions.

The environmental benefits of electric vehicles over purely gasoline-powered vehicles depend on a number of factors. The extent of the benefits is determined largely by the generation source of the electricity used to charge the electric vehicle's battery. The mix of generation sources that provide power to the New York City electric grid are favorable to electric vehicles, as approximately 40% of the electricity consumed in New York City is generated by low carbon energy sources such as nuclear and hydroelectric power. In New York, an electric vehicle produces almost 75% fewer greenhouse gas emissions than an average sedan.

Research demonstrates that the potential demand for electric vehicles outstrips likely supply in New York City. By 2015, up to 16% of all new vehicles purchased by New Yorkers could be electric vehicles if these vehicles are made available. This would mean that electric vehicles could amount to 2.5% of the city's total vehicle population by 2015, or about 50,000 vehicles in total. However, converting this demand into actual deployment requires the concerted effort of various stakeholders.

To encourage the purchase of electric vehicles and eliminate impediments to their adoption, we are collaborating with Boston and Philadelphia as part of the Northeast Regional Electric Vehicle Partnership (NREVP). One of the first key barriers that this partnership has identified is the difficulty of the installation process for EV charging equipment.

New York City already has some of the most straightforward installation regulations in the country. If a home has sufficient electric wiring, an electrician can install a charger without getting pre-approval from the city. However, installation is not always easy. Old homes may need additional electrical wiring from the street, which can add significant costs and delays. We will work with Con Edison and auto manufacturers to streamline the installation process for home chargers to ensure that it is as quick and affordable as possible. We will also identify and adopt best practices from the partner cities in the NREVP.

Many New Yorkers do not park at home. Instead, they rely on commercial parking garages and on-street parking. Using federal stimulus funding, more than 200 EV chargers are being installed throughout the metropolitan area, including in commercial parking lots. To ensure that we have a sufficient EV infrastructure, we will work with parking garage owners, co-op boards, consumers, and Con Edison to ensure that each group understands the technical and consumer needs associated with EV chargers, as well as the rules and regulations governing their installation and operation.

Despite substantial and increasing media coverage of EVs, few New Yorkers are aware of their specific benefits and limitations, let alone differences between the various models. Prevalent myths about EVs—that they accelerate poorly, or merely shift pollution from the tailpipe to the power plant—discourage potential owners. As an impartial party, the City can serve a useful role in providing facts about EVs.

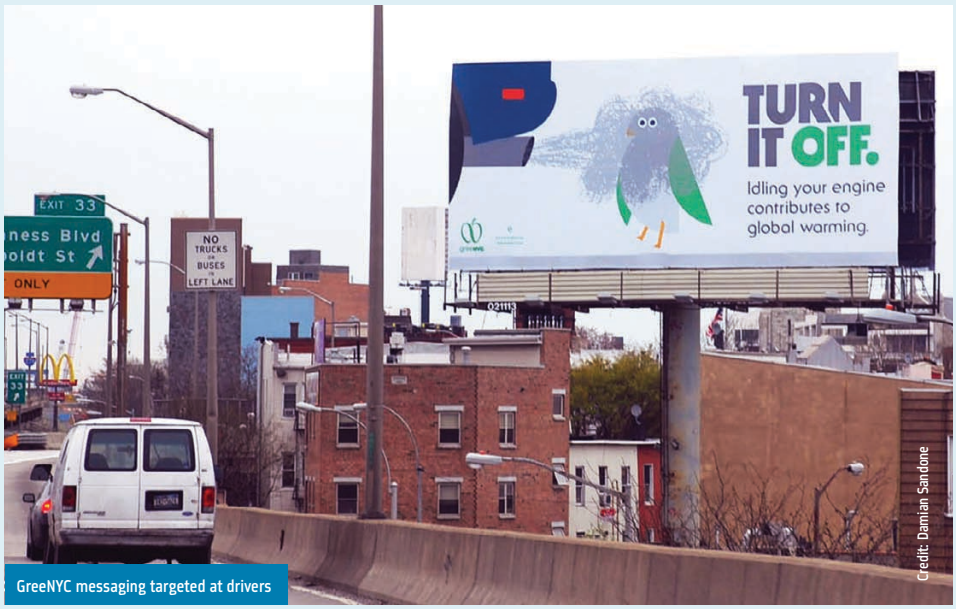
A survey conducted by the City found that providing basic information dramatically increases interest in EVs. In fact, 21% of consumers were more likely to adopt an EV after being educated about the potential benefits. To foster greater adoption and use of EVs, we will work with private and non-profit parties to launch an information campaign to inform New Yorkers about their benefits and use. And while we are building our EV infrastructure, we will also promote the use of hybrid vehicles which have significant air quality benefits.

CASE STUDY

"Turn it Off" Campaign

In response to the serious environmental, health, and financial consequences of idling vehicles in New York City, GreeNYC, our public education program, partnered with the Environmental Defense Fund, EcoDriving, and the New York City Department of Transportation to inform New Yorkers about the negative impacts of idling. The campaign, titled "Turn it Off," sought to educate New Yorkers about idling, reduce their idling tendencies (thereby decreasing their PM 2.5, ozone, and CO_2 emissions) and, ultimately, to change their attitudes towards adopting environmentally-friendly behaviors.

GreeNYC targeted both local drivers and commuters from the Tri-State region by strategically placing public service announcements where and when they would reach the greatest number of drivers while on the road. The announcements consisted of messages explaining the legal, health, financial, and environmental consequences of vehicle idling and engaged drivers by prompting them to call 311 (the City's phone number for non-emergency services) to report instances of idling.



GreeNYC messaging targeted at drivers

Credit: Damian Sandone

As a result of the campaign, GreeNYC increased issue awareness by generating over 194.6 million media impressions among New Yorkers. This resulted in a 111% increase in the number of 311 calls related to idling during the peak of the campaign—despite the fact that the total number of 311 calls for all issues actually declined during this period. The dramatic increase in 311 calls speaks to the success of the campaign in increasing public awareness of this issue.

INITIATIVE 4

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

In New York City, there are currently more than 13,000 yellow taxis, 10,000 black cars, and 25,000 for-hire vehicles. The average yellow taxi travels more than 80,000 miles annually. The entire for-hire fleet is so fuel-inefficient that taxis account for 4% of all ground transportation CO_2 emissions and 1% of all city CO_2 emissions. Making our taxis more fuel-efficient is critical to meeting our air quality and carbon reduction goals. That is why in 2007 the City attempted to mandate that all new taxis would have to achieve more than 25 miles per gallon beginning in the fall of 2008, and 30 miles per gallon in the fall of 2009.

In 2009, a federal court invalidated the City's attempts to set fuel economy standards and offer financial incentives to increase the use of hybrid taxis, on a finding that those rules were preempted by federal law. And in March of 2011, the Supreme Court refused to hear the City's appeal.

Despite this setback, over 30% of the city's 13,237 yellow cabs are hybrid or clean diesel vehicles, giving New York City the largest fleet of clean vehicle taxis in the country. These vehicles have proven themselves able to provide reliable service with dramatically lower emissions and fuel costs.

Empowering state and local governments to incentivize fuel-efficient vehicles is an important tool. We can reduce local emissions, reduce fuel costs for drivers, support the development of alternative fuels and new automotive technology, and reduce spending on foreign oil. We will work with Congress to pass legislation to explicitly allow state and local governments to incentivize fuel-efficient vehicles.

Electric vehicles are also a promising technology that may help to reduce emissions in our taxi and for-hire vehicle fleets. We will launch an electric vehicle taxi pilot to test this technology and its applicability for taxi use.

INITIATIVE 5

Reduce illegal idling

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. Converting diesel vehicles to cleaner fuels will play a significant role in reducing emissions from truck idling. But there is even more we can do locally.

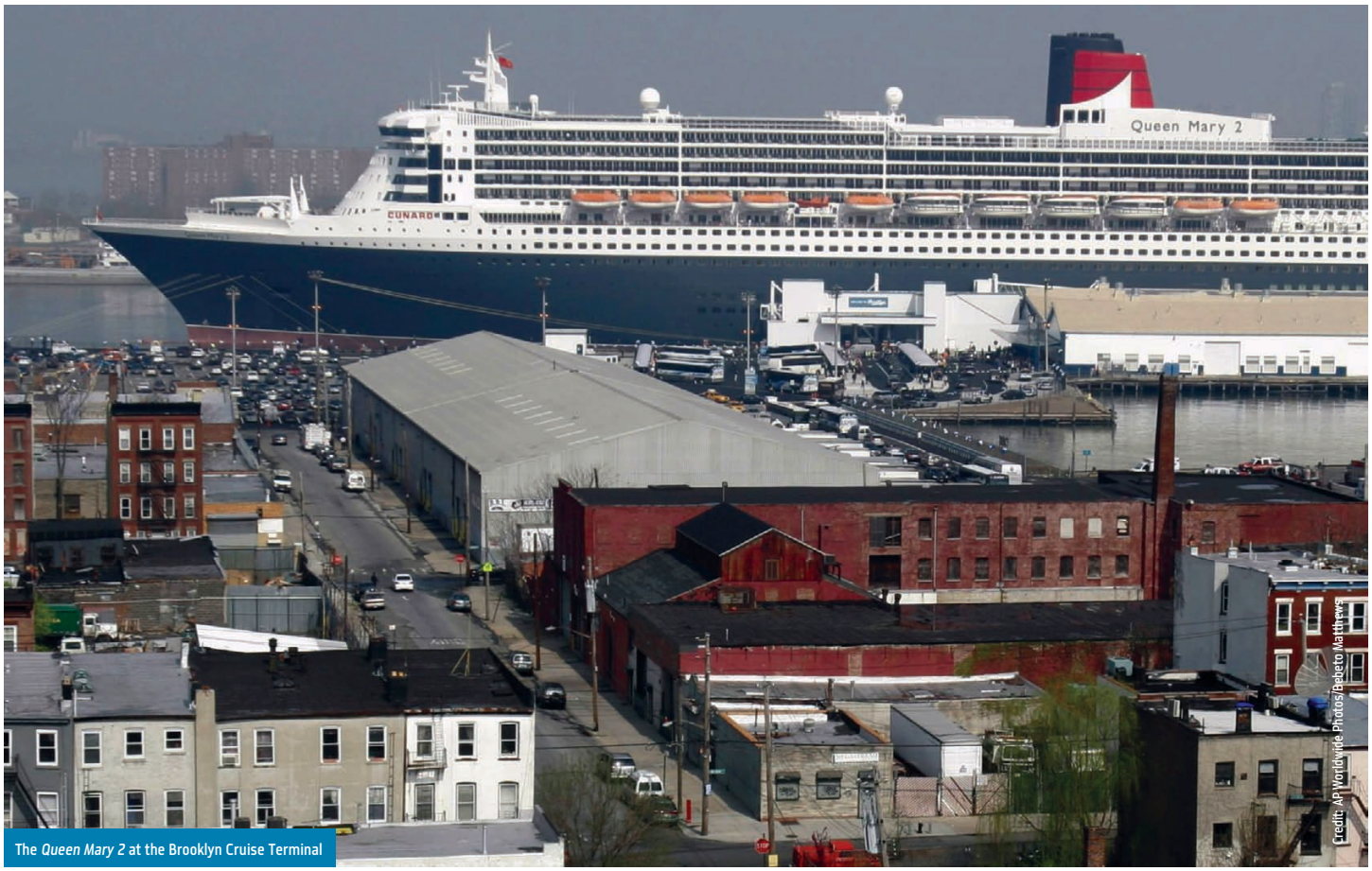
The amount of time a vehicle can idle is limited by law. New York City has a three-minute idling limit that targets all vehicles, including trucks and buses. New York State established an anti-idling law in 1990 that set a five-minute idling limit for heavy-duty diesel vehicles, excluding marine vehicles. Enforcement of these laws is an effective way to reduce emissions.

In 2009, we enacted rules that enable 2,300 Traffic Enforcement Agents to issue tickets for idling violations, greatly expanding our ability to enforce anti-idling laws. GreeNYC, our public outreach program, launched an anti-idling campaign to inform New Yorkers about the economic and public health costs associated with idling. This three-month campaign resulted in a 111% increase in 311 calls reporting illegal idling compared to the same period the previous year. We will continue to improve compliance of existing anti-idling laws through targeted enforcement and education.

INITIATIVE 6

Retrofit ferries and promote the use of cleaner fuels

Through upgrades and engine retrofits, the Staten Island Ferry fleet has become less polluting. The City fuels the ferries with ultra-low sulfur diesel (ULSD), which contains no more than 15 parts per million of sulfur, as a means of further reducing emissions from this sector. The switch to ULSD has produced immediate air quality



The *Queen Mary 2* at the Brooklyn Cruise Terminal

Credit: AP Worldwide Photos/Bebeto Matthews

benefits with no operational problems, well in advance of the EPA's 2012 deadline for the use of ULSD by ferries and similar vessels. We will also complete engine upgrades on four ferries.

We will also work with private ferry operators to reduce emissions from their fleets. Utilizing CMAQ and Federal Transit Administration (FTA) funding, we will retrofit 20 private ferry boats with Diesel Oxidation Catalysts (DOCs), which reduce particulate matter emissions, and repower nine additional vessels to improve fuel efficiency.

We will also work to clean up the fuel used by maritime vessels. New York State currently exempts bunker fuel, which is essentially Number 6 oil used for maritime purposes, from the Petroleum Business Tax. This creates an economic disincentive for the purchase of cleaner, more efficient fuels. Bunker fuel has a high sulfur content (27,000 parts per million) and is the heaviest and most polluting type of fuel used by ships. Other jurisdictions, including the State of California, have removed tax exemptions for bunker oil to incentivize the use of other fuels. We will work with the State to repeal the exemption on the Petroleum Business Tax for bunker fuels.

INITIATIVE 7

Work with the Port Authority to implement the Clean Air Strategy for the Port of New York and New Jersey

Trucks serving the Port of New York and New Jersey make up less than 4% of all trucks and less than 1% of all vehicles on the regional roadways. However, for the neighborhoods immediately adjacent to port facilities, truck emissions have a significant impact on local air quality and public health.

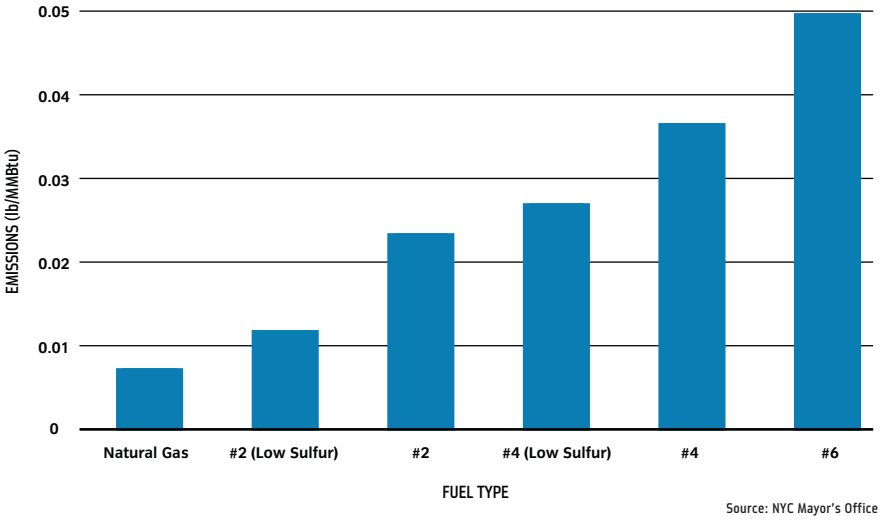
The City has a limited ability to directly regulate maritime and port activities. Our goal is to work with our partners in government and other stakeholders to reduce emissions from the ships, trains, and trucks that use our ports. Due to the complex regulatory structure governing our ports, much of this effort can be accomplished only in collaboration with the Port Authority and federal agencies.

The Port Authority, in partnership with the City, the EPA, the States of New York and New Jersey, and the maritime and trucking industries, participated in an unprecedented effort to produce an actionable and transparent strategy for reducing maritime emissions. In October 2009, the Port Authority released its Clean Air Strategy, demonstrating that emission reductions are feasible and measurable. As part of this effort, critical federal, state, and local partners agreed to take a number of actions to reduce harmful diesel pollution from the Port of New York and New Jersey.

The strategy adopts voluntary measures of the parties to reduce greenhouse gas emissions from port activities by 5% per year, and criteria pollutants such as particulate matter by 3% per year. As a 10-year strategy, this equates to a 30% decrease in criteria pollutants and a 50% decrease in greenhouse gas emissions from baseline 2006 levels despite any port growth over the next ten years. We will continue to work with the Port Authority and other partners to implement the actions outlined in the strategy and reduce emissions from all port sources.

As part of the strategy, we are partnering with the Port Authority, EPA, New York Power Authority, and Carnival Cruise Lines to develop the first operational "cold ironing", or shore power-capable cruise terminal, on the East Coast at the Brooklyn Cruise Terminal (BCT) in Red Hook, Brooklyn. Cruise ships dock at the BCT approximately 45 times a year. The ships stop for between 10 to 11 hours to load and unload passengers and supplies. During this time, they use their auxiliary engines, which burn high sulfur diesel fuel, to power their on-board systems. This practice emits as much pollution as 41,000 heavy-duty diesel trucks per ship each time they dock.

PM 2.5 Emissions From Heating Fuels



Source: NYC Mayor's Office

Cold ironing would allow cruise ships calling at the BCT to connect to the city's electric grid and shut down their engines while docked. If ships use shore power instead of high sulfur diesel fuel, the surrounding community in Brooklyn will benefit from substantial reductions in local air pollution. We will work with the Port Authority to install and operate shore-power capability at the BCT, which will result in annual reductions of 6.5 tons of PM 2.5 and 89.3 tons of NO_x. We will also look for opportunities at other facilities to connect ships to the city's grid.

Reduce emissions from buildings

Emissions from buildings are a significant source of local air pollution in New York City. We consume 1 billion gallons of heating oil annually, more than any other city in the U.S. Burning heating fuels accounts for nearly 14% of fine particulate matter pollutants emitted in New York City. More pollution comes from this source than from vehicles or power plants. The particulate matter created by heating oil contains heavy metals and other pollutants that damage our lungs and hearts, contribute to asthma, and significantly decrease life expectancy.

INITIATIVE 8

Promote the use of cleaner-burning heating fuels

Approximately 10,000 buildings in New York City burn Numbers 4 and 6 heating oil, which are the dirtiest heating oil types available and have significantly higher levels of sulfur, nickel, and other pollutants compared to other available heating fuels. These buildings, which represent only 1% of the total buildings in the city, are responsible for more PM 2.5 emissions than all cars and trucks in the city combined.

Working with our partners in the City Council and the environmental and business communities, we enacted a local law in 2010 that lowers the sulfur limits in Number 4 oil to 1,500 parts per million (ppm) starting in 2012. We recently published rules that, when fully enacted, will require that all boilers in New York City burn low sulfur Number 2 oil or natural gas. Low sulfur Number 2 oil—a new class of fuel created by state law—contains only 15 ppm of sulfur, compared to 3,000 ppm in current Numbers 4 and 6 heating oil.

Upon full implementation, these regulations will reduce the amount of fine particles emitted from heating buildings by at least 63%. They could lower the overall concentration of fine particles in the city's air from all sources by 5%. We estimate that these air quality improvements could prevent approximately 200 deaths, 100 hospitalizations, and 300 emergency room visits for illnesses caused by air pollution each year. The regulations will also reduce carbon dioxide by approximately one million metric tons.

By changing the type of fuel a building uses, owners also save money on maintenance and operating costs. The proposed heating oil regulations would phase out Numbers 4 and 6 heating oil by 2030. We can accelerate air quality benefits if buildings voluntarily phase out these fuels prior to the regulatory deadlines.

Property owners can begin to reduce pollution immediately. We can educate building owners and residents about the risks associated with heavy oils, as well as the financial benefits of switching to cleaner fuels. We can work with local utilities and clusters of buildings to achieve economies of scale to expand natural gas infrastructure. We will work with the Environmental Defense Fund, building owners and associations, local utilities, and NYCService to launch a program to encourage and support the early phase out of Numbers 4 and 6 heating oils. This program will provide benefits similar to those gained by cleaning our energy supply, which has a tremendous impact on local PM 2.5 emissions.

Currently, 415 City schools—roughly one-third of all schools—burn Numbers 4 or 6 heating oil, including 232 schools that burn Number 6. Many of these are in neighborhoods where the asthma rates are more than three times higher than the national average. By 2015, the City will phase out Number 6 heating oil at more than 200 of these schools. Schools located in neighborhoods with the highest pediatric asthma hospitalization rates—generally rates greater than seven per 1,000—will be prioritized to achieve the maximum local benefits. These neighborhoods are concentrated in the Bronx, Harlem, Central Brooklyn, and along Jamaica Bay in Queens.

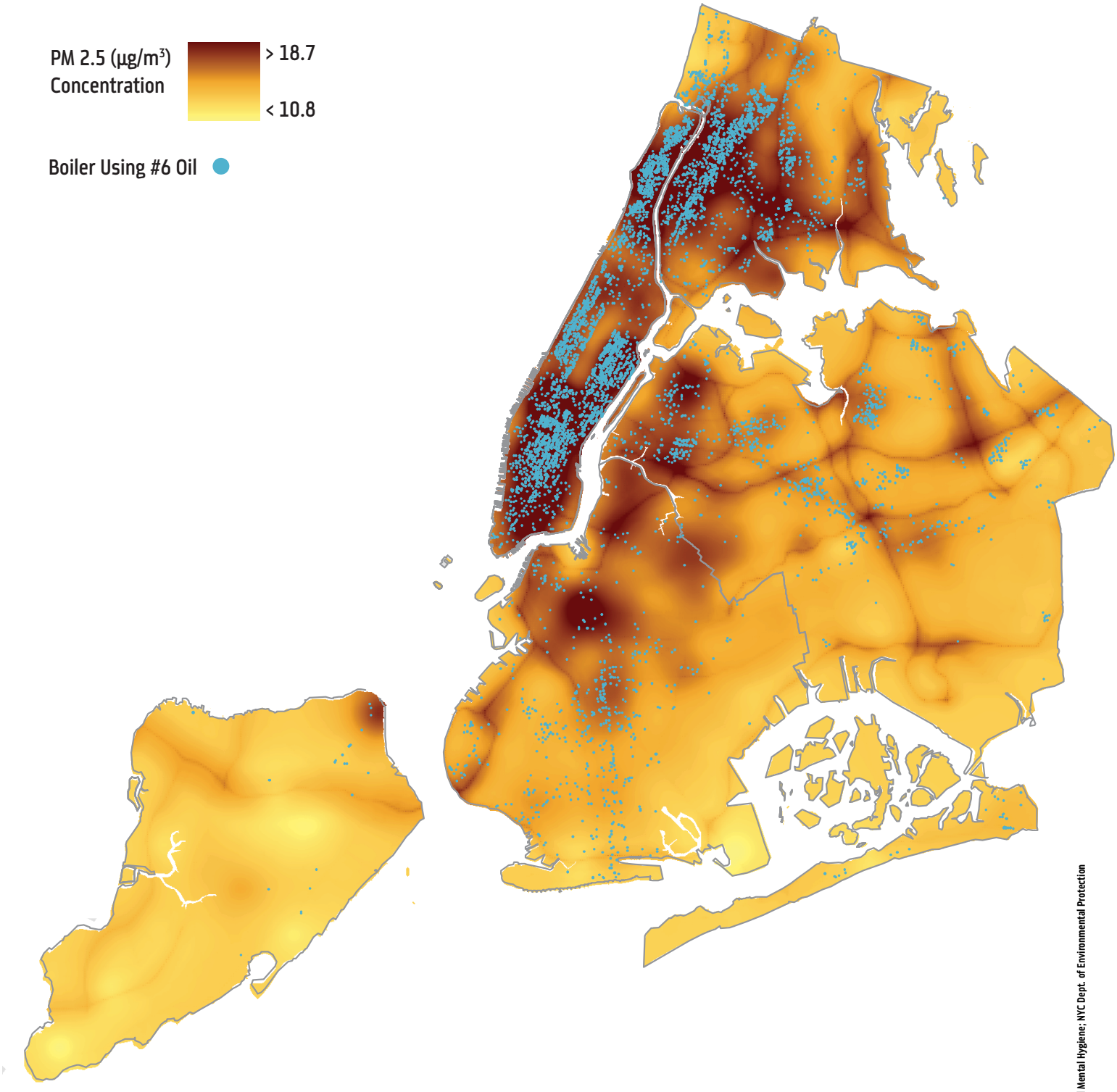
We have already replaced boilers at 13 facilities. This will lead to a 50% reduction in CO_2 and a 44% reduction in soot emissions at these locations, as well as reduced fuel and maintenance costs. We will release Requests for Proposals (RFPs) to enter into energy performance contracts for our schools. While Numbers 4 and 6 boilers are not the sole focus of this effort, successful bidders will conduct comprehensive energy audits of school buildings and make specific recommendations on how to improve each building's overall energy efficiency, which could include the replacement of outdated fuel oil boilers. We will continue to replace school boilers that burn Numbers 4 or 6 heating oil and will complete conversions at 15 additional facilities by 2013.

Update codes and standards

In addition to state and federal standards, New York City's air quality is regulated by the New York City Air Pollution Control Code (Air Code). The Air Code has not been thoroughly updated since 1975. It needs to be revised to take into account new scientific findings and changes in technology.

The quality of the air we breathe inside is as important as that which we breathe outside. On average, Americans spend about 90% or more of their time indoors. While detailed information on indoor air quality and its impacts on human health are limited, the EPA found that indoor levels of pollutants can be two to five times higher, and occasionally more than 100 times higher, than outdoor levels. This can be exacerbated in places like New York City, where indoor pollution sources from businesses can impact residential and commercial tenants sharing multi-use buildings.

New York City Community Air Survey
Winter Fine Particulate Matter Concentration
with Boilers Using #6 Heating Oil



Source: NYC Dept. of Health and Mental Hygiene; NYC Dept. of Environmental Protection

Pollution emitted from the burning of Numbers 4 and 6 heating oil

INITIATIVE 9

Update our codes and regulations to improve indoor air quality

Many materials used in buildings, such as carpets, paint, and glue, emit VOCs long after they are installed or dry. VOCs are common chemical contaminants that can easily evaporate into the air. Their presence can be noticed as an odor, such as paint and "new car" smell.

Many VOCs are known or suspected carcinogens. They can cause other short- and long-term health problems. However, studies are still pending to determine the exact health impacts and exposure levels that could trigger symptoms.

A number of jurisdictions, including California and Illinois, have adopted standards for carpet manufacturing. These standards, most notably those created by the Carpet and Rug Institute (CRI), include testing for VOCs. They prohibit the use of materials that do not comply with these standards. In New York City, we enacted laws creating an environmentally preferable purchasing program, which requires the City to purchase only carpet and carpet adhesives that meet the CRI standards. This requirement does not apply to private buildings.

While New York State currently limits the amount of VOCs that can be emitted from paint and adhesives, several state and local governing bodies, including the Battery Park City Authority, have set more stringent limits for their purchases. As research and industry standards on these and other building materials evolve, we will propose regulations to reduce exposure to toxins released by building materials, including paints, glues, and carpets.

INITIATIVE 10

Update our air quality code

The goal of the New York City Air Pollution Control Code (Air Code), which gives the City authority to set and enforce emissions and fuel standards, is to preserve, protect, and improve the air resources of the city.

Unfortunately, the Air Code has not undergone a comprehensive overhaul and revision since 1975. Instead, it has been revised in a sporadic and piecemeal manner. This incomplete revision has made the Air Code inflexible to new types of fuels and technologies and difficult to comply with. We will update the Air Code to streamline compliance processes and encourage innovative ways to reduce local sources of pollution while maintaining rigorous standards to protect public health.

Conclusion

Despite decades of progress, air pollution in New York City remains a significant concern. Current levels of PM 2.5 are estimated to contribute to over 3,000 premature deaths and over 8,000 hospital admissions and emergency room visits annually in New York City. We are working to achieve the best air quality in any large American city. We have made great strides in measuring air quality, in legislating emissions reductions from school buses and from heating oil, and in reducing pollution from ferries, private trucks, and construction vehicles.

The air pollutants with the greatest public health impact in New York City result mainly from fuel combustion emissions of on-road and-off road vehicles, heating oil, other building sources, and electric power generators. By focusing our efforts on these areas, we can reduce citywide air pollution levels and also reduce variability across our neighborhoods.

Enlisting the help, funding, and expertise of private and public partners will help us reduce emissions from key sources.