Testimony for David Bragdon
New York City Council Oversight Hearing: Climate Change
Scheduled for December 16, 2011

Good afternoon, Chairman Gennaro, Chairman Nelson and Committee Members. My name is David Bragdon and I am the Director of the Mayor's Office of Long-term Planning and Sustainability. With me today are Howard Slatkin, Director of Sustainability at the Department of City Planning, and Kelly McKinney, Deputy Commissioner for Preparedness and Planning at the Office of Emergency Management.

On behalf of the Administration, I appreciate the opportunity to discuss New York City's efforts to reduce the city's greenhouse gas emissions and prepare the city for current and future climate impacts. These actions are a motivator behind PlaNYC, Mayor Bloomberg's long-term sustainability plan, which includes goals to reduce citywide greenhouse gas emissions 30% by 2030 and increase the resilience of our communities, natural systems, and infrastructure to climate risks.

New Yorkers already have one of the lowest per capita carbon footprints among major cities and we are taking aggressive action to shrink that footprint further. In 2007, the City of New York committed to a 30% reduction in citywide greenhouse gas emissions below 2005 levels by 2030, and a 30% reduction in City government emissions below fiscal year 2006 levels by 2017. These goals were codified in law under Local Law 22 of 2008 and through an Executive Order, as well as a requirement that the City produce an annual assessment and analysis of citywide greenhouse gas emissions, which we do each September.

New York City's citywide greenhouse gas emissions are largely the result of fossil fuel energy consumed by buildings and transportation. Roughly 75% of our greenhouse gas emissions are related to heating, cooling, powering, and lighting buildings. 20% of our greenhouse gas emissions are caused by transportation. 3% are caused by solid waste operations and decomposition.

Citywide greenhouse gas emissions have decreased 12% from 2005 levels, largely as the result of a significant reduction in the carbon intensity of our electricity supply driven by a shift in the fuels used to generate our electricity. While the change in the city's fuel mix is a major factor putting us halfway toward our goal, our electricity sources in the future are uncertain and somewhat beyond the City's control—such as potential decommissioning of Indian Point. As a result, achieving our goal will require considerable efforts in multiple areas that are in our control in the coming years, even as external factors could impact our success.

PlaNYC includes 37 initiatives to reduce the city's greenhouse gas emissions. To address the critical area of energy use in existing buildings, we worked with the City Council, including many of the members on these committees, to create the Greener, Greater Buildings Plan, which was passed by the Council in December 2009. The Greener, Greater Buildings Plan is the most comprehensive set of efficiency laws in the nation and will decrease emissions by almost 5%—the single biggest action we can take to reduce carbon emissions. It will also reduce citywide

energy costs by $700 million annually by 2030 and create roughly 17,800 construction-related jobs over ten years.

To address energy use in new construction, we partnered with Speaker Quinn to launch the Green Codes Task Force, which brought together over 200 technical experts to review the city's building, construction, and zoning codes. The Green Codes Task Force developed 50 separate code proposals to increase energy efficiency in buildings. 29 have already been enacted, most of them through City Council legislation. The remaining proposals, which will be introduced in the coming months, are roughly estimated to reduce citywide emissions by 7-10%—the equivalent of making Miami carbon neutral.

And on Monday, the Department of City Planning began the public review process for the Zone Green text amendment, which will remove zoning obstacles and give building owners more choices for the improvements they can make to their buildings to save energy and reduce carbon emissions.

In addition, we are providing assistance to building owners who want to increase their energy efficiency. We have utilized $37 million in Federal stimulus funds to create the New York City Energy Efficiency Financing Corporation, which is creating loan products for energy efficiency retrofits.

The regulations the Mayor signed last spring phasing out the use of heavy heating oils will also reduce greenhouse gas emissions and provide significant air quality benefits.

The City's investments in energy efficiency upgrades to its own buildings, laid out in the *Long-Term Plan to Reduce Energy Consumption and Greenhouse Gas Emissions of Municipal Buildings and Operations,* are also beginning to show results. Greenhouse gas emissions from City government facilities and operations are now below the fiscal year 2006 base year level and current annual reductions are on track to achieve a 30% reduction by 2017.

Under the leadership of the Department of Citywide Administrative Services (DCAS), the City has completed 129 building retrofits since 2008. These investments have reduced greenhouse gas emissions from government buildings by 16,000 metric tons and save the City almost $7 million annually in energy costs. The City has another 114 projects in design and construction.

DCAS also benchmarked energy use in 2,790 City-owned buildings this year. The results of this work are available on our website as part of a comprehensive report detailing benchmark information on all New York City government buildings 10,000 square feet or larger.

To reduce emissions from transportation for City operations, the City has added 5,973 alternative fuel vehicles to its fleet—including 422 electric vehicles—making it the largest municipal clean fleet in the nation.

We are also working to reduce the amount of solid waste we export to landfills, where it decomposes and emits methane, a harmful greenhouse gas, and make our solid waste management system more efficient by shifting garbage from long-haul trucks to rail and barge. Together these measures will reduce greenhouse gas emissions by 2%.

Public transportation is an essential component of our strategy and is the major reason that New Yorkers already emit far less carbon per capita than residents of comparable American cities and emit about one-third as much carbon as the average U.S. resident. Everything that we

do to increase access to public transit and make biking and walking safer will reduce burning of fossil fuels by automobiles. The current financial instability of the MTA threatens its ability to maintain and expand the system to accommodate future population growth and poses a risk to our emissions reduction strategy.

In addition to MTA financing, state and federal energy policies are the other major factor beyond our control which will affect our emissions. For example, if Congress were to pass a national carbon tax or foreign oil import fee that would reduce fossil fuel use nationwide as well as in New York, helping us meet our goal. Conversely, federal or state decisions discouraging lower-carbon energy sources like nuclear or natural gas could lead to more burning of coal and increase the carbon-intensity of New York's electricity supply, sending our per-capita emissions up.

Now that I've described our efforts to reduce our *contributions* to climate change, I will turn to what the City is doing to *prepare for the effects* of climate change which are bound to occur. Even if we as a City or even as a nation or world were able to magically cease all our emissions tomorrow, the science is irrefutable that enough atmospheric change has already occurred that will alter our climate and affect future weather patterns.

We must increase the city's climate resilience—our ability to withstand and recover from extreme events and environmental changes.

New York City has always faced heat waves, snow storms, high winds, tropical storms, storm surges, lightning, and torrential downpours – but as our climate changes, these events will become more frequent and severe.

As we increase our resilience to current and future climate risks, we will be guided by a full understanding of the risks we face and the costs and benefits of various potential options. Using a risk-based approach built on hard science will allow us to pursue and implement the most effective initiatives to protect our city and its residents.

In 2008, Mayor Bloomberg convened the New York City Panel on Climate Change (NPCC), composed of leading scientists, social scientists, academics, and risk management experts, to advise the City on climate change. The NPCC projects that by mid-century, New York City's average temperatures will rise by three to five degrees Fahrenheit, and sea levels could rise by more than two feet. By the end of the century, the city's climate may be more similar to North Carolina than present-day New York City and sea levels could rise by as much as four and a half feet. While New Yorkers currently experience an average of 14 days a year with temperatures over 90 degrees Fahrenheit, by the 2080s it could be more than 60 days.

In response, PlaNYC outlines a five-point approach to increasing the city's climate resilience that includes:

- increasing our knowledge and understanding of climate risks,
- changing the design and operation of our built and natural environments to account for current and future climate risks,
- evaluating the public health risks associated with climate change,
- increasing the city's preparedness for extreme climate events, and
- working with communities to increase their resilience.

There is no single "one size fits all" answer to the risks of climate change, because those risks are multiple and varied. That's why New York has taken this multi-front approach, which was cited by the National Academies of Science's America's Climate Choices committee in 2010 as "one of the most comprehensive approaches so far to adaptation in the United States."

In that first category of assessing risks, we are working to develop accurate knowledge of our current exposure. The Federal Emergency Management Agency's Flood Insurance Rate Maps—known as FIRMs—determine which properties must participate in the National Flood Insurance Program and where new buildings must comply with floodproofing standards. These flood maps have not been significantly revised since 1983. The City is working with FEMA to update the city's FIRMs. The updated maps, which will be released by FEMA in draft form for public review and comment in 2013, will reflect changes to our shoreline, built environment, and sea levels—which have already risen three inches since 1983.

Unfortunately, the FIRMs as conventionally produced only incorporate historic information and do not reflect the impacts of future sea level rise. We are working with a number of academic institutions to develop publicly-available flood maps that incorporate sea level rise projections to be used for planning purposes. These maps will help government agencies, private companies, and communities plan for sea level rise.

In that second category – of altering the design and operation of our city and facilities – we know that our resilience to coastal flooding is a critical concern for a city with 520 miles of waterfront. But our densely populated city does not have the option of picking up and moving to higher ground. Our solutions, again, will be multiple and varied, reflecting the complex nature of the threat and different costs and benefits of numerous approaches. We must consider both structural and non-structural measures to protect buildings and shorelines from erosion, prevent flooding, and reduce wave and tidal action. Working with the Department of City Planning, the U.S. Army Corps of Engineers, and several academic partners, we are evaluating a wide variety of coastal protection strategies, from wave attenuators and soft edges to storm surge barriers, to determine how and where each could play a role on New York City's extensive and varied waterfront at the appropriate proportion of cost and benefit. Reflecting our commitment to a fact-based, science-driven approach to climate change, we are not presupposing the outcomes of this or other studies underway.

We are redesigning infrastructure to reflect the risks. To ensure climate change is incorporated into the design and operation of the city's critical infrastructure, we launched the New York City Climate Change Adaptation Task Force in 2008, which is composed of 40 city, state, and federal agencies and private entities that operate or regulate critical infrastructure in the city. The Task Force's mission is to assess how climate change could impact our infrastructure and to develop measures to increase the city's climate resilience.

The Task Force identified more than 100 types of transportation, energy, water and sewer, solid waste, telecommunications, and natural infrastructure that climate change could impact. The Task Force will use this initial assessment to develop coordinated strategies to increase the resilience of the region's infrastructure. These strategies include changes to standard capital and maintenance processes and will be released next year in a Task Force assessment and report.

In advance of the Task Force report, several City projects are already being built to address climate risks. Parks, such as Brooklyn Bridge Park and Governors Island, include shoreline treatments such as riprap and salt-resistant plantings that can accommodate flooding. The

entire Willets Point development site in Queens is being elevated out of the floodplain. Several wastewater treatment plants include flood gates and plans to raise critical equipment above future flood heights.

To better manage rainfall, which the NPCC projects will increase by 5-10% by the end of the century, the Department of Environmental Protection is investing $1.5 billion as part of the NYC Green Infrastructure Plan to capture or detain stormwater before it can enter and overwhelm the sewer system.

New York City's air temperature can be more than seven degrees Fahrenheit warmer than in neighboring counties due to the urban heat island effect—a phenomena in which heat is absorbed by dark surfaces increasing surface and air temperatures, particularly at night. To cool the city we are increasing our vegetated surface area by planting one million more trees, constructing green infrastructure, and incentivizing the installation of green roofs. A white or "cool" roof reflects much of the sun's energy, reducing air temperatures and the energy required to air condition the building. Cool roofs can lower air pollution and greenhouse gas emissions by reducing electricity demand, and often save building owners and tenants money through reduced energy bills.

Through the NYC°CoolRoofs program, we have coated more than two million square feet of roofs, largely through the efforts of NYC Service volunteers. We are expanding this effort to coat an additional two million square feet of roofs with cool coating by 2013. We will also pursue a cool roof requirement for existing buildings, resulting in all flat roofs in the city having a cool coating by 2030.

As new buildings are constructed, we can ensure that they are able to better withstand flooding, temperature extremes, and other conditions by updating local laws and zoning regulations.

Our current building code requires that new buildings in the FEMA 1-in-100-year flood zone elevate occupied space above the FEMA-designated flood level (the base flood elevation). Significantly lower federal flood insurance rates are available to buildings that further raise this space by one or two feet—an approach known as "freeboard." We currently require freeboard for critical buildings in flood zones such as hospitals, utility facilities, public safety facilities, and schools.

More extensive use of freeboard can help property owners manage risk, but may also change the character of buildings and the streetscape. The Department of City Planning is conducting a study of the urban design and streetscape implications of freeboard to ensure we can maintain the city's active street life and vibrant character while enhancing our resilience. On the basis of this analysis, we will explore amendments to the Zoning Resolution to encourage better management of flood risks. We will also pursue amendments to the Building Code to require freeboard for a wider range of buildings to reduce risks associated with sea level rise and more intense coastal storms.

New York City's Waterfront Revitalization Program—or WRP—establishes policies for the development and use of the city's waterfront. We are incorporating consideration of climate change within the policies of the WRP, which will be released in draft form for public comment early next year.

The effects of climate change—including rising temperatures and declining air quality—have the potential to significantly affect New Yorkers' health. Recognizing this, the Department of Health

and Mental Hygiene launched a program in 2010 to assess the impacts of climate change on public health, including impacts to our public health system infrastructure.

Through this program, we will evaluate the public health impacts of climate-related events, identify opportunities and gaps in adapting to a changing climate, outline strategies for fostering climate resilience (particularly among vulnerable New Yorkers), and devise outreach strategies to protect communities from the public health impacts of climate change. Our goal is to provide information to agencies describing actions and resources that can protect communities from the health impacts of climate change. This work will build on the City's existing efforts to protect New Yorkers from climate-related events such as extreme heat and coastal storms.

Recognizing that New York City faces climate-related risks today that are likely to get worse, the Office of Emergency Management (OEM) has plans in place to guide New York City's response to weather emergencies, including plans for coastal storms, extreme heat, flash floods, and winter weather. As we saw during Hurricane Irene, these plans are well-developed, practiced, and executed. Each plan describes a coordinated, flexible response to the hazardous weather event, defines agency roles and responsibilities, and guides agencies through key decisions and actions to mitigate effects on people, critical infrastructure, and City operations.

In addition to response plans, the New York City Natural Hazard Mitigation Plan, released in 2009, provides a hazard vulnerability assessment, identifies long-term mitigation strategies, and ensures the City's eligibility for mitigation-related grants from FEMA. OEM will be updating the Natural Hazard Mitigation Plan at the end of 2013 and will include climate change as a hazard assessed under the plan.

Citizen preparedness is a key element of our efforts and is essential to the resilience of our city. Through the Ready New York program, the Office of Emergency Management educates New Yorkers about preparing for emergencies and about personal preparedness. In the past year, OEM distributed approximately 415,000 Ready New York guides and gave a total of 243 presentations. Guides are available in up to 23 languages and many are also available in Braille and audio format.

The effects of climate change will bring new challenges to our city in the coming decades and require that our communities are well-informed and prepared to accommodate and respond to climate change effects. We will incorporate the risks posed by climate change into these outreach efforts and continue to engage New Yorkers to enhance their resilience to extreme events. We will also create an online portal and other materials that will include the latest NPCC climate projections, flood maps incorporating sea level rise projections, and tools to increase the climate resilience of homes and businesses.

Reducing the risks posed by climate change will not be achieved through a single plan or action—it must be achieved through informed decision-making and investments that are responsive to the latest scientific information and an understanding of the costs and benefits.

Thank you for the time and opportunity to articulate the Bloomberg Administration's climate change efforts, both in terms of reducing our contributions to it and preparing for its effects. My colleague and I are happy to address any questions that you may have.