



**Testimony for Adam Freed
United States Senate Committee on Energy and Natural Resources
COMMITTEE HEARING: Impacts of Rising Sea Levels on Domestic Infrastructures
Thursday, April 19, 2012**

Good morning, Mr. Chairman and Members of the Committee. I am Adam Freed, Deputy Director of the New York City Mayor's Office of Long-Term Planning and Sustainability. On behalf of Mayor Michael R. Bloomberg, thank you for the opportunity to testify on the impacts of sea level rise on New York City and the steps we are taking through PlaNYC, our long-term sustainability plan, to increase our climate resilience.

As a city with more than 520 miles of coastline, New York City faces real and significant climate risks, even without sea level rise. Today, more than 200,000 New Yorkers live within the Federal Emergency Management Agency (FEMA)-designated 1-in-100 year flood zone. These zones contain vibrant neighborhoods, critical infrastructure, natural areas, historic landmarks, and approximately 200,000 jobs. Our current vulnerability was tested by Tropical Storm Irene, which resulted in the first mandatory evacuation in New York City, affecting 370,000 residents.

The New York City Panel on Climate Change, convened by Mayor Bloomberg, projects that the city's sea levels could rise by more than two feet by mid-century and by as much as four and a half feet by 2100. This will significantly increase the size of our flood zones and lead to greater impacts in areas subject to flooding.

The consequences of sea level rise on New York City have national significance. The city is the hub of the largest regional economy in the U.S., generating over \$600 billion a year—4% of our

nation's GDP. New York Harbor is home to the nation's second and third-largest trade gateways, handling over \$350 billion in imports and exports—over 11% of the nation's waterborne freight and over 20% of air freight. We are home to the headquarters of 45 Fortune 500 companies. Thus, sea level rise impacts in New York, if not addressed, could have a significant ripple effect throughout the U.S. economy.

Sea level rise will significantly impact our energy and water infrastructure. New York City has one of the most reliable and extensive energy networks in the country, including over 90,000 miles of underground power cables, over 200 substations, and 17 in-city power plants. Many of our power plants are located near the water to allow fuel deliveries, the use of water for cooling and steam generation, and water discharges. Today, 10 of the 17 power plants located within the city are in the 1-in-100 year flood zone. By the 2050s, modest rates of sea level rise will increase this number to 13, double the number of substations in flood zones, and increase the miles of power cables and steam and natural gas pipes vulnerable to coastal flooding.

In terms of water infrastructure, the City's drainage and wastewater system consists of over 7,000 miles of sewers and 95 pumping stations. Our 780 combined sewer and storm outfalls and 14 wastewater treatment plants are located along the shoreline so that gravity can drain the sewer system and treated wastewater can be discharged into the harbor. A change in sea level relative to outfalls could substantially limit the ability of these systems to drain or discharge, requiring costly, system-wide upgrades.

Addressing these climate risks in a dense urban environment poses challenges—it is not feasible, desirable, or cost-effective to pick up and move New York City to higher ground. Instead, PlaNYC includes over 30 comprehensive initiatives to increase the city's climate

resilience—our ability to prepare for, withstand, and recover from extreme events and environmental changes.

This includes working with FEMA to update the city's Flood Insurance Rate Maps (FIRMs), which have not been significantly revised since 1983 when sea levels were three inches lower. The FIRMs, however, only incorporate historic information and do not reflect the impacts of sea level rise. To ensure sea level rise is incorporated into the design and operation of the city's critical infrastructure, we launched a task force, composed of 26 City, State, and Federal agencies and 15 private infrastructure operators, to identify the impacts of climate change on the city's critical infrastructure and develop coordinated strategies to mitigate these risks. As part of this effort, we are working with the U.S. Army Corps of Engineers—who remain a critical partner in addressing the risks posed by sea level rise—and academic institutions to evaluate a variety of coastal protection strategies—an effort funded in part by the U.S. Department of Housing and Urban Development's Sustainable Communities program.

Finally, we are building City projects to better manage these risks. Several wastewater treatment plants include flood gates and plans to raise critical equipment above future flood heights. Many parks, such as Brooklyn Bridge Park, include shoreline treatments and salt-resistant plantings that can accommodate periodic flooding. The entire 60-acre Willets Point development site in Queens is being elevated out of the floodplain.

Local governments, however, cannot meet this challenge alone. The Federal government can assist us by providing critical information, decision-making tools, policies that support local resilience, and funding for flood studies and infrastructure. FEMA should regularly update its FIRMs and provide flood elevation data for the 1-in-500 year flood zone, so that we can be better informed to take action. FEMA should also include overlays that show where the flood

lines could be in future years—as the buildings and infrastructure we build today are likely to last a century. Federal agencies could provide localities with high-resolution LiDAR data, which is the most accurate topographical data available. They could also provide clarification on the differences between Federal storm surge models, such as SLOSH and ADCIRC, and when it is appropriate to use them. A model for the provision of many of these tools is the United Kingdom’s Climate Impacts Programme (UKCIP), which is funded by the national government.

While we all share the objective of protecting and restoring coastal wetlands, federal agencies must recognize the need for regulatory flexibility in urban areas like New York City, where we do not have room to retreat from the shoreline in response to rising sea levels. For example, a recent rule prohibiting the use of Clean Water Act Section 320 funds under the National Estuary Program for certain actions in or near open water or wetlands significantly limits our ability to use these funds to protect our coastline.

Regulatory flexibility may also be needed for water supply systems as climate events could increase turbidity. Funding should be allocated to the U.S. Army Corps of Engineers to conduct storm damage risk reduction studies in high-risk communities, the starting point for decisions regarding major coastal protection measures. If substantial investments in coastal protections are needed based on a thorough cost-benefit analysis, federal funding will be necessary for these measures as well as to adapt our aging infrastructure. We have received funding from the Department of Housing and Urban Development’s Sustainable Communities program—a critical program that enables cities to reduce barriers to achieving affordable, economically vital, and sustainable communities—to identify and evaluate flood resilience strategies and design standards that may be compromised by climate change. For FY13, the President has again requested \$100 million for the program, which was funded in FY11 but was zeroed out in FY12. I urge Congress to continue this innovative program.

We must recognize the seriousness of the challenges posed by sea level rise and our responsibility to meet them. Climate risks should be addressed through informed decision-making, based on the latest scientific information, and a thorough understanding of the costs and benefits of action and inaction. New York City is pursuing and implementing a flexible, risk-based approach that emphasizes the most effective initiatives that have tangible benefits today and will have even greater benefits as our sea levels rise. But we cannot do this alone. We need the active and ongoing support of our Federal partners.

Thank you again for the opportunity to testify.