CHAPTER 3:

THE TRANSPORTATION SYSTEM
MTA New York City Transit’s new signal system Communication Based Train Control on the L train.
1. INTRODUCTION

The New York metropolitan area has one of the oldest, most complex and highly utilized transportation networks in the world. On a typical weekday, the region’s multimodal transportation network handles millions of passenger trips and thousands of tons of freight shipments. Public transportation mode share is much higher than in other regions of the United States. Within the NYMTC planning area, the transportation system includes:

- Nearly 480 route miles of commuter rail and 225 route miles of subway tracks in passenger service, plus hundreds of miles of local, express, commuter, and intercity bus routes and an aerial tramway;

- An extensive network of passenger hubs, such as bus terminals and subway transfer facilities, ferry landings, and train stations where people transfer between modes of transport, including one of the most successful rail-to-airport links in the country;

- More than 1,100 miles of bicycle facilities, ranging from shared-use bike trails to on-road bike lanes, in addition to pedestrian sidewalks, trails, and paths;

- More than 50,000 lane miles of roads and highways, including more than 30 major bridges crossing navigable waterways (there are over 3,200 bridges of all types in the region), four major underwater vehicular tunnels, and special lanes for high occupancy vehicles (HOVs) and buses;

- Four commercial service airports, plus general aviation and heliport facilities;

- Major deepwater seaport facilities owned and operated by a mix of public and private sector entities, plus an extensive network of marine cargo support infrastructure and services;

- An extensive network of inland waterways supporting barge and ferry services;

- More than 400 route miles of freight rail, some of which is shared with commuter rail services;

- A widespread network of freight hubs, including rail transfer facilities, rail yards, and truck-oriented warehouse and distribution centers; and
Supporting infrastructure like rail yards and highway maintenance facilities, highway rest areas, parking lots and garages, bus depots and transit storage yards, bicycle parking areas, toll plazas, signage, signals, electronics, and other equipment.

The NYMTC planning area also plays a major role in the national rail, road, air, and waterborne networks. Amtrak's busiest facility in the nation is Penn Station, which served 9,493,414 passengers in fiscal year 2012, and 77 percent of Northeast Corridor air and rail passengers between New York and Washington, DC chose train travel. The Port Authority Bus Terminal has long been the primary location for long-distance bus service. In addition, since the late 1990s, curbside-pickup carriers have played an increasing role in transporting bus passengers beyond the region. There are four commercial service airports, including the John F. Kennedy (JFK) and LaGuardia (LGA) airports in New York City, along with several other general aviation and heliport facilities of varying sizes that together serve millions of passengers and ship tons of freight both within and immediately beyond NYMTC's borders. Finally, New York and New Jersey remain significant port regions that are essential to international trade and domestic distribution with one of the largest concentrations of public and private marine terminal facilities in the United States.

Although not a part of the NYMTC planning area, northern New Jersey's and southwestern Connecticut's transportation infrastructure is inextricably linked with New York's. In January 2008, a Memorandum of Understanding (MOU) was created in the three state region of New York, New Jersey and Connecticut in order to better coordinate transportation planning activities. New Jersey Transit has an extensive network of commuter rail, light rail and bus services, much of which enters the NYMTC planning area. New Jersey's highways interface with New York at six bridges and tunnels, along with roads which cross the state line into Rockland County. Connecticut funds the majority of Metro-North's New Haven Line operations, as well as crucial bus routes such as the I-Bus linking Westchester and Connecticut destinations. Numerous roads also cross the state line, and ferries regularly cross from Connecticut to New York destinations.

**Federally Supported Transportation System**

A major focus of Plan 2040 in terms of assessment of needs and allocation of resources is that portion of the regional transportation system which receives both Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) aid. For the highways and bridges network that would include over 19,000 lane-miles of interstates, freeways, parkways, expressways, arterial highways and streets. The Functional Classification of roadways (discussed later in this chapter) is an important factor in identifying roadways that are eligible for federal aid. It also describes the importance of a particular road or network of roads to the overall system and, therefore, is critical in assigning priorities to projects and establishing the appropriate highway design standards to meet the needs of the traffic served. In terms of bridges the federally supported system includes over 2400 bridges of all types under the ownership of the State, counties and local municipalities.

The federally supported portion of the transit system includes qualifying equipment and other infrastructure owned and operated by the various agencies in the region including the MTA (all agencies), NYCDOT, Nassau, Suffolk, Putnam, Westchester, and Rockland Counties. These are described in the financial supporting documentation in Appendix 10.

This chapter reviews all of these elements, including recent major events and trends, and their impacts on the NYMTC planning area. Also presented are a number of operational data tables for the various transportation entities.
2. Passenger Rail

The New York City metropolitan area is unique among North American cities due to the sheer volume and proportion of passenger traffic carried by rail in the region. Including the Metropolitan Transportation Authority (MTA) New York City Transit, MTA Long Island Rail Road (LIRR), MTA Metro-North Railroad, and MTA Staten Island Railroad, there are over 9 million unlinked passenger trips made daily, amounting to 30 percent of all commuter trips made in the New York City metropolitan area. Other major cities in the United States – even those with substantial passenger rail networks, such as Washington D.C., Boston, Chicago and Philadelphia, do not come close to this number or proportion of trips.1

This section reviews three categories of passenger rail: rapid transit (subways), commuter rail, and long-distance rail (Amtrak). While the New York City subway is the dominant rapid transit system in the region, tens of millions of passengers annually are also carried by Port Authority Trans-Hudson (PATH) trains. Three major commuter rail systems also serve the region. Two of them, the LIRR and Metro-North Railroad, are operated by the MTA, while New Jersey Transit operates commuter rail services between New York's Penn Station and much of northern New Jersey. Finally, Amtrak, the nation's long-distance passenger rail carrier, also serves the NYMTC region and surrounding areas. All of these services are described in the section below.

RAPID TRANSIT

Rapid transit is a transit system that can carry large numbers of people with great frequency. It can include a passenger rail system and bus rapid transit (which is described in section 3 of this chapter). The passenger rail system can be underground or elevated and is grade separated from other traffic. In the NYMTC planning area, the New York City Subway is one of the world's premier rapid transit systems; PATH trains serve as the primary transit link between Manhattan and the neighboring New Jersey urban communities and suburban commuter railroads. Ridership on both is expected to continue to increase with the anticipated growth in regional residential, commercial, and business development.

MTA New York City Subway

The MTA New York City subway system operates 24 routes, spanning 660 miles of track and 420 stations.2 In 2011, annual subway ridership was 1.640 billion – its highest level since 1950. The most significant reason for this growth is the one-third increase in average weekday ridership between 1998 and 2011. However, weekend subway usage has also increased, both in absolute numbers and relative to weekday travel. See Table 3.1.3

A new railcar fleet and four new free transfer connections were two of the most visible signs of capital expenditures. The new transfers – at South Ferry-Whitehall Street (R, 1), Jay Street-MetroTech (A, C, F, R), Court Square (E, G, M, 7), and Broadway-Lafayette-Bleecker Street (B, D, F, M, 6) – provided passengers with new travel options. (The Bleecker Street transfer complements an existing transfer between the downtown Bleecker Street (6) platform and the Broadway-Lafayette station.) The new South Ferry (1) station, which included an entirely new 10-car platform, was financed largely with federal post-9/11 recovery money. Finally, the Fulton Street Transit Center, scheduled for completion in 2014, will provide enclosed free transfers between the existing Fulton Street station (A, C, J, Z, 2, 3, 4, 5) in lower Manhattan, the Cortlandt Street (R) station and the World Trade Center (E) station.

The delivery of the new R160 subway car fleet between 2005 and 2010 replaced rolling stock which had been running since the 1960s and 1970s. The R160 cars are running on the lettered (former BMT and IND) routes.

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<thead>
<tr>
<th>Year</th>
<th>Weekday</th>
<th>Saturday</th>
<th>Sunday</th>
<th>Saturday % of Weekday</th>
<th>Sunday % of Weekday</th>
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<td>3,962,222</td>
<td>2,015,003</td>
<td>1,490,327</td>
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<td>1999</td>
<td>4,226,709</td>
<td>2,206,869</td>
<td>1,625,211</td>
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<td>38.45</td>
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<td>1,794,874</td>
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<td>2,512,490</td>
<td>1,883,489</td>
<td>54.87</td>
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<td>2002</td>
<td>4,590,570</td>
<td>2,573,817</td>
<td>1,937,375</td>
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<tr>
<td>2003</td>
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<td>2,469,237</td>
<td>1,884,342</td>
<td>54.73</td>
<td>41.76</td>
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<td>2,594,065</td>
<td>1,973,605</td>
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<td>42.79</td>
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<td>2005</td>
<td>4,737,093</td>
<td>2,660,594</td>
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<td>2006</td>
<td>4,865,769</td>
<td>2,735,177</td>
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<td>42.95</td>
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<td>2007</td>
<td>5,042,150</td>
<td>2,917,234</td>
<td>2,111,490</td>
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<td>43.86</td>
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<td>2008</td>
<td>5,229,435</td>
<td>2,981,699</td>
<td>2,312,745</td>
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<td>2009</td>
<td>5,086,822</td>
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<td>2,283,621</td>
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<td>2010</td>
<td>5,156,913</td>
<td>3,031,289</td>
<td>2,335,077</td>
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<tr>
<td>2011</td>
<td>5,284,295</td>
<td>3,033,660</td>
<td>2,367,261</td>
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<tr>
<td>2012</td>
<td>5,380,184</td>
<td>3,172,627</td>
<td>2,490,736</td>
<td>58.96</td>
<td>46.92</td>
</tr>
</tbody>
</table>
Rapid Transit Systems in the NYMTC Planning Area

- MTA New York City Subway Lines and Stations
- Port Authority of NY & NJ PATH Lines and Stations

The Transportation System 3-7
Two major network expansion projects in Manhattan also continued. The City-funded extension of the Flushing (7) line to a new terminal at 11th Avenue and 34th Street continued, with an anticipated opening date of June 2014. However, lack of funds caused an intermediate station at 10th Avenue and 41st Street to be eliminated from the project. Work also continued to progress on Phase 1 of the 2nd Avenue Subway with the MTA projecting the opening in December 2016.

There were a number of new technological developments that also appeared throughout the MTA network. The Canarsie (L) Line, which was the first in the City to receive Communications-Based Train Control and active train arrival time displays, also became the first to have flat-panel video screens installed at one station showing train locations in real time along a route map. While Canarsie Line passengers had already been using the arrival time screens (called Public Address Customer Information Screens, or PA/CIS) since January 2007, a larger rollout of the technology began on most of the numbered subway routes starting in February 2010. By December 2012, active PA/CIS screens, which include automated audio announcements, were installed in 179 stations. On most of the lettered routes, which were not fitted with the same technology, NYCT personnel developed an in-house solution allowing less specific but still viable information to reach passengers; by the end of 2012, 44 stations had this system. A pilot station communications system called Help Point, which provides push-button access to personnel who can provide information and emergency services, was launched at two stations in April 2011; multiple Help Point stations were located at each station, and each of them were equipped with both information and emergency buttons. An additional 102 stations are receiving Help Point as part of the 2010-2014 Capital Plan.

**PATH**

Operated by the Port Authority of New York and New Jersey, PATH is a rapid transit system which is comprised of four routes and 13 stations located in Manhattan, Hoboken, Jersey City, Harrison and Newark. Manhattan stations are located at the World Trade Center, the West Village, and along 6th Avenue from 9th to 33rd streets. Connections are
New fare media and new railcars figured prominently in PATH’s development since 2008. Although PATH accepted non-NYCT-compatible MetroCards when it introduced its contactless SmartLink card in 2007, within 2 years half of all PATH customers had switched to SmartLink. In 2010, PATH tested a cross-jurisdictional, contactless farecard which could be used on three connecting NJTransit bus routes, eight MTA NYCT bus routes, and the Lexington Avenue (4,5,6) Line.

PATH’s rolling stock has recently been entirely replaced by 340 new PA5 cars, with the first train of new cars entering service in July 2009, and the entire fleet of older cars – some of which dated back to the mid-1960s – being replaced by October 2011. Less visible but of equal significance was the October 2009 awarding of $340 million in contracts to replace PATH’s entire signal network with an electronically-managed automatic train control system.

Construction continued on the World Trade Center Transportation Hub which includes a new entrance to the temporary PATH terminal that opened in March 2008. The hub’s last major contract was awarded in February 2011 and the hub station is expected to open in early 2015.6

COMMUTER RAIL

The region has three commuter rail entities – the MTA Long Island Rail Road (LIRR), MTA Metro-North Railroad (Metro-North), and New Jersey Transit (NJ Transit). The LIRR and Metro-North are subsidiaries of New York State’s MTA. Compared to subway service, commuter rail services generally offer greater distances between stations, wider coverage areas, zoned fares, and a greater emphasis on rider comfort. There are also regulatory differences as all three agencies fall under Federal Railroad Administration jurisdiction because their tracks are connected to the national railroad network. Generally, commuter rail operations are separated from rapid transit, which is regulated by the Federal Transit Administration.7

From April 2012 to March 2013, the LIRR carried a rolling 12-month average of approximately 6.8 million passenger trips per month on 735 daily trains. The LIRR system is comprised of over 700 miles of track situated on 11 different branches, stretching 120 miles from Montauk – on the eastern tip of Long Island – to Penn Station in the heart of Manhattan, and to Atlantic Terminal in Brooklyn.

Metro-North recently surpassed the LIRR as the busiest commuter railroad in North America, servicing 120 stations distributed across five lines in seven counties in New York State – Dutchess, Putnam, Westchester, Bronx, Manhattan, Rockland, and Orange, as well as two counties in the state of Connecticut – New Haven and Fairfield. From April 2012 to March 2013, Metro-North carried a rolling 12-month average of approximately 6.9 million passenger trips per month on 697 daily trains.

Although New Jersey Transit’s rail operations are primarily outside the NYMTC region, most of its rail routes indirectly or directly serve New York’s Penn Station. From April 2012 to March 2013, NJT’s rail operations carried a rolling 12-month average of approximately 6.0 million passenger trips, nearly equaling the LIRR’s and Metro-North’s ridership levels. (The impacts of Hurricane Sandy, along with more severe winter weather, reduced this average by approximately 200,000 from 6 months earlier.)

NJ Transit is New Jersey’s public transportation corporation which serves an area of 5,325 square miles and operates a commuter rail network (along with fleets of buses and light rail vehicles) – including five rail lines that link directly into New York Penn Station in Manhattan.

Railroad ridership generally continued to climb to levels not seen in recent history. In 2008, its 25th anniversary year, Metro-North set a ridership record, while the LIRR attracted over 87 million passengers. However, system-wide usage declined in 2009 before stabilizing in 2010.

By April 2013, The LIRR East Side Access project, a plan to construct a LIRR terminal beneath Grand Central Terminal, had completed all blasting in the tunnels and caverns, and the project had spent 52.4 percent of its $245 billion budget. The MTA estimated that the project would be completed in August 2019.

In September 2009, Metro-North New Haven Line trains began through service to the Meadowlands for football games and special events. In May 2009, Metro-North also opened a new train station on the Hudson Line, located near Yankee Stadium. By the 2012 baseball season, game-day ridership averaged nearly 3,100 on weekdays and 4,100 on weekends.11

In January 2009 the LIRR and Metro-North entered into a $257 million joint procurement contract with multiple parts suppliers – the largest mutual effort between the two railroads yet.

Transit-oriented development (TOD) also began to play a more visible role in the relationship between commuter rail and land use, as the MTA and its NYMTC partners sought to encourage more use of walkable communities near some of its stations, such as Harrison,
Table 3.2

<table>
<thead>
<tr>
<th>Rapid Transit and Railroad Annual Ridership and Usage, 2008-2012</th>
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<tbody>
<tr>
<td><strong>NYCT Subway</strong></td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
</tbody>
</table>

Poughkeepsie, Wyandanch, Farmingdale, Patchogue, and Ronkonkoma.

NJ Transit runs numerous trains into and out of New York Penn Station daily. Presently, there are four NJ Transit lines accessing the station; these lines serve more than 77,000 passengers daily. In 2009, NJ Transit opened a new rotunda for its passengers at New York Penn Station. Located at the corner of West 31st Street and 7th Avenue, the new rotunda features new stairs, elevators and escalators that connect directly to the NJ Transit concourse.

A rail spur at Secaucus Junction in New Jersey allows one-transfer trips to the MetLife Sports Complex from New York Penn Station on days where events expect more than 50,000 patrons. Service in July through September 2012 averaged nearly 15,700 people per event, up from its first year in 2009. Metro-North provides round-trip through-service from major New Haven Line stations to Secaucus Junction on game days, where passengers can connect to NJ Transit rail service directly to the Meadowlands via a new rail spur.

The MTA and the Connecticut Department of Transportation (ConnDOT) have introduced the new M8 railcar for Metro-North’s New Haven Line. Manufactured by Kawasaki, the new cars will be phased in, with the last railcar expected to be in service by 2014. There are 405 rail cars in the entire order, costing about $3 million each. As of April 2013, 156 M8 cars had been delivered and 200 were in revenue service. MTA and ConnDOT are working together to maintain and update catenary wire on the New Haven Line. Currently being completed in multiple phases, the new catenary wire will be able to withstand changes in temperature and higher speeds. Five bridges along the route are also being replaced. Funding is coming from a combination of MTA Capital Construction and ConnDOT funds.

Table 3.3 summarizes vital statistics for rapid transit and commuter rail service providers in the NYMTC planning area, along with services to and within New Jersey.

AMTRAK

Since its creation in 1971, Amtrak has been the provider of long-distance passenger rail service to the NYMTC area. Amtrak operates three groups of services through the region:

- **Acela/Northeast Regional Service**: Frequent service along the Northeast Corridor between Boston and Washington (Recently through service to Virginia has been added.) Acela service uses a dedicated fleet of trains to provide higher-speed express service along the corridor, while Northeast Regional trains use standard Amtrak equipment and generally make more stops.

- **Empire Corridor Service**: Frequent service between New York City and Albany with more limited but daily service to Buffalo. An additional train, the Ethan Allen Express, serves the New York-Albany corridor and continues north to Rutland, VT.

- **Long distance routes**: Other services originating or passing through New York Penn Station include trains to northern Vermont, Montreal, Toronto, Chicago, Pittsburgh, New Orleans, North Carolina, and Florida.

Both regionally and nationally, Amtrak ridership has increased in recent years, setting ridership records in 2010 and 2011, and continuing to set records throughout 2012. The railroad carried...
### Table 3.3

<table>
<thead>
<tr>
<th>Agency/Entity/Transport Type</th>
<th>Route miles</th>
<th>Routes</th>
<th>Stations</th>
<th>Fixed route fleet size</th>
<th>Average weekday unlinked trips</th>
<th>Geographic reach</th>
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<tr>
<td><strong>Rapid Transit</strong></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>MTA NYCT (subway)</td>
<td>660 track</td>
<td>25</td>
<td>420*</td>
<td>6,375</td>
<td>5,156,913</td>
<td>Bronx, Brooklyn, Queens, Manhattan</td>
</tr>
<tr>
<td>MTA Staten Island Railway</td>
<td>29 track</td>
<td>1</td>
<td>22</td>
<td>63</td>
<td>28,054</td>
<td>Staten Island</td>
</tr>
<tr>
<td>PATH</td>
<td>13.8</td>
<td>4</td>
<td>13</td>
<td>375</td>
<td>281,764</td>
<td>Manhattan, Jersey City, Hoboken, Newark</td>
</tr>
<tr>
<td><strong>New Jersey Only</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NJ Transit Hudson-Bergen Light Rail</td>
<td>36.5</td>
<td>3</td>
<td>24</td>
<td>52</td>
<td>40,975</td>
<td>Bayonne, Jersey City, Hoboken, Union City, West New York</td>
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<tr>
<td>NJ Transit Newark City Subway</td>
<td>13.9</td>
<td>1</td>
<td>17</td>
<td>21</td>
<td>18,807</td>
<td>Newark, Bloomfield</td>
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<tr>
<td><strong>Commuter Rail</strong></td>
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<td></td>
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<tr>
<td>MTA LIRR</td>
<td>594 track</td>
<td>11</td>
<td>124</td>
<td>1,185</td>
<td>333,683</td>
<td>Manhattan, Brooklyn, Queens, Nassau, Suffolk</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>774 track</td>
<td>5</td>
<td>110</td>
<td>1,101</td>
<td>277,171</td>
<td>Manhattan, Bronx, Westchester, Putnam, Dutchess, Rockland, SW Connecticut</td>
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<tr>
<td>NJ Transit Railroad</td>
<td>536 track</td>
<td>9</td>
<td>164</td>
<td>1,332</td>
<td>276,459</td>
<td>Manhattan, New Jersey</td>
</tr>
</tbody>
</table>

*Many of the system’s 468 stations are linked by free transfers.

All data compiled from member agencies and agency websites, American Public Transportation Association, National Transit Institute 2010 National Transit Database.
over 30 million passengers for the first time in its 40-year history in 2011. The increase occurred against a backdrop of a national recession, shrinking vacation budgets, and increasing gasoline prices.

In the NYMTC planning area four commuter rail stations are served by Amtrak trains: New York City, New Rochelle, Yonkers, and Croton-Harmon. Additional stations immediately surrounding the NYMTC planning area are in Stamford, CT; Bridgeport, CT; New Haven, CT; Poughkeepsie, NY; Newark, NJ; Newark Airport, NJ; Elizabeth, NJ; and MetroPark, NJ. Limited service is also provided to New Brunswick, NJ. Table 3.4 displays ridership data for these stations since 2008.

Population growth and increase in transportation demand expected in the Northeast for the next decades has placed increasing pressure on the saturated Northeast Corridor (NEC), the country’s busiest rail artery, and present challenges in terms of accommodating more trains, reducing trip time, and increasing train speed and service reliability. Amtrak’s NEC Capital Investment Program identifies funding options and priorities for improving service in the existing rail network (the NEC Upgrade program) and developing a dedicated high-speed rail system (the NEC Next-Generation High-Speed Rail program). At an early planning stage as of 2012, the implementation of both overlapping programs is expected to occur in incremental steps over the next 30 years. Funding and implementation priority would be given to the elements of the program that would have the largest impact on improving reliability, increasing capacity, and reducing trip times, in order to generate the revenue and capital needed for additional elements of the program.

Major infrastructure work on the railroad network that Amtrak uses within and beyond the NYMTC planning area has significant implications for the metropolitan area. For example, multiple rail bridges over Connecticut’s coastal waterways were replaced, or were in the process of being replaced, over the past few years – some as far away as New London, i.e. the replacement of the Niantic Bridge due to be completed in May 2013. Aside from causing temporary service changes, these bridge repairs were needed to maintain and upgrade Amtrak-owned infrastructure along the Northeast Corridor. Federal stimulus money helped rebuild out-of-commission railcars, while the Passenger Rail Investment and Improvement Act of 2008 authorized additional federal support of state grants to upgrade designated high-speed rail corridors.

Parts of Amtrak’s aging Northeast Corridor constant tension catenary electric power supply system are also being rehabilitated – a need demonstrated by incidents such as an unplanned May 2006 power outage, which stranded numerous passengers. Amtrak also began the process of purchasing new electric locomotives.

Within the NYMTC planning area, a settlement between New York State and Amtrak in 2007 paid for upgrading the

Table 3.4

<table>
<thead>
<tr>
<th>Amtrak Ridership, Fiscal Years 2008-2012*</th>
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<tbody>
<tr>
<td>Stations Serving the NYMTC Region</td>
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<tr>
<td>New York, NY</td>
</tr>
<tr>
<td>New Rochelle, NY</td>
</tr>
<tr>
<td>Yonkers, NY</td>
</tr>
<tr>
<td>Croton-Harmon, NY</td>
</tr>
<tr>
<td>Stations Serving the Surrounding Metropolitan Area</td>
</tr>
<tr>
<td>Newark, NJ</td>
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<tr>
<td>Newark Airport, NJ</td>
</tr>
<tr>
<td>Metropark, NJ</td>
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<tr>
<td>New Brunswick, NJ**</td>
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<td>Stamford, CT</td>
</tr>
<tr>
<td>Bridgeport, CT</td>
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<tr>
<td>New Haven, CT</td>
</tr>
<tr>
<td>Poughkeepsie, NY</td>
</tr>
</tbody>
</table>

*Amtrak State Fact Sheets
**limited service
Empire Corridor tracks located beneath the George Washington Bridge, improving both safety and train speeds in upper Manhattan. A 2010 USDOT TIGER (Transportation Investment Generating Economic Recovery) grant, disbursed under the American Recovery and Reinvestment Act of 2009, provided $83 million to improve access to and within New York Penn Station and laid the groundwork for the conversion of the Farley Post Office to Moynihan Station.

Amtrak’s largest project in the NYMTC planning area is a $295 million commitment to a $368 million bypass of Harold Interlocking, a section of track within Sunnyside Yards in Queens used by Amtrak, the LIRR and NJ Transit. When completed, the bypass will divert Amtrak trains from the interlocking, increasing speeds and reliability for all three railroads. The grant money was diverted from Florida after that state rejected federal high-speed rail funds.

On the technology front, Amtrak began providing wireless internet service to its passengers in early 2010, and expanded the service through the rest of 2010 and into 2011. Passengers also began receiving Northeast Corridor service disruption notifications via Twitter as part of a pilot program launched in March 2011.

Despite the numerous Northeast Corridor-related infrastructure upgrades previously mentioned, the issue of high-speed rail in the region and nationwide remains a compelling topic. In 2010 and 2011, Amtrak devoted resources to developing a vision for high-speed rail, even enacting a departmental reorganization to focus more intently on its development and potential. However, Congress removed all funding for high-speed rail from the federal 2012 transportation budget.

After the cancellation of the Access to the Region’s Core project, Amtrak began to pursue an alternative called the Gateway tunnel, which would be located under the Hudson River and connect Secaucus, NJ to the south side of New York’s Penn Station via two single-track tunnels paralleling the current North (aka Hudson) River tunnels. The new tunnels would lead to an expansion of Penn Station, currently referred to as “Penn South.” It is estimated to cost $10 billion and is proposed to open in 2020, depending on funding. In November 2011, Amtrak received $15 million to begin engineering work on the tunnels.

In May 2013, Amtrak received $185 million in federal post-Sandy recovery money to construct an 800-foot tunnel section beneath Hudson Yards, thus preserving a right-of-way for the Gateway project through the new neighborhood.
Major Local Bus Transit Systems in the NYMTC Planning Area

- Putnam Transit
- Westchester Bee Line
- Transport of Rockland
- NYCT & MTA Bus
- Atlantic Express
- Nassau Inter County Express
- Suffolk Transit
3. BUSES

This section primarily focuses on local transit operators in each county including MTA Bus, Nassau Inter County Express (NICE; formerly, MTA Long Island Bus), Suffolk Transit, the Westchester Bee-Line System, Transport of Rockland, and other providers. Also included is information on the various commuter buses and long-distance buses in the region.

LOCAL TRANSIT

Table 3.5 provides total annual ridership for the major local bus transit providers in the NYMTC planning area. New York City’s MTA bus services, NICE Bus, and Westchester Bee-Line all accept MetroCard fare payment; passengers can transfer between any of the three services and to New York City subways.

MTA New York City Bus System

MTA New York City Bus provides bus service throughout New York City 24 hours a day, 7 days a week, via over 15,000 bus stops served by 253 local and 71 express routes. (However, not all services run at all times, or on Saturdays and Sundays.)

The launch of Select Bus Service (SBS), which incorporates several elements of bus rapid transit, was a recent development for local bus transit in New York City. SBS generally uses a proof-of-payment system; customers prepay their fares using ticket machines at bus stops, allowing them to board buses through any door, reducing dwell times. Signal prioritization and designated bus lanes also reduce travel times.

The first SBS route was launched in 2008 along the heavily-used Bx12 route, which begins in the Inwood section of Manhattan and traverses the Bronx. (Local Bx12 service also remains in operation.) In its first year of service, Bx12 speeds increased by 20 percent along the route, with 98 percent of riders satisfied or very satisfied with the new service. In October 2010, New York City Transit (NYCT) and New York City Department of Transportation (NYCDOT) added SBS – along with a new, dedicated fleet of three-door articulated buses – along its busiest route, the M15 route which travels along 1st and 2nd Avenues in Manhattan, leading to a 9 percent increase in M15 ridership and 15-18 percent improvement in travel times in the first year of operation. A modified version of SBS was introduced along 34th Street in Manhattan in November 2011, in order to speed crosstown travel, and the S79 route between Bay Ridge Brooklyn and the Staten Island Mall via Hylan Boulevard was launched in September 2012.

Other SBS routes are currently under design or implementation. The Nostrand Avenue/Rogers Avenue B44 SBS in Brooklyn is scheduled to start service in the latter half of 2013. B44 SBS buses will make stops approximately every ½ mile. Local B44 bus service will continue to operate 24 hours a day, implementation of a Webster Avenue (Bronx) route is scheduled to start in 2013-2014. Potential SBS corridors for improved access to LaGuardia Airport/East Elmhurst in Queens are also under study. In addition, NYCT and NYCDOT identified additional potential SBS improvements and extensions in the 2009 Phase II BRT Study after having identified as potential candidates for SBS service areas that are either not served by the subway or seeing significant population growth, and corridors along which trips are long and slow, or subway crowding is heavy. Subsequent public workshops led to the selection of 16 potential future SBS corridors in 2010. Further potential improvements to SBS service include enhanced transit signal priority and off-board fare payment, offset or physically separated bus lanes, and camera-assisted enforcement of bus lane rules.

Table 3.5

<table>
<thead>
<tr>
<th>Year</th>
<th>MTA NYC Bus</th>
<th>NICE Bus</th>
<th>Suffolk Transit</th>
<th>Westchester Bee-Line</th>
<th>PART (Putnam County)</th>
<th>Transport of Rockland</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>868,005,155</td>
<td>32,649,109</td>
<td>6,699,354</td>
<td>32,256,000</td>
<td>250,300</td>
<td>3,884,100</td>
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<tr>
<td>2009</td>
<td>846,464,099</td>
<td>30,787,662</td>
<td>6,462,628</td>
<td>31,979,682</td>
<td>177,600</td>
<td>3,682,900</td>
</tr>
<tr>
<td>2010</td>
<td>817,137,824</td>
<td>30,816,889</td>
<td>6,531,849</td>
<td>32,264,688</td>
<td>186,867</td>
<td>3,534,231</td>
</tr>
<tr>
<td>2011</td>
<td>790,079,732</td>
<td>30,327,226</td>
<td>6,708,021</td>
<td>31,557,909</td>
<td>172,781</td>
<td>3,405,632</td>
</tr>
<tr>
<td>2012</td>
<td>781,978,816</td>
<td>29,545,079</td>
<td>6,538,326</td>
<td>32,069,161</td>
<td>168,331</td>
<td>3,390,268</td>
</tr>
</tbody>
</table>

In September 2007, NYCT introduced the peak-only S89 Limited bus route from Staten Island to NJ Transit’s 34th Street Hudson-Bergen Light Rail station in Bayonne – the first NYCT route ever to make stops in New Jersey. The service proved popular enough to be expanded slightly within less than a year.

As part of an increased focus on employee and rider safety, MTA/NYCT announced in late 2010 that it would be outfitting 400 of its buses with video surveillance equipment.

MTA/NYCT began providing its customers with real-time bus tracking, using Brooklyn’s B63 route as a pilot, starting in February 2011. The application, called BusTime, was a harbinger of much larger developments in bus tracking. By April 2013, the locations of all Staten Island and Bronx buses also became viewable in real time, along with most express bus routes and a handful of routes in Brooklyn, Manhattan and Queens.

In addition to operating the subway system and bus network, NYCT administers New York City’s paratransit service, known as Access-A-Ride. The service is available to individuals deemed unable to use the public transportation system. At present individuals age 65 and over and those with a qualifying disability are eligible for a reduced-fare MetroCard, which costs $1.25 per ride (full fare is $2.50 per ride). The reduced-fare benefits are available on all MTA New York City Transit subways, local and MTA buses. NYCT and MTA express buses offer reduced fares during non-rush hours only, and the LIRR, and Metro-North offer reduced fares anytime except weekday rush hours to New York City terminals.

### Smaller New York City Bus Systems

A handful of smaller service providers operate other bus service within New York City. Atlantic Express, a bus company which primarily owns and operates school and charter buses, also operates two peak-period express bus routes from southern Staten Island to Midtown Manhattan. The Roosevelt Island Operating Corporation runs that island’s ubiquitous red buses; service operates 21 to 23 hours a day and is coordinated with tram arrivals and departures. The one-way fare is 25 cents.

Other bus services have developed mainly to connect ethnic groups which are located in multiple communities. Private Transportation Corp. runs a single bus route that connects the Orthodox Jewish communities living in Borough Park and South Williamsburg. In addition, several private van companies provide service connecting some of the City’s major populations of Chinese immigrants: Chinatown in Manhattan, Sunset Park in Brooklyn, and both Flushing and Elmhurst in Queens.

There are other small New York City bus systems. For example, New York University’s (NYU) Department of Public Safety operates three bus routes during the fall and spring semesters (and one during summers) for NYU faculty, staff, students, administrators and alumni. NYU also operates an on-demand overnight service.

The following sections discuss Long Island’s bus operations. Table 3.7 provides a statistical overview of each system.

### Nassau County: From MTA Long Island Bus to Nassau Inter County Express (NICE)

On January 1, 2012, Nassau County transferred operation of its bus system, both fixed route and paratransit, from the MTA to Veolia Transportation Services. The system was renamed the Nassau Inter-County Express or NICE. The bus service runs 48 fixed route bus lines throughout Nassau County, and extends service into eastern Queens and western Suffolk counties. MetroCard is accepted on the fixed route system, and the base fare is $2.25. The fare for the Able-Ride ADA paratransit service is $3.75. NICE operates a fleet of 298 wheelchair-accessible, Compressed Natural Gas (CNG) powered, 40-foot fixed route buses, and a fleet of 93 paratransit vehicles that are used for the Able-Ride service.

NICE serves 96 communities, 47 MTA Long Island Rail Road stations and five MTA New York City Transit (NYCT) subway stations in addition to shopping centers, colleges, museums, parks, theaters, and beaches, with fixed route service provided seven days a week.

### Suffolk Transit

Suffolk Transit provides bus service throughout Suffolk County, with service into southeastern Nassau County at the Sunrise Mall. Suffolk Transit does not accept MetroCards as payment. The base fare is generally $2.00, and service does not run on Sundays or during major holidays, but a 2012 fare increase to $2.25 for two eastern Long Island routes was accompanied by Sunday service on these routes at least through the summer. Suffolk Transit also provides Suffolk County...
Accessible Transportation (SCAT), a curb-to-curb paratransit service.

Suffolk operates 158 fixed route buses consisting of 30-, 35-, and 40-foot diesel and hybrid diesel buses. The paratransit fleet consists of 143 gasoline and diesel powered wheelchair lift equipped buses. Bus service and route planning is done by Suffolk Transit itself (which is an agency of Suffolk County), and Suffolk Transit maintains a single brand identity. However, actual operations and maintenance of the buses is provided by private companies. Suffolk Transit provides service 6 days per week with limited Sunday service on the eastern portion of the County during the summer season and is anticipating operating additional Sunday bus service in late 2013 or early 2014.

Smaller Long Island Bus Systems

The City of Long Beach’s Department of Transportation owns and operates a separate bus system from that of Nassau County. The five-route system serves the City of Long Beach, with one route operating east to the hamlet of Point Lookout. The N15 (departing from Roosevelt Field) and N33 (departing from Far Rockaway, Queens) NICE routes also serve Long Beach.

For a city of its size (with a 2010 population of 33,275), Long Beach is unusual in that at least some part of its bus system runs 24 hours a day, five days out of the week. A special late-night route runs approximately once an hour, and the bus can deviate from its route upon request from a departing or arriving passenger who calls in advance. The base fare for most of the system is $2.00; the N69 bus to Point Lookout is $2.50. The system does not accept MetroCards. Long Beach also runs a 7-day-a-week paratransit service.

The Town of Huntington in northwest Suffolk owns and operates its own bus system, called Huntington Area Rapid Transit, or HART. As of January 2013 the base fare is $2.00 with no service on Sundays or major holidays. Transfers are available to Suffolk Transit and NICE. The Village of Patchogue also ran a local bus system, but this was discontinued in late 2010 or early 2011.

The following sections discuss the Lower Hudson Valley’s bus operations. Table 3.8 provides a statistical overview of each system.

Westchester County Bee-Line Bus System

Westchester County holds a contract with Liberty Lines Transit to operate the majority of its public bus system, known as the Bee-Line. Westchester County owns all Bee-Line buses along with the related maintenance facilities and is responsible for route planning and fare policy. Three routes in the northwest part of the county are operated by PTLA Enterprise, another bus company. With 59 bus routes in 2012, consisting of local and express service, the Bee-Line service area extends from the northern and central Bronx through Westchester, and into

### Table 3.7

<table>
<thead>
<tr>
<th>Operational Elements</th>
<th>NICE (Nassau County)</th>
<th>City of Long Beach Bus</th>
<th>Suffolk Transit</th>
<th>HART (Town of Huntington)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Route Miles</td>
<td>740.5</td>
<td>5</td>
<td>1,087.20</td>
<td>64.8</td>
</tr>
<tr>
<td># Routes Operated</td>
<td>49</td>
<td>25</td>
<td>52</td>
<td>5</td>
</tr>
<tr>
<td># Stations / Stops</td>
<td>51/2200</td>
<td>67</td>
<td>3,100</td>
<td>Hail Stops</td>
</tr>
<tr>
<td># Passenger Fleet</td>
<td>310</td>
<td>11</td>
<td>158</td>
<td>12</td>
</tr>
<tr>
<td># Paratransit Fleet</td>
<td>95</td>
<td>4</td>
<td>132</td>
<td>12</td>
</tr>
<tr>
<td># Maintenance Fleet</td>
<td>59</td>
<td>2</td>
<td>NA</td>
<td>2</td>
</tr>
<tr>
<td># Passengers: Average Weekday Usage</td>
<td>99,735</td>
<td>857</td>
<td>22,434</td>
<td>832</td>
</tr>
</tbody>
</table>
Putnam County. A number of Bee-Line routes serving the Bronx connect with New York City subway stations. Several routes within the county operate as feeders to Metro-North Stations and others provide access from the White Plains Metro-North Station to office parks in the I-287 corridor. An express route, the BxM4C, provides service to Manhattan from White Plains, operating along 5th and Madison Avenues in Manhattan, terminating at 23rd Street. The entire Bee-Line fleet accepts MetroCard, and is ADA compliant. The base fare for local buses as of March 2013 was $2.50. Service operates 7 days a week, though not all routes operate on all days.

Unlike most other localities in the region, Bee-Line ParaTransit service operates on two different types of schedules. Service is available Monday through Friday from 6:00am to 7:00pm and Saturday from 8:00am to 7:00pm. However, paratransit users whose trips begin and end within three-quarters of a mile of a Bee-Line bus route have expanded service hours which generally correspond with those of the parallel Bee-Line route. In 2011, Ford Transit Connect vehicles were added to the para-transit fleet in order to help achieve operational and cost efficiencies. Prior to that, the fleet was comprised solely of standard lift equipped paratransit vans that are more costly to purchase and operate than the smaller new vehicles. The Ford Transit Connect vehicles are not lift equipped, but are able to serve the approximately 80 percent of paratransit eligible riders who are ambulatory. In May of 2012, Bee-Line ParaTransit launched a one-year “Bee-Line Taxi” pilot program in White Plains to help reduce costs and make service more convenient for users. ParaTransit riders may now opt to use a taxi service for trips within White Plains. Given the success of this program, Westchester launched similar programs in Peekskill and New Rochelle and is pursuing opportunities to expand the taxi program to other parts of the county.

In 2009, Westchester County released its Central Avenue Bus Rapid Transit Assessment Study Final Report, which analyzed the potential for a 14.4-mile BRT route from downtown White Plains to the Bedford Park Boulevard stations of the 4, B and D subway routes in the Bronx. Over 10 percent of the Bee-Line system's total ridership traveled this corridor as of 2012. The proposed BRT route is seen as not just a way to decrease bus travel times and increase ridership, but as a possible engine for future transit-oriented development. Improvements are being phased in, due to the varying timeframes required for implementation and different jurisdictions with responsibility for the roadway and traffic signals. The development of transit signal priority in the Central Avenue Corridor is in progress.

**PART (Putnam Transit)**

Putnam County’s bus system, PART, is made up of four fixed routes and a seasonal trolleybus that operates in the Cold Spring area. Aside from the seasonal route, which runs Fridays through Sundays and on some holidays, from May through December, all of PART’s services are in the western half of the county. One route crosses the border into northern Westchester County. The Putnam County Department of Planning, Development and Public Transportation administers the system while First Transit, Inc., a private company, operates the system.

As of September 2011, the base fare was $2.50. MetroCards are not accepted on PART. Except for the system’s central transfer point at Putnam Plaza, there are no fixed stops – passengers can flag down a bus anywhere along its routes. Some stops are also “on-call,” which means that passengers need to phone in advance to schedule a pickup. Service does not operate on Sundays. PART Paratransit operates only when the rest of the system is running, and only in locations within three-quarters of a mile of a PART route. It is not a countywide service.

**Rockland County – Transport of Rockland/Tappan ZEExpress**

Rockland County holds a contract with a Coach USA for the operations and maintenance of Transport of Rockland (TOR) and TAPPAN ZEExpress (TZx) inter-county bus service. Fixed schedules are posted, but passengers can flag down a bus at any safe location along each route.

Rockland County is responsible for the TOR fixed-route intra county bus system which serves 11 local routes with 41 vehicles, and for the TZx inter-county bus service, which uses 21 vehicles. The TZx bus service runs from Suffern to selected locations in Rockland County, then across the Tappan Zee Bridge to Tarrytown and White Plains in Westchester County. TZx buses stop at the Metro-North station in both of these localities, along with other major destinations along the I-287 corridor. Numerous park-and-ride lots also exist throughout the county.

The county operates the demand-responsive system called TRIPS (Transportation Resources Intra-County for Physically Handicapped and Senior Citizens). TRIPS is a curbside-to-curbside, shared-ride paratransit service for Rockland residents with physical or mental disabilities or senior citizens over the age of 60 who find it difficult or impossible to use municipal fixed-route service. The TRIPS bus system has 25 buses.
In May 2011, TOR raised its base fare from $1.50 to $2.00 and eliminated some trips on five of its routes. However, a strip of 10 “SuperSaver” tickets costs $11.00. (The TZx base fare is $3.00, or two SuperSaver tickets.) Fixed schedules are posted, but passengers can flag down a bus at any safe location along each route.

**Municipal Bus Routes in Rockland**

Mini-Trans, which is operated by the town of Clarkstown, has five routes which operate Mondays through Saturdays. The base fare is $1.50. Passengers can flag down a bus at any safe location along each route.

Spring Valley Jitney, a publicly run bus service, runs a single fixed bus route with a $1.50 base fare. Service runs Monday through Saturday.

**COMMUTER BUSES**

New York City acts as a hub for commuter buses, attracting passengers from as close as Hudson County, New Jersey, and as far as Montauk and western Pennsylvania. Commuter buses remain an alternative to driving into the city during rush hour. Most commuter buses operate into the Port Authority Bus Terminal on West 42nd Street and the George Washington Bridge Bus Station on West 178th Street, both in Manhattan. NJ Transit also provides commuter bus service to the Port Authority Bus Terminal and the George Washington Bridge Station. Service is frequent, and serves destinations throughout New Jersey and Rockland County.

Several commuter bus routes bypass the major bus terminals and operate along city streets, especially in Lower Manhattan. The largest such presence is Academy Bus, which offers commuter bus services between Lower Manhattan and multiple locations in New Jersey such as Burlington, Mercer, Middlesex, Monmouth, and Ocean counties. Single ride tickets range between $14 and $21. Taking advantage of federal funds, Academy Bus has increased the number of stops it provides, expanding its ability to serve passengers in Ocean County, New Jersey. Passengers are allowed to transfer between routes at certain stops, allowing for increased mobility into New York. Sussex County, New Jersey, has also received federal funds to operate a local van service that connects to NJ Transit. The service, which costs $1, operates between Route 515 and Route 23, where customers transfer to another bus into New York, with two morning trips and two evening trips.

NJ Transit’s Route 120 also operates peak-directional bus service between Lower Manhattan and Bayonne, New Jersey, and Trans-Bridge Lines operates peak-directional service between Lower Manhattan and the Bethlehem/Allentown/Easton region of Pennsylvania. In addition, Martz Trailways provides service to the Poconos and Scranton and Wilkes-Barre, PA, primarily from the Port Authority Bus Terminal. However, Martz also provides limited service to Lower Manhattan central and eastern Midtown, and points in between.

In June 2011, a $183 million public-private partnership, guided by the Port Authority of New York and New Jersey, launched the rehabilitation of the George Washington Bridge Bus Station. The station will feature a modernized waiting area, create a new 21-gate station, and attract major retailers to its commercial spaces.

A major bus holding company, Coach USA, operates numerous commuter bus services into New York City. Coach USA also operates the Orange Westchester Link (OWL) which provides bus service between Orange County and White Plains, NY. Rockland Coaches, which is

<table>
<thead>
<tr>
<th>Operational Elements</th>
<th>Westchester Bee-Line</th>
<th>PART (Putnam Transit)</th>
<th>Rockland TOR &amp; TZx</th>
<th>Clarkstown Mini-Trans</th>
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</thead>
<tbody>
<tr>
<td># Route Miles</td>
<td>831.9</td>
<td>NA</td>
<td>154</td>
<td>17</td>
</tr>
<tr>
<td># Routes Operated</td>
<td>59</td>
<td>4</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td># Stations / Major Terminals</td>
<td>3,300+ stations; 4 terminals</td>
<td>Hail Stops</td>
<td>2</td>
<td>Hail Stops</td>
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<tr>
<td># Passenger Fleet</td>
<td>329</td>
<td>12</td>
<td>63</td>
<td>10</td>
</tr>
<tr>
<td># Paratransit Vehicles</td>
<td>81</td>
<td>12</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td># Maintenance Fleet</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
owned by Coach USA, operates about 20 bus routes in Rockland County, New York, and Bergen County, New Jersey, with service to both the George Washington Bridge Bus Station and Port Authority Bus Terminal.55 Some service operates consistently throughout the day, while other services are more commuter-oriented. Depending on distance traveled, fares ranged between $1.50 and $9.80 as of September 2011. Leprechaun Lines provides bus service between various points in Dutchess County and White Plains.

More intercity buses are enforcing rules about quiet commutes, similar to “quiet cars” on trains. Lakeland Bus Lines, serving various destinations in New Jersey, has responded to passenger and driver complaints about loud cell phone users by restricting phone calls to emergencies only. Signs within the buses instruct passengers of the rule, while drivers can also instruct passengers.56 Meanwhile, Lakeland Bus Lines increased its fare for routes traveling to New York City in June 2010 by roughly 9 percent.

Hampton Jitney, in existence since 1974, operates a fleet of luxury motor coaches providing all-year service between Eastern Long Island (including the North and South forks and the Westhampton areas) and New York City. Hampton Jitney’s Ambassador Class provides a premium service offering more space and amenities. Fares on the Hampton Jitney range between $22-$30 one way and $44-$53 round trip, and on the Ambassador Class between $45 one way and $80 round trip.57

In order to provide additional options to commuters in Danbury, CT, the MTA began a shuttle bus between New Fairfield, CT and the Metro-North Railroad station in Southeast, NY. The service provides five morning trips and eight evening trips. Funding is provided by NYSDOT and ConnDOT. Connecticut’s Housatonic Area Regional Transit (HART) provides similar service to two rail stations in New York. Bus service is provided in both directions between Federal Road Park-and-Ride in Danbury and Brewster station in New York throughout the day. Service to Metro-North’s Katonah station in New York is provided from Ridgefield, CT during peak hours.58 CT Transit operates the I-Bus Express service between Stamford, CT and White Plains, NY.59

Various inter- and intrastate bus routes have installed geographic positioning system (GPS) technology on their buses as a precaution in case of a hijacking.60 Using GPS, dispatchers can find the location of the bus, remotely control its speed, and also stop the bus from being restarted. Gray Line, Coach USA, DeCamp Bus Lines and NJ Transit have all installed the GPS system on their buses. Funds were provided by the Department of Homeland Security.

LONG-DISTANCE BUSES

New York City is also a major hub for long-distance buses from destinations such as Boston and Washington, DC, but also from more distant cities such as Toronto and Atlanta. Many intercity buses operate into the Port Authority Bus Terminal and the George Washington Bridge Bus Station. Newer intercity bus routes allow the boarding and alighting of passengers along city streets.

Leading the resurgence in intercity bus travel has been the introduction of discount operators like Megabus, a Coach USA brand, and BoltBus, a joint venture of Greyhound Lines and Peter Pan Bus. Megabus and BoltBus offer discount express city travel between New York and various destinations throughout the eastern United States and into Canada. With some tickets costing as little as $1, the buses serve major destinations including Washington, D.C., Boston, Philadelphia, Albany and Toronto. Both of these companies started in 2008, and their service continues to expand.61 Other bus companies offer less variety in destinations but the same quality of service, including Vamoose Bus, which operates to Lorton, VA via Bethesda, MD and Arlington, VA, and LimoLiner, which operates to Boston Back Bay Station via Framingham, MA.62 All of these discounted services arrive in Midtown Manhattan, instead of the Port Authority or George Washington Bridge Bus Station.

“Chinatown” buses, which began providing intercity service in the late 1990s, also operate often and at competitive prices. Such major bus companies include Fung Wah and Lucky Star, which both provide service to Boston, MA, from local streets in the Chinatown area. Both buses cost $15 per ride, which is slightly cheaper than Megabus and Bolt Bus.63 These buses make Wi-Fi available, another perk for customers.

The allocation of curb space and the designation of bus stops has also been an issue for curbside pickup and drop off services within New York City. NYCDOT works closely with companies that wish to have dedicated areas on the sidewalk for their services, and applications must be approved by community boards in order to be signed.

Recent accidents involving intercity buses have led to a push for more regulations, along with increased enforcement of already existing guidelines. On May 31, 2012, USDOT’s Federal Motor Carrier Safety Administration shut down 26 intercity bus operations largely controlled by three companies, citing them as “imminent hazards to public safety.” Most of these companies were located in the eastern United States, and transported over 1,800 passengers a day along the I-95 corridor, including New York.64 Three of these companies had already been ordered to cease service but were continuing to operate anyway; nu-
merous other violations such as lack of vehicle inspections, failure to use commercially licensed drivers, and failure to implement drug and alcohol testing programs were also cited. The three bus companies’ complicated ownership and management structures also contributed to their ability to stay in service despite several of their carriers having had their operating authority revoked.65

TOUR BUSES

With the exception of chartered buses, tour buses are distinct in that they generally stay confined to New York City. Their passengers are not commuters, but rather tourists who are either riding in a closed loop or using a system of “hop on-hop off” routes to visit specific attractions or neighborhoods. Therefore, these buses often occupy road space without their motor coaches or passengers being counted in standard baseline traffic counts.

Although bus tourism has historically been confined to the Manhattan Central Business District with the occasional foray into Brooklyn, tour buses are now a more common sight in upper Manhattan, Brooklyn and the Bronx. Both Gray Line and City Sights tours’ uptown loops now include Harlem, and each has a separate loop serving Brooklyn.66 At least two tour operators now provide regular Bronx tours.67

The burgeoning bus tour industry has expanded not just to other boroughs, but to topic-specific tours, often centered on popular TV shows, local foods, or specific cultural sites. For example, in July 2012, one website advertised separate tours catering to tourists interested in Harlem gospel performances, pizza, and fans of the television show “Sex and the City.”68

The question of where to store inactive tour buses in Lower Manhattan has also become more pressing as tours visit the World Trade Center site. A new Vehicle Security Center is being built, which will have the capacity to store 80 buses.69

FERRY COMPANY OPERATED BUSES

NY Waterway also operates a network of free bus routes in Manhattan providing connecting service to its West 39th Street terminal. Five peak-period routes provide crosstown service to locations as far east as 3rd Avenue via 57th Street, 49th/50th streets, 42nd Street, 34th Street and 23rd Street; the 23rd Street route loops south to the West Village.70 A separate, more condensed network of routes serves western Manhattan during off-peak periods.71 An additional peak-period bus route connects the company’s ferry service at East 34th Street to a Midtown loop via East 34th Street, 6th Avenue, East 48th Street and Lexington Avenue.72 NY Waterway also operates free bus services in New Jersey.
4. FERRIES AND OTHER SERVICES

FERRIES

The island of Manhattan is well-connected to its surroundings by ferries, which access locations as far south as Middlesex and Monmouth counties in New Jersey. Long Island and Connecticut are also connected via two ferry routes. Within New York City, the major ferry operators include NYCDOT, which operates the Staten Island Ferry; NY Waterway, BillyBey and SeaStreak. Major terminals include St. George Terminal in Staten Island, Whitehall Terminal, the Battery Park City Terminal at the World Financial Center, and various other piers along the East and West sides of Manhattan.

The Staten Island Ferry, the busiest and most frequent water transportation service in the New York City area, operates an extensive peak and off-peak schedule, connecting St. George Terminal on Staten Island to Whitehall Terminal at the southern tip of Manhattan. In 2011, the Staten Island Ferry carried almost 22 million passengers, its highest ridership ever, making 110 weekday trips between the two terminals, 77 trips on Saturdays and 68 trips on Sundays. In recent years, the Staten Island Ferry has transitioned to burning ultra-low sulfur fuel and embarked upon a fleet-wide emissions reductions program with the installation of various technologies. Subsequent to this endeavor, the New York City Council passed local laws that mirror NYCDOT’s emission initiatives. In addition, in 2012 the Staten Island Ferry received a $3 million grant under the Ferryboat Discretionary Fund to retrofit LNG-powered engines on one of the smaller ferryboats.

In 2011, New York City introduced a 3-year pilot for an East River Ferry service as an alternative to the other modes of transit that currently cross the river between Brooklyn, Queens and Manhattan. The New York City Economic Development Corporation currently contracts with NY Waterway to run the service, while providing $9 million from the city. The new ferry service makes stops at Pier 11 near Wall Street in Downtown Manhattan and Fulton Landing in Brooklyn, then makes multiple stops along the Brooklyn waterfront and Long Island City, Queens before reaching East 34th Street in Manhattan. Here, a New York Waterway connecting bus provides access along East 34th Street to 48th Street. Ferries run approximate-
Ferry Services in the NYMTC Planning Area

Lower Manhattan

- Port Imperial Ferry Terminal
- Pier 79, West 39th Street
- Lincoln Harbor, Weehawken
- Hoboken at 14th Street
- Hoboken, South
- Newport, Jersey City
- Paulus Hook
- World Financial Center
- Schaefer Landing
- Fulton Street Landing
- IKEA Landing
- Pier 17, South Street Seaport
- Pier 11, Wall Street
- Whitehall Terminal

See Inset

- New York City
- New Jersey
- Connecticut
- Long Island

Staten Island Ferry

The Transportation System 3-23
ly every 30 minutes between the hours of 6:40am and 7:50pm. In the first four months of operation, weekend ridership was six times higher than the city projected, and average weekday ridership was about twice as high as expected. Though Ferry ridership declined slightly during the winter months, the number of riders continued to be higher than expected.77

There are a number of tourist ferries in the New York City area. The Circle Line is one of the oldest and largest tour companies to offer sightseeing cruises. They offer 3-hour and 2-hour cruises as well as shorter ones around the city. The New York Water Taxi has been a New York fixture since 2002, beginning with a fleet of five distinctive black and yellow checkered vessels. Some of the tours that they have provided are hop-on/hop off service to many attractions for the price of one pass. They also provide service to the Statue of Liberty, Ellis Island, and IKEA in Red Hook, Brooklyn. Statue Cruises is the concessioner authorized by the National Park Service, Department of the Interior, to serve the public at the Statue of Liberty National Monument and Ellis Island. In addition, while the Staten Island Ferry is a passenger service ferry operated by NYCDOT, the 5-mile, 25-minute ride serves as a free sightseeing vehicle. However, it is not possible to know what percent of its users are tourists.

Ferries usually operate to Mets and Yankees baseball games during the season, but this service tends to fluctuate by the season and operator. Seastreak offers ticket packages as well as boat only seating to both Yankee Stadium and Citi Field for weekend home games from April to September. Also, Seastreak has begun offering summertime service from Lower Manhattan and Midtown to Martha’s Vineyard, MA.78

On the West Side of Manhattan, a new ferry terminal was incorporated into the World Financial Center in March 2009.79 The new terminal can accommodate five ferryboats allowing multiple vessels to come and go simultaneously. The new facility is expected to boost ridership to and from Downtown Manhattan, with its passenger amenities and increased space.80

The recent and ongoing financial downturn has caused ferry companies to re-evaluate their services. SeaStreak, one of the major companies ferrying customers between Monmouth County and Manhattan, was bought several years ago by a New England company after its original owners filed for bankruptcy.81 After the sale, fares were increased for the service.82 Around the same time, NY WaterTaxi bought Circle Line Downtown, a large tourist ferry, expanding its services beyond just daily commuters, and has since removed itself from the commuter market.83 Between 2008 and 2010, New York Water Taxi ran a ferry service ran between the Rockaways and Lower Manhattan. However, after a government subsidy ended, the service ceased running.84 In November 2012, NYCEDC and Seastreak relaunched a temporary ferry to the Rockaways in the aftermath of Hurricane Sandy.85 New York Water Taxi service between Yonkers and Lower Manhattan also ceased at the end of 2009 after funding from a Lower Manhattan Development Corporation grant ended.86

South Amboy, in Middlesex County, NJ, is also working to bring a ferry service to Lower Manhattan.87 NY Waterway increased service between Jersey City and New York’s World Financial Center in November 2009.88 In March 2011 NYCEDC released its Comprehensive Citywide Ferry Study, which examined, inventoried and prioritized over 40 sites citywide and discussed potential service corridors.

On Long Island, numerous improvements have occurred recently. A new terminal is under construction in Glen Cove, which could house a possible ferry service to Manhattan.89 In Patchogue, a new terminal welcomed its first passengers in April 2010, providing ferries to Fire Island.90 Improvements will be made at the Bay Shore Terminal, while the Ocean Beach Terminal on Fire Island will be completely replaced.91

Ferry service also operates between Orient Point, on Long Island’s North Fork, and New London, CT. The ferry service between Port Jefferson on Long Island and Bridgeport, CT became the first in the nation to hire a fully-trained K-9 team for heightened security.92 Other Long Island ferries connect Shelter Island with Greenport and North Island, and (seasonally) Montauk with Block Island, RI, New London, CT and Martha’s Vineyard, MA. An additional ferry serves Fishers Island, NY from New London, CT.93

In Rockland County, the ferry connecting Haverstraw to Ossining’s Metro-North railroad station has seen increased ridership since its introduction in 2001. This service is operated by NY Waterway for Metro-North Railroad, and allows the distance from Haverstraw to Grand Central Terminal to be covered in approximately 70 minutes. On weekdays, there are fourteen trips leaving Haverstraw and 15 leaving Ossining. A monthly Uniticket (Metro-North and the ferry) costs $328. Haverstraw Ferry Terminal has free parking for up to 300 vehicles.94

**ROOSEVELT ISLAND TRAM**

Supplementing the Roosevelt Island subway station is the Roosevelt Island aerial tram, which operates between the island and a station located at East 59th Street and 2nd Avenue on Manhattan. Originally opened in 1976 as a compromise for islanders waiting for the subway station to be built, the tram, operated by the state-run Roosevelt Island Operating
Corporation (RIOC), now carries over 6,400 people per day between the two stations. The tram operates at 7.5-minute headways during peak hours, 7:00am to 9:30am and 3:30pm to 8:00pm, and at 15-minute headways otherwise, while the overall trip takes 4 to 5 minutes. At the Roosevelt Island station, the tram connects to the Red Bus Service provided by RIOC, while the 2nd Avenue tram station is within walking distance of the 59th Street-Lexington Avenue subway (N,Q,R,4,5,6) station, as well as the M15 local bus and Select Bus Service, which runs southbound on 2nd Avenue and northbound on 1st Avenue.

From March to November 2010, the tram closed for $25 million worth of renovations. Service improvements include new and sturdier tram cars with wider windows, two cars that run independently of each other, and a faster ride. The system’s expected lifespan was also extended by 30 years. Future renovations will now be easier because of the ability of the two cars to run independently of each other.

Table 3.10 summarizes vital statistics for ferry and tram service providers in the NYMTC planning area.
5. AIR TRAVEL

AIRPORTS

In 2010, over 104 million air passengers passed through the Port Authority of New York and New Jersey’s major airports – John F. Kennedy International (JFK), LaGuardia and Newark Liberty International (Newark) – in 2010. JFK International Airport was used by over 46.5 million commercial passengers in 2010, while LaGuardia Airport was used by nearly 24 million passengers. In August 2010, JFK and LaGuardia airports had an average of nearly 1,100 scheduled daily nonstop departures.

Commercial air travel is available at four airports within the NYMTC planning area: JFK Airport and LaGuardia Airport, both in New York City and both operated by the Port Authority of New York & New Jersey; Westchester County Airport near White Plains, operated by Westchester County; and Long Island MacArthur Airport in Suffolk County, operated by the Town of Islip. Although outside the NYMTC planning area, Newark Liberty International Airport in New Jersey is the metropolitan area’s other major airport. Stewart International Airport, near Newburgh in Orange County, serves areas to the north and west of the NYMTC planning area. Teterboro Airport in New Jersey is perhaps the region’s best-known general and corporate aviation airport. General aviation reliever airports service smaller and slower aircraft and thus relieve congestion at the major commercial airports. In addition, Republic Airport, Brookhaven Airport, Gabreski Airport and Spadaro Airport in Suffolk County also serve general aviation traffic. Taken together, these airports are among the busiest in the nation.

Air freight facilities are available to private carriers at JFK and Newark airports. Both FedEx and UPS operate parcel hubs at Newark Airport, but JFK maintains its prominence as one of the nation’s largest air cargo facilities by volume. Located in one of the busiest regions in the world for goods transport by air, these airports provide intermodal freight facilities to handle and transfer goods to and from other cities, and to local distribution centers, warehouses, and customers.

AirTrain / JFK is an automated rapid transit system serving JFK airline terminals, parking lots, hotel shuttle areas and rental car facilities, and connecting the airport to the MTA transit system. AirTrain / JFK set an annual record for ridership in 2011, carrying approximately 5.5 million passengers – more than double the 2.6 million passengers carried by the system in 2004, its first full year of operation. This rail line provides connections to the NYC Subway system and the LIRR at Jamaica.

Although outside the NYMTC planning area, in November 2007 the Port
Authority also assumed responsibility for Stewart International Airport, 60 miles north of New York City and immediately west of Newburgh. Terminal and access improvements were undertaken by both the Port Authority and the New York State Department of Transportation. In December 2007, the Port Authority earmarked $500 million for improvements to Stewart in its 10-year capital plan. By November 2010, the airport had received a Federal Inspection Service, allowing it to process international travelers. Limited bus service to the Beacon Metro-North railroad station provides a connection to the regional transit network. The Port Authority is continuing efforts to entice additional carriers and destinations to the airport flight schedule.

**HELIPORTS**

New York City has three main public heliports – Downtown Manhattan/Wall Street, East 34th Street owned by the New York City Economic Development Corporation (NYCEDC), and West 30th Street, owned by the Hudson River Park Trust, generating over 106,000 flights from fall 2011 to fall 2012. The majority of these flights were for air-taxi service, followed by commercial, itinerant and military operations. There are also a number of heliports serving medical and police purposes.

Sightseeing in the city by helicopter is appealing to tourists. In April 2010 NYCEDC announced a new Helicopter Sightseeing Plan to minimize the noise and reduce the impact that sightseeing flights have on surrounding neighborhoods. Helicopter sightseeing tours generate approximately $45 million each year for the City’s economy and employ over 300 people.

Several publicly- and privately-owned heliports are located throughout the NYMTC planning area. Some are connected with corporations such as IBM in Westchester and Cablevision in Suffolk, and others are for private and public use. The Haverstraw Heliport in Rockland County and the Southampton Heliport in Suffolk County are the only two public heliports outside of New York City, reporting nearly 2200 and 400 flights respectively during the 2009-2010 year. Within the Nassau, Suffolk, Westchester, Rockland and Putnam counties there are over 50 heliports for private and public use.
Walking and bicycling are among the most sustainable forms of transportation, providing residents in the area with the means for commuting and recreation. Nearly half of the commuters in the NYMTC planning area rely on walking or bicycling as a means of travel to work, in whole or in part.

USER VOLUMES

According to 2010 U.S. Census, the NYMTC planning area has a total population of 12,368,525 residents, an increase of 2.5 percent from 2000; with the total number of workers increasing by 8.6 percent. Table 3.11 shows the Means of Transportation data which are one-year estimates obtained through the American Community Survey (ACS). The ACS one-year estimates capture the most current data and analyzes populations of 65,000 or more. Bicycle commuting has seen substantial growth with a 73 percent increase (18,575 to 32,118) from 2000 to 2010, however, regional bicycle commuting is less than a half percent of all commuters. The number of people walking to work increased 8.7 percent (381,714 to 415,000) though as a percentage of workers, it remained the same at 7.5 percent.

Lower Hudson Valley

NYSDOT has established approximately 338 miles of bicycle routes in Region 8 which consists of the Lower Hudson Valley and encompasses: Westchester, Ulster, Rockland, Putnam, Dutchess, Orange and Columbia counties.

Region 8 is developing several greenway/pathway extensions. NYSDOT continues to work with the East Coast Greenway effort to assist in extending a greenway from Florida to Maine through Westchester County. Rockland County has been actively working with the Hudson River Valley Greenway effort, and has dedicated over 34 miles of the Greenway Trail. Region 8 is also installing bicycle racks at park and ride locations where there is a significant bicycling community, and is also working to encourage multi-modal connections in the region.

The existing regional bicycle and pedestrian trailways and pathways in Westchester County consist of off-road paths, road shoulders and bicycle routes along selected roads. Most off-road paths are multi-use, though some are restricted for pedestrian only. Paths along major roads and corridors are primarily intended for bicycle use. Pedestrian facilities also include extensive sidewalk networks in many Westchester communities. In 2012, the City of White Plains designated a 1.6 mile one way pair of on-street bike lanes on Martin Luther King Boulevard and South Lexington Avenue, linking residential areas of the city with the downtown, Metro-North Railroad station and Bronx River pathway.
New York City

NYSDOT, Region 11 has established policies and procedures to ensure that pedestrian/bicycle needs are accommodated at the early stages of a project development. This strategy by NYSDOT has enhanced New York City’s pedestrian/bicycle network over the years with for example the Bronx River Greenway and the Route 9A Walkway/Bikeway projects.

For over a decade, New York City has been expanding its network of bicycle lanes, shared lanes and on-and-off street bicycle paths. In June 2009, NYCDOT accomplished the goal of building 200 miles of bicycle facilities in all five boroughs within three years, nearly doubling the citywide on-street network. By the end of 2011, more than 539 lane miles of on-street and bridge bicycle facilities had been installed or upgraded throughout the city. Of this total, more than 21 lane miles are on-street bicycle paths physically separated from vehicular traffic. Currently in New York City there are over 160 miles of greenway paths.

In 2011, NYCDOT’s CityRacks Program installed over 13,000 bicycle racks (26,000 parking spaces) since the program began. In addition, since 2007, 19 sheltered bicycle parking structures have been installed, which protect parked bicycles from the elements. New York City also launched Citi Bike, a bike share program, in the spring of 2013. It is a self-service transportation system that provides access to a network of 10,000 bicycles distributed in 600 stations in Manhattan, Brooklyn and Queens.

New York City is one of the nation’s great walking cities, with its walking opportunities and robust transit system. Each year almost 2,000,000 square feet of sidewalk gets repaired by NYCDOT. In addition, many of the 787 bridge structures maintained by NYCDOT have amenities for pedestrians and bicyclists.

New York City is one of the nation’s great walking cities, with its walking opportunities and robust transit system. Each year almost 2,000,000 square feet of sidewalk gets repaired by NYCDOT. In addition, many of the 787 bridge structures maintained by NYCDOT have amenities for pedestrians and bicyclists.

A full discussion of pedestrian and bicycle initiatives appears in Plan 2040: Appendix 2.
ROADWAYS

Functional classification is the process by which roads, streets, and highways are grouped into classes according to the character of service they provide. In New York State there are currently seven functional classifications which are further distinguished as urban and rural yielding fourteen distinct designations. All of the classifications are Federal Aid eligible except three: Urban Local, Rural Minor Collector, and Rural Local (codes 19, 08, and 09, respectively). The respective classes and codes are shown below (the FHWA codes do not contain the urban/rural distinction).

The NYMTC planning area has 32,172.6 lane-miles of arterials, collector roadways and local roadways that serve visitors and the 12 million residents of the region. Many of those roadways see heavy traffic daily, and are part of the aging infrastructure that the NYMTC region is dealing with as it works to upgrade and repair the system.

Local roadways are unique in that people use them by all modes – whether by bus, on foot, on bicycle, or in a vehicle. Local roadways make up 80 percent of the public space available in the NYMTC region, and adjacent land uses depend on parking, bus stops and foot and bicycle traffic to support commerce.

NYMTC member agencies work to meet multiple goals pertaining to the rights-of-way on local roadways in the region. The projects they fund with federal support reflect these multiple goals, such as reducing congestion, improving air quality, improving the quality of life, and increasing safety. In New York City for example, NYCDOT resurfaces 1,000 lane-miles of local roads each year, in addition to regularly maintaining all roadways in cooperation with the New York City Department of Sanitation. NYCDOT also inspects all pedestrian bridges regularly as part of its asset maintenance planning.

Fourteen Interstate highways serve the region, linking to major cities in all directions. In particular, I-95 connects the region to the rest of the eastern seaboard. I-80 and I-78 connect the New York metropolitan area to the Midwest, I-84 and the future I-86 connect the NYMTC region to New York’s Southern Tier and northern Pennsylvania, and I-87 (the New York State Thruway) reaches north to upstate New York and Canada.

7. AUTOMOBILE TRAVEL
These major highways are vital to the region’s economy, providing access to both raw material producers and finished goods suppliers across the nation. Interstate highways also link the NYMTC region to foreign trading partners in Canada, Mexico, and the Pacific Rim (via West Coast ports). On a regional scale, these Interstate highways combine with 14 expressways and 36 parkways to support regional automobile and truck travel, including commuter trips by car and bus, shopping and recreational trips, business-related trips, and distribution of freight and consumer goods by trucks and delivery vans. High Occupancy Vehicle (HOV) lanes in the NYMTC region such as along I-278 in Staten Island and Brooklyn offer carpoolers travel time savings and help improve regional air quality by incentivizing a reduction in single-occupancy vehicles. A comprehensive local street network serves as the final link in long-distance and regional trips while supporting local travel by buses, trucks, bicycles, taxis, and private automobiles. I-287 has been undergoing a 10-year update by NYSDOT. Local traffic is being separated from highway traffic by means of service roads paralleling the highway, and exits 8 and 8E are also being reconfigured to improve traffic flow.

New signs have been installed on the Long Island Expressway (LIE) informing drivers of the estimated time it takes to get to the next exit, and whether or not to expect delays. The signs were added to 19 locations on the expressway. Meanwhile, a seven-mile stretch of the road between exits 35 and 41 averages between 169,000 and 222,000 drivers per day and, as a result, requires improved lighting, increased pull-off areas, and better conditions for police officers. Portions of the LIE within Suffolk County will also see the addition of steel cable barriers such as those being installed on an 11-mile stretch in Brookhaven. The town of Riverhead will receive them by 2015.

New York City received federal TIGER funds to study the 1.3-mile Sheridan Expressway in the Bronx. The multi-agency effort involves working with residents, elected officials, and area businesses to develop recommendations for a more viable relationship between vehicular access and the needs of the surrounding community. Results from the study will feed into NYSDOT’s study of the state-owned expressway. In addition to analyzing the transportation network, New York City’s study looks at potential land use development in the area. The goal of New York City’s study is to chart a way forward with New York State that will balance the needs for community infrastructure, revitalization and open space with those for better commercial vehicle access and improved infrastructure for the Hunts Point Market and other businesses.

### BRIDGES

Millions of vehicles per day within the NYMTC region travel on bridges, ranging from small crossings to larger bridges such as Tappan Zee Bridge, which connects Rockland and Westchester counties. None of the bridges in the 10-county region are rated among the worst in the country. Suffolk, Richmond and Nassau counties maintain the lowest percentage of deficient bridges in the state, while the Bronx has the highest in the region (18.5 percent).

Bringing both I-87 and I-287 over the Hudson River, the Tappan Zee Bridge is an important link on the New York State Thruway system. However, the bridge carries more traffic now than was expected when it was first built, while maintenance is becoming costly. To remedy these increasing costs, the bridge replacement was nominated for an expedited federal environmental review in 2011. Construction of the replacement bridge could start as soon as 2013 and will take about 4 years to complete.
The Henry Hudson Bridge, which connects the Bronx and Manhattan, is currently undergoing a three-year, $33 million replacement project. The project replaces steel curb stringers (longitudinal beams that support the bridge deck) on the upper roadway in several phases, allowing cars continuous use of the bridge. One side of the bridge will be done at a time, maintaining passenger movement; the pedestrian walkway will also stay open through construction. The construction is expected to be complete in 2015.

A new ramp between Randall’s Island (which lies between East Harlem in Manhattan, the South Bronx, and Astoria in Queens) and the Robert F. Kennedy (Triborough) Bridge opened on April 5, 2010. The ramp is connected to the south- and eastbound lanes, allowing drivers from the Bronx access to the island. The goal is to reduce congestion on other parts of the bridge while improving overall traffic flow and providing increased access to parkland.

In order to improve traffic flow on the Throgs Neck Bridge, connecting Queens and the Bronx, a new traffic pattern was constructed on the Bronx-bound ramp. The new pattern is a trial project being tested as the $100 million approach construction is expected to start in 2014, and may cost up to $1.7 billion.

Four new designs have been released for the replacement of the Kosciuszko Bridge, which connects Brooklyn and Queens via the Brooklyn-Queens Expressway. The new bridge, no matter which design is chosen, will have greater capacity than the existing bridge by providing five Brooklyn-bound lanes and three Queens-bound lanes. The bridge will also include a pedestrian walkway and a bike path. Construction is expected to start in 2014, and may cost up to $1.7 billion.

The Alexander Hamilton Bridge Rehabilitation Project is the largest single-contract construction project in the history of the New York State Department of Transportation and is being funded almost entirely by federal funding. The bridge spans the Harlem River and connects Manhattan and the Bronx. Construction began in the spring of 2009 and is scheduled to continue until the end of 2013. The bridge rehabilitation involves many different elements of construction. The deck of the bridge will be completely replaced with a new concrete deck. The project also involves retrofitting (strengthening) the steel arch span and steel support beams that make up the substructure of the bridge. The steel will additionally be painted in order to protect it from the weather and the support piers and foundation will be replaced or repaired. Furthermore, park areas around the bridge will be redesigned and improved.

The Willis Avenue Bridge, which connects 1st Avenue at 125th Street in Manhattan with Willis Avenue in the Bronx, was completely replaced in July 2010 by NYCDOT. This marks the end of a $612 million project to replace the bridge, put out to bid in 2007. Replacement was necessary because of years of wear and tear due to the high volume of cars that use the bridge every day. The bridge was built near Albany and floated down the Hudson River before being set in place.

PRIVATE VEHICLE TRAVEL

The NYMTC region is home to approximately 6,371,000 licensed drivers, 4,749,000 registered private vehicles and over 204,000 commercial vehicles. Population and employment trends, as well as other socioeconomic conditions within the region play an important role in private vehicular travel. As population and employment grow, so does the need to facilitate the movement of people and goods.

NYMTC forecasts significant growth in employment for the year 2040, over 23 percent. The Lower Hudson Valley is expected to have the largest percentage of employment growth in the NYMTC planning area. Furthermore, New York City’s strong economic output will produce an increase in commuting and transport of goods. Vehicular travel is

Table 3.12
Summary of Toll Rates at MTA Crossings, 2008-2013

<table>
<thead>
<tr>
<th>Bridge</th>
<th>Before July 12, 2009</th>
<th>12-Jul-09</th>
<th>30-Dec-10</th>
<th>3-Mar-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verrazano-Narrows Bridge*</td>
<td>Cars $10.00/$8.30</td>
<td>$11.00/$9.14</td>
<td>$13.00/$9.60</td>
<td>$15.00/$10.66</td>
</tr>
<tr>
<td></td>
<td>Trucks $20.00/$15.30</td>
<td>$22.00/$16.50</td>
<td>$26.00/$17.32</td>
<td>$30.00/$19.24</td>
</tr>
<tr>
<td>Major crossings</td>
<td>Cars $5.50/$4.15</td>
<td>$5.50/$4.57</td>
<td>$6.50/$4.80</td>
<td>$7.50/$5.33</td>
</tr>
<tr>
<td></td>
<td>Trucks $10.00/$7.50</td>
<td>$11.00/$8.25</td>
<td>$13.00/$8.66</td>
<td>$15.00/$9.62</td>
</tr>
<tr>
<td>Henry Hudson Bridge</td>
<td>Cars $2.75/$1.90</td>
<td>$3.00/$2.09</td>
<td>$4.00/$2.20</td>
<td>NO CASH/$2.44</td>
</tr>
<tr>
<td></td>
<td>Trucks No Trucks Allowed</td>
<td>No Trucks Allowed</td>
<td>No Trucks Allowed</td>
<td>No Trucks Allowed</td>
</tr>
<tr>
<td>Rockaways bridges**</td>
<td>Cars $2.50/$1.55</td>
<td>$2.75/$1.71</td>
<td>$3.25/$1.80</td>
<td>$3.75/$2.00</td>
</tr>
<tr>
<td></td>
<td>Trucks $5.00/$3.75</td>
<td>$5.50/$4.13</td>
<td>$6.50/$4.33</td>
<td>$7.50/$4.81</td>
</tr>
</tbody>
</table>
expected to rise throughout the region, with Putnam County and Staten Island seeing the greatest increases.

TOLLING

Transportation infrastructure funding has come under increasing pressure in recent years, leading to a search for new funding streams. One option, which has been proposed numerous times but never implemented, is to toll the NYCDOT-owned East River bridges.¹⁰³

Two sets of toll increases at Port Authority crossings have occurred over the past 5 years. In March 2008, the E-ZPass toll on Port Authority crossings increased from $4.00 to $6.00 during off-peak hours and from $5.00 to $8.00 during peak hours. Low-emission vehicles, however, were able to register for a “GreenPass” which kept their tolls at $4.00. Faced with decreased revenue and a lengthy list of critical infrastructure needs, the Port Authority approved the following rate hikes: a $1.50 E-ZPass toll hike in September 2011, followed by an additional $0.75 increase each year through 2015; a $2.00 per axle toll increase for trucks in September 2011, followed by an additional $2.00 increase each year through 2015. (Additional surcharges applied to cash fares, but in February 2010 the Port Authority authorized buying new toll collection equipment which would accommodate cashless tolling in the future.) In 2013, the E-ZPass toll for cars is $8.25 during off-peak hours and $10.25 during peak hours, while the cash toll is $13.00.

Toll increases on MTA crossings have occurred three times over the past 5 years. Exhibit 3-7 summarizes these changes below.

TAXICABS AND LIVERY CABS

Taxis and livery vehicles are an important part of the region’s transportation system, both in Manhattan, where they are a primary mode of transportation for many trips, and in outlying areas where they provide important links to and from train stations and offer mobility to population segments that cannot or do not wish to drive such as the elderly. Recent developments related to taxis and livery cabs may reshape and expand their transportation roles within New York City. Taxis also operate outside New York City within the NYMTC region, although not with the same degree of frequency.

Present in great numbers throughout New York City, especially Manhattan, the yellow taxicab is a vital mode of intracity transportation. There are more than 13,000 taxicab medallions in New York City, with more than 3,000 additional medallions in the suburban areas. Taxis provide a convenient and flexible transportation choice for a wide range of riders, including those with disabilities and seniors. Livery cabs, on the other hand, are particularly useful for shorter trips, door-to-door service, and for those who may not wish to drive themselves. The number of livery cabs has grown significantly in recent years, with more than 1,500 licensed vehicles in New York City alone.

¹⁰³ Source: New York City Department of Transportation (NYCDOT)
New York City’s mayor announced a contest to design the “Taxicab of the Future,” with three main manufacturers competing. The van-style taxi by Nissan (NV200 model) was selected and will begin to enter service in 2013. As part of the mayor’s push for a “greener” city, these taxis are more fuel efficient, include better passenger safety features, and are expected to have a smoother ride for the passenger. Efforts are also being made to make taxis more ADA (Americans with Disabilities Act) compliant.

A recent plan to launch new street-hail taxi service for northern Manhattan and the four other boroughs, by allowing livery cabs to be hailed as are traditional taxis, was halted in June 2012 by a New York State judge, who ruled that the city and state Legislature violated the so-called home rule provision of the state constitution. (The clause says the state may pass a law directly affecting the affairs of a single municipality only if that city’s legislative body has voted to allow it.)
Chapter 3

8. RAIL FREIGHT

History and geography have combined to limit rail freight access between the NYMTC planning area and points south and west (for more information on freight please see Plan 2040: Appendix 8 for the Regional Freight Plan - Interim Plan Summary Report). Six of the 10 NYMTC counties are on islands east of the Hudson River and Arthur Kill; only Rockland lies west of the Hudson. While eight vehicular bridges and tunnels span the Kill Van Kull and the Hudson River within the NYMTC planning area, only the Arthur Kill Lift Bridge brings rail freight traffic to Staten Island from the national rail network in New Jersey and beyond and that rail service is limited to Staten Island. In 1974 a fire closed the Poughkeepsie railroad bridge which was the only rail crossing between New York City and Albany. Since then, to reach anyplace in the NYMTC planning area except Staten Island, freight trains have traveled north up the West side of the Hudson, across the Hudson using the Castleton Cutoff, and then back down the East side of the Hudson (sharing commuter rail track), a detour of 240 miles.

East of the Hudson much the regional rail network is primarily dedicated to passenger service. This contributes to the NYMTC planning area shipping only approximately one percent of its freight by rail. However, the PANYNJ has taken steps to encourage more freight. In September 2008, PANYNJ bought New York New Jersey Rail LLC, a company that transfers rail cars by barge between the Greenville Yards in Jersey City and the 65th Street Yard in Brooklyn. The Port Authority also embarked upon a $118.1 million expansion of the facility to allow it to handle significantly higher volumes, including foodstuffs, lumber and construction materials, biodiesel, and plastics eastbound and scrap metals, autofluff, and municipal solid waste westbound. Planned improvements include new, larger carfloats, a replacement transfer bridge, new locomotives, new fendering in Greenville and Brooklyn, and new supporting track. The project is projected to take 360,000 trucks off the road annually, freeing up space in trans-Hudson tunnels and bridges.

Staten Island has also played a large part in converting truck freight to rail freight. Following the creation of ExpressRail at the New York Container Terminal in northwest Staten Island, the terminal saw an increase from 451 containers moved by rail per month in 2007 to more than 5,000 per month in 2008. Capacity for the new facility is 100,000 containers a year. Five tracks in the facility (with plans to expand to eleven) connect to the reactivated Staten Island Railroad, which connects to the Conrail Main Line in Elizabeth, NJ New York Economic Development Corporation, on behalf of the New York Container Terminal in Staten Island, also received $1.55 million in order to replace one locomotive with a new, environmentally friendly model. Less than one percent of freight on Long Island is shipped by rail. However, ef-
forts are being undertaken to increase that percentage. In September 2011, Suffolk County saw its first new rail yard in Yaphank, called the Brookhaven Rail Terminal. The $40 million facility accepts rail freight, which is then transferred to trucks for local delivery. The goal of the facility is to reduce traffic and emissions from 40,000 trucks annually by reducing truck trips to short-haul and local trips originating at the terminal. Space at the facility exists for expansion. A restored spur off the Long Island Rail Road Main Line to the western edge of Enterprise Park at Calverton also opened in September 2011. Future phases could bring the spur through the business park to connect to more businesses.

Rail freight on Long Island is carried by the New York & Atlantic Railway, a subsidiary of Anacostia & Pacific Company, Inc., or trucks owned by LIRR. In order to cut down on idling engines in Glendale, the New York & Atlantic Railway will spend $1 million to install devices that reduce emissions and make the trains quieter by cutting down on idling time.

Meanwhile, a CSX Corporation freight train facility situated in Middle Village, Queens will be moved to a less residential area, which is several hundred feet southwest of 69th Street near All Faiths Cemetery. The trains carry municipal solid waste, and occasionally idle in the neighborhood. After complaints by residents about noise and odors, NYSDOT and CSX reached an agreement to move and divide the facility. One staging area will be moved closer to the All Faiths Cemetery while the second staging area will be relocated less than 500 feet from its current location.

Fourteen grade crossings will be examined by CSX, New York State and Rockland County in order to improve safety. The $8 million project will install crossing gates and other safety measures to create a “Quiet Zone”; without these gates, CSX is required by law to sound its horns as it passes through the intersection. The goal of the project is to improve rail freight movement through the county, and also keep pedestrians and drivers safe while improving quality of life.

Along with track improvements, CSX bought four Generator Set (gen-set) locomotives for its Oak Point Yard in the Bronx using NYMTC Congestion Mitigation Air Quality (CMAQ) funding. These locomotives reduce nitrous oxide and particulate matter emissions by 80 percent while also reducing carbon dioxide emissions. This is part of a CSX systemwide locomotive upgrade. Also at the Oak Point Yard, CSX will rebuild track and increase clearances by using funds from NYSDOT.

In June 2011, NYSDOT and the CUNY Institute for Urban Systems released its Consideration of Potential Intermodal Sites for Long Island report. The document considers various locations throughout Long Island for a rail/truck freight facility. Thirteen locations were studied in both Nassau and Suffolk counties. Criteria ranged from necessity to amount of free space to accessibility to the LIRR. Ultimately, the report recommends the Pilgrim State Hospital site due to its central location on Long Island, its connection to the LIRR, and its large size.

Another notable project is the development of freight villages in the NYMTC planning area. As the volume of freight increases in the NYMTC planning area, efforts are being made to utilize existing older industrial sites as staging areas for improved and more efficient distribution areas. These areas, commonly referred to as freight villages, will include not only the more traditional distribution functions but also facilities for taking semifinished goods and creating customized finished products. This complete approach to distribution and product development will promote the rational and efficient use of land, relieve traffic congestion among freight vehicles and promote economic development by increasing job opportunities.
Freight Transportation Networks in the NYMTC Planning Area

- Air freight facilities
- Major publicly-operated marine cargo terminals
  - Private marine terminals
- Truck routes
- Freight rail network
- PANYNJ Float service
Cars carry the vast majority of freight in the NYMTC planning area, transporting up to 80 percent of all freight tonnage (please see Plan 2040: Appendix 8 for the Regional Freight Plan - Interim Plan Summary Report). Truck traffic is expected to grow, with estimates ranging from a 39 percent increase by 2035 to a 47 percent increase from 1998 levels by 2025. Improving freight access across the region is a key initiative for NYC-DOT and its regional partners. There are approximately 5,800 miles of streets within the five boroughs of New York City, including approximately 930 miles of truck routes. To help truck drivers navigate to their destinations in the City, NYCDOT produces a truck route map and a parkways guide which identify the legal routes for trucks in New York City. Additionally, regulatory and guidance signage are provided to direct trucks to these routes.

Trucks are restricted in many parts of the NYMTC planning area. For example, trucks are not allowed on most parkways in New York State, due to the relatively low clearance of the bridges and roadways. This restriction causes trucks to rely on already congested roads in the NYMTC planning area. In 2006, congestion was estimated to cost the New York City economy $13 billion annually as people and goods were stuck in slow-moving traffic. A lot of that daytime congestion is created by trucks utilizing the streets while making deliveries.

NEW YORK CITY SUSTAINABLE DELIVERY INITIATIVES

To facilitate truck mobility by reducing the impact of goods movement during the most congested periods of the day, NYCDOT has implemented two programs to address congestion related to truck deliveries: Delivery Windows and NYC deliverEASE.

Delivery Windows establishes dedicated truck loading and unloading zones dur-
ing peak delivery hours in the morning and allows passenger vehicles to park outside of the Delivery Window hours. Delivery Windows are typically installed alongside other NYCDOT efforts to manage curb access and traffic congestion such as: bus rapid transit (i.e. Select Bus Service), curbside bike lanes, Park Smart peak-rate parking programs, and congested corridors programs. In 2010, a Delivery Windows program was implemented on a section of Church Avenue in Brooklyn to address congestion from double parking. Before the program was implemented, double parked trucks blocked traffic for more than three hours a day and travel speeds were less than 10 miles per hour along much of the corridor. The corridor experienced a 21 percent improvement in travel time within four months of the project being installed. The Delivery Windows program has also been implemented in locations in Manhattan and the Bronx and is being explored for congested corridors citywide.

NYC deliverEASE, a program funded by USDOT and initiated by NYCDOT and Rensselaer Polytechnic Institute (RPI), is an off-hour delivery program focused on reducing congestion during the day. By shifting deliveries to the off-hours, between 10:00pm and 6:00am, this program increases the competitiveness of the businesses located at the core of the city while also easing traffic congestion during the most congested hours of the day. In 2010, NYCDOT served as the lead coordinating agency for the USDOT Research and Innovative Technology Administration-funded Off-Hour Delivery Pilot. The Manhattan Off-Hour Delivery Pilot research team was led by RPI and included Rutgers University, the Rudin Center at New York University’s Wagner School, and ALK Technologies. Participating businesses agreed to shift their deliveries to between 7:00pm and 6:00am. Businesses found that fewer deliveries during normal business hours allowed them to focus more on their customers, and improved staff productivity. Carriers found that their trucks could make more deliveries in the same amount of time, they saved money on fuel costs, they used a smaller fleet by balancing daytime and nighttime deliveries, and legal parking was more readily available. Their drivers reported feeling safer and less stressed. The pilot also demonstrated the viability for permanent implementation of off-hour deliveries on an expanded scale.

TRUCK PARKING

Truck parking is an important aspect of goods movement. A NYMTC study found that peak demand for truck parking often exceeds 100 percent of available capacity, meaning there are not enough spots for trucks within the region. If nothing is done to reduce parking demand, NYMTC anticipates that peak demand will more than double by 2030. When parking areas lack space, many trucks park along the shoulders of highways like I-84 or NY303 in Rockland County.

The same study found that nearly 60 percent of truck drivers interviewed had started their trips in New York and New Jersey, while 50 percent of their destinations were in either New York or New Jersey. The most cited starting points include Elizabeth and Newark, NJ; and the Bronx, and Farmingdale, while the most cited endpoints include Plattsburgh, the Bronx, Newburgh, and Brooklyn.
10. WATERBORNE CARGO

New York Harbor and its tributaries are home to one of the largest concentrations of public and private marine terminal facilities in the United States. These facilities serve containerized cargo, petroleum and chemicals, automobiles, and other critical commodities, as well as passengers utilizing the region’s extensive ferry networks. Within this larger Port of New York/New Jersey (PONYNJ) district – which includes facilities in New York City, New York State, and Northern New Jersey – the Port Authority of New York & New Jersey (PANYNJ) and the City of New York are the main public facility operators, with private companies offering port services related to crude oil transport and passenger cruises (please see Plan 2040: Appendix 8 for the Regional Freight Plan - Interim Plan Summary Report).

In New York City, there are three major publicly-owned port facilities, including the Howland Hook Marine Terminal (including the New York Container Terminal and Port Ivory rail yard), the Brooklyn-Port Authority Marine Terminal (including the Red Hook Container Terminal, Brooklyn Piers, and Brooklyn Cruise Terminal), and the South Brooklyn Marine Terminal. Hempstead in Nassau County and Port Jefferson in Suffolk County also handle significant volumes of freight, while several passenger ferry terminals mentioned above accommodate passenger traffic. Facilities outside the NYMTC planning area include the large terminals at Port Newark/Elizabeth as well as smaller niche and reliever ports at Port Jersey and The Peninsula at Bayonne Harbor in northern New Jersey; and the Ports of Stamford, Bridgeport, New Haven, and New London on Long Island Sound in Connecticut. In addition to these publicly-operated marine cargo terminals, a large number of private terminals operate along the waterfront in the region.

As economic conditions stabilized somewhat in 2010, the Port Authority reported a 16 percent increase in cargo traffic from 2009, bringing Port of New York and New Jersey activity nearly back to its record levels of 2007. Total cargo volume increased from 28.2 million metric tons in 2009 to 32.2 million metric tons in 2010. Twenty percent of the port’s traffic is discretionary – that is, its cargo could be handled by other ports since its ultimate destination is not the New York metropolitan area.

The Port Authority has undertaken several initiatives to expand waterborne port
commerce and capacity. One major initiative in Staten Island was the June 2007 reactivation of the western portion of the Staten Island Railroad’s North Shore Line under the name ExpressRail Staten Island. The rail link, which required rehabilitating the Arthur Kill Lift Bridge, connects the New York Container Terminal in Staten Island and the New Jersey’s Chemical Coast Line, which in turn connects to the national rail network. By the end of its first year of operation, monthly container volume on ExpressRail Staten Island had grown from 451 to over 5,000, removing 70,000 trucks from the Goethals Bridge in its inaugural year. By 2009, the Port Authority was offering financial incentives to shippers using any of the ExpressRail network which includes trackage in Newark and Elizabeth, as well as Staten Island.

In late 2008, PANYNJ assumed responsibility for resuming the long-dormant Cross Harbor Freight Movement EIS, and also bought New York New Jersey Rail LLC and its rail carfloat assets. The agency secured FHWA approval to commit federal-earmark and PANYNJ matching funds to modernizing the service. Damage from Superstorm Sandy in late 2012 briefly set back steady progress in rebuilding car float volumes, but PANYNJ is advancing capital improvements in both states under a revised agreement with FHWA. In October 2009, PANYNJ extended its leases at the Howland Hook Marine Terminal (to 2058) and the Brooklyn cruise-ship terminal (for 20 years).

A more physical challenge faces the Port Authority at the Bayonne Bridge, which has a clearance of 151 to 156 feet above the Kill Van Kull. The next, taller generation of container ships, which are expected to access port facilities west of the bridge once an expansion of the Panama Canal is complete in 2014, would not be able to pass under the bridge. In September 2009, the Port Authority released a study by the U.S. Army Corps of Engineers, analyzing potential solutions to this problem. After a $1 billion commitment in September 2010, the authority announced that it had decided to increase the existing bridge’s clearance to 215 feet by rebuilding the existing bridge deck, approaches and ramps at a higher elevation while preserving the span’s iconic arch.

The Port Authority hopes to replace the existing span, which has four 10-foot-wide lanes, no shoulders, and no bicycle-pedestrian access, with a span that has six 12-foot-wide lanes, full shoulders, a sidewalk/bikeway, and separate room for a future transit service. A final environmental impact statement for the project was completed in August 2010, and the United States Coast Guard signed off on the project in January 2011. Along with major expansion plans in New Jersey in 2008, the authority undertook several other port-related initiatives, many of them having to do with improving air quality. In 2008, the authority set an ambitious goal to be carbon-neutral by 2010 by making operational improvements and investing in low- or zero-emission energy-efficient infrastructure. Over the next two years, the authority provided financial incentives to freight operators who purchase new or retrofitted trucks with emission control technologies; replaced the most polluting older trucks; completed the dockside ExpressRail system; incentivized the use of low-sulfur fuel by oceangoing vessel operators, and provided onshore power for vessels docked at the Brooklyn Cruise Terminal.
ENDNOTES


2 While the subway system serves 468 individual stations, many of these are connected by free transfers. As of January 2012, there were 420 stations or multistation complexes joined by such transfers.

3 Historical average weekday ridership data provided courtesy of NYCT Office of Management and Budget.


7 Even if it were legal, carbody dimensions, power supply systems and the subway system’s tighter turning radii would make joint service next to impossible.


10 Conversation with Jeff Olwell, Metro-North Market Research, Apr 30, 2013. Does not include 10 Port Jervis Line and four Pascack Valley Line trains which primarily run express through New Jersey en route to New York state.

11 Conversation with Jeff Olwell, Metro-North Market Research, Apr 30, 2013.


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44 Link to report here.

45 Conversation with Naomi Klein, Principal Planner, Westchester County DOT, September 1, 2011.


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<http://cityroom.blogs.nytimes.com/2008/06/06/this-ferry-terminal-will-come-to-you/?scp=1&sq=this%20ferry%20terminal%20will%20come%20to%20you&st=cse> 


<http://www.cainsnewyork.com/article/20080402/FREE/150568948/1066> 


<http://www.glencoeferry.org/projectoverview.html> 

<http://www.nps.gov/fis/parkmgmt/planning-patchogue-ferry-terminal.htm> 


93 Port Jefferson-Bridgeport service is run by The Bridgeport & Port Jefferson Steamboat Company, while the Cross Sound Ferry operates the Orient Point to New London service. For ferries to Shelter Island, see www.northferry.com and www.southferry.com. Seasonal Montauk service is run by Viking Fleet, and the Fishers Island Ferry District runs service to New London.


98 AirNav.com data for Downtown, West 30th Street and East 34th Street heliports. Web. May 1, 2013. An average of 290 combined flights a day were multiplied by 366 to get a total of 106,140 flights. Data for Downtown Manhattan Heliport covers Sep 12, 2011 through Sep 11, 2012, while data for West 30th Street and East 34th Street is for Nov 10, 2011 through Nov 9, 2012.


100 Ibid.

101 AirNav.com data for Haverstraw and Southampton heliports. Web. May 1, 2013. An average of 42 flights a week from Haverstraw and 33 flights a month from Southampton were multiplied by 52 and 12 respectively to get these totals. Data for Haverstraw Heliport covers Sep 15, 2009 through Sep 14, 2010, while data for Southampton is for Sep 29, 2009 through Sep 28, 2010.

102 Ibid.


106 In 2009 this bridge was restored as a pedestrian crossing, and became Walkway across the Hudson State Historic Park.


109 “Long Island Short Line Terminal Set to Open.” Railway Age.