





DEP is transforming former City-owned landfills into parks, including the Pennsylvania Avenue Landfill in Brooklyn, and recently planted 1,000 trees at the site to help MillionTreesNYC reach its PlaNYC goal of adding one million new trees throughout the city over the next decade. Opposite: Jamaica Bay: Photo: Don Riepe, Jamaica Bay Guardian.

SUSTAINABILITY

Sustainability unites environmental protection and economic development to create a more livable city. Rather than conceiving of environmental protection coming at the expense of economic growth, or vice versa, sustainable initiatives maximize synergies and minimize tradeoffs among energy, air, water, land, and climate policies. Environmental justice considerations and robust public engagement generate innovative solutions and determine shared priorities for spending scarce public resources to meet our greatest social needs.

Until the landmark federal environmental legislation of the 1970s, including the Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act, DEP and its predecessors made decisions through local processes, and based on local considerations, about how best to serve New Yorkers' needs for essential services, recreational outlets, and economic development. For example, some of the first wastewater treatment plants in the United States were built in New York City because residents and resort owners demanded clean bathing beaches at Coney Island. Similarly, our world-class drinking water infrastructure was built with local funding, designs, and construction oversight to meet the residential and industrial needs of a growing city. These initiatives provided significant environmental, public health, and economic benefits. A consensus is emerging about the need to make sustainability part of the calculus that drives decisions by utilities like DEP and future regulatory mandates by the state and federal governments.

In 2010, we appointed a Deputy Commissioner for Sustainability to implement PlaNYC and make sustainability a core consideration for our operational, compliance, and capital investment decisions. To do this we will focus on unifying environmental and economic initiatives in five major areas: overall regulatory relationships and policy, water quality, energy, hazardous materials management, and air and noise pollution.

REGULATORY RELATIONSHIPS AND POLICY GOALS

- ▶ **Enlist stakeholders to develop investment priorities and help secure funding for water and wastewater infrastructure.**
- ▶ **Engage state and federal regulators in proactive regulatory review and reform to incorporate sustainability principles into clean water regulations and initiatives.**

DEP's mission requires billions of dollars in scarce public resources. A sustainability framework can be the basis for a candid, open discussion about water quality investments and how they relate to other civic goals. As DEP looks to the future it is critical that we make these investments—whether self-selected or mandated—based on a scientific assessment of overall effectiveness, consensus about priorities and methods, and a broad understanding of how investments can advance other public needs. The success of ambitious initiatives like the NYC Green Infrastructure Plan depends on the willingness of environmental regulators and other stakeholders to embrace a sustainability framework.

STRATEGIES & INITIATIVES

Goal: Enlist stakeholders to develop investment priorities and help secure funding for water and wastewater infrastructure.

72 Form a clean water and clean air partnership with civic groups, customers, regulators, and other stakeholders.

DEP will convene a full range of stakeholders—regulators, customers, environmental groups, businesses, and developers—to collaborate about future water quality investments and the costs and benefits of alternative pollution prevention measures and approaches. This collaboration will initially focus on some of the most important issues we face: green infrastructure and other combined sewer overflow (CSO) controls, turbidity controls for drinking water, and water supply dependability in connection with the repair of the Delaware Aqueduct.

73 Advocate for federal funding for water and wastewater infrastructure.

A generation ago, significant federal funding supported the Clean Water Act and its mandatory scheme of effluent controls. Over the last 20 years, federal funding has steadily and precipitously declined even as regulations have become more stringent, giving rise to large unfunded federal mandates. For example, of the \$6.3 billion New York City has spent to improve water quality in New York Harbor since 2002, only \$41 million, or 0.64%, has been paid for with federal grants. The lack of federal support to match increasingly stringent pollution controls has forced utilities like DEP to defer critical state-of-good-repair investments to comply with mandates that may be unnecessary, or a lower priority in New York City. DEP will advocate for increased federal funding for the Clean Water state Revolving Fund, the Drinking Water State Revolving Fund, and other sources.

Goal: Engage state and federal regulators in proactive regulatory review and reform to incorporate sustainability principles into clean water regulations and initiatives.

74 Accelerate meaningful regulatory reform.

DEP and DEC have initiated a joint review of outdated permit conditions and consent orders to end obsolete practices and reallocate resources to productive uses. For example, DEP's permits currently require that 72 personnel be assigned to an Industrial Pretreatment Program despite a steady and significant decline in the number of enrolled businesses over the past 20 years. DEC is considering allowing us to shift many of these personnel to tide gate repair and other stormwater-related uses with a more immediate impact. DEP hopes to accelerate an across-the-board review of outdated regulations and permit conditions to maximize the resources that are productively dedicated to improving water quality.

75 Advocate for flexible new state and federal regulations that accommodate local conditions.

The last 10 years of water quality investments by New York City have made clear that a one-size-fits-all water quality regulation is not working. The benefits of a single rule—clarity and ease of enforcement—are far too often outweighed by missed opportunities to spend resources on local needs. DEP will advocate, together with other cities and utilities, for EPA and DEC to base regulations on sound scientific studies of public health risks, the relative magnitude of those risks, and the likely effectiveness of proposed solutions.

76 Seek affordability criteria that make sense for urban areas.

DEP will work with other cities and utilities to expand EPA's consideration of affordability criteria when it sets compliance schedules or issues regulations. In New York City and other areas, affordability criteria should not be limited to a percentage of median household income across the city, but rather should expressly recognize that our diverse population includes low-income communities with tight household budgets which face many competing demands, including higher housing and food costs, and other unavoidable expenses of urban living. The pace and scale of rate increases to fund mandated and other necessary infrastructure should also factor into the affordability calculus.



Recent investments, including those at the Newtown Creek Wastewater Treatment Plant, will help DEP meet mandated treatment standards in 2011.

77 Press for state and federal adoption of a watershed management approach to environmental compliance.

A historic 1997 Memorandum of Agreement established a flexible, partnership-based approach to watershed management that has allowed New York City drinking water from the Catskill and Delaware watersheds to remain unfiltered. This has ensured the long-term protection of our source waters while saving the city billions of dollars; provided new wastewater treatment plants and other benefits to upstate communities; and expanded recreational opportunities in protected watershed lands. DEP will advocate with EPA and DEC to shift away from chemical- and pollutant-specific regulation toward watershed-based management for the entire water cycle that incorporates stakeholder participation, considers the most cost-effective means of improving water quality, and complements other social needs.

78 Refine dissolved oxygen criteria and measurements to open up new recreational opportunities.

Dissolved oxygen criteria are formulated as “never less than” a certain concentration; the modeling to predict performance of control measures is premised on a worst case scenario of oxygen content at the bottom of the water column. As a result, many waters that would otherwise meet pathogen criteria for primary contact recreation are classified for secondary recreation because of dissolved oxygen levels predicted for the bottom of the water column that are slightly lower than the oxygen criteria. Averaging dissolved oxygen levels throughout the water column would more accurately assess water quality and would enable DEP to work with the state, community members, and other stakeholders to expand the areas in the New York City that are classified for primary contact recreation.

RECREATION OPPORTUNITIES AND LAND USE DESIGNATIONS

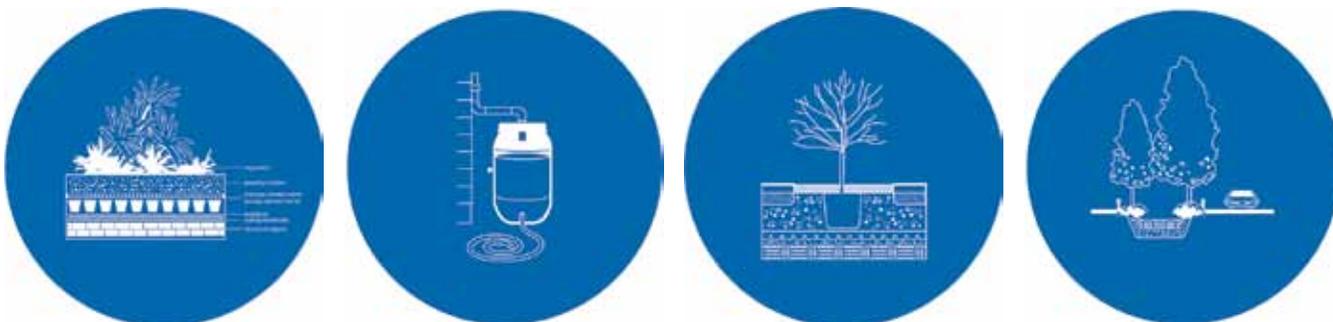
DEP will work with community stakeholders and city, state, and federal agencies to designate additional areas for swimming and boating and to realize the full recreational, economic, and residential potential of the waterfront. We will ensure that water quality standards are factored into decisions about adjacent land uses.

HARBOR WATER QUALITY GOALS

- ▶ Maximize the use of green infrastructure and other source controls to improve water quality.
- ▶ Restore natural systems that can reduce pollution while providing recreational opportunities, habitat, and climate adaptation benefits.

New York Harbor is cleaner than it has been in 100 years as the city has steadily eliminated public health threats. By the late 1980s, pathogen levels from sewage had dropped in many areas of the harbor by as much as 99% from historic levels, and most open waters in the harbor achieved a level of quality that makes boating and other recreational activities possible. After billions of dollars of past and current investments in upgrades at wastewater treatment plants, harborwide pathogen and dissolved oxygen levels are now consistently better than state standards, and this year—for the first time ever—all 14 of DEP’s wastewater treatment plants are collectively meeting monthly Clean Water Act standards for pollutant removal. Indeed, well over 75% of the New York side of the harbor now meets pathogen standards for swimming and other primary contact recreation and an additional 19% meets pathogen standards for boating and other secondary contact recreation. Despite this progress, impaired tributaries comprise 7% of the harbor and do not yet meet water quality standards for pathogens.

Our biggest remaining challenge is to further reduce combined sewer overflows (CSO) when it rains. We have made great progress over the past 20 years—CSO capture has increased from 30% in the 1980s to more than 72% annually today; and sewage is a smaller proportion of overflows, decreasing from 30% by volume in the 1980s to 12% in 2010. A traditional approach would require the construction of massive “grey” infrastructure—tanks and tunnels to store all of this combined flow temporarily until it can be pumped to a treatment plant after flow volume returns to normal. But the remaining opportunities for this end-of-pipe approach are very expensive and do not provide the additional sustainability benefits that create more vibrant communities. The NYC Green Infrastructure Plan that Mayor Bloomberg launched in September 2010 will achieve those benefits in addition to CSO reductions, and DEP is working hard to get the plan approved and begin its implementation.



Schematic diagrams of green infrastructure installations show how they capture rain where it falls before it ever enters the sewer system in order to reduce wastewater volumes at our treatment plants. From left: a green roof, a rain barrel, an enhanced tree pit, and a street-side bioswale.

STRATEGIES & INITIATIVES

Goal: Maximize the use of green infrastructure and other source controls to improve water quality.

79 Reduce runoff from new and existing development by capturing the first inch of rainfall on 10% of the impervious areas in CSO watersheds over the next 20 years.

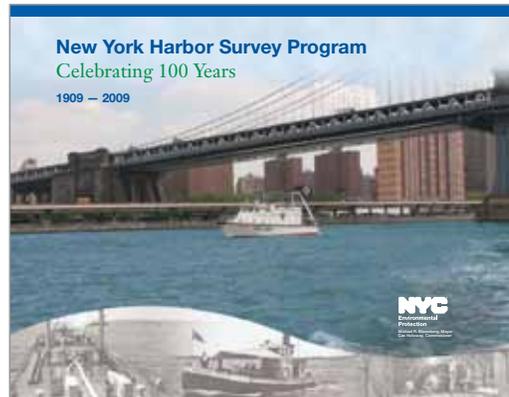
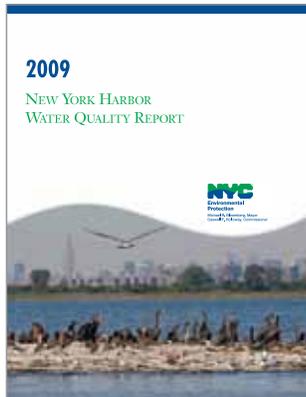
As the most densely developed city in the United States, New York City generates a tremendous volume of runoff from rooftops, streets, and other impervious surfaces every time it rains. If the root cause of runoff—impermeable surfaces—is not addressed, DEP will have to build more expensive tanks and tunnels to manage our stormwater flows, which will further increase with climate change. The NYC Green Infrastructure Plan calls for \$2.4 billion of public and private investment in swales, green roofs, and other source controls to control runoff, and will provide additional benefits, including improved air quality, cooler temperatures, lower energy bills, more green space, and increased property values that the existing grey strategy cannot. If approved by DEC and EPA, the NYC Green Infrastructure Plan will transform the city and reduce CSOs by 12 billion gallons per year—two billion gallons more than the existing grey strategy at a savings of more than \$2 billion over the 20-year implementation period.



The city already has more than 30 green infrastructure demonstration projects throughout the five boroughs to absorb stormwater and beautify our streets.

80 Expand the number of water-quality parameters and testing sites in the New York Harbor Survey.

Since the New York Metropolitan Sewerage Commission, DEP's predecessor, started the Harbor Survey in 1909 with 12 monitoring stations around Manhattan, this survey has evolved into a tool that regulators, scientists, managers, educators, and citizens rely on to assess impacts, trends, and improvements in water quality. Today, DEP tests 20 water quality parameters from 65 stations in the waterways surrounding all five boroughs. To better understand both the impact of CSOs and forthcoming improvements under the NYC Green Infrastructure Plan, DEP will increase the number of monitoring sites throughout the harbor and at the mouths of key tributaries to 85 sites, and we will collect samples approximately once a week in the summer, and monthly during other seasons. We will also seek to expand the monitoring parameters at certain locations to include biotic and ecosystem measures, such as the number of bird and animal species and the rate of growth or decline of wetlands, eelgrass beds, and other native habitats.



2009 marked the 100th anniversary of the New York Harbor Survey, which measures the quality of the water in New York Harbor. A century of investments in wastewater treatment, public education, and changing industry regulations have helped make the harbor the cleanest it has been in the past 100 years.

81 Measure CSO volumes.

Monitoring is critical to our ability to manage water quality and verify the models that form the basis for the city's Long Term Control Plan due in 2017. DEP has installed water elevation meters and telemetry equipment at 110 regulators to help determine whether a CSO has occurred. However, measuring the volumes of CSOs is difficult in combined sewer systems that are affected by tidal waters, so although DEP has conducted pilot studies, none of the available technology measures CSO flow with reliable accuracy. We will launch a renewed applied research effort to challenge the wastewater engineering and technology community to develop a reliable way to measure and monitor CSO volumes.



DEP has distributed rain barrels and encourages homeowners and businesses to install green and blue roofs to reduce stormwater runoff.

Goal: Restore natural systems that can reduce pollution while providing recreational, habitat, and climate adaptation benefits.

82 Restore wetlands habitat in and around Jamaica Bay.

Jamaica Bay is a diverse ecological resource and national treasure that supports multiple habitats, including open water, salt marshes, grasslands, coastal woodlands, maritime shrublands, and brackish and freshwater wetlands. DEP is responsible for protecting and restoring this diverse ecological resource and has been an active local partner with other city agencies on restoration efforts. DEP will continue to restore wetlands habitat in and around Jamaica Bay by investing \$15 million in additional funds for saltwater marsh restoration projects, and by seeking to leverage an additional \$30 million or more in federal matching funds. And we are investing an additional \$100 million at our wastewater treatment plants to reduce nitrogen discharges into Jamaica Bay by more than 50% over the next 10 years.

83 Expand the Staten Island Bluebelt.

The Staten Island Bluebelt provides ecologically sound, cost-effective stormwater management for approximately one-third of Staten Island's land area by preserving streams, ponds, and other wetland areas. These natural systems convey, store, and filter stormwater, and provide valuable open space and diverse habitats. Since the inception of the program, New York City has purchased approximately 325 acres of wetlands and invested \$300 million in sewer construction projects in the South Shore Bluebelt watershed. DEP will expand the Mid-Island Bluebelt to Oakwood Beach, New Creek, and South Beach and will expand the use of this approach in parts of Queens and other boroughs where it is cost-effective and there is sufficient space.



The award-winning Staten Island Bluebelt reduces the city's reliance on storm sewers and provides many co-benefits such as increased property values through beautification and restored habitats for wildlife.

CLIMATE CHANGE

The impacts of climate change in New York City are uncertain. Climate models indicate that by the 2080s, New York City and its watershed region may be 4°F to 7.5°F warmer, with a 5% to 10% increase in precipitation. Scientists anticipate that extreme weather events, such as hurricanes and tropical storms, may also become more frequent. At the magnitudes currently anticipated, climate change could compromise existing water supply and treatment systems. For instance, heavier precipitation and more frequent storms could threaten DEP's unfiltered water systems by increasing turbidity and warmer weather could affect the amount of snowpack and the timing of snowmelt to change the flow into our reservoirs.

Some of the investments we are making now—such as the Croton Water Filtration Plant—will address the potential impact of climate change on the water supply, and some projects—such as the repair of the Delaware Aqueduct—will increase system redundancy and operational flexibility. But there is more to do. In 2008, DEP convened a task force to study the effects of climate change on the city's water system; the task force produced an assessment and action plan that we are now working to implement, including efforts to monitor and model the effects of weather and climate trends on our water supply system. We will also study existing capacity constraints, especially in areas prone to flooding, sewer backups, and combined sewer overflow, and will develop a stormwater drainage strategy to ensure that design criteria for infrastructure investments minimize the risks of population growth and increased rainfall intensity.



DEP restored wetlands and reintroduced local plant life to a 16-acre section of Alley Pond Park in Bayside, Queens to reduce combined sewer overflows into Alley Creek and Little Neck Bay.

ENERGY GOALS

- ▶ **Reduce DEP's carbon footprint.**
- ▶ **Reduce electricity demand.**
- ▶ **Explore and invest in cost-effective clean energy projects.**

DEP is the second largest municipal consumer of electric power in New York City, and our power consumption is expected to grow by 53% over the next five years as we complete and begin to operate the the Catskill/Delaware Ultraviolet Disinfection Facility, the Croton Water Filtration Plant, nitrogen removal processes, and other new facilities required under water quality mandates. An aggressive energy strategy is crucial to maintain the reliability of the water system, as well as meet the PlaNYC goals of reducing our greenhouse gas emissions by 30% by 2017.

In addition to being a large consumer of energy, DEP has the opportunity to become a significant producer of clean energy in New York State. Within the city, DEP owns and operates facilities with a favorable footprint for developing renewable energy sources such as solar photovoltaics (PV), wind turbines, and biogas for power generation. Further upstate, our reservoirs in the Catskill, Delaware, and Croton watersheds offer the prospect of harnessing clean, safe, and environmentally-friendly hydroelectric power.

We are developing a comprehensive energy strategy with three main goals consistent with broader city initiatives: (1) to reduce DEP's carbon footprint, including its emissions of greenhouse gases and criteria pollutants consistent with the goals set out in PlaNYC; (2) to reduce our electricity demand, the cost of which is expected to almost double by 2014 in the absence of aggressive energy efficiency investments; and (3) to explore and invest in cost-effective clean energy projects. DEP will also take a lead role in developing the city's overall energy strategy, managing third party energy infrastructure and City-funded projects, and representing New York City in energy regulatory matters that affect municipal consumers and all energy ratepayers in New York City. Working with the Department of Citywide Administrative Services, the Mayor's Office of Long-Term Planning and Sustainability, the Economic Development Corporation, and other stakeholder we will ensure that New York City remains at the cutting edge of innovation and that residents enjoy clean, reliable, and affordable energy.

STRATEGIES & INITIATIVES

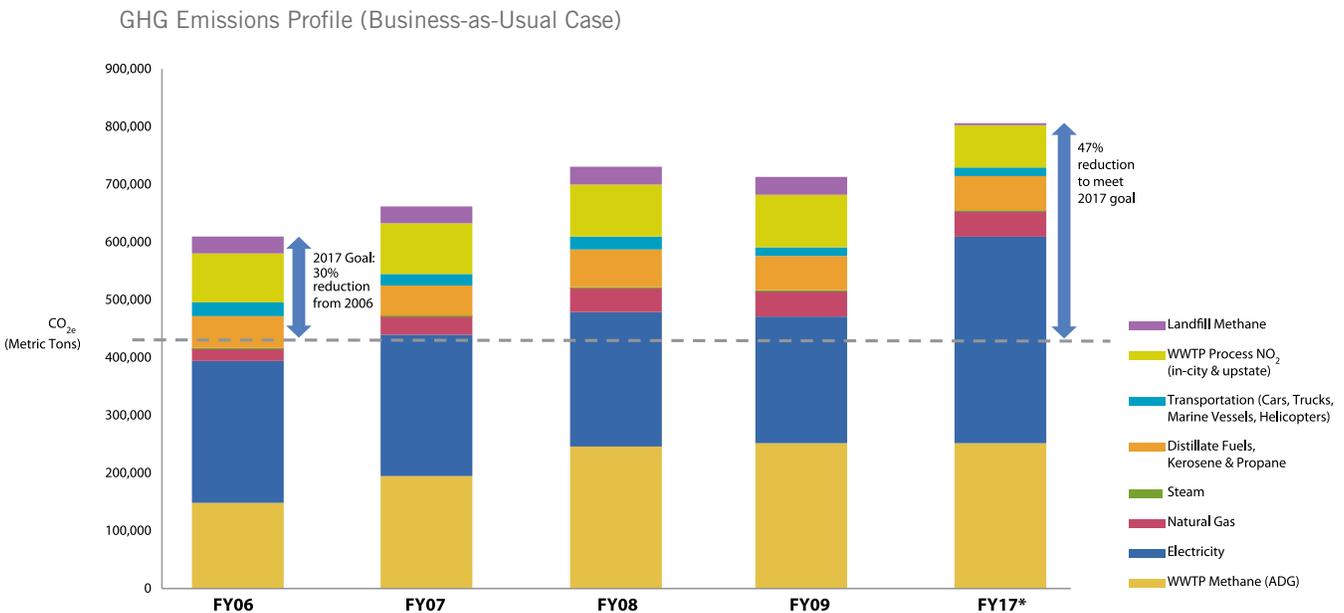
Goal: Reduce DEP's carbon footprint.

84 Implement strategies to reduce DEP greenhouse gas emissions by 30% from 2006 levels to meet Mayor Bloomberg's PlaNYC goals.

DEP is one of the largest emitters of greenhouse gases in New York City and roughly one-third of our emissions are associated with our consumption of electricity. Emissions of methane—a major component of anaerobic digester gas at our wastewater treatment plants—are the second biggest contributor. Our greenhouse gas emissions are expected to grow by approximately 200,000 metric tons between 2006 and 2017 due to increased power consumption and increased methane production from improved digester processes. As a result, by 2017 DEP's 30% reduction target is effectively a 47% reduction from our 2006 baseline emission forecast (Figure 1). We are looking across the agency for cost-effective supply- and demand-side investments to help us reach this aggressive carbon reduction target, while at the same time improving our core utility operations. DEP has identified projects between FY 2010 to 2014 that will reduce our greenhouse gas emissions by 304,000 metric tons that include: improved and expanded digester gas distribution systems to handle anaerobic digester gas; new or rehabilitated power and heat generation equipment such as engines, boilers, and fuel cells; and more energy-efficient equipment such as new centrifuges.

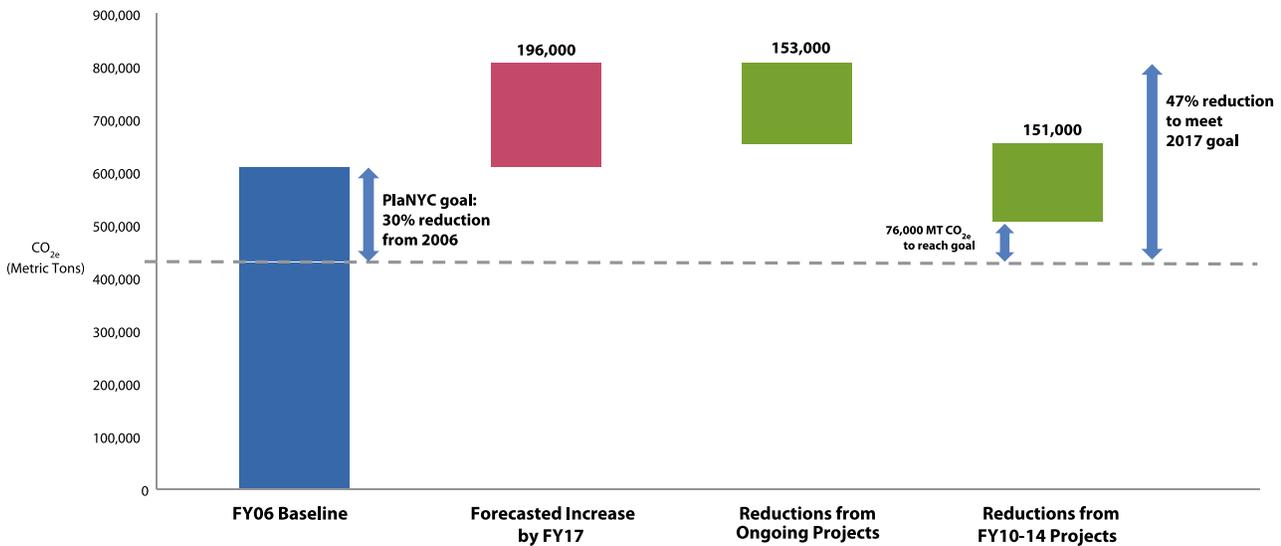
This set of investments will bring the agency to within 75% of its ambitious greenhouse gas reduction target (Figure 2). DEP is evaluating the most cost-effective investments to bridge the remaining gap by 2017. We believe this target is reachable through a combination of additional investments in the use of anaerobic digester gas and hydroelectric power, more efficient lighting, heating, ventilation, and cooling systems, operational changes at wastewater treatment plants, and selected replacements of inefficient process equipment.

Figure 1: Projected DEP Greenhouse Gas Emissions (2006-2017)



* FY17 emissions forecast assumes no additional ADG use or energy efficiency investments other than what is currently in the 10-year Capital Plan. Does not include emissions from steam consumption at the Red Hook and Wards Island wastewater treatment plants. Includes a reduction of landfill methane emissions as a result of the natural decomposition of the landfill and the implementation of a flare at the Brookfield Landfill. Includes reduction of NO₂ emissions associated with implementation of biological nitrogen removal at six of the in-city and upstate wastewater treatment facilities.

Figure 2: DEP Projects and Greenhouse Gas Reduction (2010-2014)



Goal: Reduce electricity demand.

85 Ensure the reliability of our power supply.

Treating 1.3 billion gallons of wastewater every day is energy-intensive and requires a reliable supply of electricity. As the city continues to grow and demands on the power grid increase, we must find ways to reduce our electricity needs by operating our wastewater treatment plants more efficiently and generating more power onsite at our wastewater treatment plants. To ensure that our minimum power needs are always met, we must strengthen our partnerships with utilities including Con Edison, the New York Power Authority, and the Long Island Power Authority, and establish protocols for communication and coordination during peak demand periods. As part of this effort, we must work closely with our state and federal regulators to institutionalize emergency protocols that will maximize DEP's ability to use on-site generator power when doing so will reduce the strain—and likelihood of a power disruption—on local grids.

86 Implement aggressive demand-side management practices to mitigate a projected 53% increase in electricity demand over the next five years.

Energy costs comprise approximately 11% of DEP's operating budget and are expected to grow as we complete and begin to operate new water and wastewater treatment facilities to meet state and federal water quality mandates that will increase our annual electricity consumption by more than 53% (an additional 373 million kilowatt-hours) by the end of the decade (see Figure 3). These additional facilities include the Catskill/Delaware Ultraviolet (UV) Disinfection Facility, Newtown Creek Wastewater Treatment Plant upgrades, the Croton Water Filtration Plant, combined sewer overflow detention facilities, and the Biological Nitrogen Reduction (BNR) programs. DEP must implement an aggressive demand-side management program since we are on track to become the largest consumer of power among city agencies by 2015. We are conducting facility-level audits to identify the most cost-effective options to reduce energy consumption, including modifications to operational practices, more efficient buildings, and capital upgrades to our core process equipment to improve energy efficiency and reliability.

■ **Operational efficiency**

DEP regularly engages its in-house experts to determine the most effective solutions to improve energy efficiency. For example, our plant superintendents are exploring how to modify operational practices such as adjusting the flow rates of blowers at wastewater treatment plants to reduce energy loads while still maintaining wastewater treatment standards.

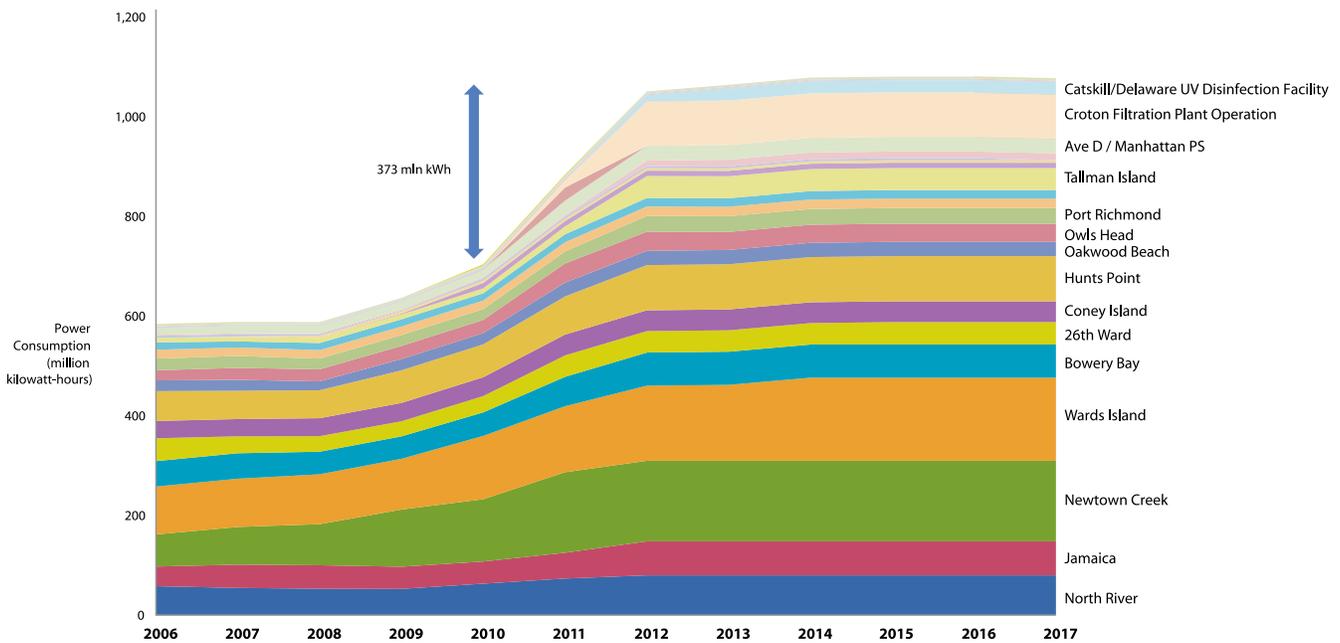
■ **Lighting and HVAC replacement**

We are currently evaluating capital upgrades such as more efficient heating, ventilation and cooling systems (HVAC) in buildings, and the replacement of old lighting infrastructure with more efficient light emitting diodes (LEDs).

■ **Capital upgrades to process equipment**

As part of our capital asset management program we are replacing aging and inefficient equipment, such as pumps and centrifuges, to improve the reliability of our operations and reduce our energy costs. Energy will now be an integral consideration in choosing the right capital investments throughout the agency.

Figure 3: Projected DEP Power Consumption (2010-2017)



PEAK LOAD MANAGEMENT

We are participating in a Peak Load Management program in partnership with Con Edison in which our Owls Head and Coney Island wastewater treatment plants will reduce their power consumption during times of greatest electricity demand—either by using less electricity or by using alternative sources of generation. Due to federal restrictions on pollutants, such as National Emissions Standards for Hazardous Air Pollutants (NESHAP), most of our generators no longer operate during peak periods but only when there is an impending blackout or other emergency. DEP is working closely with its electric utility partners, including Con Edison, to coordinate the deployment of these generators during emergency situations so that service is not interrupted to wastewater treatment plants or the city’s energy grid. DEP also operates emergency generators at all 14 wastewater treatment plants in the five boroughs that can support primary treatment needs during a power outage.

87 Facilitate new gas transmission projects into New York City to lower gas and power prices, increase the reliability of power and gas supply, and decrease fuel oil consumption.

Despite the slowdown of the energy market since the economic recession, New York City residents still face some of the highest retail electricity and gas prices in the nation and an aging infrastructure in need of expansion and modernization. Specifically, no new natural gas pipeline capacity has been built to serve the city in almost 40 years and the city has limited gas storage capacity. This increases energy costs and jeopardizes longer term reliability. And since more than 90% of the generating capacity in the city uses natural gas as its primary fuel, there is a very close relationship between the availability of natural gas and our ability to ensure adequate and affordable electricity for 8.4 million residents and the many millions more who visit and work here in New York City every day.

DEP is working with private developers of gas pipeline projects and the Federal Energy Regulatory Commission (FERC) to represent NYC stakeholders and to bring vital new gas supply into the city and protect the city infrastructure that these projects might affect. For example, one project proposed by Spectra Energy could increase the city's access to natural gas by up to 7.6 billion cubic feet per day—enough to heat more than 2 million homes—and would support our efforts to achieve a number of key citywide goals, including decreased use of fuel oil in the five boroughs.

Goal: Explore and invest in cost-effective clean energy projects.

88 Develop 30-50 megawatts of clean energy supply at DEP facilities through public/private partnerships.

DEP will evaluate targeted investments in 30-50 megawatts of clean energy supply where it has a comparative advantage and where there is a sufficient return on investment. DEP is examining the following potential sources of clean power supply:

■ Harness clean hydroelectric power to reduce DEP's carbon footprint and spur economic development

Hydroelectric power is a key component of DEP's efforts to create a clean power portfolio, support economic development in host communities in upstate New York, generate revenues for the City of New York, and reduce our overall carbon footprint. The infrastructure that impounds New York City's drinking water currently contains five hydroelectric facilities. In 2008, FERC granted the City a preliminary permit to study opportunities for four additional facilities at the Neversink, Pepacton, Cannonsville, and Schoharie reservoirs that could provide up to approximately 15 megawatts of power. In November 2010, DEP issued a Request for Expressions of Interest to energy developers and financiers to design, build, and/or finance hydroelectric facilities on the four reservoirs to further explore this clean energy opportunity.

Further downstream, DEP is investigating how to efficiently harness the potential and thermal energy in our water distribution and wastewater treatment systems to reduce power and heat loads. Our distribution system has multiple hydraulic gradients—such as the effluent from our wastewater processes that sometimes drops into the ambient water from a significant elevation—that we can transform into electric power for our wastewater treatment plants. We are also studying the prospects for using the heat in our sewer systems to power the heating, ventilation, and cooling operations at nearby buildings.

■ Use anaerobic digester gas and eliminate emissions

Large digesters at wastewater treatment plants act like giant stomachs to remove solids from water. This process creates a large volume of anaerobic digester gas, including methane and heavier hydrocarbons. Although anaerobic digester gas is currently a source of carbon emissions, it is also a useful energy source. A central component of our greenhouse gas reduction strategy will be to capture the anaerobic digester gas we currently waste to power wastewater operations, meet on-site heat and electricity needs, and, where feasible, sell excess energy to the market. The most effective way to do this is through public-private partnerships that leverage the expertise, creativity, and incentives of the private sector;

we will pursue these partnerships wherever they make sense. In addition to gas-to-grid projects, we will pursue partnerships to build cogeneration facilities that create electricity and usable heat or steam at our wastewater treatment plants. In November 2010 we released a Request for Expressions of Interest (RFEI) to develop a cogeneration facility near our Wards Island Wastewater Treatment Plant and we hope to pursue a viable proposal next year.

■ **Develop solar and wind energy**

DEP's real estate portfolio includes a number of the best locations in the city to produce renewable solar and wind energy, including a 200,000 square foot roof at the Port Richmond Wastewater Treatment Plant in Staten Island. A number of DEP-operated landfill sites also contain large, unshaded parcels of land that are at a premium in New York City and offer the potential for large-scale solar and wind power installations. Newtown Creek and other wastewater treatment plants are also large enough and have local power and heat loads ideal for solar development. We are currently conducting a feasibility study for the development of a 1.5 megawatt wind turbine at our Oakwood Beach Wastewater Treatment Plant in Staten Island, which would be the first standalone wind turbine in the city. As with anaerobic digester gas and cogeneration projects, partnerships with the private sector will be essential to make these projects a reality.

89 Support city energy initiatives by working with regulators and utilities to promote competitive energy markets and efficient and fair incentives for New York City.

In addition to managing the energy strategy for our core water utility assets, DEP will play a central role in developing and supporting citywide energy initiatives, including representing the City on all energy regulatory matters with the Public Service Commission, New York Independent System Operator (NYISO), and FERC. We will actively pursue clean, reliable, and affordable energy for DEP and the city's 8.4 million residents. As chair of both New York City's Energy Policy Task Force and Energy Planning Board, we will work with stakeholders to support our energy priorities, including the continued operation of the Indian Point nuclear plant, a key component in the achievement of citywide greenhouse gas reduction goals.

Effective energy market design must fully reflect the needs of energy ratepayers for safe, reliable, and affordable power, and DEP is the city's voting representative at NYISO, which has overall responsibility for market design for the wholesale electricity market. We will support key city goals with regulators, including our continuing interest in modernizing older, inefficient power generation facilities. DEP will also advocate for the continued development of competitive energy markets to ensure that clean energy technologies, including renewable and repowered assets, can compete in the market and enable the city to lower its emissions, and become a center for innovation in energy.

State and federal incentives for energy efficiency and clean distributed energy investments will play an increasingly critical role in New York City's efforts to limit the cost of consumers' energy bills, reduce citywide greenhouse gas emissions by 30% by 2030, and improve the reliability of the overall energy system. DEP will work with state and federal regulators to develop the most efficient and transparent state energy efficiency programs and ensure that New York City receives its fair share of state funding for energy projects.

DEP will also foster the development of innovative energy projects in and around the city, including renewable power and smart grid technologies. For example, offshore wind turbines represent an opportunity to harness utility-scale renewable power located in proximity to the city; DEP is an active member of the Offshore Wind Collaborative, along with Con Edison, Long Island Power Authority (LIPA), and New York Power Authority (NYPA), and will work closely with federal and state authorities and utilities to pursue this potential opportunity. DEP will also work with Con Edison and other stakeholders to help the transition to a smarter energy grid for New York City that will improve system reliability, provide better pricing signals for energy consumption, and facilitate the greater use of clean energy technologies.

HAZARDOUS MATERIALS GOALS

- ▶ Prevent public and ecosystem exposure to contaminated sediments and soils, return water to providing ecological services, and reuse clean soils and sediments.
- ▶ Ensure proper management of hazardous materials.

Like all cities with an industrial past, New York has land and waterways that are contaminated from historic disposal and handling practices. In fact, much of the city was built on soil that contains low levels of contamination. The remediation and restoration of contaminated sediments complements DEP's work to improve water quality and ecology. DEP will work with the New York City Office of Environmental Remediation, EPA, DEC, and private parties to investigate and remediate contaminated sediments. DEP also regulates the management of hazardous materials by industrial and commercial facilities under Local Law 26 and other authorities and responds to emergency spills. DEP will improve its delivery of these critical security and public health functions.

Additionally, DEP regulates the removal of asbestos and recently overhauled the city's asbestos regulations to improve safety for workers, first responders, and the public. We will continue to implement these measures and make sure that bad actors are barred from the industry.



DEP works with business owners and construction contractors to ensure that workers are safe and hazardous materials are carefully stored and disposed of properly.

STRATEGIES & INITIATIVES

Goal: Prevent public and ecosystem exposure to contaminated sediments and soils, return water to providing ecological services, and reuse clean soils and sediments.

90 Continue to work with EPA to clean up Superfund-designated sites.

In the Gowanus Canal, DEP is addressing stagnant water, high volumes of nutrients, and odor through a multi-pronged improvement plan that includes reducing combined sewer overflow by building a new interceptor sewer, repairing and upgrading the flushing tunnel that brings more oxygen-rich water from Buttermilk Channel along the East River into the Gowanus Canal, and installing an aeration system during the construction period. On Newtown Creek, DEP is spending \$5 billion to upgrade the city's largest wastewater treatment plant. In 2010, EPA designated Gowanus Canal and Newtown Creek as Superfund sites based on the historic industrial discharges of pollutants that remain in the sediment of these urban waterways. In addition to our long-standing water quality efforts, we will work with EPA, DEC, and industrial polluters to complete the remediation of contaminated sites as quickly as possible for the benefit of local communities.



The Gowanus Canal and Newtown Creek are working waterways with environmental degradation from decades of industrial use.

91 Secure the repeal of GASB Standard 49.

In 2006, the Government Accounting Standards Board (GASB) issued an interpretation that municipalities can no longer use capital funds to investigate or remediate environmentally contaminated sites. After limited waivers expire in 2011, the City will not be able to fund as much of the critical remediation work needed to return properties to productive use. DEP will work with the Office of Management and Budget to seek an amendment to GASB 49 to once again allow us to use capital funds to pay for environmental cleanups.

BROWNFIELD REMEDIATION

New York City established the Mayor's Office of Environmental Remediation (OER) to accomplish the 11 PlaNYC initiatives that address brownfield properties throughout the city. Since its creation in June 2008, OER has worked with DEP and other city agencies to launch the first municipally-run brownfield cleanup program, create a brownfield incentive program that provides more than \$9 million of City investment in brownfield investigation and cleanup, and develop a GIS-based web application to facilitate property research and identify brownfield sites. DEP looks forward to continuing this strong relationship and will continue to provide the services and expertise to ensure that brownfields are properly managed and returned to productive use.



Brownfields in Greenpoint, Chelsea, and Long Island City are undergoing remediation so that they may be usefully redeveloped.

92 Promote beneficial use determinations (BUDs).

Some soil that is excavated during construction projects can be reused for certain purposes, such as landfill caps and contours. Reuse avoids unnecessary emissions and the expense of shipping and disposing of these materials at distant landfills. DEP will work with DEC and the Army Corp of Engineers to standardize BUD applications, develop a multi-agency BUD team, and increase appropriate reuse of sediments.

Goal: Ensure proper management of hazardous materials.

93 Continue to meet all of the requirements of the Construction, Demolition, and Abatement (CDA) laws and improve asbestos compliance.

Exposure to airborne, friable asbestos remains a significant public health risk decades after it was banned, as the city's older building stock continues to be rehabilitated. DEP has a comprehensive program to train and certify asbestos removal workers and managers, permit asbestos removal activities, and enforce asbestos safety rules. DEP's Asbestos Control Program has undergone a major overhaul to implement the Construction, Demolition and Abatement law and will continue to complete all of the CDA initiatives and promulgate rules for asbestos abatement during demolition. We will increase office audits and will complete at least 500 field inspections each year going forward.

In 2009, DEP created the online Asbestos Reporting and Tracking System (ARTS) to allow applicants to submit applications and receive approvals electronically. DEP will continue to improve and update DEP's permit database to allow for online permit filing and renewal and will ensure that only certified asbestos inspectors submit applications. DEP also started a data sharing and notification process with EPA, DEC, and other city agencies to maintain the integrity of asbestos inspector certifications.



DEP promotes public safety by making sure that contractors abate asbestos safely.

94 Improve and refine hazardous material management systems.

Local Law 26, the Community Right-to-Know Law, mandates that all facilities that handle hazardous materials must report information about their materials to DEP. We maintain an inventory of more than 7,600 businesses and facilities that store, use, process, or handle hazardous materials, such as hospitals, factories, dry cleaners, and auto body repair shops, and track an additional 49,400 power utility facilities.

DEP annually conducts more than 5,000 inspections to ensure compliance with Local Law 26 and issues enforcement orders, oversees cleanups of spills, and responds to public complaints of odors, chemical spills, and abandoned chemicals. We also collaborate with law enforcement agencies to monitor major public facilities and events for toxic air pollutants.

DEP will work to refine and strengthen its web-based reporting system to improve the accessibility and quality of the information available to communities, workers, and emergency response personnel. Furthermore, DEP will increase inspections at targeted facilities with numerous citations or confirmed violations of regulatory standards. We will also continue to reduce the amount of Extremely Hazardous Substances within city limits and the overall risk these materials pose by promoting prevention and avoidance strategies in facilities that file Risk Management Plans for Extremely Hazardous Substances.

95 Improve responses to emergencies.

DEP's Emergency Response & Technical Assessment (DERTA) unit is comprised of approximately 35 qualified HazMat responders who protect public health and safety by responding to emergencies caused by releases, or threatened releases, of potentially hazardous substances into the environment. This unit is one of the most technically accredited groups in the country and continues to receive specialized training in the use of highly advanced tools at the cutting edge of technology. We will improve response efficiency by streamlining the criteria and the type of events that require a response and will enhance public safety by restructuring operational procedures to improve the efficiency of hazardous material mitigation.

AIR AND NOISE POLLUTION GOALS

- ▶ Improve air quality and public health in New York City by controlling local sources of air pollution.
- ▶ Reduce noise through targeted enforcement and code changes.

Air quality and excessive noise are critical quality of life issues; indeed, air quality is a primary factor that affects public health and life expectancy throughout the city. While New York's air has been getting cleaner, it does not meet national standards for two primary pollutants: fine particulate matter (soot or PM 2.5) and ozone (smog). In addition, EPA is adopting new national standards for nitrogen oxides and sulfur oxides that New York City may be out of compliance with when they become effective. DEP will continue to work with EPA and DEC to control upwind sources, and will continue to reduce and eliminate local sources of air pollutants throughout the five boroughs. New York City has a history of bold action to improve air quality, and we will soon establish rules for boiler installation and repair to essentially phase out the use of No. 6 and all but low-sulfur No. 4 heating oil in the city.

We will also conduct the first review of our groundbreaking Noise Code since its adoption in 2005 to reflect both our experiences in its application and technological improvements.



DEP works with construction contractors to develop comprehensive noise mitigation plans that are sensitive to community needs.

STRATEGIES & INITIATIVES

Goal: Improve air quality and public health in New York City by controlling local sources of air pollution.

96 Reduce air emissions from idling.

Mobile sources are a significant source of local pollution. DEP can reduce emissions from construction vehicles, city fleets, and other sources that are within local control through enforcement and the promotion of new technology. DEP will continue to review new technology that both reduces idling and achieves comparable results, including auxiliary engines. In addition, DEP will work to increase compliance with local anti-idling laws, including the new one-minute limit in school zones, through targeted enforcement and education.

97 Reduce local air emissions from the use of residual heating oil.

Small, diffuse sources can emit significant levels of pollution and still evade federal or state regulation. For example, according to EPA's National Emissions Inventory, as much as 14% of local PM 2.5 emissions come from the relatively small oil and gas burners we use to heat buildings or water. DEP and other agencies have already worked to enact Local Law 43 of 2010 to reduce heating oil pollution by requiring the use of biodiesel blends and creating a new class of low-sulfur heating oil. DEP will amend its regulations to reduce the use of residual oil while minimizing capital costs that low-income residents must bear.

98 Update the New York City Air Code for the first time since 1970.

The New York City Air Pollution Code, or Air Code, regulates any industry or group, such as the automotive industry and owners of buildings with boilers, or activity that can emit potentially harmful substances into the air, including chemicals and particulate matter. Over the past 30 years, the New York City Council has amended the Air Code in piecemeal fashion. Since 1970 there have been many advances in regulation and technology, and the City Council needs to update the entire Air Code to fully reflect these changes. DEP will take the lead in a comprehensive update of the Air Code that will focus on ways to streamline compliance processes and will encourage innovative ways to reduce local sources of pollution while maintaining rigorous standards to protect public health.

99 Expand and refine local air emission inventories with DOHMH and relevant stakeholders.

In 2009, the Department of Health and Mental Hygiene (DOHMH) released the first ever New York City Community Air Survey, a report of neighborhood levels of fine particles, elemental carbon, nitrogen dioxide, and sulfur dioxide collected during the winter of 2008-2009. The findings show a significant correlation between street level air pollution and certain local sources, such as heating oil. This monitoring effort will continue for several more years, and DEP will continue to work with DOHMH and other stakeholders to expand and refine local air emissions inventories to better understand the type, location, and exposure risk of local sources of air pollution

Goal: Reduce noise by targeted enforcement and code changes.

100 Enhance the 2005 Noise Code.

Noise complaints are among the highest volume 311 referrals to DEP every year, and there is a growing scientific consensus that noise pollution has a significant impact on public health. In 2005, DEP adopted a comprehensive Noise Code that substantially reduced noise and related complaints, especially regarding construction activity. Beginning in 2011, DEP will assess methods of further reducing noise from the sectors that generate the most significant complaints and will work with the Department of Buildings to incorporate additional noise mitigation standards into the Noise and Building Codes.

Noise meters allow DEP to accurately enforce the Noise Code and issue violations in the field.

