

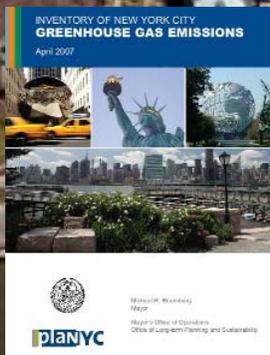


Greenhouse Gas Emissions and **Mitigation** At DEP

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Climate change will have significant and adverse effects on the well-being of New Yorkers and the operations at DEP facilities and infrastructure. Climate scientists have warned that even if human-caused greenhouse gas (GHG) emissions were curtailed today, climate changes as a result of previous emissions would nonetheless continue, perhaps for centuries. However, a growing consensus of scientists and policymakers now affirms that prompt action to limit and control further GHG emissions can potentially mitigate the most severe climate change impacts. DEP is committed to the global project of GHG emissions reductions.

This Chapter begins with an overview of the commitments that the City of New York has made to reduce GHG emissions. The sources of GHG emissions within DEP's water supply, drainage, and wastewater management systems are then outlined, and an overview of DEP's work to inventory the emissions from those sources is provided. Possibilities for accounting for carbon sequestration in DEP's GHG emissions inventory are explored, and an overview of the City's efforts to limit uncontrolled GHG emissions nationally by way of litigation is discussed. The Chapter concludes with the actions that DEP will take to further inventory and manage its GHG emissions. DEP's actions to inventory and manage its GHG emissions are also summarized in Chapter 6 of the Report.



New York City recognizes the consequences of climate change and, with the City emitting nearly 0.25% of the world's total greenhouse gases (GHGs), realizes that reducing its carbon footprint could have a tangible impact on global warming (Bloomberg, 2007).

Mayor's Office of Operations, Office of Long-term Planning and Sustainability

4.1 | City of New York Commitments to Greenhouse Gas Emissions Reductions

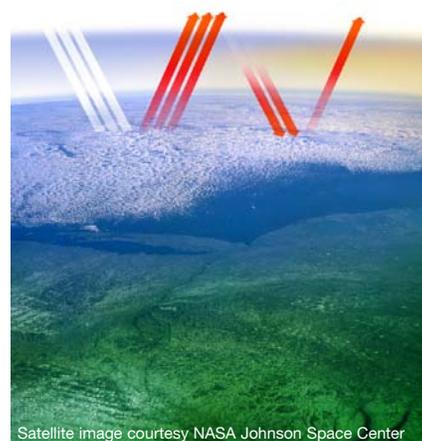


Thinning Upper Atmosphere

Models predict that emissions of carbon dioxide are causing the upper atmosphere to cool and contract and therefore reduce the density of gases in the layer spanning from 60 to 400 miles above the surface - known as the thermosphere. (Photograph taken from the Space Station at roughly 225 miles above the earth.) According to a study by the Naval Research Laboratory, the density of the thermosphere has decreased about 10 percent over the last 35 years. The study validates models of the "greenhouse effect" of increased carbon dioxide release on the dynamics of the atmosphere. (Text and photograph courtesy of NASA.)

Although GHG emissions are not currently regulated by the federal government, the City has voluntarily taken early action by committing to reduce GHG emissions. First, in 2001, the City joined ICLEI – Local Governments for Sustainability – Cities for Climate Protection™ (CCP) Campaign. Second, in 2005, New York City Mayor Michael Bloomberg committed to strive to achieve a 7% reduction from 1990 levels in City government GHG emissions by 2012 under the U.S. Conference of Mayors Climate Protection Agreement. Most recently, as one of the goals in PlaNYC, a plan for a sustainable City announced by Mayor Bloomberg in December, 2006, the City set a 30% reduction target in GHG emissions from 2005 base levels by 2030 for City-wide emissions. Furthermore, on April 22, 2007, Mayor Bloomberg released PlaNYC, which includes an ambitious GHG emissions reduction target of 30% below 2006 levels by 2017 for government operations. In addition to reducing its own emissions, New York City is participating with several northeastern states in a number of litigation actions with the goal of achieving national controls for GHG emissions.

DEP is committed to managing and reducing GHG emissions from its facilities and operations to the extent practicable in order to assist the City in achieving its emissions reduction target. In response to a recommendation from DEP's Climate Change Task Force, the Department conducted an initial feasibility study for an agency-wide GHG inventory and management plan (CDM, 2007). DEP's long-term plan is to develop an agency-wide GHG inventory and management plan for all facilities operated by the Department. GHG management will be implemented over the long term, integrated with facility upgrades, equipment replacements, and new facility designs, to ensure that reduction opportunities are not missed. This will increase energy efficiency and reduce GHG emissions in a cost effective manner. ■■■■



Satellite image courtesy NASA Johnson Space Center

Global Warming Potential and Carbon Dioxide Equivalents

Global warming potential (GWP) is the relative heat-trapping strength of a gas compared to carbon dioxide (CO₂) on the basis of its radiative effect. Scientists express the GWP of various gases in "carbon dioxide equivalents" (CO₂e). For example, compared with one kilogram of CO₂ released into the atmosphere today, one kilogram of methane will result in about 21 times more warming, and one kilogram of chlorofluorocarbon-12 will result in 8,500 times more warming.

4.2 | DEP Greenhouse Gas Sources

Energy use, predominantly in the form of burning fossil fuels, is by far the largest source of worldwide GHG emissions (WRI, 2005). In the United States, more than 90% of GHG emissions is from energy use, predominantly for electricity, heating, and transportation (WRI, 2005). Waste management disposal accounts for approximately 4% of both world and U.S. GHG emissions (WRI, 2005). However, the great majority of waste management emissions are from landfills, not wastewater treatment facilities. Thus, from a global perspective, wastewater treatment is not a significant cause of GHG emissions.

On a local level, however, wastewater plays a more substantial role. A City-wide GHG emissions inventory conducted by the Mayor's Office calculated that in Fiscal Year 2006 (July 1, 2005 - June 30, 2006), DEP's water supply and wastewater management systems accounted for a significant 17% of total City government emissions (that is, 655,000 metric tons CO₂ equivalent (CO₂e) out of 3,840,000 metric tons CO₂e) (Office of the Mayor, 2007). Included in this calculation are the direct and indirect emissions from energy consumed to run DEP's water

supply and wastewater management systems and the direct emissions of methane gas from the wastewater treatment process. As the City's water supply system is almost entirely gravity fed, the great majority of energy consumed by the water and sewage sector was used for wastewater transport and treatment (Office of the Mayor, 2007). Because the water and sewage sector accounts for 17% of total City government emissions, reductions in GHG emissions from DEP's water systems will be studied in order for City government operations to meet the Mayor's 30% reduction target by 2017.

DEP's GHG emissions come from stationary combustion sources (e.g., boilers), electricity and steam generation, mobile combustion sources (e.g., the vehicle fleet and marine sludge vessels), and fugitive emissions (e.g., releases from sludge digestion and equipment leaks). DEP owns and operates a wide variety of facilities throughout a large geographic area extending from New York City to the City's upstate watersheds. The Department's several hundred facilities and other GHG-emitting system components include Water Pollution Control Plants

(WPCPs) in the City, wastewater treatment plants in the watershed, combined sewer overflow facilities, water and wastewater pump stations, grit chambers, regulators, water supply distribution shafts, gatehouses, office buildings, the vehicle fleet, marine vessels, and more.

In addition to the GHG emissions from its current facilities, it is anticipated that DEP's emissions will increase due to the energy demands linked to a number of needed water supply and wastewater treatment projects that are planned or under construction.

In addition to the energy needs of these new or upgraded facilities, some strategies for adapting DEP's water systems to mitigate the impacts of climate change could be very energy intensive and increase DEP GHG emissions (such as additional pumping to prevent flooding as the sea level rises). Furthermore, the population of New York City is projected to grow by almost one million by 2030 (NYCDCP, 2006). The water supply and wastewater treatment needs of these additional people will add to DEP's energy use. ■■■

Projects that will add to DEP's energy use include:

A new water filtration plant for the Croton Watershed System

Status

Under construction

A new Ultraviolet Light Disinfection Facility for the Catskill/Delaware Watershed System

Site preparation underway; construction in near future

New CSO control facility at Flushing Creek

Presently online

New CSO control facilities at Paerdegat Basin and Alley Creek

Under construction

New CSO control facilities at other locations (in planning phase)

Planning phase

Major upgrades of Newtown Creek, the City's largest WPCP

Under construction

Major upgrades of four East River WPCPs (Wards Island, Bowery Bay, Hunts Point, and Tallman Island) for installation of advanced wastewater treatment

In progress

Major upgrades of two Jamaica Bay WPCPs (26th Ward and Jamaica) for process improvements

Planning underway

4.3 | Establishing a DEP Greenhouse Gas Emissions Inventory

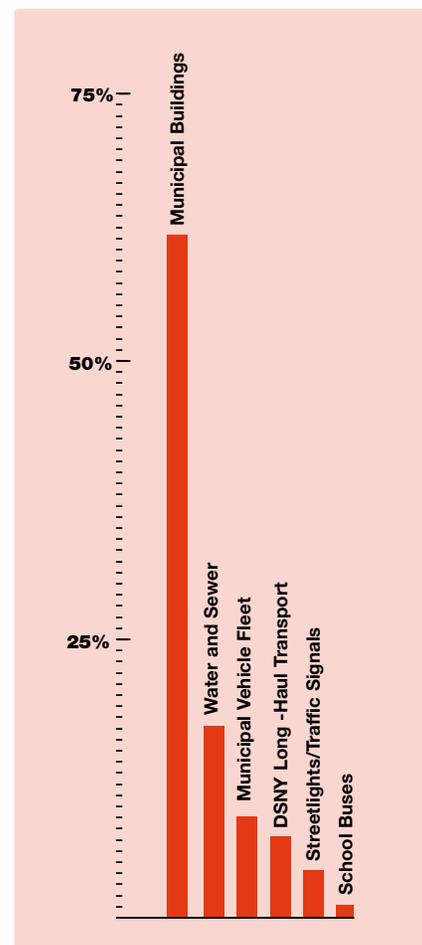
A comprehensive and complete baseline inventory of GHG emissions and a tracking system for annual GHG emissions are essential for a successful GHG management program because it will allow DEP to identify opportunities across the Department for GHG reductions and to measure progress in reducing its GHG emissions over the coming years. The process of creating a complete baseline inventory of DEP emissions has been incremental and is still underway.

Previous DEP Greenhouse Gas Emissions Inventories

In 2005, DEP completed an initial preliminary emissions inventory for the years 1995 and 2004. It was conducted by Columbia University's Center for Climate Systems Research using the ICLEI Clean Air and Climate Protection Software, and the data was collected and verified in partnership with the Mayor's Office of Environmental Coordination (CCSR, 2005). The initial preliminary inventory was limited to emissions from electric power and natural gas consumption. Because of its limited scope, the inventory did not include some data that proved to be difficult to locate, including electric power and natural gas data for several large City facilities. Even though data were incomplete, the inventory was still highly informative, indicating that about 80% of DEP's GHG emissions, on the basis of electrical power and natural gas consumption alone, was from WPCPs and sludge dewatering operations (CCSR, 2005). This finding highlights: 1) energy efficiency of DEP's water supply system (only about 5% of the water is regularly pumped to maintain the desired pressure and, due to its high quality, it currently receives limited treatment); and, 2) the need for DEP's initial emissions management focus to be on the WPCPs.

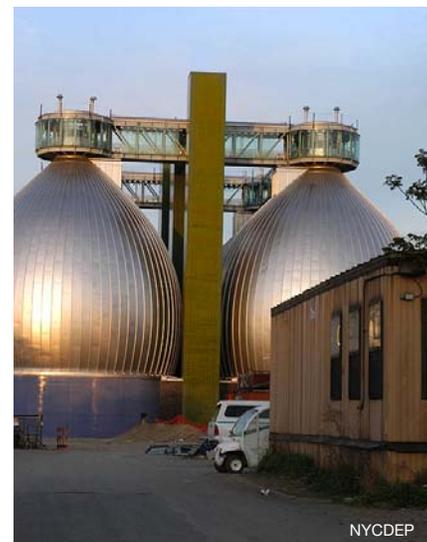


In early 2007, DEP completed a follow-up Greenhouse Gas Management Feasibility Study, conducted by the New York Power Authority (NYPA) and CDM - Environmental Management & Planning (CDM) that explored the feasibility of completing a more comprehensive GHG inventory and associated management plan (CDM, 2007). The 2007 Feasibility Study focused on assessing the sources, quality, availability and completeness of GHG emissions data beyond those included in the initial preliminary inventory described above, as well as on identifying objectives, processes and structures for developing an agency-wide GHG management plan that would include facility-specific plans. CDM collected data on DEP GHG emissions sources and carbon sinks for 1995 and 2005 and assessed the current state of the available data. This review found that the 2005 data are much more complete than the 1995 data. Although DEP will keep the 1995 and 2005 data as references, it will likely be even more accurate and efficient for DEP to use a more recent year as the baseline for DEP's eventual GHG management plans (CDM, 2007). Using 2006 as the baseline is most likely, as the 30% reduction target by 2017 for government operations is based on 2006 emissions.



2006 City of New York Government CO₂e Emissions by Sector

One important finding of the 2007 Feasibility Study is that development of a "normalization factor" will be necessary in order to measure DEP's progress in emissions management. A normalization factor (such as gallons of water supplied or treated, or tonnage of water pollutants removed) will allow DEP to take facility expansion and the resulting growth in emissions into account. One single factor may not be appropriate for all facilities, so DEP may elect to use different factors for various types of facilities. Another important finding is that a comprehensive and useful DEP inventory will need to go beyond energy use to include fugitive emissions from Anaerobic Digester Gas (ADG) leakage, which has high methane content, as well as other sources of GHGs. As outlined in Table 4.1, which provides a list of the six GHGs regulated by the international Kyoto Protocol and their common sources, methane (CH₄) has 21 times the Global Warming Potential (GWP) of CO₂. In addition to CO₂ and CH₄, four other GHGs



Sludge Digestion Tanks at NYCDEP's Newtown Creek Water Pollution Control Plant, Brooklyn.

can be critical to include because, although generally emitted in much lower quantities than CO₂ and CH₄, their GWP is very high.

Table 4.1
Six Greenhouse Gases and their Global Warming Potential

Greenhouse Gas	Common Sources	DEP Sources	Global Warming Potential
CO₂ - Carbon Dioxide	Fossil fuel combustion, forest clearing, cement production	Flaring of digester gas, fossil fuel combustion at facilities and by vehicles, electric power purchased	1
CH₄ - Methane	Landfills, production and distribution of natural gas and petroleum, anaerobic digestion, rice cultivation, fossil fuel combustion	Digester gas leakage at WPCPs, fossil fuel combustion at facilities and by vehicles, electric power purchased	21
N₂O - Nitrous Oxide	Fossil fuel combustion, fertilizers, nylon production, manure	Wastewater treatment, fossil fuel combustion at facilities and by vehicles	310
HFCs - Hydrofluorocarbons	Refrigeration gases, aluminum smelting, semiconductor manufacturing	Potentially from facilities that repair refrigeration and air conditioning equipment	120-12,000
PFCs - Perfluorocarbons	Aluminum production, semiconductor industry	No DEP source	5,700-11,900
SF₆ -Sulfur Hexafluoride	Electrical transmissions and distribution systems, circuit breakers, magnesium production	No DEP source	22,200

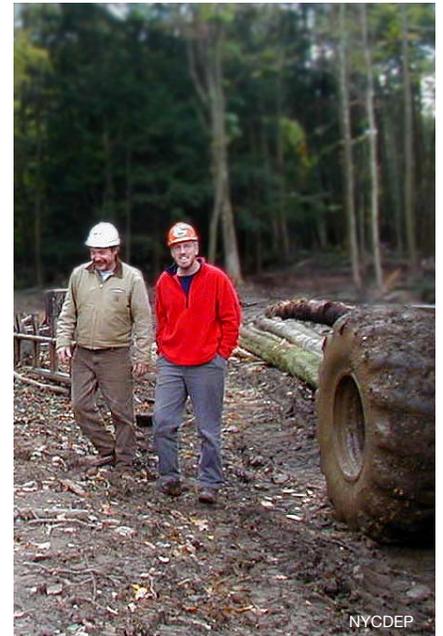
Sources: ICBE (2007), IPCC 1996 Second Assessment Report (1996), CDM (2007)

ADG is a by-product of anaerobic decomposition, a method used at wastewater treatment facilities to digest and stabilize the sludge produced during the different stages of the water purification process. By volume, ADG is typically composed of 65-70% CH₄; 25-30% CO₂; and small amounts of nitrogen (N₂), hydrogen (H₂), and hydrogen sulfide (H₂S) (M&E, 1991). Historically, ADG has been piped to a flare to eliminate odor problems and methane emissions. Flares can prevent the release of ADG gas directly into the atmosphere by transforming it into CO₂. Since ADG has a very high GWP, the use of flares can prevent several thousand tons of CO₂e from being emitted into the air. However, to minimize WPCP fossil fuel dependency, instead of being flared, ADG can be beneficially used by being converted into electric power for on-site boilers and engine generators while generating heat for other plant operations such as digesters.



Flaring Digester Gas

Flaring transforms ADG into CO₂, which eliminates a lot of emissions because of the high GWP of ADG.



The forests in the watershed owned and managed by NYCDEP sequester millions of pounds of carbon each year.



Carbon Sinks

Trees are carbon sinks, with mature trees able to absorb up to 48 pounds of CO₂ in a year (McAliney, 1993)

Building on the findings and recommendations of the Feasibility Study, DEP's next step is to develop a complete and comprehensive GHG emissions baseline. This will identify opportunities across the Department for GHG reduction, and a process for tracking annual emissions in future years so that DEP can measure its progress in GHG emissions reduction.

Accounting for Carbon Sinks

In addition to including the sources of GHG emissions in DEP's baseline inventory, the Department may also be able to include "carbon sinks." Resources or processes that absorb atmospheric carbon can be referred to as "carbon sinks" because they sequester, as opposed to emit, CO₂. The Department owns and maintains considerable resources which act as carbon sinks.

DEP owns tens of thousands of acres in its watersheds to protect drinking water quality, many of which are forested. Under the 1997 Filtration Avoidance Determination for the Catskill/Delaware watershed (FAD), a Land Acquisition and Stewardship Program was established. The primary goal of the program is to ensure that, through fee simple or conservation easement acquisition of undeveloped, environmentally-sensitive wa-

tershed land, the watershed continues to be a source of high-quality drinking water (USEPA, 2007). Under the program to date, DEP has acquired or has under contract nearly 80,000 acres of land, the majority considered high quality properties at risk of development (NYCDEP BWS, 2006). DEP has also worked with 620 landowners to develop long-term forestry plans that cover 109,000 acres to be implemented in the coming years (J. Schwartz, May 30, 2007). Under the 2007 FAD, issued by EPA, the City will be required to commit \$300 million over the next ten years to acquire even more watershed land and has agreed to solicit at least 50,000 acres annually.

In addition to its protection and management of forests in the watershed, DEP is also planting tens of thousands of trees to create Northeastern coastal woodlands on the former Fountain and Pennsylvania Avenue Landfills in the City. These landfills, located near the Belt Parkway and Jamaica Bay in eastern Brooklyn and a small part of Queens, cover approximately 400 acres and are composed of tens of millions of cubic yards of waste disposed at the site until the landfills were closed in the mid-1980s. In the early 1990s, concerned that rainfall filtering through the uncovered waste deposited at the landfills was having an adverse effect on the water quality of Jamaica Bay, State regulators mandated that New York City act to seal the landfills with impermeable covers. In response, DEP is now involved in a multi-year project to remediate the landfills with an innovative approach that goes beyond the more traditional approach of capping landfills and planting them with lawn grass. DEP is planting coastal woodland/shrubland and

grassland species indigenous to the region, including some species that have been extirpated from the area to create coastal woodlands with hiking and walking trails for passive public use. At the end of the planting phase of this project, DEP will have planted over 40,000 trees and shrubs. The coastal woodlands being planted by DEP will not only protect the water quality of Jamaica Bay, provide valuable habitat for wildlife within the City, and create an enormous seed source enabling once-absent species of trees and plants to be disseminated throughout the City, but will also sequester carbon.

Managing DEP-owned forests for maximum carbon sequestration will present opportunities and challenges. A warming atmosphere will extend the growing season, so forests will leaf-out earlier and retain foliage later, therefore, increasing carbon sequestration to some degree. Changes in forest species composition could also result in greater sequestration, if the compositions

of forests become more like those of the southeastern U.S. and/or central hardwood forests (e.g., if the sugar maple gives way to black birch and red maple). However, warming may also increase the likelihood of severe damage from insects, pathogens, wind disturbance, and fire, thus causing adverse effects on soils and forest health, thereby precluding carbon sequestration.

The forests owned or managed by DEP in the watershed and the forests that DEP is planting in the City on landfills could potentially be included as a 'carbon sink' in the Department and City government emissions inventories, i.e., as a net emissions reduction for DEP and the City (CDM, 2007). However, this needs to be explored because guidelines for accounting for 'carbon sinks' in GHG inventories are still evolving. ■■■

The 40,000 trees and shrubs that DEP is planting on the closed Pennsylvania Avenue Landfill (shown here) and Fountain Avenue Landfill in Brooklyn and Queens will improve the water quality of Jamaica Bay and sequester carbon.



4.4 | Establishing a DEP Greenhouse Gas Management Plan

DEP has already made progress in managing its GHG emissions. Since 2003, NYPA, in cooperation with DEP, has installed eight fuel cells at each of four DEP WPCPs in a venture made possible with grants from the New York State Energy Research and Development Authority (NYSERDA) and the U.S. Department of Energy (DOE). These fuel cells, which are owned and operated by NYPA, are powered with the renewable ADG produced at the WPCPs. Since their installation, the fuel cells have consumed a total of 253 million cubic feet of ADG and generated 18.7 million kWh of clean power. A 2005 study estimated digester gas leakage at the four WPCPs using fuel cells with the primary purpose of identifying system improvements necessary for providing a consistent and reliable source of ADG for use by the fuel cells (CDM, 2005). The study concluded that fugitive ADG emissions could be substantial. Therefore, DEP has an opportunity to reduce overall DEP emissions by capturing even more ADG for beneficial use at its WPCPs. DEP's efforts to manage its GHG emissions will go beyond the use of fuel cells. After developing a complete emissions baseline, DEP will create a Department-wide GHG management plan that includes facility-specific management plans with an emphasis on the fourteen WPCPs. Multiple facility-specific management plans are important because they facilitate accurate identification and quantification of GHG emissions and because specific equipment and building energy services are controlled at individual facilities. The 2007 Feasibility Study recommends that the WPCP GHG management plans identify all potential emissions management projects (e.g., fugitive emissions capture, energy efficiency, fuel switching and carbon sinks) and their cost and potential contribution to managing GHG emissions; establish goals and objectives, prioritize projects, and integrate projects into facility operations and management and DEP capital plans; allow for flexibility and responsiveness to changes in operations, budgets, and expenses over time; and provide for personnel training and the involvement of facilities personnel in the implementation of the plans. In addition to developing the facility-specific management plans, DEP will explore opportunities for

reducing emissions from its vehicle fleet. Such opportunities may include increasing the use of alternative fuel or high-efficiency passenger vehicles and light trucks, or the possibility of using alternative fuel for DEP's marine vessels and heavy trucks.

In order for DEP to effectively minimize future GHG emissions, the 2007 Feasibility Study concluded that where economical and practical DEP will need to maximize energy efficiency and the use of renewable energy and alternative fuels. DEP should replace inefficient equipment with more

Currently five small hydroelectric facilities within the watershed are operated under contracts with DEP; more such opportunities could be explored.

highly rated products during normal replacement cycles or sooner; assess potential revisions to some of DEP's design standards and specifications; evaluate equipment efficiency ratings and operation and maintenance protocols; review energy efficiency and use of alternative energy at existing and planned facilities; and maximize the use of fuel cells.

The Department should explore renewable energy strategies in addition to heat recovery and reuse and use of ADG as an energy source at its WPCPs. For instance, the Gryaab Wastewater Treatment Plant in Gothenburg, Sweden, views organic waste as a resource (GSA, 2007). The plant has reduced costs by accepting more organic waste and using it to produce biogas, which is then upgraded and injected into the City's gas distribution network. There may also be opportunities for harnessing more renewable energy from the water supply system.

When exploring various opportunities for meeting energy demands with renewable energy, in addition to cost and the potential for GHG emissions reductions, the 2007 Feasibility Study recommends that DEP consider energy needs and time of use; reliability of renewable energy sources; ability to provide backup, emergency power during grid outages; financing or incentives

available from New York State or other outside sources; visibility and community relations; and risk management and liability.

Carbon can be a marketable commodity in the form of a "carbon offset." A carbon offset represents the reduction in GHG emissions from a project undertaken by an organization that meets the criteria of additionality. Additionality is "a criterion for assessing whether a project has resulted in GHG emission reductions or removals in addition to what would have occurred in its absence" (WRI/WBCSD, 2004). Examples

of such projects include installing energy-saving light fixtures, adopting fuel-reduction protocols, and permanently protecting forestland for the express purpose of carbon sequestration (CDM, 2007). Because the primary purpose of DEP's current Land Acquisition and Land Management programs in the watershed and landfill planting program in the City is not carbon sequestration, the carbon sequestered through these initiatives is not marketable. However, there may be future opportunities for carbon offset projects at DEP facilities or within the watershed.

DEP's current Ten-Year Capital Strategy budget is approximately \$20 billion, the bulk of which is dedicated to upgrades at WPCPs and the construction of new drinking water treatment plants (The City of New York, 2007). These large financial commitments could be further enhanced by fully examining opportunities for energy efficiency and alternatives to fossil fuel energy in order to help lower operating costs and reduce GHG emissions. Opportunities for retrofitting equipment at DEP are ongoing because of the Department's constant infrastructure needs and large capital planning program. However, managing GHG emissions at DEP facilities will be a considerable undertaking due to the large number of diverse facilities (even within the wastewater system) that the Department owns and operates. The fourteen WPCPs, which currently account for the great majority of GHG emissions within the agency-wide

emissions profile, all have differing designs, equipment, and ages. Space limitations at WPCPs can preclude installation of additional large infrastructure such as fuel cells.

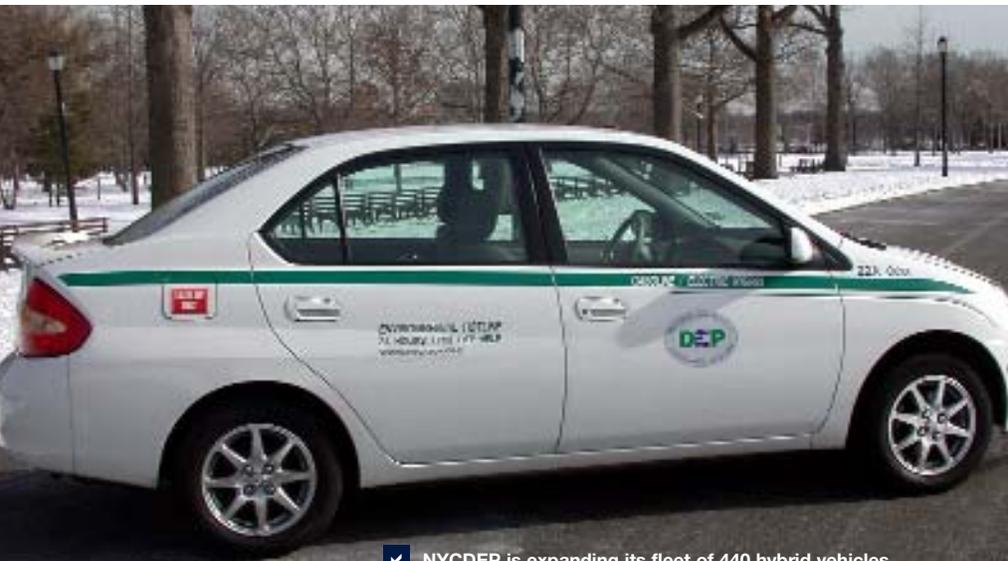
Furthermore, prioritization of infrastructure upgrades and other GHG reduction measures adds a competing demand for capital funds, and the City's current funding structure procures equipment based on up-front costs, not lifetime costs. Thus, the City's Office of Management and Budget will need to be involved in this process. Despite the challenges, DEP is committed to decreasing its GHG emissions. ■■■■



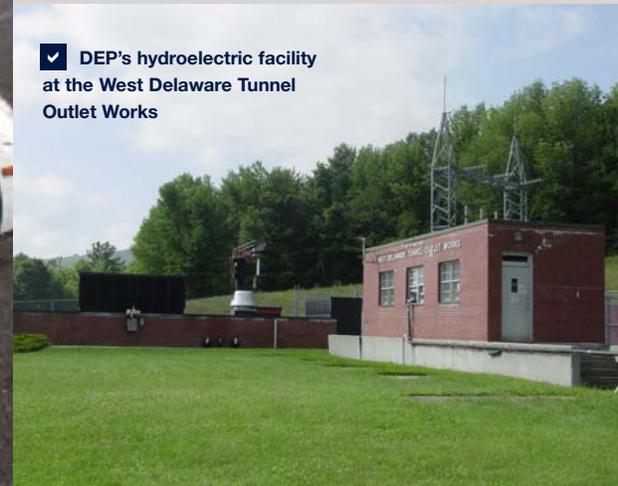
✓ DEP's new 6th Police Precinct at Eastview in Westchester County, dedicated on December 19th, 2007, has been designed according to U.S Green Building Council Leadership in Energy and Environmental Design (LEED) criteria.



✓ Fuel Cell Operated by the New York Power Authority at NYCDEP Water Pollution Control Plant. Fuel cells at NYCDEP facilities prevent the release of several thousand tons of CO₂e greenhouse gas emissions every year.



✓ NYCDEP is expanding its fleet of 440 hybrid vehicles, which currently accounts for over 20% of DEP's passenger vehicles and light trucks.



✓ DEP's hydroelectric facility at the West Delaware Tunnel Outlet Works

4.5 | City of New York Litigation Initiatives to Curb Greenhouse Gas Emissions

In addition to DEP's internal efforts to inventory and ultimately reduce its GHG emissions, the Department, through its Bureau of Legal Affairs, supports New York City's efforts to require the federal government to limit the uncontrolled emissions of GHGs nationally. As United States emissions account for 25% of the global total (NEIC, 2004), significant reductions within the U.S. are necessary to prevent the most extreme climate changes and the associated damage that those changes will cause. The Environmental Law Division of New York City's Law Department leads the City's involvement in four major litigation actions that the City is pursuing with the joint goal of mandatory reductions in national emissions and minimizing the injuries to the City due to global warming.

The first court action that the City joined was *Massachusetts et al. v. Environmental Protection Agency et al.*, a challenge brought in October 2003 by several U.S. states, cities, and environmental non-governmental organizations (NGOs) against the U.S. Environmental Protection Agency (EPA) determination not to regulate motor vehicle emissions of carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. Reversing the appellate court's decision upholding the EPA determination, in a 5-4 ruling in April 2007, the U.S. Supreme Court sent the determination back to EPA and held "that EPA must ground its reasons for action or inaction in the Federal Clean Air Act," [549 U.S. Code (2007) (slip op., at 32)]. The Court reached this ruling by deciding that the petitioners had the legal right to challenge the EPA's determination, and the federal Clean Air Act authorized EPA to regulate emissions of these GHGs. Hailed as one of the U.S. Supreme Court's most significant environmental decisions, the majority's opinion will ease the ability for the City and others to pursue global warming litigation and could lead to EPA finally regulating in this area.

As a companion to the Massachusetts action, which addressed certain mobile source emissions, the City joined a group of states, cities, and NGOs in bringing *State of New York, et al. v. Environmental Protection Agency, et al.*, a challenge to EPA's failure

to regulate GHGs emitted from certain stationary sources - electrical utility steam-generating units. Put on hold until the U.S. Supreme Court decided *Massachusetts*, the *New York* petitioners are now in the process of filing a motion to send the complaint back to the EPA to conduct a rule-making that is in accordance with the U.S. Supreme Court's decision in *Massachusetts*.



The City is also part of a third climate change challenge against the federal government, this time involving the National Highway Traffic Safety Administration (NHTSA). The NHTSA recently promulgated rules to reclassify light trucks for purposes of setting new corporate economy fuel efficiency (CAFE) standards. The reclassification creates incentives to build larger, less fuel-efficient models, thus it has the potential of putting a greater number of larger passenger vehicles on the road, causing a net increase in GHG emissions. Therefore, a group of petitioners including the City has challenged the adequacy of the environmental review that NHTSA conducted for the new rule. DEP has submitted an affidavit that details the City's injuries from and responses to climate change. The matter is pending before the U.S. Court of Appeals for the Ninth Circuit.

In addition to challenging the federal government for its failure to regulate and for its improper environmental review, the City also joined Connecticut and several other states in a public nuisance action against

the five largest U.S. power plant emitters of carbon dioxide - responsible for 10% of the United States' emissions - in an attempt to require them to gradually reduce their emissions even in the absence of federally mandated standards. In September 2005, the action was dismissed as a political question not proper for courts to resolve. An appeal before the U.S. Court of Appeals for the Second Circuit is pending. The plaintiffs recently brought the U.S. Supreme Court's *Massachusetts* decision to the attention of the Second Circuit as authority for why the plaintiffs have the legal right to pursue this global warming action, why the matter is not a political question, and why any forthcoming regulation from EPA does not prevent the nuisance action from going forward.

Finally, because of its involvement in these different matters, the City is often invited to submit *amicus curiae* or "friend of the court" briefs in other climate change actions occurring in states and localities throughout the country. ■

4.6 | DEP Actions to Inventory and Reduce Greenhouse Gas Emissions

To inventory and reduce its GHG emissions, DEP will:

» ACTION 1

Complete a comprehensive base-line emissions inventory and a process for yearly updates

The inventory and annual reporting and tracking system will allow DEP to identify GHG reduction opportunities and measure the Department's progress in reducing its emissions. The 14 WPCPs will be prioritized because they are DEP's largest emitters; the second-level priority will be DEP's vehicle fleet.

» ACTION 2

Develop a Department-wide GHG management plan with facility-specific management plans that are integrated with the capital improvement program

DEP will first focus on the fourteen WPCPs, the Filtration Plant for the Croton water supply system, and the Ultraviolet Light Disinfection Facility for the Catskill/Delaware water supply system. A GHG management plan for a WPCP will first be developed for the Rockaway WPCP. During its planned upgrade of the facility, DEP will increase equipment efficiency and use the improvements as a pilot project for the development of GHG inventories and management plans for DEP facilities.

The facility GHG management plans will develop procedures and new design standards for the incorporation of process improvements, energy efficiency, and renewable energy into facility planning; efforts will focus on the actions with the greatest emissions reduction potential per dollar invested; a plan will be identified for phased implementation; efforts will be coordinated with DEP's capital planning program; and be adaptive to changes in energy pricing and future GHG regulations. Techniques that water utilities in other jurisdictions use to maximize their GHG reductions will be investigated.

» ACTION 3

Review current and proposed construction and equipment replacement contracts to identify opportunities for energy efficiency improvements

DEP will install more energy-efficient equipment during the planned replacement of boilers at the Port Richmond WPCP and generators at the 26th Ward WPCP.

» ACTION 4**Accelerate the replacement of aging infrastructure with equipment that will minimize GHG emissions when the benefits outweigh the costs**

DEP will search for opportunities to proceed with cost-effective infrastructure maintenance utilizing equipment that will reduce GHG emissions.

» ACTION 5**Reduce methane leaks from sewage processing equipment and expand the use of ADG for on-site energy production at the WPCPs**

As part of this effort, DEP will assess the potential to accelerate contracts to repair ADG leaks and identify all potential beneficial uses of ADG (e.g., for boilers, fuel cells, Stirling engines, and on-site cogeneration of steam and power).

» ACTION 6**Continue to support the Bureau of Legal Affairs and the New York City Law Department in their efforts to seek judicial and administrative relief from injuries to the City caused by the uncontrolled emissions of GHGs nationally and the resulting climate change**

DEP will continue to support with technical expertise and other activities as appropriate Departmental and City legal initiatives to require the reduction of uncontrolled GHG emissions by large emitters nationally.