Chapter 1: Project Purpose and Need

A. INTRODUCTION

The Federal Transit Administration (FTA) and the Metropolitan Transportation Authority (MTA), in cooperation with the Long Island Rail Road (LIRR), propose the East Side Access Project, to provide direct access for LIRR riders to Grand Central Terminal (GCT) at Park Avenue and 42nd Street. The proposed project is the locally preferred alternative, recommended after careful consideration of a full range of alternatives in the Major Investment Study (MIS) for the Long Island Transportation Corridor (LITC), which was completed in April 1998.

This chapter discusses the need for the proposed East Side Access Project. The following sections identify the project, define the current and future travel problems in the LITC, describe the project's background and current planning context, present the project's goals, and outline the review and approval process for the project. These discussions summarize the work of the project's MIS as updated with the results of the EIS analyses.

B. IDENTIFICATION OF THE PROPOSED ACTION

As shown in Figures 1-1 and 1-2, the proposed action would bring passengers to GCT by constructing connections from the LIRR Main Line and Port Washington tracks south of Sunnyside Yard (in Queens) to the lower level of the existing 63rd Street Tunnel under the East River and from there to GCT. The new connecting tunnel in Queens would pass beneath Long Island City at approximately 41st Avenue; in Manhattan, the connecting tunnel would curve southward from the existing tunnel at 63rd Street and approximately Second Avenue toward Park Avenue, where it would continue to GCT.

The proposed action also offers the opportunity to create a new station to serve customers at Sunnyside and Long Island City, Queens. This station, adjacent to Sunnyside Yard near Queens Boulevard, would offer LIRR service to Penn Station. The station would also be constructed to permit future expansion for possible use by Amtrak and/or New Jersey Transit (NJ Transit) trains.

This *Final* Environmental Impact Statement (*FEIS*) considers the potential impacts of the East Side Access Project in the LITC, which is broadly defined to encompass the majority of origins, destinations, and routes of those traveling between Long Island and New York City. It therefore consists of Manhattan, Queens and Brooklyn, and Nassau and Suffolk Counties.

The proposed action is critical for the future of the LITC. Without the project, transportation conditions in the corridor will deteriorate:

- The LIRR will not be able to accommodate demand for service into Manhattan, causing severe overcrowding on peak hour trains.

- Commutes on the LIRR characterized by crowding and delays will continue to be followed by time-consuming trips to East Midtown by many LIRR commuters, causing millions of person-hours of delay each year.
- Inadequate transit service will worsen already serious congestion on the region's roads and highways, as residents of Long Island and eastern Queens choose to drive to avoid the growing inconvenience of mass transit.
- Commuters in aggregate will travel hundreds of thousands of miles in automobiles, worsening already poor air quality conditions.

C. PROBLEM IDENTIFICATION

The New York Metropolitan Area is the most transit dependent region in the United States. According to 1990 Census journey-to-work data, some 2 million people travel to and from work in Manhattan each day, and the great majority arrive by public transportation: approximately 58 percent take subways or buses and 13 percent commute by rail from the suburbs. However, the transit/rail system, by far the largest in the nation, is more than 70 years old. It has not expanded at the rate of the region's population and employment, and its routes and terminals do not fully meet the needs of those it serves. These problems extend beyond mere travel inconvenience and potentially threaten the region's environment, economy, and character. The discussion below describes the regional transportation network and focuses on the LITC and its problems.

EXISTING REGIONAL TRANSPORTATION NETWORK

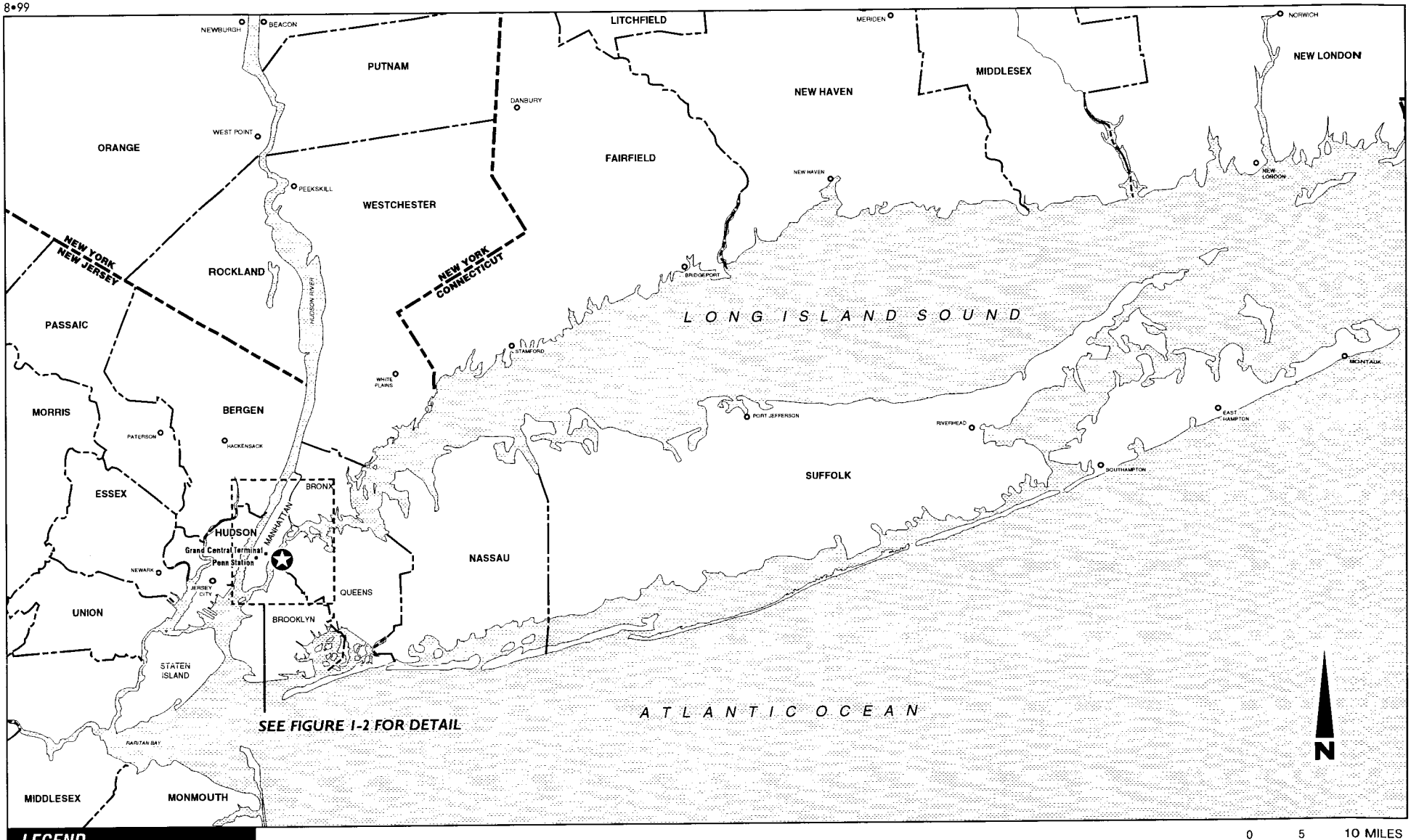
The 31-county New York-Connecticut-New Jersey Metropolitan region contains a vast network of transportation services. The oldest components of the network are the regional rail and transit systems, built to transport passengers and freight throughout the area and beyond. Today, the passenger rail system serves mostly commuters traveling to and from the Central Business District (CBD) in Manhattan. The largest component of the commuter rail and transit network is the MTA system, which serves commuters from suburban counties in New York State and Connecticut and within New York City.

The regional highway system serves local, regional, and national vehicular traffic, moving freight, long-distance travelers, commuters, and local trip-makers. The regional roadways are linked to the island of Manhattan via 16 bridges and 4 tunnels. Within Manhattan, the vast majority of surface roads are local streets.

Beginning in the early 17th century, from the foot of what now is Old Fulton Street in Brooklyn to the Wall Street area, Manhattan's location adjacent to New York Harbor has fostered a long tradition of ferry service. Today, there are a number of ferry options for commuters, from Staten Island, across the East River, and across the Hudson River. Regional network components are described in more detail below and shown in Figure 1-3.

TRANSIT CONNECTIONS FROM NORTH AND EAST

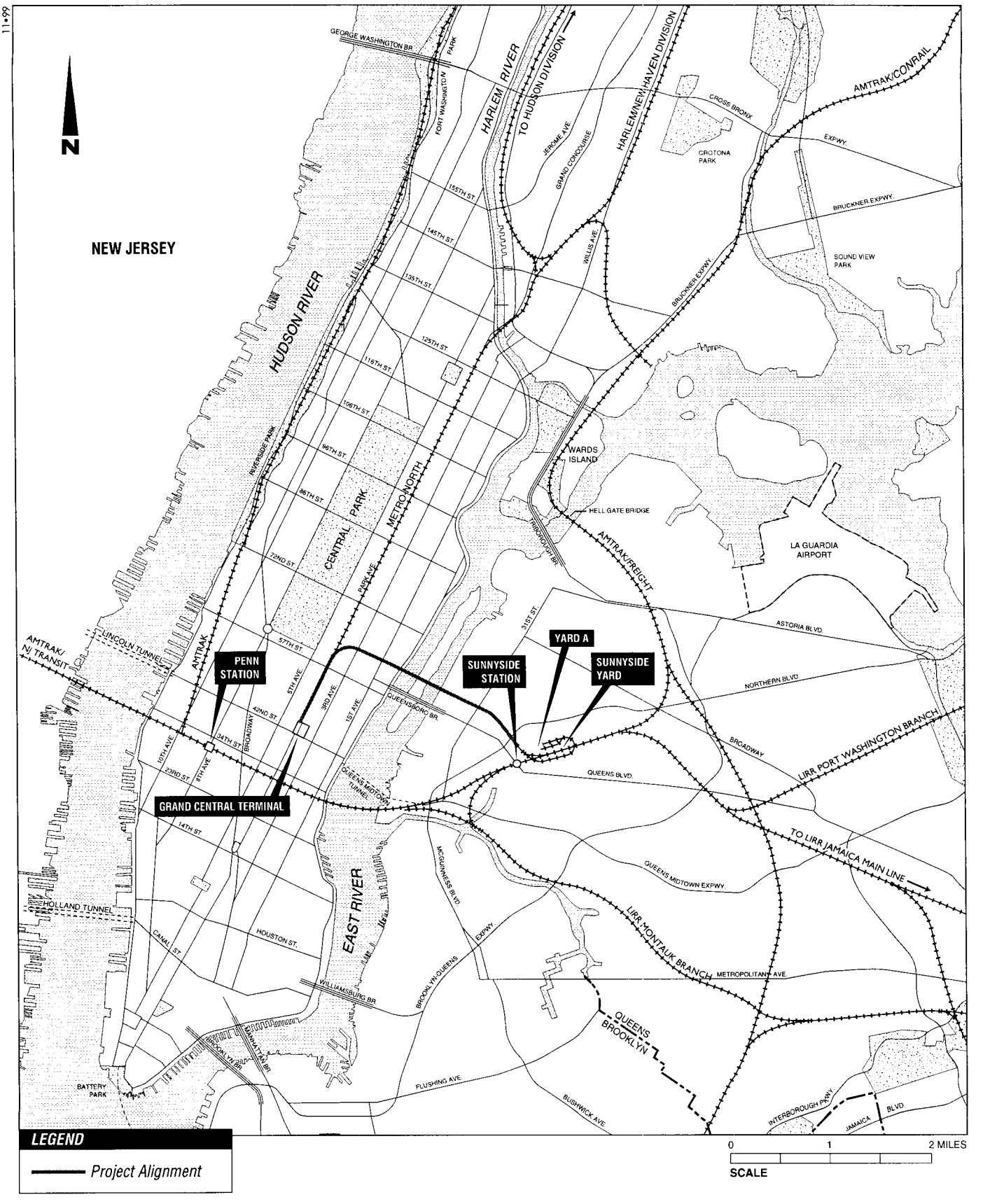
Commuters coming into the CBD from the north and east, in Westchester, Putnam, and Dutchess Counties, southwestern Connecticut, Upper Manhattan, the Bronx, Long Island, Queens, and Brooklyn, rely most heavily on the MTA's five types of transit service—LIRR, MNR, New York City Transit (NYCT) subway, NYCT bus, and Long Island Bus (LI Bus)—to get to their jobs. These five MTA providers carry more than 1.9 billion riders each year, or more



MTA / LIRR
East Side Access

Figure 1-1

Project Location



MTA / LIRR

East Side Access

Figure 1-2

Location of Preferred Alternative

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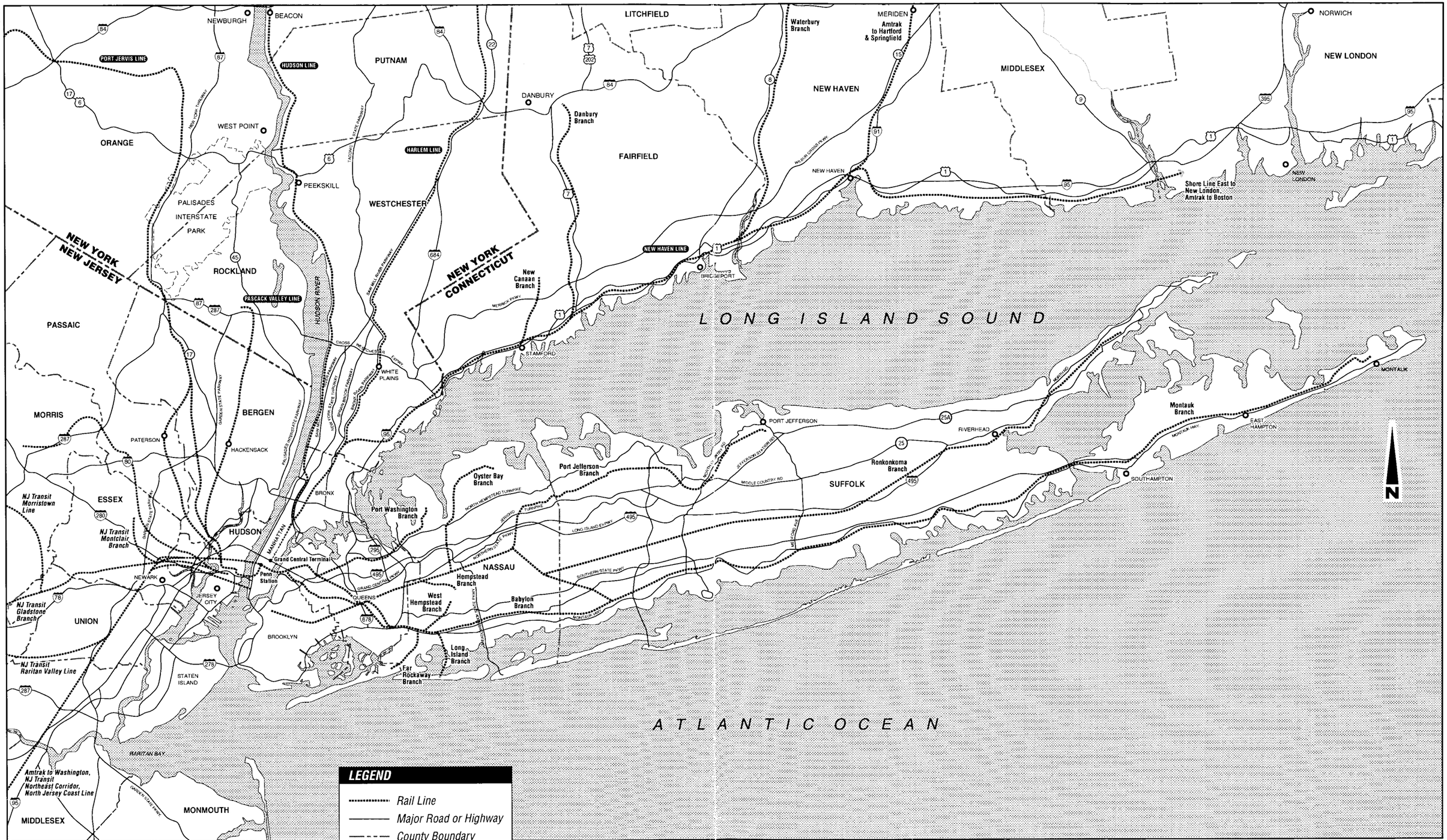


MTA / LIRR

East Side Access

Figure 1-3

Regional Transportation Network

than 6.0 million riders each weekday, accounting for nearly two out of every three rapid transit trips and half of all commuter rail trips in the nation.

MNR brings more than 70,000 passengers into GCT each weekday morning during the peak period (6 to 10 AM). Serving Manhattan, Bronx, Westchester, Dutchess, and Putnam Counties, and Connecticut (as well as Rockland and Orange Counties in cooperation with NJ Transit), MNR is the second largest commuter rail system in the United States, carrying 67 million passengers in 1999 over 340 route miles serving 120 stations. MNR is currently the sole railroad user of GCT. All MNR trains serving areas east of the Hudson River operate on three lines—the Hudson, the Harlem, and the New Haven—that cross the Harlem River to enter Manhattan, and then travel south on a viaduct above Park Avenue to 96th Street. From 96th Street, the tracks run beneath Park Avenue to GCT. At GCT, the tracks fan out and separate into two levels. The westernmost tracks of the lower level serve as MNR's Madison Yard, used for midday storage and maintenance. Most other MNR tracks serve trains carrying passengers into the terminal.

TRANSIT CONNECTIONS FROM WEST OF THE HUDSON

Commuters coming into Manhattan from west of the Hudson River rely heavily on NJ Transit trains, the Port Authority Trans-Hudson (PATH) train, Amtrak trains, Hudson River ferries, and a number of buses operated by NJ Transit and private carriers. NJ Transit also operates service for MNR on the New York portion of the Pascack Valley and Port Jervis lines. While ferries operate into two primary piers on the west side of Manhattan—at 38th Street and at Battery Park City—all other public transportation into Manhattan from New Jersey is funneled through or over seven river crossings: the George Washington Bridge, Lincoln Tunnel, and Holland Tunnel, which carry buses; the rail tunnel that carries NJ Transit and Amtrak trains to and from Penn Station; and two PATH tunnels, which carry commuters from Newark, Jersey City, and Hoboken, including those who have transferred from NJ Transit trains. Many of the commuter buses use the Exclusive Bus Lane on Route 495 to make direct connections to the Lincoln Tunnel and the Port Authority Bus Terminal.

NJ Transit has traditionally run trains from two of its three Newark Division lines—Northeast Corridor and North Jersey Coast—directly into Penn Station (commuters on the Raritan Valley line transfer at Newark for these trains). Commuters on Hoboken lines—the Morris and Essex line, Main line, Bergen line, Pascack Valley line, and Port Jervis line—were routed to Hoboken, where they transferred to PATH or ferry service. In June 1996, NJ Transit initiated Midtown Direct service, which gave select trains from its Morris and Essex line a one-seat ride into Penn Station. (See "Current Planning Context" below for more information about NJ Transit projects related to Penn Station.)

Amtrak's Northeast Corridor line, which runs from Washington, D.C., in the south to Boston in the north, uses Penn Station as its only stop in New York City. Each year, approximately 38 percent of Amtrak's total national riders begin or end their trips in Penn Station, New York. Numerous commuters use Amtrak's service between Philadelphia and New York to make their daily commutes.

THE REGIONAL HIGHWAY NETWORK

In addition to the public transit system described above, a dense network of heavily used highways, local roads, and bridges bring almost 900,000 people into Manhattan each day, via 20 river crossings. Major interstate highways and state/local parkways form the network of regional roads that brings commuters to Manhattan. The New Jersey Turnpike, Garden State Parkway,

Palisades Parkway, and the New York Thruway (I-87) are major north-south highways west of the Hudson River; these either connect to east-west feeders, which bring vehicles to the Holland and Lincoln Tunnels and the George Washington Bridge, or, in the case of the Thruway, bring travelers directly over the Hudson (on the Tappan Zee Bridge).

From the north and northeast, the Henry Hudson Parkway, the Hutchinson River Parkway, the New York Thruway, Broadway (U.S. Route 9), and the New England Thruway (I-95) funnel vehicles across the Harlem and East Rivers into Manhattan. Bringing travelers from Long Island, the Long Island Expressway and Grand Central Parkway (which becomes the Northern State Parkway farther east) end at the Queens-Midtown tunnel and Triborough Bridge, respectively. Queens Boulevard (Route 25 farther east) terminates at the Queensboro Bridge, the most heavily traveled East River crossing. This bridge also receives traffic flows from the Brooklyn-Queens Expressway, which links the Grand Central Parkway to Brooklyn and points south. Long Island's highways also feed into Manhattan via the Belt Parkway to the Brooklyn-Battery Tunnel or to the Brooklyn-Queens Expressway and then to any one of three Brooklyn-to-Manhattan East River Bridges (Brooklyn, Manhattan, Williamsburg).

LONG ISLAND TRANSPORTATION CORRIDOR

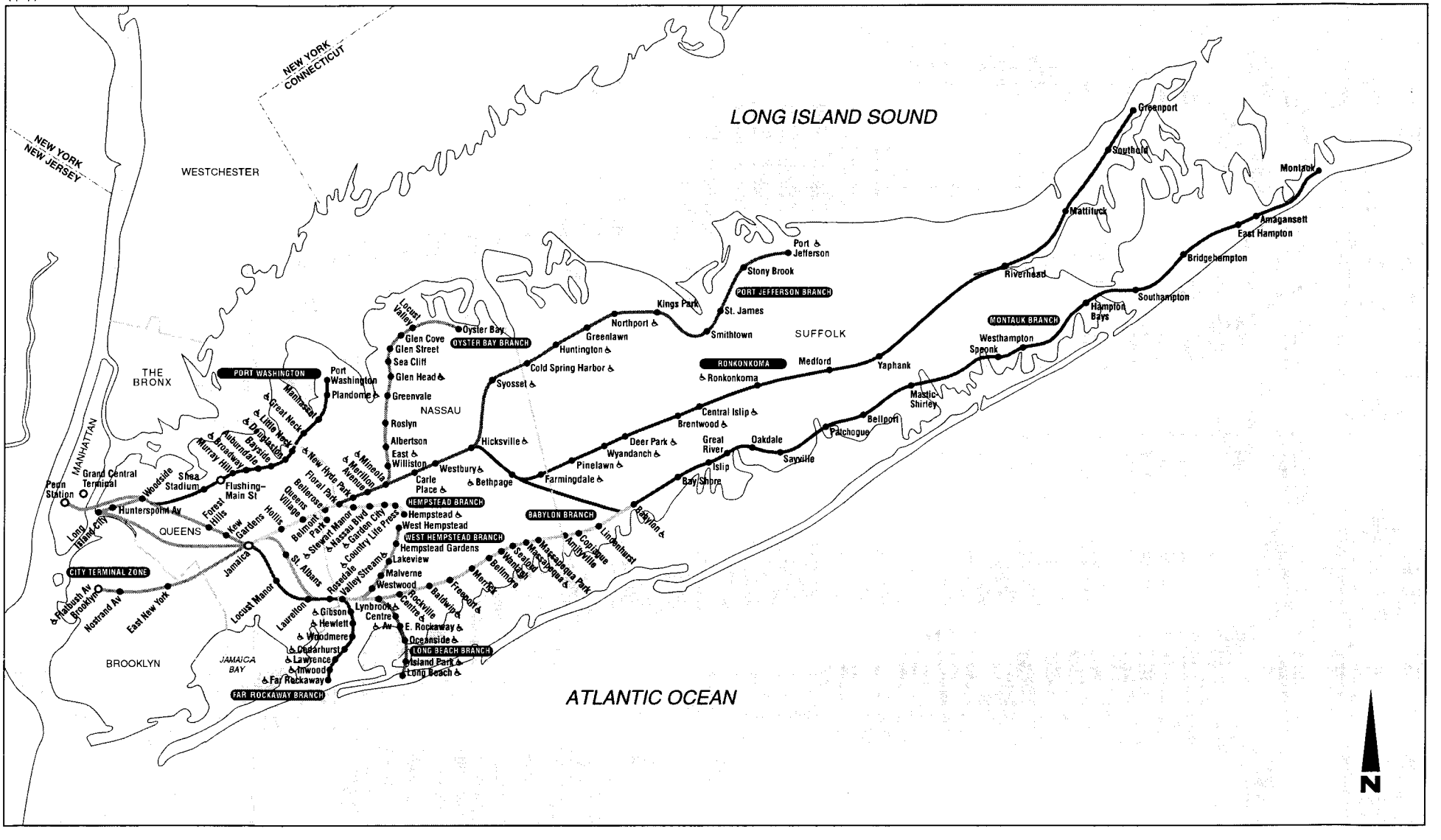
Employed residents living in the LITC make up approximately 40 percent of the metropolitan area's total employed population who work outside the home (trip-based labor force). According to the New York Metropolitan Transportation Council (NYMTC), more than 440,000 commuters travel from homes in Queens, Nassau, and Suffolk Counties to jobs in Manhattan each day. They do so using four primary modes of travel: LIRR, NYCT subways, NYCT and LI buses, and automobiles. The following sections provide a brief discussion of each of these modes of travel: how they came about, the areas they cover, and whom they serve.

LONG ISLAND RAIL ROAD

The LIRR was originally constructed to shorten travel time to Boston; passengers traveled through the center of the Island to Greenport, boarded a ferry to Stonington, Connecticut, and continued via train to Boston. Its first train ran on April 18, 1836, and the majority of its current track system was built between the 1830's and 1900. The construction of the LIRR's 10 branches—along with its connection directly into Penn Station through two East River tunnels in 1910—played a major role in shaping development on Long Island, by significantly cutting travel times into Manhattan.

The LIRR is the busiest commuter railroad in North America, with an average total daily ridership of 269,400 passenger trips on 740 trains each weekday and a total annual ridership of 82.2 million passengers in 1999. Its 10 branches consist of 365 route miles and 124 stations, serving the area from Montauk and Greenport on eastern Long Island's South and North Forks, to its primary western terminal: Penn Station in Manhattan, approximately 120 miles away (see Figure 1-4). All branches except Port Washington run through Jamaica Station, where passengers on some non-dual mode diesel trains switch to electric trains for the ride to Penn Station.

Each weekday morning, some 103,000 riders arrive at three western terminals during the peak period: Penn Station, Hunterspoint Avenue/Long Island City (in Queens), and Flatbush Avenue (in Brooklyn). Nearly 90,000 of these passengers, or 87 percent, are destined for Penn Station. Of the remaining passengers destined for one of the western terminals, 2 percent (2,350) disembark at Hunterspoint Avenue/Long Island City in Queens and 11 percent (11,000) at Flatbush Avenue in Brooklyn. Jamaica Station, which is not one of the western terminals, is actually the



MTA / LIRR

East Side Access

Figure 1-4

Long Island Rail Road Map

third most popular disembarkation spot for LIRR commuters, with more than 3,500 passengers getting off trains during the AM peak period. The vast majority of LIRR's morning riders board at stations in Nassau and Suffolk Counties, and nearly three-quarters use one of four branches: Babylon, Port Jefferson, Port Washington, or Ronkonkoma (see Table 1-1).

Table 1-1
Morning Peak Commuting by LIRR Branch, 1998
East of Jamaica

Branch	AM Peak Weekday Boarding Passengers	Percent of All AM Peak Boarding Passengers
Babylon Branch	28,840	27%
Port Jefferson Branch	19,860	19%
Ronkonkoma Branch	17,970	17%
Port Washington Branch	16,570	15%
Long Beach Branch	8,730	8%
Hempstead Branch	4,910	5%
Far Rockaway Branch	4,560	4%
Montauk Branch	2,260	2%
Oyster Bay Branch	1,800	2%
West Hempstead Branch	1,720	2%
TOTAL	**107,220**	**100%**

Source: MTA Long Island Rail Road, *Long Island Rail Road Fall 1998 Ridership.*

In addition to commuters from Long Island, the LIRR serves patrons who live in eastern Queens. In addition to the terminals at Long Island City and Hunterspoint Avenue and the major transfer point at Jamaica, the LIRR makes 18 stops in Queens on four different branches—the Port Washington Branch, the Hempstead Branch, the West Hempstead Branch, and the Far Rockaway Branch—and in the City Terminal zone west of Jamaica. On the Port Washington Branch during the AM peak period, riders who board at stations in Queens represent more than half (52 percent) of the total ridership on that branch.

All LIRR trains bound for Manhattan travel on the Main Line alongside Sunnyside Yard in Queens to the East River tunnels at Long Island City/East 33rd Street. Adjacent to Sunnyside Yard, LIRR trains and Amtrak's Northeast Corridor trains traveling to and from Penn Station share the Harold Interlocking, an approximately 1.5-mile-long portion of track leading to the East River tunnels. The Harold Interlocking allows connection among tunnel tracks, LIRR's Main Line tracks, Amtrak's Northeast Corridor tracks through Queens and over the Hell Gate Bridge, and loop tracks leading into and out of the yard. Amtrak also uses Sunnyside Yard for train maintenance and storage, and NJ Transit stores trains there during the midday as well. Amtrak and NJ Transit can access storage and maintenance facilities via the loop tracks, without using Harold Interlocking. Just north of Sunnyside Yard is Yard A, which is used by New York & Atlantic Railway (NYAR) for freight operations.

NEW YORK CITY TRANSIT BUSES AND SUBWAYS

NYCT serves more than 1.8 billion riders annually over 1,671 bus-route miles and approximately 244 train route miles. Bus and subway service between Manhattan and Queens centers around the No. 7 Flushing Line and the Queens Boulevard (E, F, and R) lines (see Figure 1-3). Both of these lines are linked by feeder bus service to Eastern Queens and Nassau County. These four subway lines bring approximately 85,000 commuters into Manhattan in the peak AM hour (and are all filled to at least 80 percent of capacity). The N train brings another 13,620 commuters in the AM peak hour from Astoria and Long Island City.

While most Queens subway lines parallel LIRR lines, competition between the two transit providers is minimal, with the subway serving predominantly city dwellers and the LIRR serving predominantly residents of Nassau and Suffolk Counties. The proximity of the two service providers does, however, provide a number of transfer sites from LIRR to subway and vice versa, the most popular of which are at Flatbush Avenue in Brooklyn (2, 3, 4, 5, B, D, Q, M, N, and R subway connections), Jamaica in Queens (E, J, and Z subway connections) and Woodside and Hunterspoint Avenue in Queens (7 train connection). LIRR passengers use these subway connections to travel to and from destinations on Manhattan's East Side and in Lower Manhattan, and in Brooklyn and Queens.

EXPRESS BUS SERVICES/LONG ISLAND BUS SERVICES

Thirty-five express bus lines, operated by the New York City Department of Transportation (NYCDOT) and NYCT, run between Queens and Manhattan, serving outlying neighborhoods in Queens and Western Nassau County. The MTA operates 53 LI Bus routes serving almost 100 communities in Nassau and Suffolk Counties and eastern Queens. Many Nassau County residents take the bus to the No. 7 subway at Main Street, Flushing, and the E and F lines at Jamaica. LI Bus routes also connect to 47 different LIRR stations.

EAST RIVER FERRIES

East River ferry routes, initiated in the past decade by New York Waterway, provide ferry service between Long Island City and East 34th Street in Manhattan every 15 minutes during peak morning and evening hours and between the Marine Air Terminal at La Guardia Airport and 62nd Street, 34th Street, and Wall Street every hour from 7:45 AM to 5:45 PM. New York Waterway ferry service is combined with free shuttle bus service to and from various Manhattan destinations. Use of commuter ferry service across the East River has traditionally been limited by the longer travel timer needed to access ferry landings.

HIGHWAYS AND BRIDGES

Since the 1920's, thousands of miles of interstate highways, expressways, and parkways have been constructed in the New York Metropolitan Area. Long Island is served by three primary east-west highways (Long Island Expressway, Northern State/Grand Central Parkway, Southern State/Belt Parkway), all of which are operating at capacity. These connect to 13 major north-south highways and parkways, which are also crowded during peak periods. Long Island's vehicular connection to the mainland is through 10 river crossings into New York City, seven of which connect to Manhattan over and under the East River.

Only three East River crossings—the Queens-Midtown Tunnel, the Queensboro Bridge, and the Triborough Bridge—are typically used by commuters to East Midtown. These crossings mark

the termination of three major Long Island routes: the Long Island Expressway at the Midtown Tunnel, Queens Boulevard at the Queensboro Bridge, and the Grand Central Parkway at the Triborough Bridge. Once in Manhattan, commuters crossing these bridges are fed onto the streets of Midtown either directly (from the Midtown Tunnel and Queensboro Bridge), or onto Midtown streets via the FDR Drive or major avenues (from the Triborough Bridge).

STUDY AREA PROBLEMS AND NEEDS

INTRODUCTION

Manhattan is one of the largest and the most dense employment centers in the nation, set roughly in the center of a 31-county metropolitan region. It is also an island. Its economic and geographic position have made Manhattan's business districts particularly dependent on the regional transit system. The commuter rail services and subways are the most efficient in moving large numbers of people over sizable distances to a very dense center city with reliable and predictable travel time. The region's explosive growth during most of the 20th century, the shift in population outward into growing commuter suburbs, and the concentration of white-collar jobs that have remained in the city center have made the region's transit operations more vital to commutation and to the region's economy and environment, despite the rise of the automobile and its highway infrastructure.

In fact, although total employment in Manhattan has stayed essentially the same since the early 1970's, white-collar jobs have risen dramatically and consistently, while blue-collar jobs in industries such as manufacturing have declined. The 1,783,000 jobs in Manhattan in 1974 comprised 319,600 in manufacturing sectors and 628,230 in "office" sectors, such as finance, real estate, insurance, services; in 1998 Manhattan's employment totaled 1,767,899, with only 148,470 in manufacturing sectors and 818,286 in "office" sectors. As a result, Manhattan has experienced a tremendous growth in new office space in the post World War II period (nearly 213 million square feet), and East Midtown has seen most (62 percent) of that growth (nearly 132 million square feet). Along with this shift in employment type and location has come a concurrent shift in the residential location of the labor force. In particular, an increasing number of Manhattan workers are living in Nassau and Suffolk County suburbs and commuting to jobs in Manhattan.

Population, employment, and labor force projections prepared by NYMTC for New York City and Long Island for the years 2010 and 2020 indicate that these trends will continue. Employment in Manhattan is projected to increase 21 percent by 2020, and the size of the labor force in Nassau, Suffolk, and Queens is projected to increase 28 percent by 2020.* These trends indicate that demands on the currently overtaxed transit and traffic systems will increase significantly, as the number of morning commuters arriving during the peak 4-hour period is projected to increase by 28 percent at Penn Station and at GCT in the period between 1995 and 2020 (see Table 1-2).

* Projections prepared by Urbanomics for NYMTC, February 23, 1996.

Table 1-2
AM Peak 4-Hour Commuter Rail Ridership
Without the East Side Access Project: 1995, 2010, 2020

Terminal	1995 Arrivals	2010 Arrivals	Percent Change 1995-2010	2020 Arrivals	Percent Change 1995-2020
LIRR to Penn Station	86,630	103,856	20%	110,522	28%
MNR to GCT	70,169	84,164	20%	88,738	27%
Source: KPMG Peat Marwick, LLP.					

CAPACITY PROBLEMS AND NEEDS

The first problem faced by the LITC is one of capacity. Capacity refers to the physical ability of a transportation system, or any of its elements, to carry travelers from one point to another. The capacity is defined as the number of passengers or vehicles that can be accommodated by a train, train platform, train track and tunnel, stairwell, mezzanine, bus, sidewalk, or street's traffic lane (or the combination of any of these) during a specified time frame, such as an hour or part of an hour, a peak period (three or four hours, normally during the "rush hour"), a day, or a year. Volumes (the number of people or vehicles actually using a transportation facility) are compared to capacities (this is known as a volume-to-capacity; or "v/c" ratio) to determine severity of crowding on a transportation system.

LIRR Capacity Problems And Needs

Long Island's population and Manhattan's white-collar job base have both grown so substantially over the years that Penn Station is now operating, by all measures, at maximum capacity. The railroad's capacity at Penn Station is limited in several ways: by the capacity of the East River tunnels; by line haul capacity (the number of trains that can pass through the system, which is affected by the signal system and dwell times); by interlocking plant capacity at Penn Station (the interlocking plant is the system of track crossovers used by trains traveling toward the platforms); by platform capacity for passengers leaving trains, which in turn affects train dwell times; and by the storage capacity of the West Side Yard. Capacity limitations for pedestrians in the LIRR passenger concourses at Penn Station further limit the overall capacity at Penn Station.

The LIRR has attempted to address passenger overcrowding and train traffic at Penn Station by marketing subway connections from its other western terminals as time-saving alternative routes into East Midtown and Downtown Manhattan. As noted earlier, numerous passengers are making connections to the subway at LIRR stations in Queens (particularly Hunterspoint Avenue and Jamaica) and Brooklyn (Flatbush Avenue). At the three western terminals, most LIRR passengers continue on NYCT subway lines to final destinations in either East Midtown (connecting to the No. 7 train at Hunterspoint Avenue or Woodside) or Downtown Brooklyn and Lower Manhattan (connecting to the 2, 3, 4, 5, B, D, Q, M, N, and R trains at Flatbush Avenue). In addition, a number of passengers transfer from the LIRR to the E train at Jamaica Station in Queens, for destinations in East Midtown. But, as detailed in the East Side Access MIS, riders are deterred from using these subway connections to complete their trips because of the following "friction factors":

- The disincentive of a two-seat ride;
- Psychological resistance to changing modes;
- Perceived concerns about personal security on subway trains (especially outside of Manhattan);
- The added cost of an additional subway fare;
- Overcrowding on connecting subway lines;
- Perceived unreliability of subway service to suburban commuters;
- Lack of connectivity between certain LIRR routes and subway transfer spots; and
- Limited LIRR services connecting to subways.

The LIRR has also implemented a number of system improvements over the past few years that have improved capacity at Penn Station to 36 trains per hour. These include the 1987 construction of the West Side Rail Yard and the complete reconstruction of the LIRR passenger concourses (the Level "A" concourses) in Penn Station. Additional planned improvements are projected to improve capacity to, at best, 42 trains per hour. However, without additional tunnel and track creation, further capacity improvements are nearly impossible. Capacity of 42 trains per hour will not sufficiently meet the projected needs of LIRR customers.

Projections indicate that the number of LIRR commuters coming into Penn Station in 2020 is expected to increase 25 percent, to nearly 50,000 in the morning peak hour in 2020. This increase in ridership, combined with the inability to expand capacity, would result in severe crowding conditions on peak hour LIRR trains. In 2020, during the busiest time of day, LIRR trains are projected to be operating at 127 percent of capacity.

These ridership projections do not fully demonstrate the demand for service, however, as they are affected by the system's capacity constraints. Ridership forecasting for the East Side Access Project further demonstrates the need for additional LIRR service into Manhattan. The ridership forecasting model—which assumed 24 additional LIRR trains entering Manhattan (to GCT) in the AM peak hour—indicates that an additional 17,000 commuters would ride the LIRR into Manhattan in the AM peak period if such service were available (see Table 1-3; for more information, see Chapter 9, "Transportation").

Table 1-3
AM Peak 4-Hour LIRR Ridership
1995, 2010, 2020

Manhattan Arrivals	1995	2010 without East Side Access	2010 with East Side Access	2020 without East Side Access	2020 with East Side Access
Penn Station	86,630	103,856	58,154	110,522	62,249
GCT	0	0	62,334	0	65,676
Total	86,630	103,856	120,488	110,522	127,925

Source: KPMG Peat Marwick, LLP.

The movement of Amtrak's operations into the "New Pennsylvania Station" in the current Farley Post Office Building across Eighth Avenue from Penn Station (see description in "Current Planning Context" section below) will result in a substantial increase in passenger space above the tracks. However, it will only marginally increase needed platform availability and will not add to LIRR platform capacity or alter current tunnel capabilities.

The consequences of the projected growth in ridership combined with capacity constraints will be serious:

- LIRR platforms and Level "A" concourses in Penn Station will become even more crowded as more commuters embark on and disembark from a fixed number of trains.
- Crowding on LIRR trains will increase—trains will be standing-room-only during rush hours and inbound passengers not boarding at easternmost stations will rarely get seats. Trains that are currently standing-room-only will be unable to accommodate the demand for rides.
- Stations on Long Island will become increasingly crowded as more people wait to embark on the same number of trains.
- These conditions will result in lost riders—patrons will switch to autos, or even choose different locations to live or work—if no improvements are made.

Subway Capacity Problems And Needs

NYCT will soon open service from the Queens Boulevard line through the 63rd Street Tunnel to Manhattan (see further details in the "Current Planning Context" section), which will alleviate substantial existing and predicted overcrowding. However, this change to subway service will not make it easier for LIRR commuters to use the subway to get to destinations on Manhattan's East Side. It is clear that the subway—because it, too, operates at capacity—is not a long-term option as an alternative route for LIRR riders into Manhattan.

For instance, the Queens Boulevard lines (E, F and R) are severely overcrowded during rush hours. The Queens Boulevard lines are the second most heavily used in the system, with 1995 peak-point volume/capacity (v/c) ratios ranging from 1.22 (i.e, operating at 122 percent of capacity) on the F train to 0.98 on the E train. For comparison, a v/c ratio of about 0.35 would indicate that all seats in a subway car are taken, but nobody is standing.* V/C ratios of about 0.9 indicate unavoidable physical contact between riders, and v/c ratios above 1.0 indicate that most to virtually all riders are standing in direct physical contact with those around them with little to no room for movement. Beyond this v/c ratio, subway reliability can deteriorate as passengers require more time to board and disembark from the subway trains.

Highway Capacity Problems and Needs

While constructed as a response to growth in the city and its surroundings, the regional highway network has further encouraged the development of low-density, automobile-dependent suburbs characterized by single-family, detached houses. Not surprisingly, suburban development in

* Due to their use in high-density, relatively short trip-length service, subway cars are not designed to maximize seating capacity, in contrast to commuter rail cars.

counties such as Nassau and Suffolk on Long Island has quickly filled these highways and roads to capacity.

Long Island's highways face constant traffic problems, regardless of direction of travel, resulting in low travel speeds and stop-and-go driving conditions (see Table 1-4). According to the *Long Island Rail Road Network Strategy Study*, published by the MTA in May 1994, 52 percent of the state's total vehicle hours of delay occur on Long Island roadways. The Long Island Expressway is a good example: designed to carry a volume of 80,000 vehicles, it carries more than 180,000 vehicles each weekday. Mandated compliance with air quality standards (especially particulate and gaseous emissions standards) in the coming years will make expansion of the Long Island's highway system extremely difficult. And while current highway improvement projects (see "Current Planning Context" section below) may relieve some congestion situations on Long Island, they will not add capacity to East River crossings.

Table 1-4

AM Peak Hour Traffic Conditions

Highway Route	LOS at Peak Point*	Peak Hour Volume, Both Directions
Long Island Expressway at Grand Central Parkway [1]	F	13,840
Grand Central Parkway at Brooklyn-Queens Expressway [1]	F	10,640
Queens Blvd. at Queensboro Bridge and Northern Blvd. [2]	F	3,200

Note: * Level of Service (LOS) ratings range from A to F, with A indicating free flow traffic conditions and F indicating breakdown in vehicular flow.

Sources:

1 NYSDOT, Van Wyck Expressway/Western Queens ITS Project, Expanded Project Proposal Design Report, Eng-Wong, Taub & Associates, November 1998.

2 Traffic counts conducted by Eng-Wong, Taub & Associates, January 1999.

East River crossings form an effective bottleneck for vehicular traffic entering and leaving Manhattan, with most crossings (especially the three used as Midtown access points) experiencing extreme levels of congestion during peak hours. This was not always the case. In fact, while average daily traffic volumes at the Queensboro and Triborough Bridges and Queens-Midtown Tunnel more than doubled from 1948 to 1972, congestion limited volume increases to only 12 percent from 1972 to 1996, and peak hour crossing volumes have remained steady (and at capacity) in recent years (source: NYCDOT, *Manhattan River Crossings*, 1991, 1993, 1995, and 1996). As detailed in Chapter 9, "Transportation," traffic congestion impedes commuting into and out of Midtown Manhattan throughout the highway system on bridges and tunnels, on Manhattan streets, on Long Island highways, and on local bridge and highway feeder routes.

TRAVEL TIME PROBLEMS AND NEEDS

The second problem faced by the LITC is one of travel time. Travel time refers to the amount of time spent traveling from the trip's beginning ("origin") to its end ("destination"). Total trip time includes the time spent using each type ("mode") of transportation (e.g., walk, bus, subway, rail, auto, bicycle). Waiting, boarding, transfer, and alighting time are also included. Travel time is related to capacity and to accessibility. Where a system is congested (operating at or near capacity), travel time increases. In the case of rail systems, it takes passengers longer to get to and from platforms and to get on and off trains. As a consequence, the trains must stay longer in the

station and some cannot meet their schedules, causing further back-up along the routes. In the case of vehicular traffic, bottlenecks at toll plazas, bridges and tunnels, along with accidents, cause back-ups farther down the road and even out to local streets, thus reducing local quality of life in addition to creating longer commute times.

Travel times for many LIRR commuters are further increased because of the distance between Penn Station or other LIRR terminals and the commuters' final destinations. Many commuters must transfer to one or two subways or bus lines to reach their workplaces on Manhattan's East Side. To avoid this inconvenience, some commuters opt to drive instead.

LIRR Travel Time

In some cases, excessive travel times in the corridor are a direct consequence of capacity constraints, but in the case of access to East Midtown, lengthened travel times are an issue of "disconnection." At the time Penn Station was constructed, the demand for rail travel was different from that of today. Before the nation's highway system and air travel were in place, long-distance travelers were major users of the LIRR. Penn Station, when it opened in 1910, was billed as the gateway to America. It boasted a grand main hall modeled after the Roman Baths of Caracalla, a separate arcade and ticketing hall, full baggage-check services and a 300,000-square-foot track area containing 27 tracks. In the mid-1960's the above-ground elements of the terminal were demolished and a new Penn Station was built, but the underground network of tracks and platforms remain the same. Today, although Amtrak provides long-distance travel, the overwhelming use of Penn Station is by commuters.

As the decades of the 20th century passed and commuters became a more important presence on the LIRR, the growth of white collar employment (generally the primary source of rail journey-to-work travel) centered on locations at some distance from Penn Station's location on Seventh Avenue and 34th Street. Key areas of commercial/office growth were Lower Manhattan and East Midtown, surrounding and north of GCT. There is now a considerable "disconnect" between the location of LIRR terminals, particularly Penn Station, and the location of jobs.

While LIRR trains enter Manhattan on the East Side through East River tunnels at 33rd Street, passengers cannot disembark until trains reach the West Side. Commuters who work in East Midtown, or at any location on the East Side, must double-back across town to reach their destinations. It is estimated that doubling-back costs commuters anywhere from 15 to 30 minutes of commuting time each day. Since the train ride is typically 30 minutes to an hour, this in-Manhattan trip adds substantial time to the total trip. To avoid this doubling-back, other LIRR commuters transfer to subway connections in Queens to travel to destinations on the East Side or in Lower Manhattan. The additional LIRR travel time to East Midtown and the inconvenience of the transfer encourages some commuters to drive to work, adding to highway, local road, and bridge and tunnel congestion. The ridership forecasting for the East Side Access Project demonstrates how much time is lost by commuters who double-back across town or find alternative means of travel to work. The forecasts show that adding 24 trains to GCT in the peak hour would result in a savings of more than 24,000 person-hours each work day (see Chapter 9, "Transportation").

This separation between Penn Station and the location of commuters' jobs is expected to be exacerbated in the future, as Long Island City in Queens becomes a densely developed commercial and office district as a result of current city policy initiatives. This development is expected in the area immediately north of Sunnyside Yard near Queens Plaza and Court Square, an area

that is nearly a mile from the nearest LIRR terminal at Hunterspoint Avenue, and even farther from the terminal at Long Island City.

Highway Travel Time

In the case of the LITC highways and East River crossings, travel time problems are a direct result of capacity constraints and excess demand. Congestion at bottlenecks, merge points, and toll booths slows down vehicles and increases total trip time into Manhattan. The Long Island Expressway has been called the world's "longest parking lot"; the morning radio routinely reports waits of longer than 30 minutes at the Queens-Midtown Tunnel and the East River bridges. As noted above, numerous commuters from Long Island are choosing to drive to Manhattan rather than ride the LIRR, because of perceived inconveniences associated with the railroad. This pattern is likely to increase as growth in ridership on the railroad increases crowding on the trains, as discussed above and noted in Table 1-4.

ENVIRONMENTAL PROBLEMS AND NEEDS

The primary environmental problem associated with capacity and travel constraints on the LIRR is air pollution caused by heavy traffic congestion. New York City is currently designated by the U.S. Environmental Protection Agency (EPA) as a "non-attainment area" (i.e., it does not meet federal ambient air quality standards) for carbon monoxide and ozone, which are associated with internal combustion sources, such as vehicular traffic. Manhattan is also a non-attainment area for particles small enough to be inhaled ("inhalable particulates" or PM_{10}). Similarly, Nassau County is a designated non-attainment area for carbon monoxide and ozone, and Suffolk County is a non-attainment area for ozone. Indeed, from 1970 to 1990, vehicle miles traveled increased by 110 percent, significantly increasing associated emissions of air pollutants.

Preventing further deterioration of air quality is an important goal of the East Side Access Project. Without good public transit access, people drive or ride in private cars and taxis. The continued increase in Long Island's labor force and Manhattan's white-collar employment cannot be accommodated on a constrained mass transit system. Increasing capacity on the LIRR during the peak period and providing access (and therefore reduced travel time) to the East Side would draw commuters to the railroad who would otherwise drive, reducing the vehicle miles traveled in the region.

SOCIOECONOMIC PROBLEMS AND NEEDS

The transportation system in the LITC is an economic lifeline, taking people and goods where they need or want to go. In addition, the LIRR and the city's subways have been critical in shaping development in the corridor over the last 150 years; they continue to play a key role in making the region attractive for investment and growth. A certain level of congestion on such a system is tolerable during peak periods, and is usually a sign of healthy socioeconomic conditions. But, in the long term, a system that is not organized to serve the centers of economic activity and that cannot keep pace with economic growth will undermine growth. The congestion and inconvenience associated with the area's transit system—its increasing lack of capacity, its inaccessibility to many residents, its unreliability and slow speeds, and its inability to cope with change and growth—will, over time, threaten the health of the regional economy and contribute to a decline in community character and quality of life throughout the corridor. Further, for the LIRR, the "disconnect" between the location of its terminals, particularly Penn Station, and the location of jobs induces unwanted east-west travel in the heart of the Midtown

Manhattan CBD, thereby adding to congestion and noise, impeding important local movement, and detracting from the excitement and vitality that are key to the area's character.

The LIRR and the subway system have both reached a critical condition for the region's economic well-being. The physical and operational problems described above have been cited time and again by firms moving out of the city and/or the region as reasons for relocation. If, as currently predicted, the region's population and employment base continues to expand without an echoing response in the transportation system, the situation will only worsen. As the public transportation system becomes less able to meet demand, the commuting public will turn to the automobile, increasing congestion on the corridor's limited highways and local roads. On a global scale, the region will lose ground competing for business, employment, tourists, and residential growth. On a local level throughout the corridor, the congestion from increased use of the automobile—and associated increases in noise, air pollution, and smog—will hinder people's ability to move between home, work, school, shops, or elsewhere, thus eroding community character and quality of life. These areas will become less attractive for residents, for businesses, and for investment in general.

SOLVING THE PROBLEMS AND MEETING THE NEEDS

The East Side Access Project, specifically the Preferred Alternative, would be a major contributor to solving the problems and meeting the needs outlined above. The Preferred Alternative, which is discussed in detail in Chapter 2, "Project Alternatives," would offer LIRR service directly into GCT via the existing 63rd Street Tunnel under the East River and new tunnels deep under Manhattan streets. By providing this new service, the Preferred Alternative would add capacity to the transportation network, alleviate congestion on the region's highways and many NYCT subway lines, reduce travel time from Long Island into East Midtown, provide a new station serving Long Island City and Sunnyside, improve air quality in the region, and help improve the region's overall socioeconomic condition in the future.

Adding Capacity to the Transportation System

By adding 24 new peak-hour trains into GCT, the Preferred Alternative would increase to 61 the total number of peak-hour trains serving Manhattan terminals. Not only would this 45 percent increase in service alleviate current and projected crowding on trains into Penn Station, it would free up space in Penn Station for other transportation uses and make the MNR Penn Station Access possible (see description on page 1-20).

The Preferred Alternative would alleviate the current and future projected overcrowded conditions on LIRR trains to Manhattan. Without the project, trains are expected to operate an average 127 percent over capacity at critical times within the peak period.

At the same time, the Preferred Alternative would significantly reduce crowding on a number of subway lines. With direct-to-GCT LIRR service, 8,000 fewer people would ride subways from Queens into Manhattan in the peak period (in 2020). Additionally, as described in Chapter 9, approximately 19,000 fewer people would transfer onto Penn Station area subways in the peak period (in 2020).

By offering direct-to-GCT LIRR service, the Preferred Alternative would reduce highway congestion by more than 12,000 cars each day. This reduction would be noticeable on highways in and around the LITC, and on East River crossings such as the Triborough Bridge and Queens-Midtown Tunnel (see Chapter 9, "Transportation").

Improving Travel Time into Manhattan

The Preferred Alternative would improve the travel time of most LIRR commuters and many subway riders. It would do so by reducing congested conditions on LIRR trains into Penn Station and many subway lines, and by providing commuter rail service into East Midtown Manhattan. Riders of the new service into GCT would see the most drastic improvement in travel times, shaving 30 minutes or more off their commutes in each direction (and an hour each day).

Improving Air Quality

The Preferred Alternative would support the region's clean air goals by reducing daily vehicle miles traveled by 342,000 in 2010 and 375,000 in 2020. These reductions would improve air quality in the region by reducing the emission of mobile source pollutants typically generated by automobiles. Tons less carbon monoxide, nitrogen oxides, respirable particulates (PM_{10}), and volatile organic compounds would be released into the air due to the Preferred Alternative (see Chapter 10, "Air Quality").

Improving the Region's Socioeconomic Condition

By fundamentally improving the region's transportation system, the Preferred Alternative would facilitate the region's continued socioeconomic growth. While its most visible benefit would be an improvement in the ability of employees to access jobs, it would have more far reaching effects on health and growth of the region. By significantly improving transportation links between Long Island and Manhattan, the Preferred Alternative would help meet projected population and labor force growth projections on Long Island, as well as projected employment growth projections in Manhattan. Additionally, as described in section E of this chapter and in Chapter 19, "Secondary and Cumulative Effects," the Preferred Alternative would combine with several other potential transportation projects for a synergistic effect to benefit the region's economy through greatly improved transportation.

D. PROJECT GOALS

East Side Access project goals were developed at the start of the planning process and refined during initial problem identification and public outreach. The alternatives developed during preparation of the MIS were selected in part based on their ability to meet these goals.

GOALS

GOAL 1: IMPROVE THE QUALITY OF SERVICE AND REDUCE TRAVEL TIME WITHIN THE CORRIDOR BETWEEN LONG ISLAND AND EAST MIDTOWN MANHATTAN

The capacity needed to meet travel demand for Long Island commuters to Manhattan should be provided, and this service should be provided in a way that will enable commuters to reach their destinations in Manhattan more directly, quickly, and conveniently than presently possible.

GOAL 2: RELIEVE LIRR TRAIN CONGESTION AT PENN STATION NEW YORK

The recent and planned capital improvements relating to Penn Station will not significantly ease limitations on the LIRR's capacity at Penn Station. Capacity constraints faced by NJ Transit and Amtrak (which are expected to worsen over the next two decades) will also not be alleviated. A

LITC improvement strategy must significantly ease congestion at Penn Station platforms, on tracks leading to Penn Station, in East River tunnels, and in the West Side Rail Yard.

GOAL 3: INCREASE MOBILITY BY SERVING NEW MARKET AREAS AND CREATING NEW MARKET CONNECTIONS WITHIN THE REGION

A viable transportation improvement strategy should facilitate and enhance regional transportation links—among NYCT subways and buses, MNR, and LIRR—to improve the quality of journey-to-work trips and to more effectively knit this patchwork of different service providers into a "seamless" network, much like the one that exists for highways. For example, a strategy should improve links between the LIRR and MNR, allowing passengers to more easily travel between points on Long Island and points north of New York City.

GOAL 4: ATTRACT NEW RIDERSHIP TO PUBLIC TRANSPORTATION BY INCREASING MASS TRANSPORTATION CAPACITY

By increasing capacity and improving service on the LIRR's service to Manhattan, the project should attract new riders to rail transit from other modes (particularly, automobiles).

GOAL 5: RELIEVE SERIOUS OVERCROWDING ON NYCT'S QUEENS BOULEVARD LINE AND FLUSHING LINE SUBWAY TRAINS

The project should improve the subway's capacity to handle more local trips, by diverting riders from overcrowded Queens subway lines to the LIRR.

GOAL 6: REDUCE CONGESTION ON AREA HIGHWAY CORRIDORS

Increasing Long Island to East Midtown capacity should enable the LIRR to tap the projected additional journey-to-work trip demand, while reducing demand and consequent congestion on area highway corridors that serve East Midtown. Improving the connection between Long Island and East Midtown should draw commuters to the rail road who would otherwise drive, easing congestion throughout the area.

GOAL 7: PROMOTE AND REINFORCE ECONOMIC DEVELOPMENT AND THE QUALITY OF LIFE OF THE NEW YORK CITY METROPOLITAN REGION

A key goal for the project is to ameliorate the congestion and inconvenience associated with the increasing lack of capacity in the area's transportation system, and particularly between Long Island and Midtown Manhattan. The capacity of the transportation system must be expanded to maintain the economic vitality of the region and the metropolitan area's competitive edge in terms of business, employment, tourists, and residential growth.

GOAL 8: CONFORM TO THE NEW YORK STATE AIR QUALITY IMPLEMENTATION PLAN (SIP) AS REQUIRED BY THE CLEAN AIR ACT AMENDMENTS OF 1990

The East Side Access Project should contribute to improved regional air quality conditions by decreasing reliance on the use of motor vehicles to enter New York City. The growing demand for transportation to Manhattan's CBD from Long Island must be accommodated in a way that prevents an increase in auto use and associated emissions of air pollutants. Preventing further deterioration of air quality is an essential component of the East Side Access Project.

GOAL 9: PRESERVE OPERATIONAL CAPABILITIES FOR EXISTING OPERATORS

To provide the greatest benefit for the region's transportation network, the changes proposed by the East Side Access Project should be designed to avoid any adverse effects on other transit providers in the region. This includes maintaining existing and planned capacity and operations for Amtrak and NJ Transit at Penn Station, in the East River tunnels, in the Harold Interlocking, and in Sunnyside Yard, and maintaining required future capacity and operational flexibility for MNR at GCT. It also includes minimizing potential effects on and maximizing benefits to NYCT subway lines, by reducing ridership where possible on overcrowded lines, and to the extent possible, allowing flexibility for coordination with other potential transportation projects.

E. PROJECT BACKGROUND, PRIOR STUDIES, AND CURRENT PLANNING CONTEXT

PROJECT BACKGROUND

Improving mobility within the LITC—specifically alleviating highway congestion by providing a rail link between Long Island and East Midtown—has been under discussion for at least four decades. Since the 1950's, a number of studies have investigated ways to improve mobility within the LITC. Several studies have examined and supported the concept of an East Midtown rail terminal for the LIRR. A review of the history of these studies sheds light on the sequence of events leading up to this East Side Access *FEIS*.

PRIOR STUDIES

The first recommendation of an East Midtown terminal for the LIRR came in 1963, as part of the LIRR modernization program. Three years later New York State purchased the LIRR from the Pennsylvania Railroad and placed it under the authority of the newly created Metropolitan Commuter Transportation Authority (MCTA). Planning for the LIRR became more coordinated with planning for the city's subway system, and the concept of a joint subway-LIRR tunnel emerged. The tunnel, to run beneath the East River at 63rd Street, would have two upper tracks for subway service between Manhattan and Queens and two lower tracks for LIRR service between East Midtown and Long Island.

Passed as part of a $2.5 billion state transportation bond issue in late 1967, the 63rd Street East River tunnel was allocated $600 million. Early in 1968, two MCTA studies examined the feasibility of an East Midtown LIRR terminal to receive trains using the 63rd Street Tunnel. *Improved Passenger Service to Manhattan* recommended a LIRR terminal at GCT while *Metropolitan Transportation: A Program for Action* (sometimes referred to as "*Grand Design*") recommended, among other things, a new LIRR terminal under Third Avenue at East 48th Street with a skyscraper above. In October 1969 construction of the 63rd Street Tunnel began under the auspices of MTA, the successor to MCTA.

Despite local opposition to a Third Avenue LIRR terminal, design work continued and, by January 1975, preliminary engineering and design work was complete. (Reasons cited for the opposition to the terminal included the following: increased traffic congestion in the area, adverse effects on a residential neighborhood, excess capacity at GCT and hence an insufficient need to construct an entire new terminal.) The design called for pedestrian connections to GCT, the Lexington Avenue subways at East 53rd and East 51st Streets (E, F, and 6), and the

proposed 48th Street station on the planned Second Avenue subway line. Costs were estimated at $420 million in 1975 dollars.

Continued negative reaction to the Third Avenue Terminal forced the MTA to revisit the idea of a LIRR terminal at GCT. Grand Central Alternative, published by the MTA in September 1976, called for a $332 million (in 1975 dollars) LIRR Terminal at GCT with a similar design as the proposed Third Avenue Terminal. This study called for dedicating 20 lower-level tracks to LIRR service—10 tracks on the west side and 10 storage tracks on the east side—and moving some ConRail (predecessor to MNR) operations to the upper level of GCT.

Although the fiscal crisis of the early 1970's stalled the consideration of an East Side terminal for the LIRR, the need remained. The *Penn Station Capacity and Utilization Analysis* report, completed by MTA in January 1992, affirmed that peak period commuter needs at Penn Station were constrained by a number of factors: train length limitations, lack of full access to the West Side Yard from some LIRR tracks, and capacity ceilings through the East River tunnels, to name a few. According to the report, increased demand for LIRR service was expected to worsen these conditions over the next decade. While operational changes at Penn Station (increasing station capacity from 36 to 42 trains per hour) were expected to relieve this condition slightly, a subsequent *LIRR Network Strategy Study* (LIRR, 1994) concluded that only a new terminal could fully address Penn Station's capacity constraints.

An April 1993 report, *The Operational & Physical Feasibility Study of Long Island Rail Road Access to Manhattan's East Side* (prepared by STV/Seeleye Stevenson Value & Knecht), concluded that, as originally intended, the lower level of the 63rd Street Tunnel could provide a feasible East Side access for LIRR trains. According to the report, this could be achieved by connecting the tunnel to both the LIRR's Main Line and Port Washington Branch at Harold Interlocking in Queens, and by connecting the tunnel to GCT in Manhattan. Although it was similar to the 1976 study, which came to the same conclusion, the 1993 study included more detail, evaluating a number of Queens and Manhattan connections and alignments and, for the first time, raising the possibility of midday LIRR train storage in Yard A adjacent to Sunnyside Yard rather than at GCT.

In October 1989, 21 years after construction of the 63rd Street Tunnel began, three new subway stations were opened on the 63rd Street line—East 63rd Street and Lexington Avenue, Roosevelt Island, and 21st Street/Queensbridge. The Sixth Avenue line and the Broadway line were extended northeast beneath Central Park to 63rd Street and eastward to the upper level of the 63rd Street Tunnel into Queens. NYCT is currently extending this line approximately 1,500 feet farther to connect to the Queens Boulevard line; this work is scheduled for completion in 2001 (see "Planning Context," below). The unused lower level of the 63rd Street Tunnel has been extended to just north of Sunnyside Yard.

In April 1998, an MIS was completed. This study evaluated a wide range of actions to address the mobility needs and access problems of the LITC. The MIS process, initiated in January 1995 in accordance with the requirements of the Intermodal Surface Transportation Efficiency Act of 1991 (usually referred to as "ISTEA"), set forth goals and objectives to solve the problems identified in the corridor, and developed and evaluated alternatives in a two-stage screening process (described in more detail in Chapter 2 of this document, "Project Alternatives"). Among the alternatives were: new express bus service combined with high-occupancy vehicle, or HOV, lanes; various East Side terminal alternatives, including different services using GCT and numerous alternatives with other East Side terminal locations; provision of different intermodal

transfer stations at Sunnyside Yard (e.g., transfers between LIRR and NYCT subways, 42nd Street light rail transit, buses, and/or NJ Transit trains); operation of NYCT subway service on certain LIRR routes in Queens; and operation of LIRR service on certain NYCT subway routes in Queens. As a result of the MIS process, NYMTC identified a locally preferred alternative to meet the study's goals: provision of new LIRR service to GCT, from Harold Interlocking, under Sunnyside Yard, and through the existing lower level of the 63rd Street Tunnel. That alternative is evaluated in this *FEIS*.

CURRENT PLANNING CONTEXT

MTA LONG-RANGE PLANNING FRAMEWORK

Problems similar to those encountered in the LITC can be found in varying degrees throughout MTA's vast transportation system. Recognizing the need for system-wide improvement and the interconnections among the system's many components, MTA has developed the "Long Range Planning Framework" aimed at a unified program of improvements to its subway and commuter rail systems. This effort also recognizes that although a current map of the region's subway and rail lines would show little difference from one produced a half-century ago, the areas and the passengers they serve have seen tremendous change. In the expectation of continued changes in the 21st century, MTA is examining how its network can be expanded and adapted to meet long-term access and mobility needs. To this end, MTA and its operating authorities, in coordination with FTA and other agencies, as appropriate, are undertaking seven coordinated but independent studies. These improvements are intended to alleviate overcrowding, reduce travel time, better connect the rail and subway lines, provide high-quality service, and extend service to under-served areas. The East Side Access Project is one such project; the others are as described in the subsections below.

All *these* studies are being coordinated through the MTA Long Range Planning Framework Group, which consists of study managers and key staff from MTA and its subsidiaries, LIRR, MNR, and NYCT, with additional input from NYMTC and the Port Authority of New York & New Jersey (PANYNJ) *and NJ Transit*. In particular, the group has worked to make sure that the same assumptions and common evaluation criteria are used for such items as regional forecasts, current and future levels of transit service evaluation, and the future shape of the regional transit network. Although these projects, if built, would be part of the region's overall transportation system, they are independent of one another. Each has its own purpose and need and maintains its own public involvement process; each is subject to its own assessment and alternatives evaluations; and each can be built without affecting the decision to build any other. *The design and construction of the East Side Access Project would continue to be coordinated with these other regional transportation plans.*

East River Crossing Study

Sponsored by MTA and NYCT, this study assesses alternative strategies to improve transit service between Brooklyn and Manhattan, particularly considering the long-term reliability of the East River bridges for continued transit service. The Draft MIS Report for the project, completed in October 1997, concluded that the preferred alternative would construct a connection at Rutgers Street/DeKalb Avenue, to allow trains now limited to the Manhattan Bridge to also use the Rutgers Street tunnel. This would be accompanied by operational changes, including service rerouting, lengthening of the No. 3 trains to increase their capacity, and creating new transfers between Lawrence and Jay Street stations in Brooklyn and from Broadway/Lafayette

and Bleecker Street (northbound) stations in Manhattan. This proposal must now be subject to public review and consideration by the MTA Board of Directors.

Second Avenue Subway/Manhattan East Side Transit Alternatives (MESA)

This study, sponsored by NYCT and MTA, examines NYCT's long-term needs and options for increasing transit capacity on Manhattan's East Side. Goals and objectives for the project include improving mobility, achieving economic feasibility and cost effectiveness, and maintaining or improving environmental conditions. The study has considered a full range of alternatives, and an MIS/DEIS was completed in August 1999. Detailed analyses were performed for four alternatives—the No Build, a Transportation Systems Management (TSM) Alternative that includes dedicated bus lanes on First and Second Avenues; a new East Side subway on Second Avenue north of 63rd Street and continuing on the Broadway express tracks down to Lower Manhattan; and the same new subway supplemented by new light rail transit (LRT) serving the Lower East Side and Lower Manhattan.

The MESA Study is the planning effort for the northern element of a full-length Second Avenue subway. Following public review of the *MESA* MIS/DEIS, MTA determined that it will construct a full-length Second Avenue subway that will extend generally along Second Avenue from 125th Street in East Harlem to the Financial District in Lower Manhattan. The *MESA Study is an important and necessary step in the planning for the Second Avenue subway project.* The goal of the Second Avenue subway is to improve mobility and reduce crowding on the East Side of Manhattan, including the reduction of peak hour demand on the Lexington Avenue subway, reducing delays in passenger loading and unloading at major stations, including 42nd Street, and thus increasing train capacity by allowing better train throughput. *A total of $1.05 billion has been allocated in the MTA's 2000-2004 Capital Program for a full-length Second Avenue subway project.*

Access to the Region's Core (ARC)

This study—a joint planning effort of MTA, PANYNJ, and NJ Transit—began in January 1995, and examined long-term transportation initiatives to improve access and mobility from west of Hudson and Queens/Long Island to Midtown Manhattan's CBD ("the core"). Phases I and II of the ARC study considered a full range of alternatives. The study is now focusing on one alternative (Alternative AA). This alternative includes LIRR East Side Access, and permits all three of the region's commuter railroads to operate in both Penn Station and GCT. It fosters the concept of a one-seat ride from all commutersheds to both East and West Midtown, and includes a through connection between these two terminals, an expanded Penn Station, and a new two-track Hudson River tunnel. Phase 3 of ARC will include a more detailed analysis of this alternative, while also exploring variants to the alternative's alignment east of Penn Station. ARC Phase 3 will also investigate possible improvements to increase Penn Station capacity in the near term (2003-2010). The result of Phase 3 will be the selection of a locally preferred alternative, which may proceed into an EIS.

Lower Manhattan Access

This study is intended to identify, evaluate, and recommend alternatives for short- and long-term access improvements to Lower Manhattan for New York's suburban commuters using MNR or the LIRR. This MTA study, which began in the fall of 1997, is a key component of a city and state effort to maintain and enhance Lower Manhattan as a strong office center and as a 24-hour community, serving residents, workers, shoppers, and tourists. In this study, the short-term

options would include steps that could be implemented quickly to improve the transfer from rail terminals to the subway and to improve the commuter's sense of comfort and convenience. Such options might encompass operating practices, rolling stock, and station improvements. Longer-term strategies would address the total commuting trip and might include major facilities, such as new routes, new stations, or altered use of existing facilities.

MNR Penn Station Access

MNR is considering options for bringing its commuter trains into Penn Station via tracks currently used by Amtrak trains for long-distance travel. In addition to provision of MNR service to Penn Station, the MIS/DEIS study is examining the need for additional stations on the West Side of Manhattan and at Co-op City in the Bronx, and the potential for permitting diesel dual-mode through-running operations across several lines and routes.

La Guardia Subway Access Study

This NYCT study was initiated by a cooperative partnership among the State and City of New York, the Queens Borough President's Office, MTA, and PANYNJ to develop one-seat rail rapid transit access from Lower and Midtown Manhattan to La Guardia Airport, perhaps an extension of the Broadway line N train. Work on an Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) was begun in March 1999.

OTHER MTA PROJECTS

A number of other major projects recently completed, now under construction, or in the planning stages affect the planning context for East Side Access. These are described below.

LIRR Projects

- *Penn Station Platform Improvements.* Platform 11 at Penn Station was recently lengthened to accommodate 12-car trains (rather than its previous 8-car train capacity). All of LIRR's platforms now accommodate 12-car trains.
- *LIRR Bi-Level Push-Pull Coaches.* LIRR's entire diesel-hauled fleet will be replaced by a new fleet of bi-level coaches which will enable LIRR passengers to have a more comfortable ride, while slightly increasing line capacity.
- *LIRR Cab Control Cars.* Some of the forthcoming new LIRR bi-level coaches will be cab control cars, which are positioned at the end of a trainset to allow push-pull train operation from this car. This saves capital and operating costs by eliminating the need to purchase an additional locomotive to accomplish this task.
- *LIRR Locomotives.* A new fleet of diesel and dual-mode locomotives will haul the new bi-level coaches. New, dual-mode locomotives (both diesel and electrically powered) will operate directly into Penn Station, allowing for a one-seat ride for passengers on non-electrified, diesel lines. Currently, all passengers on diesel lines must switch to electric trainsets (usually at Jamaica) because of restrictions on diesel locomotive operation in Manhattan. Diesel lines include the Oyster Bay Branch, the Port Jefferson Branch east of Huntington, the Greenport Branch east of Ronkonkoma, the Montauk Branch east of Babylon, and the Montauk Division west of Jamaica to Long Island City. Dual-mode locomotives will be phased in beginning in late 1999. In addition, new diesel locomotives will replace existing 1960's equipment in diesel territory.

- *LIRR Parking and Hub Development.* An expansion of parking system-wide and bicycle parking provisions will help eliminate LIRR ridership growth constraints, and development of several regional intermodal transportation hubs will encourage other means of access to LIRR stations.
- *Main Line Third Track Construction.* To expand capacity and facilitate greater levels of reverse peak and intra-Island service, the LIRR has developed plans to install a third Main Line track between Mineola and Hicksville.
- *At-Grade Crossing Elimination.* The LIRR is working with Nassau County and the New York State Department of Transportation (NYSDOT) to eliminate six at-grade train crossings in Mineola.
- *Shops and Yards.* Expansions or improvements at storage yards are planned over the 20 year horizon to efficiently and effectively provide for planned fleet growth and service expansion. Identified improvements include: storage at Huntington, south of Babylon Yard; Yaphank; Ronkonkoma; Jamaica; Hempstead; Port Washington; and Long Beach.

MNR Projects

- *Grand Central North.* Until recently, all passengers arriving at GCT had to leave the platforms using exits at the south end of each platform. This created pedestrian flow bottlenecks and imbalanced trainset loadings since many customers attempted to ride near the platform exit. The Grand Central North Project (formerly known as North End Access), inaugurated in the summer of 1999, has redressed this imbalance by constructing exits from the northern portion of each platform that lead to street exits as far north as 48th Street. These north-end exits are more convenient to many passengers' destinations. These exits have also provided a more even distribution of passengers throughout each train, and increased terminal capacity by allowing crowded rush hour platforms to be cleared more quickly. Exits have been created near East 46th, East 47th, and East 48th Streets.
- *MNR Mid-Harlem Line Third Track Construction.* An upgrade of an existing third track between Mount Vernon West and Fleetwood stations on the Harlem Line, along with new third track construction between Fleetwood and Crestwood stations, will accommodate expansion of peak service into GCT, facilitate Upper Harlem/Dover Plains express service, and accommodate the growing intra-suburban/reverse commute markets.
- *MNR Wassaic Extension.* In this project, now under construction, MNR will extend the Upper Harlem Line approximately 6 miles from its current terminus at Dover Plains north to Wassaic in the town of Amenia to serve the emerging population growth in this region. Two new stations, a layover rail yard, and a maintenance building are being constructed as part of this project.
- *MNR Parking.* As with the LIRR, additional parking spaces and the provision of bicycle storage are required to keep pace with projected MNR ridership growth. During the period from 1987-1998, 6,175 new and improved spaces were constructed in the MNR system. An additional 1,650 spaces will be added by 2000.
- *MNR Push-Pull Coaches.* MNR is purchasing 50 push-pull coaches to meet growth and service improvements for the Upper Hudson Line, the Dover Plains service, and the future extension to Wassaic. These coaches will be used to lengthen existing trains and to provide new through and express services for these non-electrified lines.

- *MNR Cortlandt Station.* MNR has completed the construction of a regional station in the Town of Cortlandt on the Hudson Line. This station resulted in the replacement of the obsolete Crugers and Montrose stations with a modern facility that has superior highway access and greater parking capacity.

NYCT Projects

- *Far West Midtown Study.* MTA/NYCT is studying options for extending No. 7 train service from its terminus at Times Square westward to the Javits Center.
- *63rd Street Tunnel Connection.* NYCT is currently constructing a two-track connection between the Queens Boulevard station at Queens Plaza and the tunnel's existing terminal at Queensbridge/21st Street. This connection to both the express and local tracks of the Queens Boulevard (E and F) line is expected to be completed in 2001. After the completion of the connection, improvements to subway service between Manhattan and Queens can be made via rerouting trains from the Queens Boulevard line to the 63rd Street Tunnel and extending the 63rd Street (B and/or Q) service to Queens Boulevard. Both of these service improvements will increase overall passenger capacity across the East River and reduce passenger crowding on the E and F lines.
- *Manhattan Bridge Reopening/T Train.* By 2004, all tracks on the Manhattan Bridge will be reopened to train traffic. At this time, the Broadway line will again operate its express service via the Manhattan Bridge. The N line will run express in Manhattan between 57th and Canal Streets, while the R line will continue to provide local service to all stations. By 2020, the Long Range Planning Framework No Build Service Plan presumes that ridership will have rebounded, following the reopening of the full Manhattan Bridge, sufficiently to warrant new rush hour express service from Brooklyn, tentatively designated as the "T" train.
- *One-Seat Transit Access to JFK Airport.* MTA is conducting a study to examine the operational and engineering feasibility of providing one-seat rail transportation access between the Manhattan CBD and Queens and John F. Kennedy International (JFK) Airport. The preferred link must be compatible with the JFK Light Rail System (LRS) currently under development (see "Other Transportation Projects in the Metropolitan Area," below). The preferred link also must be compatible with either the LIRR commuter rail system or the NYCT subway system, depending on the alignment selected. At the initiation of the study, MTA had identified four groups of potential alignment alternatives: New Rockaway Beach Branch service (either LIRR or NYCT) to the LRS at Howard Beach; direct connection from LIRR to the JFK LRS at Jamaica; extension of the proposed La Guardia Airport subway line (see above) to the LRS at Jamaica; and direct connection of the NYCT subway to the LRS at Howard Beach.
- *Southeast Queens Local Area Transportation Study.* This project is examining transportation needs and opportunities for people in Southeast Queens, an area of approximately 600,000 residents. The primary focus of the study is near- and intermediate-term transit improvements (primarily through improved bus and rail service, along with improved traffic access to the rail system). The study is being coordinated among NYCT, LIRR, LI Bus, and private bus companies.

- *Other NYCT Projects*. NYCT has programmed and is implementing a wide range of track, signal, car, facility, lighting, and infrastructure improvements throughout the transit system, intended to bring the subways to a state of good repair.

HIGHWAY PROJECTS ON LONG ISLAND

A number of major highway improvement projects are planned for the LITC. These projects include:

- The creation of lanes reserved for high-occupancy vehicles (HOV lanes) along the Long Island Expressway (from exits 30-32 in Queens and 32-40 in Nassau County), together with the development of express bus service to serve park and ride lots between exits 64 and 49;
- Reconstruction and rehabilitation of the 134-mile Long Island parkway system (Northern State, Southern State, Meadowbrook, Wantagh, Sagtikos, Sunken Meadow, Robert Moses Causeway, Bethpage, and Hechscher Spur Parkways);
- Improvements along Sunrise Highway;
- Widening of Jericho Turnpike;
- Realignment and improvement of Hempstead Turnpike;
- Elimination of six at-grade LIRR crossings in Mineola (as discussed previously in "LIRR Projects"); and
- Upgrades and expansions to Long Island's Intelligent Transportation System (ITS) operations center at Hauppauge.

In addition to highway improvements on Long Island, the E-ZPass electronic toll collection system has been put in place at all tolled East River crossings. This system permits two to three times as many vehicles to be processed per hour than existing toll collection devices.

NYSDOT's Long Island Transportation Plan (LITP) 2000 Study (discussed below) investigates ways to ease traffic congestion on Long Island's highways. This study examines highway congestion in the context of the entire Long Island transportation network.

OTHER TRANSPORTATION PROJECTS IN THE METROPOLITAN AREA

JFK Light Rail System

PANYNJ is currently constructing "Airtrain," a $1.5 billion light rail link to JFK Airport. The project's first two phases, to be completed in 2002, are a 2-mile loop around the airport, linking nine passenger terminals; and a 3.3-mile extension from the airport's terminal area to rental car areas, long-term and employee parking, and the NYCT Howard Beach subway station on the A line. The project will also include a 3.1-mile connection between the airport and LIRR's Jamaica station in Queens (also the location of the Sutphin Boulevard subway station on the E, J, and Z lines), and the construction of an intermodal transportation center at Jamaica Station, linked to LIRR and NYCT subway platforms. A new control center will also be constructed at Jamaica Station. This segment is to be completed in 2003.

NJ Transit Midtown Direct (Kearny Connection)

This project, a portion of which was completed in 1996, consists of the connection of the NJ Transit Morris and Essex Line with the Northeast Corridor Line. This connection permits

Morris and Essex Line train service to travel directly into Penn Station, eliminating the need for Manhattan-bound passengers to transfer at Hoboken for the PATH train. Midtown Direct will eventually permit 10 Morris and Essex trains to arrive at Penn Station during the AM peak period. Full implementation of Midtown Direct includes the ½-mile extension of the Montclair Branch to the Boonton Line, and the electrification of this line to Great Notch.

NJ Transit Secaucus Transfer

Similar to Midtown Direct service, the new Secaucus transfer station, currently under construction, will provide a transfer point from NJ Transit's Main Line, Bergen Line, Pascack Valley Line, and MNR Port Jervis Line to the Northeast Corridor Line and Penn Station. By eliminating the need for a Hoboken PATH transfer, the Secaucus Transfer will cut up to 25 minutes off the commutes of Manhattan-bound passengers. NJ Transit's package of improvements include the High Density Interlocking System, improvements to permit more than 25 trains per hour to enter Penn Station from the west. In addition, NJ Transit's East End Concourse project will create new vertical access and pedestrian spaces at the east end of NJ Transit's Penn Station area. These improvements support new NJ Transit services to Penn Station and are expected to be completed by 2001-2002.

Amtrak Northeast Corridor High Speed Electrified Service

Completion of electrification between New Haven and Boston will allow Amtrak to initiate high-speed rail service to Boston in early 2000, cutting travel time between Boston and New York to 3 hours. In addition to electrification, the new high-speed service also requires other infrastructure improvements, including changes to Sunnyside Yard in Queens. Improvements include a new service and inspection shop in the northeastern portion of Sunnyside Yard and the addition of another yard loop track.

Farley Post Office Conversion

The Pennsylvania Station Redevelopment Corporation (PSRC), a subsidiary of the Empire State Development Corporation, is overseeing the conversion of the Farley Post Office on Eighth Avenue across from Penn Station, into a new Amtrak gateway serving New York City. The existing passenger platforms will be reconfigured to allow access to both the current portion of Penn Station and the newly expanded Amtrak station area in the Farley Building. The creation of a new Penn Station will separate Amtrak operations from the commuter operations, allowing the current Penn Station to be used solely by LIRR and NJ Transit.

As part of the project, PSRC is proposing a primary pedestrian connection between the existing Penn Station and the new Amtrak area in the Farley Building through the existing pedestrian passageway under 33rd Street. This would connect the new Penn Station with the Eighth Avenue (A, C, and E) subway station and the west end of LIRR platforms. The project includes widening the passageway, reducing the grade of the ramp, improving access for disabled people, and upgrading the lighting, ventilation and life safety components. A draft Environmental Assessment has been prepared for the entire redevelopment project, including the passageway. While this new station will create additional passenger facilities, it is not expected to change or improve operations at Penn Station.

REGIONAL TRANSPORTATION PLANS IN THE METROPOLITAN AREA

Regional Transportation Plan: Mobility for the Millennium

NYMTC, in cooperation with state and local transportation agencies, is responsible for the development of a financially constrained Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) for the New York Metropolitan Region. The RTP, *Mobility for the Millennium, A Transportation Plan for the New York Region*, identifies issues and sets goals and objectives to guide transportation decision-making in the context of funding constraints and other limitations on the degree of transportation improvement that can be expected. The plan presents a vision of goals for transportation system by 2020. The following goals of the plan are relevant to the East Side Access study:

- Achieve and maintain a state of good repair on the transportation system. Objectives related to this goal include bringing transit infrastructure to a state of good repair and maintaining the system on a normal replacement cycle.
- Maximize the transportation system's level of service and manage demand. This mobility goal includes the objectives of increasing the market share of all transit modes, including (among others) rail rapid transit, local and express bus, ferry, and commuter rail.
- Develop integrated land use and transportation solutions for the short-, medium-, and long-term future. This includes taking into account how new development will affect the transportation system, and how that system should improve access to major activity centers.
- Improve the safety and security of the mass transportation system, including improving the environment of transit stations and facilities, and reducing the number of pedestrian and bicycle-related fatalities throughout the region.
- Improve regional environmental quality, balance environmental quality with the region's mobility and economic activity, and conform to the State Implementation Plan (SIP) and Clean Air Act Amendments (CAAA). A particularly relevant objective related to this goal is to minimize growth in vehicular traffic (vehicle miles traveled), thus reducing air pollution from cars, buses, and trucks (mobile source emissions).
- Identify public and private funding resources to implement the long-range plan. This goal, through its objectives, fosters increasing operating efficiencies in transportation systems, minimizes the time needed to implement projects, and develops new privatization efforts and innovative financing techniques.
- Continue to monitor the performance of the long-range plan, adding measures and projects, as necessary to achieve the goals of the plan.

The TIP addresses and coordinates specific transportation projects in the region in accordance with regional transportation goals. It is updated every two years, and must be found to conform to the SIP. The East Side Access study is included in the TIP. In addition, NYMTC, with NYSDOT, is developing the Congestion Management System (CMS) as mandated by the Transportation Efficiency Act for the 21st Century (TEA-21, which updates the Intermodal Surface Transportation Efficiency Act, or ISTEA) to carry out regional goals. CMS is not yet in final form, but has interim policies that reflect the goals and objectives cited above.

LITP 2000—Long Island Transportation Plan to Manage Congestion

NYSDOT's LITP 2000 study is a two-year, Island-wide transportation planning study to reduce traffic congestion and improve the movement of people and goods. This study will identify and evaluate solutions that will serve Long Island's transportation needs well into the next century, and will serve as a portion of NYMTC's broader regional planning efforts.

The study's initial list of types of strategies to be considered for evaluation in a MIS include: Travel Demand Management (TDM) actions, ITS, HOV lanes, physical improvements to the highway system, transit system improvements, improvements in the movement of cargo, non-motorized travel facilities (for pedestrians and bicyclists), and public/private policy initiatives (such as land use controls, flexible work hours, etc.)

New York State Air Quality Implementation Program

Under the CAAA of 1977 and 1990, areas of the country that exceed National Ambient Air Quality Standards (NAAQS) must prepare air quality plans demonstrating how standards will be attained. New York City and Nassau County, as non-attainment areas for carbon monoxide and ozone, and Suffolk County, a non-attainment area for ozone, are held to the commitments of the New York State Air Quality Implementation Plan (SIP). A SIP is a state's plan on how it will meet the NAAQS under the deadlines established by the Clean Air Act Amendments. EPA's final transportation conformity rule, dated August 15, 1997, requires metropolitan planning organizations (MPOs), the Federal Highway Administration (FHWA), and FTA to make conformity determinations on metropolitan long-range transportation plans, transportation improvement programs (TIPS), and transportation projects with respect to the SIP before they are adopted or approved. The long-range transportation plan is the official intermodal metropolitan transportation plan for an area and generally has a 20-year planning horizon. The TIP is a staged, multiyear, intermodal program of transportation projects which is consistent with the long-range transportation plan.

The conformity regulations require that, to demonstrate conformity, transportation programs must contribute to annual emission reductions and provide for the implementation of transportation control measures, consistent with SIP requirements. Project-level conformity to the SIP is determined by demonstrating conformity to a plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and supporting the expeditious attainment of the standards.

The applicable MPO for the New York Metropolitan Area is NYMTC. NYMTC approved the conformity determination for the RTP, which is the metropolitan area's long-range transportation plan, and the 2000-2004 TIP on September 23, 1999. FHWA and FTA approved the TIP/SIP conformity determination and EPA concurred with the findings. The MTA/LIRR East Side Access Project is included in the TIP *and the RTP.* ❖