

# Sustainable New York City: A Work in Progress

By Steven Cohen

New York City (NYC), under the leadership of Mayor Michael Bloomberg, has been at the forefront of a growing urban sustainability movement through its groundbreaking sustainability strategy - PlaNYC 2030. What are the city's successes and failures? How can lessons from New York be applied in cities around the world?

**F**or the first time in history, a majority of world's population now lives in cities and it is estimated that urban populations will almost double by 2050<sup>1</sup>. In order to support this growing population, cities must become more sustainable. A sustainable city uses as few non-renewable resources as possible with the least possible impact on the environment. Urban sustainability includes reexamining the systems that make it possible for us to live in such concentrated areas. This includes land use, materials, transportation, energy, water and wastewater, toxic waste, air quality, the economic systems that provide livelihoods, and the cultural, educational, recreational, health and entertainment institutions that provide many of the positive benefits we derive from living in cities. These systems are the building blocks of urban areas and the elements of cities that must be maintained and enhanced if cities are to be sustainable.

New York City (NYC), under the leadership of Mayor Michael Bloomberg, has been at the forefront of a growing urban sustainability movement through its groundbreaking sustainability strategy, PlaNYC 2030, which was first released in 2007 and updated in 2011. The plan is driven by the need to accommodate the additional one million people projected to live in New York City in 2030. Bloomberg, who made his fortune analyzing financial data at Bloomberg LP, understood the implications of that estimate. The goal of a more sustainable city grew out of the need to ensure that New York in 2030 would continue to maintain the high quality of life of its residents to warrant the price premium that people pay to live there. The quality of life goals embedded in PlaNYC2030 can only be reached if the city enhances its capability to manage its scarce resources while reducing its waste and environmental impacts. The Bloomberg administration understands that environmental quality and economic growth are not mutually exclusive; rather, they are both elements of the single concept of sustainability.

Let us turn to four urban issues- transportation, energy, water, and waste- and assess how New York City is introducing concepts of sustainability into each of these areas. What are the city's successes and failures? How can lessons from New York be applied in cities around the world?



## Transportation

New York City has one of the most extensive mass transit networks in the world. The Metropolitan Transit Association (MTA) moves more than 7 million people every day<sup>2</sup> and nearly 55% of New Yorkers use mass transit to get to work<sup>3</sup>. Ensuring that the city's transportation network is secure and sustainable is integral to the city's future.

The Bloomberg administration, working with the state-run MTA, has taken on significant subway and bus development - a necessary step to accommodating increasing ridership. Construction on the new Second Avenue subway is progressing and the extension of the 7 line from Times Square to 11th Avenue is moving forward. By 2016, the Long Island Rail Road, one of three major commuter train systems, will service Grand Central Station, in addition to Pennsylvania Station, decreasing commuting time for 160,000 riders each day<sup>4</sup>. The city is working to expand its Select Bus Service (a bus rapid transit-style system) and has undertaken revitalization projects at several transit hubs to maintain existing infrastructure. NYC is also turning to bicycling as a sustainable way to address transportation needs. Between 2006 and 2009 the city constructed 200 new miles of bike lanes and partnered with commercial tenants to improve bike parking in office buildings<sup>5</sup>. A public-private partnership bike-share program will be launched in 2012 in an effort to meet the needs of residents who do not want to purchase their own bike or do not have space to store a bike at home.

While the city's efforts on improving mass transit and biking are notable, car travel still accounts for one-third of all trips by New Yorkers and congestion remains a pressing problem<sup>6</sup>. It results in \$13 billion in lost productivity annually<sup>7</sup>. In 2007, Bloomberg attempted to implement congestion pricing to ease traffic in Manhattan's Central Business District (CBD), which runs from 59th Street to the southern tip of the island. The program was designed to not only improve congestion but to generate funding for mass transit and reduce greenhouse gas emissions. Under the plan, cars would have paid \$8 and trucks \$21 per day to enter the CBD (Monday through Friday).

Unfortunately, the plan was met with widespread opposition both among city residents and their elected state officials. Opponents argued it was an unfair tax on the middle class who live outside of Manhattan and have little choice but to drive into the city in private vehicles. The odd part of the opposition was that almost none of the people protesting typically drove into lower Manhattan. Nevertheless, outer borough residents used the proposal to protest the lack of transportation alternatives in parts of the outer boroughs. They argued that the plan enabled those with more financial resources to have greater access to roads and the comfort of the private car. Ultimately, the plan, which required State approval, died in Albany. After the plan was killed, the NYC Traffic Congestion Mitigation Commission tried to develop alternate ways to calm congestion in Manhattan's CBD. This included increased availability of car shares, taxis and car services in the outer boroughs, and improved parking regulations that encourage drivers to park for shorter periods. The city has also helped businesses voluntarily switch their delivery hours to evenings and nights, reducing the amount of congestion that delivery trucks face and cause.

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Despite its failure, congestion pricing will be needed at some point if we are to address Manhattan's traffic woes. Some future Mayor will probably reintroduce the proposal. Bridge tolls and business taxes have historically been used to subsidize mass transit, along with funds from the state's budget, but unfortunately, these revenues cannot cover the costs of running and restoring the aging system, which is why congestion pricing is necessary. The logic behind the congestion pricing proposal was that people driving cars into Manhattan should offset the environmental, social and economic costs of doing so by subsidizing the cost of mass transit. In addition, businesses that rely on large labor forces and customer bases should help with transportation costs. People who are willing to pay for the privilege of driving in lower Manhattan will receive the benefit of less traffic, and the millions who rely on mass transit will have the

benefit of higher quality, less expensive service.

However, for congestion pricing to pass, the city needs to resolve the political opposition from the outer boroughs. This will only happen when residents of these areas believe that they will benefit from congestion pricing. Declining subway and bus service has hit those communities hard and any future deal on congestion fees must lock in improved mass transit service to outer boroughs up front. At the same time, the city needs to develop a nuanced pricing plan, because not all car use is created equal. Congestion pricing allows for variable rates, and a more flexible pricing structure should be developed. For example, all residents could be given four or five free passes to drive into lower Manhattan each year. Other exceptions could be made if needs were identified. The political hurdle remains high and it will take a significant commitment of time and resources to convince residents' of the plan's broad benefits. However, with specific changes to the plan and strong political leadership, congestion pricing is possible.

## Energy

New York City's unique density means that its residents have one of the lowest per capita carbon footprints in the United States. On average, residents produce less than a third of the CO<sub>2</sub>e (carbon dioxide equivalent) than the average American<sup>8</sup>. Further, unlike many U.S. cities, over two thirds of NYC energy usage is from buildings, compared to a national average of less than one third<sup>9</sup>. Moreover, it is estimated that by 2030, at least 85% of the city's energy usage and carbon emissions will come from buildings that exist today. For these reasons, the city is focusing heavily on improving the energy efficiency of existing buildings<sup>10</sup>.

In 2009, Mayor Bloomberg and City Council Speaker Christine Quinn created a six-part plan to make existing buildings more energy efficient. The plan's highlight is a suite of four energy efficiency laws that are considered among the most ambitious in the United States. The Greener, Greater Buildings Laws were passed in December 2009 and apply to the city's largest buildings, those over 50,000 square feet. The plan focuses on these buildings because they represent roughly one half of citywide square footage and 45 percent of GHG emissions<sup>11</sup>. Collectively, the laws are expected to reduce the city's GHG emissions by 5%, the largest single contributor to PlaNYC's goal reduction of 30% by 2030<sup>12</sup>. Further, they will save the city a projected \$700 million in energy costs annually and create 17,800 local construction jobs, boosting a sector that has been particularly hard-hit during the economic recession. These savings will be especially beneficial to New Yorkers, who already pay among the highest utility rates in the nation.

In October 2007, to illustrate the city's commitment and to lead by example, Mayor Bloomberg signed Executive Order 109, which mandated the PlaNYC goal of 30% reduction in greenhouse gas emissions from municipal buildings. It calls for the reduction within the city's own real estate portfolio, over 4,000 buildings for 80 agencies, to be achieved in an accelerated

time span of ten years - by 2017. Projects primarily consist of lighting retrofits and heating, ventilation, and air conditioning upgrades in buildings as varied as auto repair shops for city fleets, jails, schools, museums, and zoos. As of March 2011, the city completed 98 projects with another 24 in construction, 119 in design, and 85 undergoing energy audits - the first stage of the process. The completed projects are estimated to save the city \$3.8 million and 17,300 metric tons of greenhouse gasses emissions annually, while the projects in the design and construction phase are expected to save \$16.7 million and 77,600 metric tons of greenhouse gas emissions<sup>13</sup>.

In the private sector, one issue that consistently arises with energy efficiency projects is the “split incentive” problem. This occurs when building owners pay the upfront capital expenses for building retrofits, but tenants receive the financial benefits of energy savings through a reduction in their energy bill. Because owners do not share in the benefit, they have little incentive to move these projects forward. In an effort to remedy this problem, the Mayor’s Office assembled a team of major building owners, tenants, property managers, lawyers, and engineers. Together, they developed the “energy aligned lease provision,” which can be easily inserted into a typical lease. The groundbreaking solution allows tenants and owners share the costs and the benefits<sup>14</sup>. The provision counts energy savings over the length of the projected payback period, instead of the useful life of the improvements. This shortens the time it takes for the owner to recoup the investment, thereby increasing the likelihood that both owner and tenant will make those improvements. The first lease to incorporate the energy-aligned provision was signed in April 2011 for 7 World Trade Center<sup>15</sup>. Mayor Bloomberg demonstrated that energy efficiency retrofits do not have to be a zero sum game, paving the way for expanded use of innovative upgrades to NYC buildings.

## Water

The issue of combined sewer overflows (CSO) is one of the most difficult water quality issues facing cities with old infrastructure, including New York. In these systems, residential sewage is combined with street sewage before it is piped to the local sewage treatment plant. The problem is that if a large amount of rain suddenly sends a high volume of water into street sewers, it can overwhelm treatment plants and push raw sewage into local waterways before it is treated. The traditional approach to dealing with this problem is to build tanks and other facilities to hold storm water during inclement weather and then release it into the sewers once the storm has ended. In September 2010, New York City released a Green Infrastructure Plan, which presents alternative approaches to improving water quality and reducing sewer overflows. A core feature of the plan is the integration of “green infrastructure,” such as swales, advanced street-tree pits, porous pavements and streets, green and blue roofs, and other storm water controls, with investments to upgrade and optimize the existing traditional or “grey infrastructure.” Green infrastructure has the same ability to retain water as traditional

tanks and pipes, but does so at a much lower cost. In addition, reductions can be achieved much faster; it takes much less time to plant greenery or put out rain barrels than to site, design, build and operate a holding tank. The plan expects to reduce sewer overflows into NYC waterways by 40% by 2030 and to reduce the city’s long-term sewer management costs by \$2.4 billion over the next 20 years, which will help hold down future water bills<sup>16</sup>.

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In October 2011, the New York State Department of Environmental Conservation and the NYC Department of Environmental Protection reached an agreement whereby the city will invest approximately \$187 million in green infrastructure projects by 2015 to alleviate the combined sewer overflow problem. The agreement calls for a total of \$2.4 billion public and private investment over the next 20 years as well as \$1.6 billion in gray infrastructure projects<sup>17</sup>. The agreement is a significant step towards implementing the Green Infrastructure Plan. While New York is by no means the first city to develop green infrastructure, the scale and ambition of this effort is impressive. The plan demonstrates the current administration’s ability to merge sound business and environmental principles in increasingly sophisticated ways.

## Waste

Solid waste is another pressing environmental problem without an easy, clear solution. The city generates an average of 36,200 tons of garbage every day<sup>18</sup>. After the city’s last landfill closed in 2001, New York began to export 100% of its garbage to out of state landfills, recycling facilities, and waste-to-energy incinerators. Nearly all of it is shipped by truck. It would be hard to design a more expensive and destructive way of disposing of garbage. The city now spends \$1.25 billion annually on collecting and disposing of trash, yielding 1.66 million metric tons of GHGs<sup>19</sup>.

The city’s long term waste management plan seeks to make the disposal of trash more equitable. It calls for barging the city’s garbage out of state via waste transfer stations located on New York’s waterfront. However, community resistance to these new facilities has been overwhelming. Elected leaders know that waste is a no-win issue, and no politician will try to build a waste incinerator or new landfill in the city. Garbage is inherently undesirable, and there is no positive spin that can be placed on being the host site for a community’s waste. Even many environmentalists, while arguing against landfills and long-distance waste transportation, are even more opposed to siting an incinerator or a waste-to-energy plant within New York City. The politics of waste, particularly the local community

politics of siting, has been the principal constraint on policy options for managing the city's waste.

The updated PlaNYC includes some small efforts to address the city's garbage problem. The plan includes attempts to reduce the amount of trash that New Yorkers produce in the first place. PlaNYC includes programs to incentivize recycling, improve the convenience of recycling, and develop new ways to recover organic material through facilitating composting and growing the community garden network. Still, the technology of waste incineration has advanced dramatically since we stopped using the apartment incinerators from the 1960's. While incineration pollutes the air, it is less polluting than transporting waste in trucks to out-of-state-landfills. NYC needs a long-term, sustainable strategy that incorporates waste-to-energy.

Development of community-based waste management facilities can be a key solution to the problem. Smaller, more localized facilities coupled with recycling facilities and anaerobic digesters (a form of automated compost facility) could be located in all 59 community board districts in the city. This would reduce the economic and environmental costs of our current trash-export model and the inequity of the way those costs are distributed. Environmental justice issues would be better addressed by a large number of small, decentralized facilities instead of a small number of large plants. Ultimately, though, as in the case of congestion pricing, this issue comes down to local politics. Until the city can generate significant community support, waste will remain a significant sustainability problem for the city.

## Conclusion

In April 2011, the Mayor's Office reported on PlaNYC's progress noting that in only four years, the city has built hundreds of acres of new parks, provided new transportation options, enhanced its energy efficiency, launched green infrastructure projects, increased mass transit access in underserved neighborhoods, and much more. The city reduced its

greenhouse gas emissions to 13% below 2005 levels, demonstrating that it is well on its way to meeting the plan's targets. The city launched over 97% of the plan's initiatives within one year of the plan's release<sup>20</sup>.

However, not all PlaNYC initiatives have succeeded. The city lost its battle to implement congestion pricing and has yet to devise a sustainable solution to its waste problem. Often in the cases where the city has not succeeded, the programs were met with strong political opposition. Local politics remain a hurdle for many issues, particularly those that involve significant trade-offs.

Still, it's no surprise that the largest city in the U.S. continues to take two steps forward for every one step back on the path to sustainability. While no plan is perfect, and there is still room to improve, PlaNYC has been a stunning success. It has reframed the debate about New York's future. There are two integral components to the city's sustainability success thus far: the dedication of New York City's government and intellectual leaders to the issue of environmental quality, and the integration of that issue with the overarching issue of the city's long term economic development. In PlaNYC 2030, the Bloomberg administration explicitly connects the goals of environmental protection with the goals of job creation and economic development. A sustainable planet begins with sustainable cities, and the lessons learned from New York can be adapted in cities throughout the globe – expanding sustainability management from the realm of theory into practice.

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