

Testimony of Carter H. Strickland, Jr.
Commissioner, New York City Department of Environmental Protection
before the
New York City Council Committee on Environmental Protection
concerning
Air Quality Impacts and Ways to Measure and Address Them in NYC Environmental
Justice Communities
250 Broadway, 16th Floor
February 28, 2014, 1 pm

Good morning Chairman Richards and Members. I am Carter Strickland, Commissioner of the New York City Department of Environmental Protection (DEP). Thank you for the opportunity to testify on air quality impacts and ways to measure and address them in NYC environmental justice communities. I am joined by Dr. Tom Matte, Assistant Commissioner for Environmental Surveillance and Policy at the Department of Health and Mental Hygiene. First, congratulations to you, Mr. Chairman, on your appointment to this committee. DEP looks forward to working with you and this committee over the next four years.

Improving our city's air quality remains an important public health goal and one in which city government can play a large role. Now that emission-reduction control strategies have been applied to most of the stationary and mobile sources of air pollution inside and outside the City's boundaries, federal, state and local governments are focusing on finding control strategies for smaller sources that could be better regulated or that have been unregulated to date. In 2007, PlaNYC, the city's first long term sustainability plan set the ambitious goal to "achieve the cleanest air quality of any big U.S. city" by the year 2030. Since then the City has made significant strides toward achieving this goal. Along with air quality initiatives by other City agencies, DEP is responsible for updating and enforcing the Air Pollution Control Code (Air Code), which has the goal of preserving, protecting, and improving the air resources of the city. We hope to come before you soon to testify on the re-introduced revised Air Code for its adoption this year.

While New York City's air quality has improved, air pollution in New York City remains a significant environmental threat. The Department of Health and Mental Hygiene (Health) estimates that fine particle pollution—our most harmful pollutant overall—causes an average of more than 2,000 deaths, approximately 1,500 hospital admissions for lung and heart conditions, and 5,000 emergency department admissions for asthma each year, based on levels in 2009-11.

Particle pollution and most other harmful air pollutants in cities, like oxides of nitrogen, sulfur dioxide, and ozone, come from fuel combustion. These pollutants affect all New Yorkers in all kinds of neighborhoods and demographic groups. In fact, the accompanying map shows that some of the worst air quality is in the Upper East Side of Manhattan, on both sides of 96th Street, and this pattern is true for other transportation corridors and areas with a high concentration of large buildings that use dirtier grades of heating oil. However, a disproportionate burden of public health harm from air pollution falls on the most vulnerable New Yorkers—the very old, the very young, and those living in neighborhoods with the highest rates of poverty and pre-existing respiratory and cardiovascular health conditions, which are exacerbated by air pollution. For example, Health estimates that rates of emergency department visits for asthma exacerbated by fine particle exposures are four times higher in high-poverty neighborhoods, compared to low-poverty neighborhoods. In other words, in NYC, unlike other cities or nationwide, we do not observe consistent differences in levels of fine particulate matter (PM_{2.5}) by neighborhood poverty, but there are strong differences in PM_{2.5}-attributable health events due to underlying neighborhood susceptibility. So while all New Yorkers have a stake in cleaner air, those in our most vulnerable neighborhoods have the most to gain from efforts to reduce emissions in their own communities and elsewhere in the city, as air does not stay within neighborhood boundaries.

In the rest of my testimony, I will talk about what the City is doing to monitor air pollution, its sources and impacts, and how we are working to reduce local emissions. I will then speak to the implications of air pollution and control efforts for environmental justice (EJ) communities. Finally, I will touch on remaining challenges, including passage of a revised, updated Air Code, to achieving the cleanest possible air quality for all New Yorkers.

The New York State Department of Environmental Conservation (DEC) conducts routine air quality monitoring in New York City and throughout the state, as required by federal regulations. DEC tracks hourly, daily and annual trends in overall air quality in the NYC metro area to determine whether the City is complying with the federal Clean Air Act, and to help forecast days when air quality will be poor. DEC monitors are located at about 25 sites around the city, mostly on rooftops at some distance away from heavy traffic and other emission sources. These locations are deliberately chosen to detect citywide trends rather than to pinpoint neighborhood-by-neighborhood variation. Routine DEC monitoring is not designed to compare pollution levels at different locations within the city. Most pollutants are monitored at just a few locations; for example, NO_x and PM chemical constituents are monitored at only a few sites. A map of the monitoring locations is appended to this testimony.

While the State performs the majority of air quality monitoring, and the State and the U.S Environmental Protection Agency (EPA) address many of the largest stationary sources as well as mobile sources, the New York City Air Code seeks to fill the gaps by controlling smaller but widespread emission sources such as boilers, as well as other sources not addressed by the federal and state regulatory schemes. Enforcement strategies have proven to be an effective mechanism in controlling these pollutants and also in addressing citizen complaints. For example, a boiler may malfunction and generate smoke and fumes, leading citizens to register a smoke odor complaint through the 311 system, and DEP will respond by sending an inspector and taking other steps to correct the issue. DEP can also respond through programmatic corrective policies, such as revising engineering criteria and requiring an annual combustion efficiency test that will require owners to tune their boilers, resulting in more frequent maintenance.

To best understand how to revise the NYC Air Code and local policies to improve air quality for all communities, the City has been monitoring air quality throughout all five boroughs. Health and Queens College are conducting the New York City Community Air Survey (NYCCAS) to evaluate how common criteria pollutants, including fine particles, black carbon, oxides of nitrogen, sulfur dioxide, and ozone differ across New York City. As part of the City's

sustainability initiative, PlaNYC, this program studies how pollutants from local sources such as traffic, boilers, and restaurants affect air quality in different neighborhoods.

NYCCAS is designed to assess pollution across the five boroughs at street level based on established air pollution research methods. Monitoring locations represent a wide variety of NYC environments, including busy downtown streets, locations near highways, parks, and quiet suburban roads. Most of the original NYCCAS sites (80%) were chosen at random to ensure a good representation of all types of neighborhoods that vary in the density of traffic and buildings—major local pollution sources in New York and other large cities. The remaining 20% of sites were selected to ensure that at least one monitor is placed in every Community District, in some neighborhoods with large transportation facilities or long-term construction, and near some major highway interchanges and other locations with heavy traffic.

From 2009-2011 NYCCAS air pollution measurements were taken at 150 locations throughout the City in each season. As the data showed fairly stable geographic patterns, the number of locations monitored was routinely reduced to accommodate budget reductions and allow for measuring other pollutants. From 2011-2013 measurements were taken at 100 sites and since then routine air quality monitoring occurs at 60 sites. Currently, the density of monitors per square mile is about 80% higher in the Community Districts with the highest concentration of poverty compared to more affluent neighborhoods. Monitors are mounted 10 to 12 feet off the ground on public light poles or utility poles. The monitors use a small battery-powered pump and filters to collect air samples. The results have been disseminated in several public reports and scientific publications. A map of the monitor locations is appended to this testimony.

Here are a few key findings. NYCCAS has shown that any of the important local sources of air pollution affect neighborhoods across the city to some extent, but have their greatest impact on ambient air quality in the most densely developed and trafficked communities. High-density neighborhoods burn more fuel for heat and hot water and have more emissions from other sources such as commercial cooking. They also tend to have more traffic and emissions from vehicles. All fuels burned to heat buildings produce some air pollution. Heating equipment in many large City buildings that are concentrated in the most developed and populous

neighborhoods burn residual oil (also known as No. 4 or No. 6 oil), which emits much more pollution than regular home heating oil (No. 2, or distillate oil) or natural gas.

New Yorkers burn more than one billion gallons of heating oil every year, which, prior to recent heating oil policies, accounted for nearly 14% of PM_{2.5} pollutants emitted into our air—more PM_{2.5} emissions than all cars and trucks in the city combined. This particulate matter contains many pollutants that are associated with respiratory and cardiac diseases. Stack controls found on large power plants don't make sense for controlling emissions from relatively small building boilers, so the most cost-effective solution was to clean up the fuel that is burned. The City worked with the State to pass legislation that limited the sulfur content of No. 2 fuel oil statewide to less than 15 parts per million (ppm)—the same level as that used in clean diesel fuel for trucks. Then the City worked with the Council to pass legislation that limited the sulfur content of No. 4 fuel oil to no more than 1,500 ppm after October 1, 2012. Finally, the City promulgated a rule that bars permits for new No. 6 oil boilers after July 1, 2012, requires all existing No. 6 boilers to burn No. 4 fuel oil by 2015 (i.e., lowering sulfur levels from over 3,000 ppm to under 1,500 ppm), and requires all boilers to burn the cleanest fuel—ultra-low sulfur No. 2 oil or natural gas by 2030.

The second component of the legislation was to have all new boilers/burners meet the emission equivalent to combustion of the new, ultra-low sulfur No. 2 fuel oil. State law now requires ultra-low sulfur No. 2 fuel oil (15 ppm sulfur content) for use in residential, commercial or industrial heating applications beginning on July 1, 2012. Therefore, by 2030 all boilers/burners would be required to meet the emissions equivalent of ultra-low sulfur No. 2 fuel oil with a sulfur content of 15 ppm compared to the current No. 2 fuel oil sulfur content of 2,000 ppm. 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 once all 10,000 No. 4 and No. 6 boilers are converted to burn No. 2 oil, there will be a net annual reduction of more than 700 tons of particulate matter, more than 6,000 tons of nitric oxide and nearly 9,000 tons of sulfur dioxide. The new regulations will also cut carbon dioxide emissions by more than 200,000 pounds per year. These air quality improvements could prevent approximately 200

deaths, 100 hospitalizations, and 300 emergency room visits for illnesses caused by air pollution each year.

DEP has been aggressively reviewing those buildings that are not in compliance with this important regulation and our efforts have proven successful. Out of the over 5,000 buildings that burn No. 6 fuel oil, approximately 650 buildings still need to convert to No. 4 fuel or cleaner and those buildings have been issued a violation. After one violation, DEP can request a cease-and-desist order that would terminate the use of the boiler until the fuel has been changed and would require a temporary boiler be provided to tenants. Of course, the focus is on compliance, and by having this option, it is forcing building owners to come to DEP with a compliance schedule for at least switching the boiler to No. 4 fuel oil, which costs approximately \$10,000.

To help ensure compliance with the clean heating regulation, DEP set out to make the filing of fuel burning equipment easier. DEP's Clean Air Tracking System (CATS), is a new online process for building owners submitting new applications or renewals for boilers. It expedites the boiler registration process, enables online payments, and allows for better tracking of compliance. Building owners can apply for and obtain registrations online, saving them multiple visits to city agency offices.

As I mentioned earlier, traffic is a significant mobile source that causes a substantial increase in emissions from transportation, primarily cars, buses, and trucks, on a daily basis. Every year these vehicles contribute approximately 11% of the local PM_{2.5} and 28% of the nitrogen oxide emissions. The City has been actively finding ways to reduce emissions from motor vehicles, including investments to expand the use of mass transit and 'zero emissions' active transportation like cycling and walking, greening of city-owned vehicle fleets with more hybrids, passing and enforcing rules to use cleaner fuels across the city and reduce unnecessary emissions like idling.

There have been several initiatives and regulations that address this significant source of pollution. One such important proposal became law when DEP worked with the Council to further reduce idling affecting one of our most sensitive populations by limiting vehicle idling to

no more than one minute when adjacent to a school—public or private—and to three minutes everywhere else. DEP has conducted extensive outreach to motorists to educate them about the law by distributing literature about the pollutants emitted from idling vehicles. We have also increased enforcement. Such efforts have resulted in increased compliance with this law. Of course most idling that occurs on our streets is in congested traffic. Making faster progress on reducing vehicle emissions will require more efforts to encourage public and active transportation.

In addition to the one-minute idling law, DEP has proposed amending the Air Code to prohibit all refrigeration trucks, including their secondary diesel engines, from idling longer than three minutes. DEP would then promulgate a rule that will set forth technologies that a refrigeration truck with an independent refrigeration system shall use to prevent the truck, including auxiliary power units, from idling for longer than three minutes at a particular location. Such a rule would allow DEP to be flexible in enforcement and sensitive to cargo needs such as ambient temperature. We are hopeful that this Council will work with us in making sure the Air Code is updated to reflect such important changes to the existing Code, which has only undergone piecemeal changes since 1970.

There are also a number of local laws that improve the City's fleet by reducing emissions from various types of vehicles. Local Law 77 of 2003 was the first aimed at reducing emissions from various types of vehicles. It requires any diesel-powered non-road vehicle, fifty horsepower and greater, that is owned, operated, or leased by, or operated on behalf of a City agency be powered by ultra-low sulfur diesel fuel (ULSD) and utilize the best available technology (BAT) for reducing the emission of pollutants. DEP promulgated a rule specifying that diesel particulate filters (DPFs) that reduce PM by a minimum of 85 percent are deemed to be BAT. DEP continues to review the technology every six months.

Local Law 39 of 2005 requires all City-owned and -operated diesel-powered vehicles greater than 8,500 lbs., such as garbage collection trucks and DEP's truck fleet, to use ULSD to reduce pollutants. In order to lower the emission of harmful pollutants into the environment, these vehicles also must install emission reduction devices.

All on-road diesel vehicles are powered by ULSD (since the passage of Local Law 39, EPA has required ULSD to be sold nationwide for the on-road fleet). The City is also requiring that the entire fleet use a diesel particulate filter, without enabling a waiver to use a less-effective emission control device as was originally permitted by the law. As of Fiscal Year 2012, 93% of the required vehicles used an emission reduction device, which falls just short of the required mandate of 100% by Fiscal Year 2012.

The City is doing even more to ensure compliance with this law by requiring the use of at least five percent biodiesel in the City's fleet during the fall, spring, and summer months, as well as a pilot program to determine if a 20% biodiesel blend can be used successfully during the winter. In addition the City worked with the Council to use biodiesel in City-owned building heating systems, as biodiesel is a cleaner and more sustainable replacement for petroleum-based diesel fuels. Local Law 73 of 2013 requires City-owned buildings to use a minimum of five percent biodiesel as of October 1st, 2014, with a pilot program to use ten percent biodiesel in City-owned buildings. This requirement may be extended to all buildings throughout the city based on the success of the City program.

Local Law 41 of 2005 requires all City-licensed sightseeing diesel buses to use ULSD to reduce pollutants. In addition, to lower the emission of harmful pollutants into the environment, these vehicles must install emission reduction devices. As of Fiscal Year 2012, 100% of the required vehicles use best available retrofit technology (BART). Also, all diesel vehicles are powered by ULSD.

Local Law 42 (LL42) of 2005 required that by September 1, 2006, certain general education diesel fuel-powered school buses be powered by ULSD. In addition, LL 42 required that by September 1, 2007, all of these school buses use BART to reduce emissions. As of Fiscal Year 2012, the Department of Education (DOE) was using ULSD for their fleet of school buses with vehicles manufactured after 2001. DOE is also going beyond the scope of the requirements of the legislation to reduce the emission of pollutants from Type C and D general education school buses by retrofitting special education buses with BART. Of DOE's total fleet, 96% are using

emission control devices with 43% using the best available devices. This piece of legislation is particularly beneficial to EJ communities as many of these bus depots are in EJ areas.

To go even further than the existing school bus regulation, DEP and DOE have proposed in the revision of the Air Code an earlier phase-out date for Type A and B buses. The proposal would require pre- 2007 Type A and B school buses to be retired from the Department of Education fleet by September 1, 2020, two years sooner than would have been required under the current Code. The existing Code currently requires all diesel fuel-powered school buses to be retired 16 years from date of manufacture. The proposal sets forth the accelerated timeframe for this type of bus to be retired, as they cannot be retrofitted with a closed crankcase ventilation system, as required by the current Code, due to spatial constraints. The proposed provision would allow DOE to achieve a cleaner school bus fleet more rapidly.

Local Law 40 requires all contractors managing the solid waste disposal program or recycling program for the Department on Sanitation to use ULSD. It also requires these vehicles to be equipped with emissions reduction technology to reduce the pollutants their vehicles emit into the environment. As of Fiscal Year 2012, all contractor vehicles were in compliance with this legislation or had received an appropriate waiver. As many of the transfer stations are located in EJ communities, the law will be especially valuable.

This combination of regulations has dramatically reduced emissions from the City fleet. The estimated average PM emission percentage reduction per vehicle in Fiscal Year 2011 through Fiscal Year 2012 is 48.99 percent.

Finally, at the end of the 2013, the City Council passed Local Law 145, which requires all operators of heavy-duty trade waste vehicles that provide commercial waste removal services in the City meet the 2007 EPA standard by 2020, and aligns the private service providers with the City's efforts to upgrade its own fleet. This policy was promoted by the New York City Business Integrity Commission (BIC), the City agency that licenses all commercial waste operators in the city, and strongly supported by environmental groups like the Environmental

Defense Fund (EDF). DEP will work closely with BIC to ensure full compliance across the private fleet.

Heavy-duty trade waste hauling vehicles are found in every city neighborhood and routinely expose residents to PM and nitrogen oxide (NO_x) emissions at street level. The impact is even greater in areas where there are transfer stations, commercial corridors and high construction. Today, 85% of the private fleet (approximately 7,000 garbage and dump trucks) is composed of truck model years of 2007 or older. BIC and EDF estimated that without this law, only 37% of the fleet would meet the 2007 standard through natural turnover and attrition. By accelerating this turnover, the City will benefit from a reduction of 40% of PM and 35% of NO_x generated by this fleet. The PM reduction is the equivalent of taking 27,000 delivery trucks or 1,300 intercity coach buses off the road every year from 2020 to 2030.

There is also another vehicle initiative that is helping to improve the air quality in EJ communities. The Hunts Point Clean Trucks Program (Program) funded through the U.S. Federal Highway Administration's Congestion Mitigation Air Quality (CMAQ) Program, which provides funding for programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter that aim to reduce transportation related emissions. The Program is a unique environmental initiative led by the New York City Department of Transportation (DOT) aiming to promote sustainable transportation and a cleaner environment in the South Bronx. It targets truck owners serving the Hunts Point and Port Morris communities and offers attractive rebate incentives for the purchase of advanced vehicle technologies such as new diesel, hybrid electric, compressed natural gas, and battery electric vehicles. Rebate incentives are also available for truck scrappage and the installation of exhaust retrofit technologies.

Through the use of advanced vehicle technologies the program seeks to retire, replace, repower, or retrofit up to 500 older trucks with newer and more environmentally friendly vehicles. The overall goal is to reduce diesel pollution and improve air quality and public health. In order to implement a successful program, DOT and its program partners understand the importance of building strong relationships and partnerships with members of the Bronx community. For this

reason, the program looks to engage stakeholders, government agencies and the local community in every step of this initiative.

While air quality is an important component of making the City's air cleaner, the analysis behind each regulation and the permitting process is a significant component in ensuring that the process is transparent and fair. The City Environmental Quality Review manual requires a socio-economic assessment as well as several other criteria that are listed below in the enumeration of factors to be considered in the State Environmental Quality Review (SEQR) regulations. The manual guides the process not only in the context of developing a project, but also in deciding on regulations, such as the No. 6 fuel oil rule. In essence, the environmental review encapsulates many issues that would be reviewed under an environmental justice analysis.

For example, the SEQR regulations state that a project may have a significant effect on the environment if it may reasonably be expected to have any of the following consequences: a substantial adverse change in existing air quality, ground or surface water quality or quantity, traffic or noise levels; a substantial increase in solid waste production; a substantial increase in potential for erosion, flooding, leaching, or drainage problems. The extensive list continues, but germane to this hearing are: the creation of a hazard to human health; changes in two or more elements of the environment, no one of which has a significant effect on the environment, but when considered together result in a substantial adverse impact on the environment; or two or more related actions undertaken, funded, or approved by an agency, none of which has or would have a significant impact on the environment, but when considered cumulatively would meet one or more of the above-stated criteria.

The reduction of particulate matter from large sources that I have discussed, including residential and commercial fuel combustion as well as non-road and on-road diesel fuel, has greatly benefited the City. However, there is a significant source of particulate matter that is largely unregulated, and that is from commercial char broilers, which can emit an estimated 1,400 tons of particulate matter per year. Health estimated that those emissions, which are concentrated in our most populous neighborhoods, contribute to hundreds of the premature deaths caused by PM_{2.5}, and that the use of control technologies could prevent more than 80% of these premature

deaths. DEP is hopeful that by working with the Council we can revise the Air Code and require that all char broilers install control devices which will help all communities.

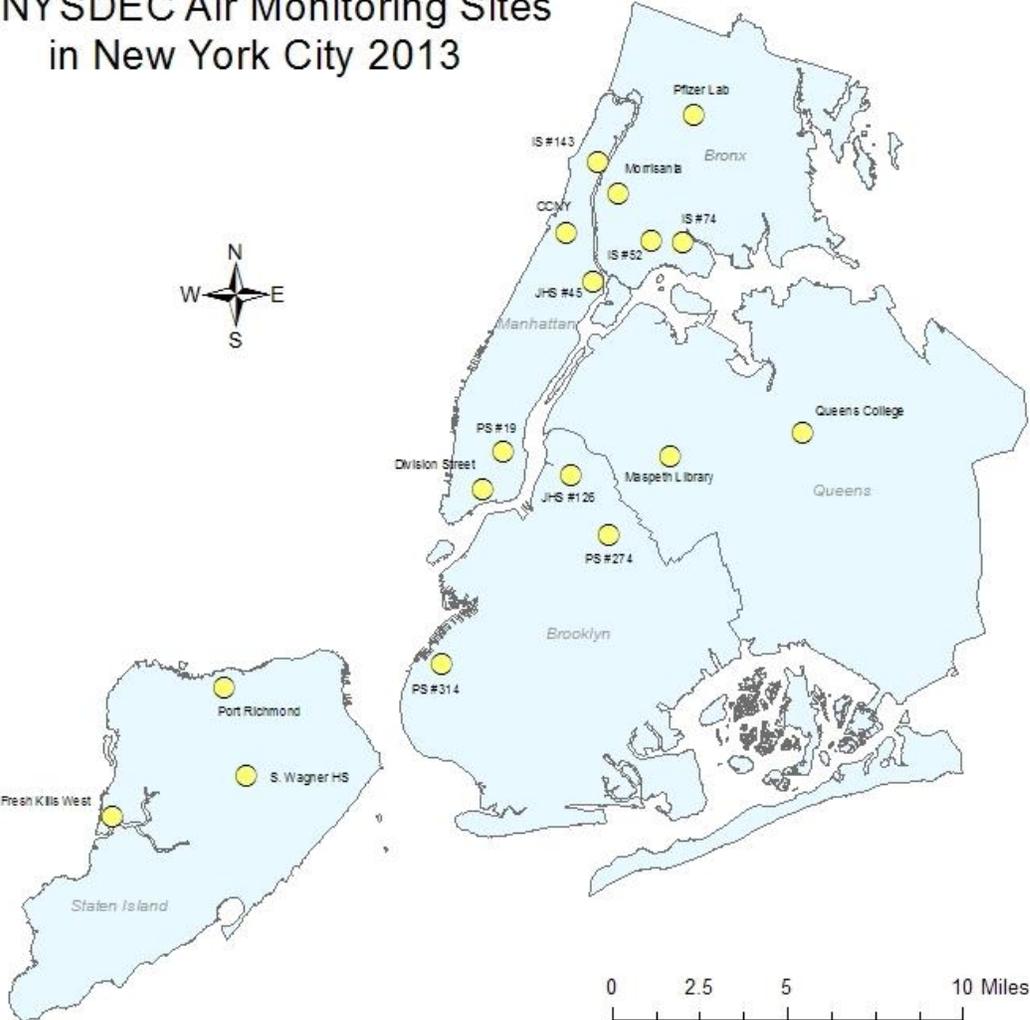
We've used data to set priorities and improve air quality across the city. However, New York City air pollution remains at levels that cause serious illness and premature mortality, and we need to do more, particularly to protect the most vulnerable populations. Ozone levels have not improved substantially in recent years, following trends seen in other major U.S. cities. Ozone is formed downwind from major sources of NO_x. Reduced NO_x emissions in metro area counties upwind of New York City will be required in order to bring down ozone levels in the City.

Further improvements in NO_x and other traffic-related pollutants in our most congested neighborhoods will require continued and expanded local, regional and federal efforts to address on-road sources which account for approximately 10% of PM_{2.5} emissions and 25% of NO_x emissions locally. Traffic-related pollution also contributes carcinogenic pollutants such as benzene and formaldehyde, which are found to occur at high levels in areas of high traffic density. Increased efforts to reduce congestion and adopt low-emission vehicles are needed.

In the partial revisions over the last 40 years, the Air Code has focused on the reduction of particulate matter from large sources, including residential and commercial fuel combustion, as well as non-road and on-road diesel fuel. The regulation of these large sources now allows the City to focus on smaller, yet pervasive sources that, when viewed as a whole, contribute a significant amount of particulate matter. These sources include commercial char broilers, coal and wood-fired ovens, and fireplaces. By focusing on these sources, a revised Air Code will continue to reduce particulate matter emissions throughout the City and ultimately save lives.

Thank you for the opportunity to testify. I will be glad to answer any questions.

NYSDEC Air Monitoring Sites in New York City 2013



NYC DOHMH New York City Community Air Survey Monitoring Locations

