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Growing Greener, New York Style

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Cities around the world are striving to meet the challenges of greening their transportation systems. London implemented a congestion charge in 2004, reducing auto usage and increasing its commitment to public transportation. Paris has reallocated a highway along the Seine as Paris Plage, converting the road to a pedestrian space and manmade beach for several weeks each year. Paris has also installed thousands of bicycles throughout the city that can be rented for short journeys around town. These bikes may be picked up at any bike stand location and returned at any other location. In the United States, major cities such as Salt Lake City, Chicago, San Francisco, and Denver are contributing through their transit and bicycle initiatives to a budding revolution in sustainable/green transport.

New York City is making an especially noteworthy effort to put in place a green transportation plan. PlaNYC 2030, issued by Mayor Michael Bloomberg in April 2007, will contribute to the city meeting its pledge to reduce carbon emissions 30 percent by 2030 and setting New York on course for further reductions in the future. This chapter discusses this initiative and the question of transportation in New York City generally by first discussing the negative externalities of transportation and showing how these led to the guiding principles the city adopted. New York City has a transit advantage relative to other U.S. cities: residents rely heavily on this transit infrastructure and the city will leverage this strength in the plan. Next it outlines New York’s current mobility needs, providing a window on future patterns. How the city has defined its transportation problem is a critical step in proposing a solution. The chapter ends with a description of the PlaNYC initiatives proposed to reach the city’s sustainability goals.

New York is unique in its low levels of auto ownership and high transit usage, two positives it must preserve and build on to achieve greater levels of sustainability. Despite its uniqueness, the city can, and should,
serve as a model for other cities. Even while it has improvements to make, it is a living example of the possibility of sustainability in the transportation arena.

The Negative Externalities of Transportation

The transportation system is the lynchpin of the New York City’s success. Failure to manage it well will put a serious strain on the city’s ability to grow. With an expected 10 percent increase in city population by 2030, New York can expect a commensurate increase in the demand for transportation. In addition, the city expects a surge in suburban commuters and visitors, further increasing pressure on the transportation system. The challenge is to provide for additional movements in a system that is, in many places and at many times of the day, already stretched beyond capacity, and to do so while decreasing carbon emissions. To accommodate these new demands will require approaching transportation resources with a new strategy.

As New York develops solutions to ensure future mobility, it must bear in mind the environmental implications and land requirements of its transportation system. A desirable solution minimizes environmental damage and preserves as much land as possible for other uses. There are at least three negative externalities of transport that New York City sought to address in planning the transportation system:

1. Pollution. Motorized transportation degrades air quality causing adverse health effects. In 1994, the U.S. Environmental Protection Agency (EPA) identified driving a car as the single most polluting activity of most Americans (USEPA 1994). This is an enduring phenomenon, according to the National Safety Council (NSC 2002).

2. Congestion. When a transportation system reaches capacity, its users impose unreasonable delays on themselves and each other. For example, when a train is full, passengers hold the doors to squeeze on, preventing the next train from entering the station, making the ride longer for those already on the train and delaying the next train as well. Likewise, when too many vehicles attempt to use a bridge, tunnel, or road simultaneously, the facility’s capacity is diminished. Beyond lost time, these delays impose additional costs on a city’s economy, as deliveries are slowed and thus made more expensive.

3. Land. Space requirements associated with transportation compete with other needs for a city’s land. The space required to surface park 50 cars is equal to that needed for a small playground or to house 30 people in medium density dwellings.
Pollution

Emissions contribute to both air and water problems. Burning fossil fuels to power cars, buses, and trucks adds to air pollution, air toxins, and greenhouse gases. In accordance with the Clean Air Act Amendments of 1990, the EPA monitors six air pollutants included in the National Ambient Air Quality Standard: ozone, volatile organic compounds, carbon monoxide, nitrogen oxides, particulate matter 2.5 and 10, and lead. However, the National Ambient Air Quality standard does not cover air toxins, which include other airborne substances that can also cause cancer, respiratory diseases, and leukemia and other blood disorders. Some examples of these toxins are benzene, formaldehyde, acrolein, toluene, acetaldehyde. In addition, heat-trapping or greenhouse gases, such as carbon dioxide, nitrous oxides, and methane, are by-products of burning fossil fuels.

Nationally, public transportation uses about half the amount of fuel per passenger mile as automobiles (Figure 1). In New York the savings are higher. Buses use 60 percent less fuel and the subway system is even
more fuel efficient. Emissions per passenger mile are considerably lower for transit than for cars. Nationally, the rate of carbon monoxide emissions per passenger mile on transit is 5 percent that of private auto emissions, volatile organic compounds 8 percent, nitrogen oxides 52 percent, and harmful greenhouse gas carbon dioxide 55 percent.

In New York City, cars and light trucks are responsible for 78 percent of transportation carbon dioxide equivalent (CO₂e) emissions, yet they carry only 60 percent of motorized trips. In contrast, 40 percent of people traveling by motorized transportation in the city use public transit, yet are responsible for only 12 percent of transportation CO₂e emissions. Public transit is more than four times more carbon efficient at current usage rates. If New York is successful in its new policy direction, transit will become even more carbon efficient. Furthermore, as will be shown, the better an environment is for transit, the better it will be for walking and bicycling, which will further contribute to emissions reductions. Today, comparing cars with other modes combined shows that private motorized transport is 10 times more polluting than public transit or walking and bicycling in New York City.

Despite its per passenger efficiency, New York City produced a high level of air pollutants. Burning 1 gallon of gasoline in a passenger car emits nearly 1 pound of carbon monoxide, .07 pounds of nitrogen oxides, and 20.7 pounds of carbon dioxide. Drivers in New York City currently register about 51 million miles per day, thus creating 837 metric tons of carbon monoxide, 103 metric tons of nitrogen oxides, 2.8 metric tons of coarse particulate matter, and 34,000 metric tons of CO₂e each day from on-road vehicles alone. Taxis and for-hire vehicles contribute significantly to air pollution and greenhouse emissions because of the high mileage driven by each vehicle. Together, these vehicles emit approximately 1.6 million metric tons of CO₂e each year—almost 3 percent of the city’s total. Forty percent of the roughly 100,000 miles driven by a medallion taxi each year are driven cruising for fares, resulting in the annual emission of more than 230,000 metric tons of CO₂e. While strategies to reduce cruising should be pursued, the city’s robust livery industry also contributes to New Yorkers’ low auto ownership rates, a very important factor in the city’s relatively low per capita auto emissions. The livery system as a complement to the transit system means New Yorkers use cars less frequently than other Americans. The option of not owning a car contributes significantly to the high walking and transit use rates among New York City residents.

**Congestion**

Roads have different capacities at different speeds. For example, a highway designed to be safe at 50 mph has a per lane capacity of about 600
cars per hour at its maximum design speed. Capacity increases as the speeds slow. The 50-mph facility reaches a maximum per lane capacity of about 1,500 vehicles per hour when vehicles operate at speeds around 35 or 40 mph (HCM 2000). Thus the mobility of individuals is said to decrease but the overall system performance and aggregate mobility are improved. Beyond the maximum capacity, speeds slow even further and both system performance and individual mobility suffer. All the access routes to New York City’s main business districts, in particular bottleneck facilities like tunnels and bridges, are operating beyond their maximum capacity for substantial parts of the day. If fewer people tried to use these facilities at once, more people would be able to flow through during a given day. To meet this challenge, New York has adopted a demand management strategy to reduce peak-time usage of these facilities.

In transit, when a passenger holding subway doors delays subsequent trains, the individual may succeed in saving a few minutes on his own journey, but delays to the system likely delay him as well, and surely cause the entire system to operate below capacity, serving fewer passengers than it otherwise could. For example, on New York’s most crowded subway line, the Lexington Avenue line, in-station delays prevent the Metropolitan Transportation Authority (MTA) from dispatching all the available trains, leaving the line operating at only about 90 percent of its capability during the busiest parts of the day.

The city’s approach is to encourage the more efficient—both from a space and carbon perspective—transit and walking trips by providing additional transit facilities and to manage the auto system to redistribute some of those trips to different times of day or on to the transit and nonmotorized parts of the transportation network.

LAND

Transportation requires a large amount of land to move and store vehicles. New York City’s 19,000 lane miles of streets translate to approximately 23,000 acres (almost the same size as the Bronx). Furthermore, the cars New Yorkers own would occupy about 5,500 acres, about seven times the size of Central Park. This does not account for trucks, taxis, and other for-hire vehicles and the thousands of cars that commuters and residents of adjacent counties drive into the city on a regular basis. The cars New Yorkers do not own (that is, if they owned vehicles at the same rate as average Americans) would require 11,000 acres or almost all of Manhattan just to park them side by side and end to end. Other modes of transportation are far more space efficient. Automobiles not only consume land, they also contribute other environmental problems.
Impervious surfaces such as asphalt and concrete roadbeds prevent rainwater from percolating into the ground. As the runoff from streets enters the storm sewer system, it carries tire dust, oil, and antifreeze spills and other pollutants into the waterways. Figure 2 shows how much of Manhattan would be devoted to parking additional cars. Figure 3 shows how many people can travel one mile, two miles, and five miles in one standard lane by walking driving, and cycling in the first two and by driving, cycling, and bus in the third.

The New York Advantage

Cities across the country scramble to build new urbanist communities and encourage transit-oriented development in a style that New York takes for granted. Steeped in the growing consensus that cars have an important place in transportation systems, but that auto dependence is not healthy for the environment, economies, or communities, these cities are trying to create transit systems, transit nodes, and pedestrian-oriented plazas. In all but the largest cities these communities are just beginning to build the basic elements of rail transit systems. Houston is expanding its light rail, and Denver has an ambitious program to build 120 miles of new commuter rail, light rail, and bus rapid transit (BRT). Salt Lake City has recently built light rail also. The country is moving in this direction to take advantage of what transit can offer, ease auto dependence, increase transport choices, and satisfy mobility needs in less space and with fewer pollutant and greenhouse gas emissions.

As shown in Figure 4, New York City’s transit network carries more passengers than the five next largest transit systems in the United States.\(^2\) The city’s transit system—and walkability—provides far more efficient mobility than would be possible with exclusive auto dependence. According to the New York MTC 1998 household travel survey (the most recent available), New York’s street system served 6 million daily trips on its 19,000 miles, while the subway served 3.5 million trips on 660 miles of track, making the subway 17 times more space efficient than the street system. At maximum capacity the subway system is potentially 25 times more space efficient and buses could be 10 times more space efficient (Figure 5). In fact, the city would need to increase street capacity by at least 50 percent to accommodate the same level of usage that the transit system provides. Curiously, unlike most cities, New York is in the peculiar position of having no direct jurisdictional control over its public transportation systems. Instead, it must work to align the interests of its regional partners with its own interests to achieve this high level of ridership.

Even with these tremendous efficiencies, tailpipe emissions from
Figure 2. Nearly all Manhattan would be required as parking space if New Yorkers owned cars at the same level as the rest of the nation. New York City Mayor’s Office of Long-Term Planning and Sustainability.
transportation still account for 61 percent of the city’s carbon monoxide emissions, 7 percent of the more dangerous particulate matter (PM2.5), 32 percent of nitrogen oxides, and 26 percent of volatile organic compounds emissions (EPA 1994). The latter two form ozone, which is the main component of urban smog. New York City does not meet federal air quality standards, and a large percentage of New Yorkers face an elevated risk of developing respiratory diseases such as asthma.

Relative to residents of other United States cities, New Yorkers rely heavily on transit, but compared with global competitors the city could do much better. In London, a city that is generally lower density and harder to serve by transit, people use transit more than twice as intensively as New Yorkers (Figure 6).

New York is a multimodal city. New Yorkers, more than other Americans, can match their trip needs to the most appropriate travel mode relative to their personal circumstances and destinations. For example, New Yorkers do not have to drive to the theater because the transit system does not stop running late at night, leaving them no way to get home. And if they are tired, or if it is raining, they can hail a cab or call a car service with relative ease. They can satisfy many trips by walking. New Yorkers make more than one-third of their trips on foot because
the city’s unique land use and extensive transit system allow its residents to use and own automobiles by choice rather than by necessity.

Nationally, 90 percent of households own one or more vehicles and 88 percent of the population commute to work by car, truck, or van. More than 75 percent drive alone. Most have little choice but to own a car. Indeed, across the country all but the poorest citizens and those unable to drive—due to age or physical disabilities—own cars. In most of New York City the story is different. In Staten Island, the borough with the highest auto ownership per household, and arguably the most similar to the rest of the nation with respect to land use, 82 percent of households own private vehicles. But overall, only 44 percent of New York City households own cars, with as few as 22 percent of Manhattan households owing an auto. Only 26 percent of the population drives to work (less than 5 percent to Manhattan); indeed, only 33 percent of all trips are made by private automobile. The remaining trips are made by ferry, rail, subway, bus, bicycle, and foot.

While nationally auto ownership is highly correlated with income, in
New York City it depends on income and other factors. Density and transit access are stronger predictors of auto ownership. For example, people in the lowest income brackets in Staten Island are more likely to own cars than people in every income bracket in Manhattan. Brooklyn households with earnings over $150,000 are less likely to own private vehicles than those in the $100,000 to $150,000 bracket, and they are less likely to own vehicles than Staten Island households in the $25,000 to $50,000 and any higher bracket. These differences are due to the nature of the urban fabric and transit access where the non-auto-owning households locate.

New York City’s Mobility Patterns

Understanding the different trip purposes and their essential characteristics—such as their distance and what time of day they occur—guides planning and helps determine the best mode and transportation system configurations.

As is the case in every city, transportation is an integral part of New Yorkers’ lives. To get to work or school, to go shopping, visit friends, or enjoy the parks, people travel. Every day, New Yorkers have access to a wide range of options for these personal trips: they can walk, ride bikes,
hail cabs, take personal cars, ride buses, or take trains. Forty-five percent of work trips are made to Manhattan’s central business district and the newer centers in Long Island City, Downtown Brooklyn, Flushing, Jamaica, and the Bronx hub. Residents also depend on the timely delivery of goods to supply local stores, carry packages, deliver construction materials, and haul trash. Trucks carry nearly all this freight. This section describes in some detail the trips New Yorkers make.

Streets and sidewalks are the most basic element of New York’s transportation infrastructure. Subway and commuter rail trips generally begin with a walk to a station; most auto trips in the city also include a walk to a parking spot or garage. As mentioned earlier, walking is the means of travel for more than a third of all trips and is part of nearly all trips. Walkers and cyclists transporting themselves, automobiles and taxis serving individuals, buses providing mass transit, and trucks moving freight share the city’s streets. Street space must be allocated efficiently to accommodate all the required trips.

New Yorkers daily take millions of trips around the city and throughout the region. The average New Yorker makes 3.4 trips and travels a total of 21 miles a day. Family and personal business, including shopping
and trips to the doctor, account for 44 percent of all trips. Social and recreational trips, including exercise and sports, going out to eat or for entertainment, and visiting friends, constitute 25 percent of trips; commuting to work 16 percent; and trips to school and religious activities another 11 percent. Just over half of all trips are less than 20 minutes, regardless of mode, and one third are less than one mile in distance.

**Mobility Needs**

Currently, the citywide modal distribution of trips is 34 percent by walking, 33 percent by private automobile, 19 percent by rail or ferry, 11 percent by bus, and 3 percent by taxi or shared ride. In 2006, all vehicles combined logged 20 billion miles on New York City’s streets and highways. Automobiles and light trucks, typically associated with personal transport, accounted for 95 percent of city vehicle mileage, with heavy trucks accounting for 3 percent and buses 1 percent. Analysts expect auto traffic to increase 10 percent and truck traffic, growing much faster, to increase 64 percent by 2030.³

Data from several sources form the basis of the analysis in the following sections that describe the characteristics of trips and trip makers for different trip purposes.⁴ They detail mode split, travel times, trip lengths, and volume at different times of the day and week that allow for better service planning and transportation interventions to ease congestion, improve air quality, and reduce vehicle emissions.

**Family and Personal Business Trips**

For New Yorkers, family and personal business is the largest category, accounting for 44 percent of all trips. This category includes shopping, doctor and dentist visits, traveling to day care, and other family and personal obligations. On weekdays, family and personal business trips are spread between 9 a.m. and 7 p.m.; on weekends, the greatest amount of travel of this type occurs between 9 a.m. and 1 p.m., gradually decreasing through the rest of the day. Family and personal business trips are shorter during the week, averaging about 3.1 miles compared to 5.2 miles on the weekend. Two-thirds of family and personal business trips are less than 20 minutes long, and nearly half of those are less than 10 minutes. Trips for family and personal business are fairly evenly split between walking and driving, with only 14 percent on public transit.

Among the family and personal-business trip types, shopping is the shortest, averaging 16 minutes. Only 6 percent of these trips are to Manhattan from the other boroughs. Most shopping is on foot or by auto, with the relative share of these modes varying significantly across the five
boroughs. In Manhattan, 70 percent of shopping trips from home are on foot; in the Bronx, Brooklyn, and Queens, walking shares are 55 percent, 47 percent, and 42 percent respectively. On Staten Island, where auto ownership and car dependency are highest, only 9 percent of shopping trips are on foot. Citywide, 36 percent of shopping trips are by auto. However, only 6 percent of shopping trips in Manhattan use an auto compared to 85 percent in Staten Island. Other types of personal business rely more heavily on transit—40 percent in Manhattan and 28 percent citywide.

**Social and Recreational Trips**

Social and recreational trips, accounting for one quarter of all trips, include vacations, visiting friends, eating out, exercising or playing sports, and other entertainment. Weekdays, the largest share (36 percent) is evening trips between 7 p.m. and 10 p.m. On weekends, New Yorkers make twice as many social and recreational trips as on weekdays, and travel more than three times farther than during the week. On the weekend, the longest trips of any type are for social and recreational purposes, with an average distance of 10.6 miles.

Social and recreational trips are somewhat longer than family and personal business trips, averaging 27 minutes. Weekday social and recreational trips having their origins and destinations within the city vary greatly by borough with regard to modal split. For example, on Staten Island, more than three-fourths of these trips are by auto but the proportion is much lower in Queens (50 percent), Brooklyn (37 percent), the Bronx (18 percent), and Manhattan (9 percent).

**Journey to School**

For younger New Yorkers, the “commute” to school is their most important daily trip. With 1.5 million New Yorkers attending preschool, elementary school, or high school, and another half million in college or graduate school, citywide, 35 percent walk to school, 30 percent take a bus, 20 percent ride the train or ferry, and 15 percent come by car.

As with the other trip purposes, significant cross-borough variations exist. On Staten Island, 41 percent of students commute to school by car, 42 percent take a bus, and 13 percent walk. In Queens 40 percent take the bus while in the Bronx and Manhattan less than 20 percent use this mode. The subway accounts for 20 percent or less in the outer boroughs. Walking has a lower share in Manhattan than in the Bronx, possibly due to the concentration of magnet schools and universities in
Manhattan to which students commute longer distances, typically by transit.

**Journey to Work**

The journey to work is the most studied area of trip making, possibly because it is the most stable and predictable. Consequently, planners tend to have the most data about this type of trip. Despite the amount of attention journey to work receives, it accounts for only 16 percent of trips by New Yorkers. About 43 percent of New Yorkers are in the labor force. Commuting trips tend to be the longest trips New Yorkers make, averaging 8 to 12 miles and taking about 34 minutes. Ironically, while New Yorkers’ long commute times are due to their use of transit—an inherently slower way to travel—if New Yorkers commuted predominantly by car the times would be much longer because the street system simply does not and cannot have the capacity to serve their number efficiently.

Most New Yorkers work within the borough in which they live, but a significant portion (47 percent or 1,372,000 trips) of commuting trips are to Manhattan below 96th Street. The volume of commuters varies by borough: 530,200, Manhattan; 329,000, Queens; 325,600, Brooklyn; 135,400, the Bronx; and 51,700, Staten Island. While mass transit accommodates the majority of trips to the Manhattan hub, many drive. Queens is the borough with the highest number of drivers—60,000, including carpoolers. Staten Island, with only 16,000 car commuters, has the lowest absolute number of drivers, but the highest share of its Manhattan-bound commuters coming in by car (32 percent) (see Plate 6 for the origins of commuters to below 96th Street by census tract and Plate 7 for the highest concentrations of drivers).

**Freight**

As New York City has increasingly supported a service-oriented economy, it imports nearly all its material goods—from food to office supplies to construction materials—from other states or overseas. It exports its waste because it has no active landfills or waste-to-energy plants. Nearly 99 percent of this freight travels on trucks.

Over the last 20 years, the city’s rising population and booming economy have been accompanied by a 35 percent increase in truck traffic. As was mentioned earlier, truck traffic is expected to grow another 64 percent by 2030. New York’s congested roads slow trucks and delay deliveries, imposing significant costs on businesses and the freight industry. Truck traffic also imposes heavy costs on the city. Trucks are a small frac-
tion of the total vehicles on the road, but have disproportionate impacts on pollution and safety. In terms of greenhouse gases, for example, heavy trucks emit three times as much CO$_2$ per mile as do automobiles and light trucks. Moreover, because they are used commercially they log more miles, using the street system more heavily than cars. Not only do trucks contribute to regional air pollution, in neighborhoods with high concentrations of truck traffic their emissions exacerbate public health problems such as asthma and other respiratory diseases. Truck traffic in those neighborhoods is also a significant safety hazard for pedestrians.

In recent years, New York has taken a number of steps to reduce trucking’s negative impacts. For example, the Department of Sanitation’s Solid Waste Management Plan (approved in 2006) uses barges and trains to export 90 percent of the city’s residential trash. The program is expected to cut truck traffic in the city by nearly 3 million miles per year. The Department of Transportation Truck Route Management and Community Impact Reduction Study (released in March 2007) calls for improved signage and enforcement of truck routes and establishment of an Office for Freight Mobility. Such steps could improve safety in neighborhoods with high concentrations of truck traffic.

Defining the Problem

PlaNYC defines New York City’s transportation problems in terms of accessibility and sustainability. Historically, transportation performance measures have revolved around mobility—how much distance can be covered by people and vehicles. Recently, the notion of accessibility has taken center stage. Accessibility, defined in terms of how many people can reach a certain place in a certain amount of time, is a function of the surrounding land uses and their densities. Thus, mobility combined with land use defines accessibility.

The transportation/land use connection is mediated by how much land must be devoted to the transportation infrastructure and the capacity of the transportation system. An area served only by automobile-designed streets (an auto/highway network) cannot accommodate high-density development because it is physically impossible to bring high volumes of people to a particular place by automobile—an inherently low-capacity mode. Furthermore, the amount of space that must be devoted to the carriageway for autos and to parking cars diminishes the amount of space that can be developed for other uses. Similarly, an area zoned for low-density development cannot have robust transit options because it lacks sufficient population to support frequent and comprehensive transit. Thus, areas zoned and built for auto use (low-density places with parking requirements) are virtually guaranteed to
have auto-use dominance. To address this problem, the 2030 plan calls for development of more mass transit infrastructure and rationalization of land devoted to transportation in order to facilitate movement of more efficient modes—rail, bus, bicycle, and walking. Fortunately, these more space-efficient modes tend to be more fuel efficient as well.

With regard to sustainability, New York City considered the impact of transportation on air quality and its contributions to global warming stemming from the burning of fossil fuels. It identified three areas where intervention could reduce negative impacts of the transport sector while preserving the city’s special accessibility characteristics:

1. Burn less fuel while satisfying the same travel needs. This would include shifting trips to more energy efficient modes, for example, auto to bus trips, bus to train trips, bus, train, and auto to walking or biking trips. It would also include vehicle replacement to more fuel-efficient vehicles. In addition to the city’s own vehicle fleet this could include the taxi fleet and incentives for private citizens to adopt more fuel-efficient vehicles. It also includes reducing idling by reducing double parking, reducing traffic tie-ups, and enforcing anti-idling laws.

2. Burn cleaner fuels (biofuels and removal of toxins such as benzene from gasoline).

3. Burn fuel more cleanly (ensure better vehicle maintenance through more regular and rigorous inspection, regular engine tune-ups, and particulate filters, especially on diesel fuel trucks and buses).

The latter two interventions would not only address issues in the transportation sector but are also would have an impact on energy production and consumption, the construction industry, and other sectors. The 2030 plan treated these areas under its air quality initiatives. The plan emphasized the first impact area, burning less fuel, under its transportation initiatives, calling specifically for the reduction of private automobile use and developing policies to ensure more trips by nonmotorized and more fuel-efficient per capita modes. Thus the transportation element of the 2030 plan focuses on strategies to burn less fuel while meeting travel needs.

In sum, New York City adopted a strategy to match every trip need to the mode with the smallest pollutant and carbon footprint possible. In so doing, it seeks to allocate transportation resources to favor the most space-efficient and productive modes, taking into consideration the different characteristics of trips and the surrounding conditions: distance, whether items need to be carried, and the availability of options at the
trip’s origin and destination. For example, typically, a person can make an intra-neighborhood trip for grocery shopping on foot, car, bus, or bicycle. In promoting accessibility and sustainability, the 2030 plan sets a policy direction and contains initial provisions to position walking as the most pleasant, convenient, and desirable way to make that trip. For longer trips, people choose bicycle, bus, subway, or automobile. Again, the 2030 plan supports efforts to facilitate biking and transit as the most convenient, pleasant, and reliable ways to travel. Routine journey-to-work trips that are too long to walk or bicycle are usually best served by transit. And for unique trips like a family visit between parts of the city that are not now well connected to each other—for example, a trip between Brooklyn and the Bronx—the city seeks to develop greater connectivity. Meanwhile, the automobile may be the best choice, either in a private auto or in a livery car. To the extent that New Yorkers can rely on livery for car trips, their needs for individual auto ownership will be reduced, in turn lowering their propensity to default to the auto for other trips where more sustainable options exist. Over time, this would result in a reduction of the land resources required to accommodate automobiles.

Accompanying its decision to make trips by transit and nonmotorized modes the most pleasant and convenient, the city developed basic planning principles for transit access and pedestrian space to guide decision making:

- Provide safe, secure pedestrian connections with transit stations.
- Design transit stations to facilitate transfers to other transit services.
- Guarantee a pedestrian environment that is comfortable, safe and supportive of mixed uses where appropriate.

Station access is a critical piece of transit planning because potential riders may be discouraged if arriving at and departing from the stations makes the trip by mass transit more costly, time intensive, unreliable, or otherwise more difficult than using another mode, such as private automobile. The goal is to create a mass transit system that provides seamless, intermodal connections, offering riders a high level of comfort, ease, and satisfaction. Designing pedestrian access to a station involves creating safe, secure, and direct routes. Pedestrians tend to seek the shortest paths, often choosing routes that compete with cars, buses, or bicyclists. Planning direct and safe paths must meet pedestrian needs while providing protection from other traffic. Another concern is ensuring adequate sidewalks at bus stops and subway entrances to increase safety and comfort.

Stations should also be designed to facilitate transfers to other transit
services, such as bus, subway, or rail. Way-finding systems, appropriate signage, comfortable waiting areas, and real-time information about wait times for connecting services can all help to make the trip more predictable and provide a consistent high level of service throughout the journey. Bicyclists should also be accommodated in station access planning. Bicyclists must have safe, convenient, and available parking near a station attendant or in a high-volume area, protected from inclement weather when possible.

While walking is the earliest and most basic form of mobility, it was not frequently considered a serious mode of transportation until 1991, when federal legislation mandated planning for bicycle and pedestrian facilities in federally supported projects. Walking holds numerous benefits. It is the most environmentally sustainable form of transportation. It produces no emissions, no noise impacts, and requires less space per person than other forms of transport. It also promotes economic activity and is good for local businesses. Walking has well-documented physical and mental health benefits. In New York, an extraordinary number of residents walk for transportation, rather than for just recreational purposes; as previously noted, 34 percent of trips are made on foot.5

In designing sidewalks and other pedestrian ways, safety, accessibility, comfort, and the visual variety that comes from mixed land uses or well-landscaped streets are key ingredients. These elements are not always compatible, and the challenge for planners and designers is to strike the right balance among them, prioritizing where necessary. To the extent that investing in pedestrians can encourage a shift away from automobiles, pedestrian planning is a critical strategy in reducing New York’s traffic congestion and emissions. In addition, making walking a more attractive alternative for short trips has the added advantage of also making bus and car trips more productive. The road space freed by shifting trips to walking brings demand for the road space more in line with capacity, serving the long trips that cannot reasonably be made by walking.

New York’s Transportation Initiatives for 2030

In developing the 2030 plan, New York City assessed its past and future potential. The mayor, Michael Bloomberg, concluded that both realizing the potential and being a good global citizen would require auto-reducing and transit-enhancing strategies. Thus, with a commitment to reducing greenhouse gas emissions and a recognition of the physical impracticality of accommodating the city’s expected growth by replicating and expanding the existing transportation configuration, the plan outlined four focal areas for sustainable transportation improvements:
(1) building and expanding transit infrastructure; (2) improving existing transit; (3) promoting other sustainable modes; and (4) improving traffic flow by reducing auto use and its attendant congestion. The plan includes an additional critical element: the introduction of congestion pricing. Congestion pricing, part of the fourth focus, addresses the traffic problem and creates a revenue stream that can be leveraged to implement other parts of the plan.

The first focal area aims to clear the backlog of major transit improvements that have already been identified as important to the city and region. These projects include construction of the Second Avenue subway; completion of the East-Side Access project, which will allow Long Island Rail Road trains that currently serve only Penn Station to travel into Grand Central Station; building Access to the Region’s Core, a project to add a rail passenger tunnel under the Hudson River, which will increase transit capacity between New York City and New Jersey. Of these projects, some date from the 1920s (Second Avenue subway) and others were conceived more recently. All are long-term infrastructure improvements that will take several years to complete and require a commitment of substantial resources. In reality, many are the primary responsibility of the city’s regional partners, not the municipal government. PlaNYC’s contribution is to articulate their need strongly, clear city-related obstacles to their implementation, and contribute funds to fill chronic financing gaps.

In the second focal area, improving existing transit, the 2030 plan identifies a series of short-term transit improvements that the city can make, in cooperation with the Metropolitan Transportation Authority, to attract and accommodate additional riders in the next few years. One project that the city and the MTA will bring on-line shortly is a bus-rapid transit pilot project that supplements the subway system. An associated effort is the creation of additional exclusive bus lanes on city streets and bridges to enhance the efficiency and reliability of the existing bus system. Other bus and subway service initiatives include improving station access, changes in routing, and adding or supplementing transit service to underserved areas. In addition, the city will address congested bottlenecks on the auto-highway system by developing multi-modal corridor plans and will develop pedestrian plazas throughout the city to reinforce its commitment to promoting a lower carbon lifestyle.

The 2030 plan calls for supporting other sustainable transportation modes including bicycles and ferries. By completing the 1,800-mile bike master plan and installing more than 1,000 on-street bicycle racks, New York hopes to increase the cycling mode share beyond its current 1 percent of journey-to-work trips. The city has already replaced a couple of on-street car parking spots with bicycle storage racks near a subway sta-
tion in Williamsburg, Brooklyn. Additional reallocations will follow. In addition, it is taking measures to partner with private ferry operators to provide service along the East River. This service will help meet the transportation needs of prospective residents of the new waterfront developments in Brooklyn and Queens that were stimulated by the 2006 rezoning of this former industrial area. Ideally, the ferry operators will provide seamless connections to the city’s mass transit network through bus service and fare integration.

The most publicized element of the plan 2030’s transportation strategy is its congestion pricing recommendation. The plan envisions using this mechanism to reduce automobile traffic in the main business district, Manhattan south of Eighty-Sixth Street while raising money to fund the major infrastructure improvements discussed earlier. By charging drivers a fee to enter Manhattan at the busiest time of day, the city expects to see a 6.3 percent reduction in vehicle miles traveled within the priced zone. It also anticipates significant revenues—an estimated $400 million per year. Other cities such as London, Stockholm, and Singapore have found congestion pricing to be an effective tool in reducing gridlock, not only within the pricing zone, but also in peripheral neighborhoods that had experienced traffic bound for the priced zone. To implement this element requires approval by the state legislature.

Loathe to endorse the plan without a careful examination, the legislature delayed an up or down vote in the last legislative session. Instead, it voted to form a commission to develop a workable congestion pricing plan or to propose an alternative plan that would accomplish the same objectives. The head of the commission, Marc Shaw, sees his role as ensuring a workable plan. The key to its success, he asserts, is to show how the revenues will be used to improve mass transit (Neuman 2007). A U.S. Department of Transportation grant of $354 million is conditioned on this commission’s positive recommendation of a program that includes road pricing. The city is working assiduously with the legislature and the commission to pass an effective resolution allowing the city to pilot the plan.

Looking Beyond PlaNYC

The strategy outlined in PlaNYC—expanding transit capacity, improving existing service, encouraging other sustainable modes, and managing traffic and raising revenues through congestion pricing—has set a strong precedent for New York City to use transportation policy as a means of attaining broader goals, especially reducing its carbon footprint. One important benefit of this large-scale planning effort is that it raises consciousness about a host of issues, initiating widespread dia-
logue about the city’s future. The congestion pricing strategy, for example, would make people think twice before taking their cars, especially if they have a comparable mass transit option.

PlaNYC is a dynamic document stimulating change in many areas. To implement it, the New York City Department of Transportation (NYC-DOT) has retooled, creating a new Department for Planning and Sustainability led by a deputy commissioner. New York City and the New York State MTA, frequently pursuing competing agenda, are now enjoying an unprecedented level of cooperation, evidenced by their successful submission of a joint application to the U.S. Department of Transportation for $354 million to be used for transit improvements in anticipation of implementing congestion pricing. Other tangible results include the mandatory replacement of the 13,000-vehicle taxi fleet with all hybrid vehicles by 2012, announced by Mayor Bloomberg in May 2007. The conversion of the iconic symbol of New York City, the yellow taxi, from a 14-mile-per-gallon gas guzzler to a 30-mile-per-gallon energy conserver, saves almost 50 million gallons of gasoline every year and makes a strong statement about the city’s commitment to its sustainability goals.

New York City’s plan is both ambitious and cautious, striving to make important changes palatable to the body politic while setting the stage for dramatic changes in the future. As the city continues with its implementation, sustained outreach is essential to communicate the plan’s underlying values and to put the various initiatives in context. Understanding the broader benefits to a congestion charge, which include less traffic, improved air quality, faster bus service, and funding to support mass transit, makes paying a modest fee to drive into the zone more palatable. Moreover, critical to the plan’s success is the city’s ability to garner broad-based support that will last beyond the Bloomberg administration, which ends in 2009. Stakeholders can help hold future administrations accountable and keep sustainability issues at the forefront of political agenda. In particular, the city must work to maintain good relationships with its regional partners—including the MTA, Port Authority, and New Jersey Transit—which all have a role in bringing the planned projects to fruition.

References


