The Nassau Hub Study
Alternatives Analysis/
Environmental Impact Statement

Problem Statement
Technical Memorandum

DRAFT FINAL

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1. INTRODUCTION

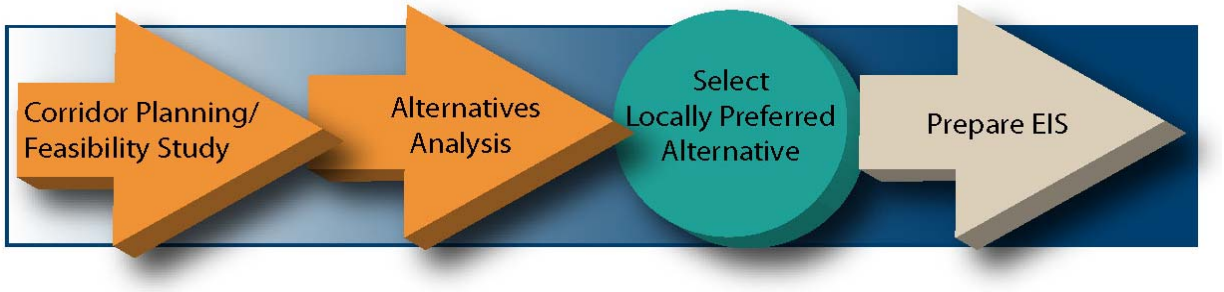
1.1 The Nassau Hub Study Overview

Nassau County has undertaken *The Nassau Hub Study Alternatives Analysis/Environmental Impact Statement (AA/EIS)* to define new transportation options and identify land use strategies that will help promote economic development, create jobs in the Study Area and improve access and mobility, which, in turn, will enhance the overall quality of life for all Nassau County residents. The AA phase is expected to result in the selection of a Locally Preferred Alternative or Alternatives (LPA) or a system of near and long-term improvements. Following the selection of the LPA and with the Federal Transit Administration's (FTA) concurrence, the potential environmental consequences and necessary impact mitigation required for implementation of the LPA will be evaluated pursuant to the National Environmental Policy Act (NEPA) EIS process.

Transit projects seeking funding from the FTA New Starts or Small Starts program must follow a standard process (Figure 1). New/Small Starts is the Federal funding program for new transit initiatives and Nassau County must follow a prescribed process to be eligible to receive these funds. An important early step in this standardized planning process is the preparation of an Alternatives Analysis (AA) that documents existing and future transportation problems, evaluates a range of potential alternatives to address those problems, and selects an LPA. An Environmental Impact Statement (EIS) is then prepared to fully disclose the potential impacts of the LPA on the human and natural environment. During both the AA and EIS processes, the public and other stakeholders are given frequent opportunities to review the analyses and provide comments and other input.

The purpose of the Problem Statement is to identify and document the transportation and related issues and challenges facing the area being studied that have led the project sponsor, Nassau County, to undertake *The Nassau Hub Study AA/EIS*. The Problem Statement is the underpinning on which all future study analyses are built and becomes the basis for identifying and evaluating potential solutions leading to the eventual selection of an LPA. The Problem Statement will be refined throughout the Study process as new data become available to communicate Study Area problems to the FTA, elected officials, agencies and the public.

Figure 1-AA/EIS Process Flow Chart



1.2 Background

In 2003, the Nassau County Planning Department began efforts to position the County to be eligible for Federal grants related to improving, upgrading and extending the transit network within the County, specifically the Study Area. The results were documented in the 2006 *Nassau Hub Major Investment Study Final Report* (the MIS) that examined and analyzed the demographic, economic and transportation

issues within an area known as the "Nassau Hub". The MIS concluded that the County should further study potential transit and related land use improvements, within the context of the FTA's project development process.

1.3 Previous Studies

Over the years there have been multiple efforts initiated to study the transportation, land use and economic issues within the Study Area. These studies include:

- Nassau County Planning Commission's *1968 Transit System Study*;
- The 1996 *Nassau Hub Economic Development Study;*
- The 1998 *Nassau Hub Study*; and,
- Nassau County's *Nassau Hub Major Investment Study Final Report*, dated March 2006.

Additional pertinent studies that have examined Nassau County and/or Long Island as a whole include:

- The *2008 Nassau County Master Plan Update, Trends Analysis*, adopted April 3, 2009;
- New York Metropolitan Transportation Council's (NYMTC) *2010-2035 Regional Transportation Plan (RTP)*;
- The *Long Island Regional Planning Council's Long Island 2035*, dated December 2009; and,
- The Regional Plan Association's *Places to Grow, an Analysis of the Potential for Transit-Accessible Housing and Jobs in Long Island's Downtowns and Station Areas*, dated January 2010.

These studies identified problems of growing roadway congestion, a limited transit system, slowed population growth and an overall stagnation of economic growth. Additionally, these studies identified strategies for directing growth to existing downtowns and targeted development areas, including the Study Area, as well as encouraging the use of public transit as a means of supporting growth without further exacerbating traffic congestion. The MIS was the only one of the above studies conducted pursuant to FTA requirements.

Faced with stagnant economic growth, an ever-increasing property tax burden and traffic congestion that continues to worsen, the County determined that a new paradigm was necessary for the future sustainable growth of the County. Accordingly, the County commissioned *The Nassau Hub MIS* in 2003 to review new transportation options and supportive land use development strategies that would result in improved access and mobility, support economic development opportunities, and enhance and preserve the high quality of suburban life that residents had come to expect. The MIS laid the groundwork and established the starting point for this current AA. The MIS identified problems and needs in the Nassau Hub, including:

- High levels of roadway congestion;
- Incomplete and/or missing transportation linkages between the Long Island Rail Road (LIRR) stations within the Nassau Hub and major activity centers;
- Missing transportation linkages among various activity centers within the Nassau Hub;
- Lack of north-south transit connectivity;

- Disjointed and automobile-oriented land use patterns;
- Unrealized economic development potential; and,
- An over-reliance upon automobiles for traveling to, from and within the Nassau Hub.

After significant technical analysis and public outreach, the MIS concluded that a potential series of transit projects should be advanced into the FTA New Starts/Small Starts process beginning with the completion of an AA, the selection of an LPA, and the completion of a NEPA EIS. This Problem Statement is one of the initial work elements in this process.

1.4 The Nassau Hub Study Area

1.4.1 Primary Study Area

The Nassau Hub Primary Study Area (Study Area) occupies an approximate 11.7 square-mile area in the heart of Nassau County, and is home to Hofstra University (existing campus and planned medical school), Nassau Community College, Museum Row, the Nassau Veterans Memorial Coliseum, the County Government Center, Nassau University Medical Center, Mitchel Field, Eisenhower Park, Roosevelt Field, and other notable County features (see Figures 2 and 3). Additionally, thousands of residents, employees, students and others live, work, or travel to, within and through the area. This crucial economic center, so vital to the future of Nassau County, has substantial traffic congestion, lacks efficient and direct transit choices and includes large areas of disjointed land use patterns. These factors have contributed to long commutes, decreased environmental quality, and overall difficulty in traveling to, from and within the area.

The Study Area has been established as the focus of this Study and is the area where it is anticipated that the majority of physical improvements associated with any given alternative may occur. During the MIS, a Study Area boundary was established based on the nexus of major roadways, transit stations and infrastructure, major land-use features and institutions and principal trip origins and/or destinations that might benefit from transit and mobility improvements. The MIS' Study Area northern boundary was located just to the north of the LIRR's Port Jefferson Branch, while the southern boundary was just to the south of Hempstead Turnpike. The western boundary ran along Rockaway Avenue and Cathedral Avenue, and the eastern boundary was Eisenhower Park. It included all or parts of the Villages of Mineola, Westbury, Garden City and Hempstead; the Hamlets of Carle Place and Uniondale; and the U.S. Census defined area of East Garden City. This area also included the Mineola, Carle Place, Westbury, Garden City, Country Life Press, and Hempstead LIRR stations; the Mineola Intermodal Center; the Rosa Parks – Hempstead Transit Center; and the Roosevelt Field Bus Transfer Facility. Finally, major roadways within these boundaries that serve both regional and local destinations include: the Meadowbrook State Parkway, Franklin Avenue, Clinton Road, Merrick Avenue, Hempstead Turnpike, Old Country Road, and Stewart Avenue.

The MIS Study Area boundary has been adopted as the starting point for this AA with one modification (Figure 3). The eastern boundary has been extended to incorporate the Nassau University Medical Center's East Meadow campus that is immediately east of Eisenhower Park. It was determined that the Medical Center is integral to any consideration of improved transit because it is:

- a major provider of public healthcare;
- a major employer with existing transit-dependent users and visitors;

- a destination with significant expansion plans; and,
- a key location on Hempstead Turnpike and adjacent to the existing MIS Study Area boundary.

The Study Area boundary is not necessarily a hard and fast line. Rather, as the Study progresses with technical analyses and outreach to the public, stakeholders and government agencies, the boundaries may contract or expand if dictated by Study needs.

1.4.2 Preliminary Regional Study Area

A Preliminary Regional Study Area (Regional Study Area) has also been defined based on travel patterns, potential opportunities for connections among activity centers, and key economic development opportunities outside the Primary Study Area. Building on the conclusions of the MIS, coupled with a need to incorporate areas that have the greatest potential for economic development, boundaries have been established. These boundaries extend slightly north of Mineola along Jericho Turnpike, on the east to the Village of Bethpage along the Seaford Oyster Bay Expressway, on the south along Sunrise Highway, and to the west along Nassau Boulevard (Figure 4). Beyond the features included in the Study Area, this area includes portions of the West Hempstead, Babylon and Ronkonkoma Branches of the LIRR; major roadways such as the Northern and Southern State Parkways, the Wantagh State Parkway, Routes 106/107, the Seaford Oyster Bay Expressway, Sunrise Highway and Jericho Turnpike; as well as major town centers such as the Hamlet of Hicksville and the Village of Freeport; and the former Grumman site in unincorporated Bethpage (currently undergoing redevelopment). The Regional Study Area was established to capture the context of the larger travel market to the Study Area.

As noted above for the Study Area, the boundary of the Regional Study Area may be modified if warranted by findings of the Study's technical analyses and/or input from the outreach process.

Figure 2-Regional Context for Study Areas

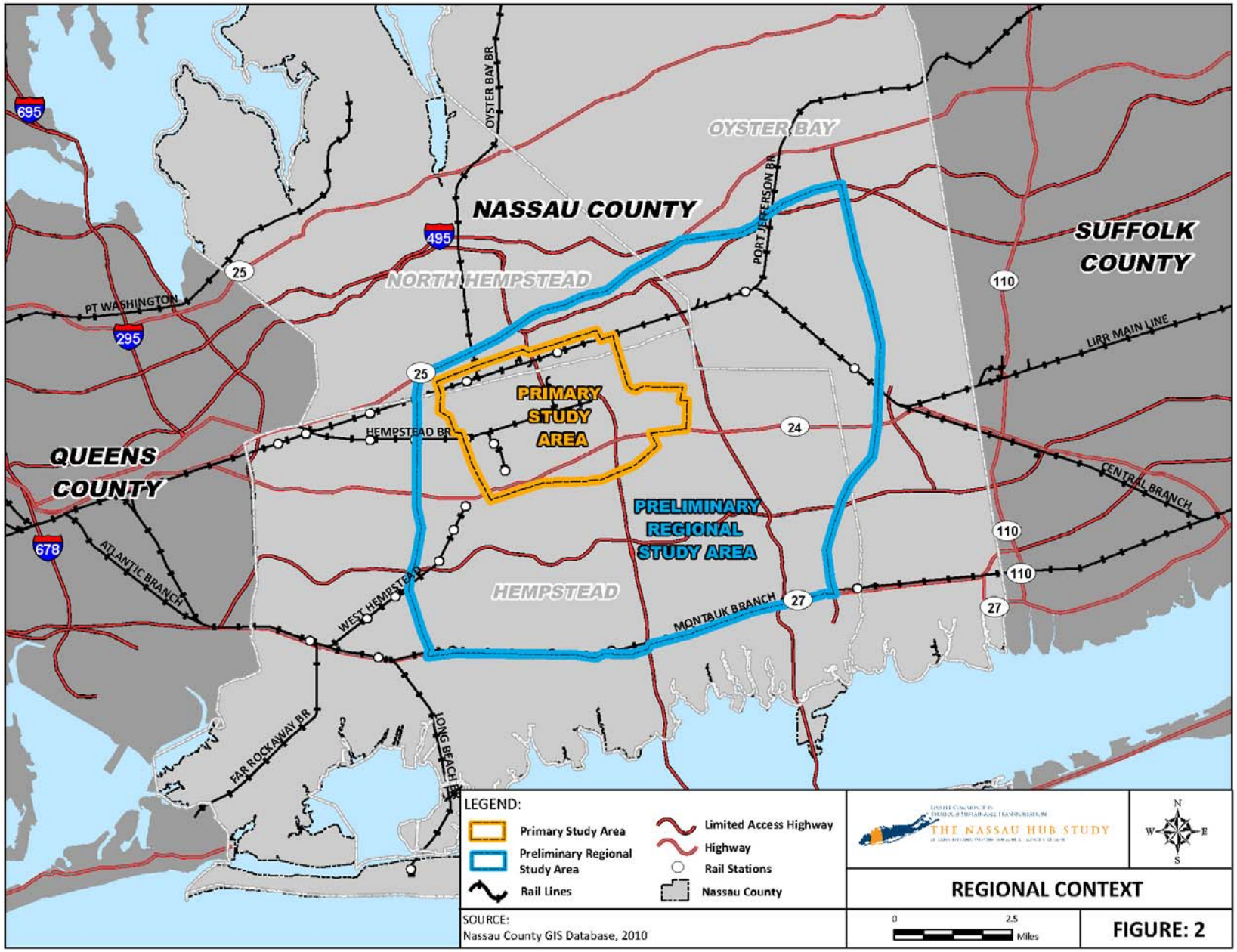


Figure 3-Primary Study Area

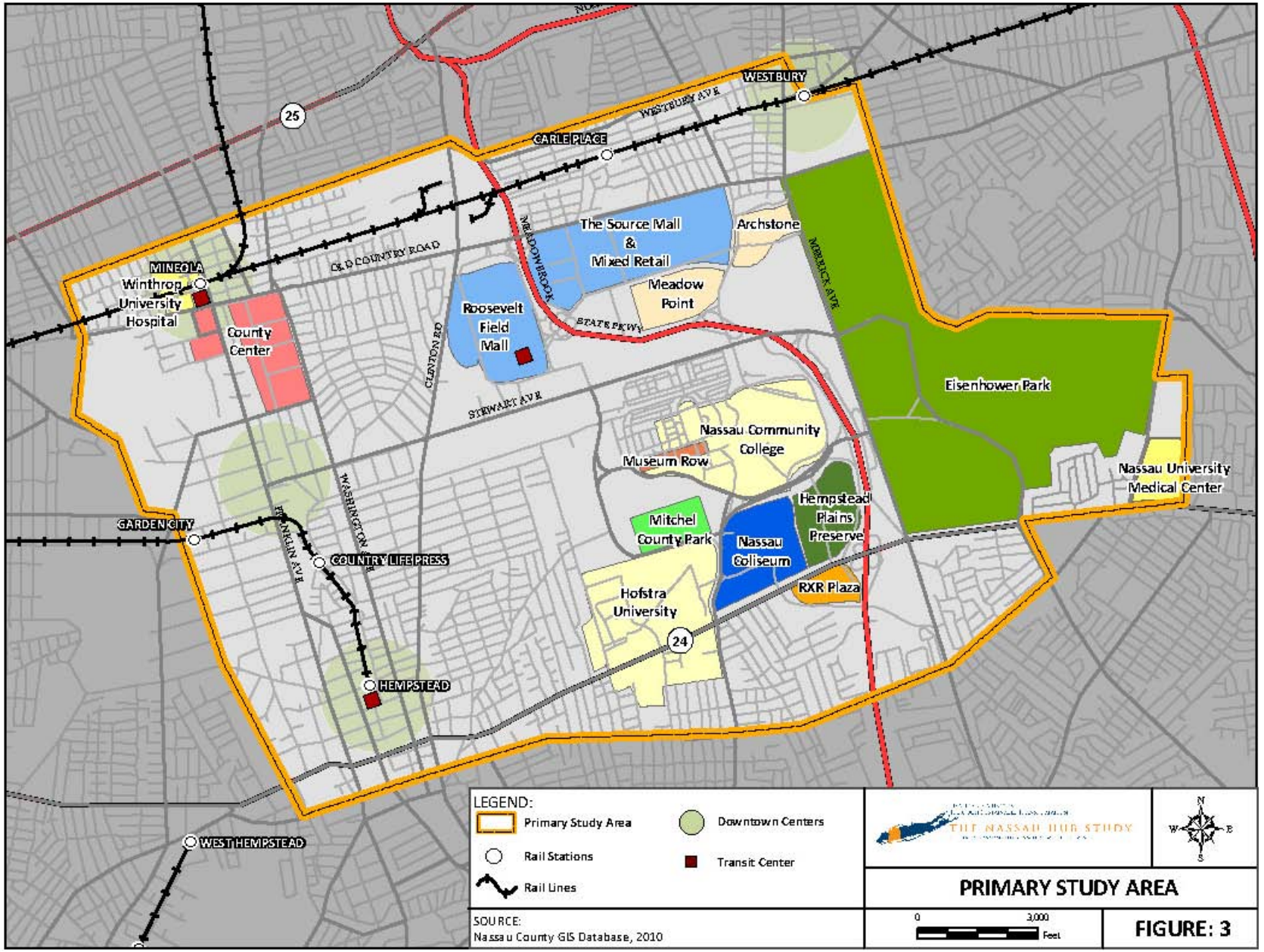
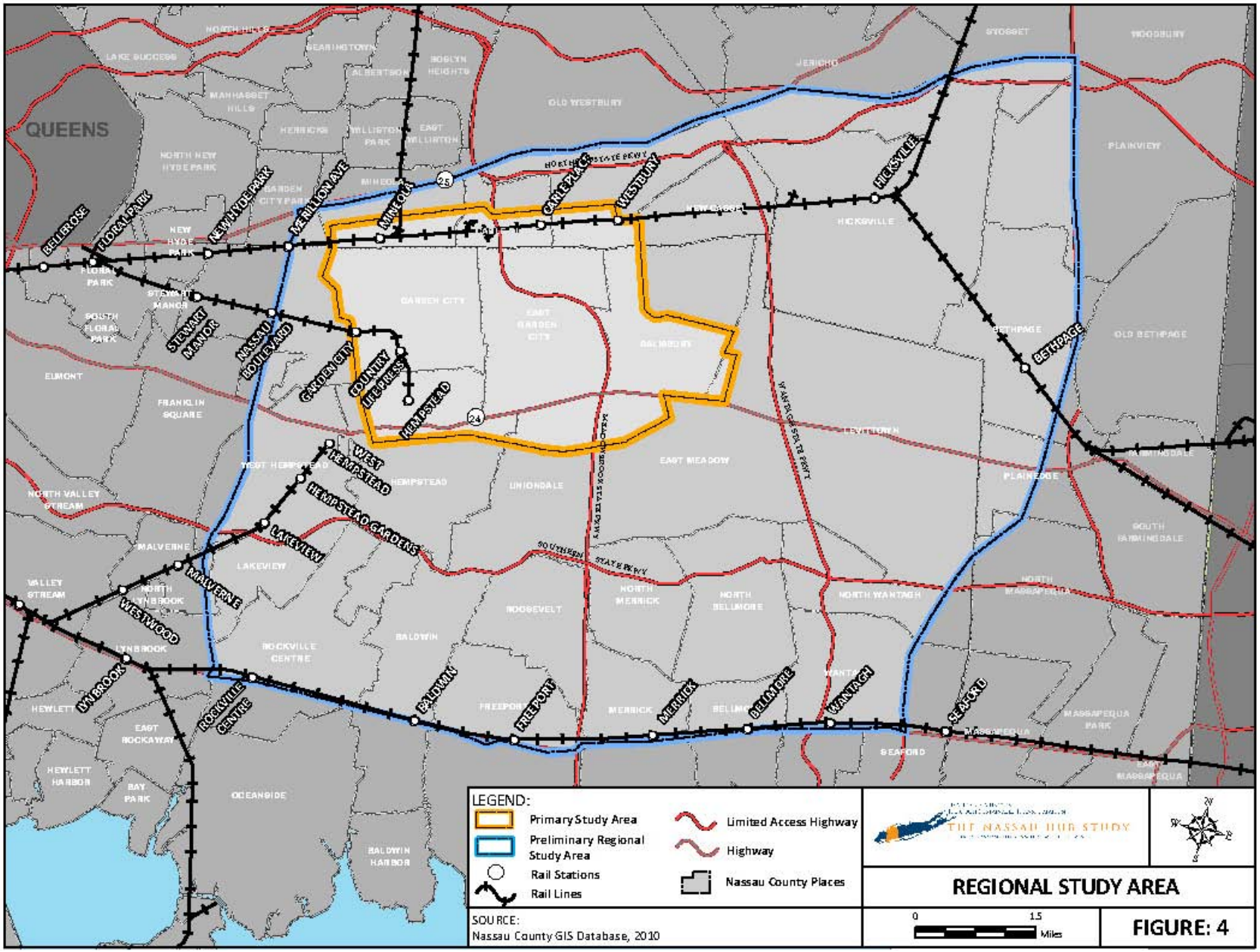


Figure 4-Preliminary Regional Study Area



2. NASSAU HUB STUDY AREA PROFILE

2.1 Historic Development Patterns

Nassau County, then part of Queens County, was first settled in the early 1600s by colonists from Connecticut. At the center of Nassau County was an area known as the Hempstead Plains, one of the few natural prairies east of the Allegheny Mountains. Remnants of the prairie remain in The Hempstead Plains Preserve and parts of Eisenhower Park. In the early years, settlers established agricultural and fishing communities. One of the oldest commercial centers is the Village of Hempstead in the southwest corner of the Study Area. Other colonial era settlements include Mineola and Westbury. The agricultural towns grew slowly through the early 1700s. By the late 1800s, Long Island supplied the Greater New York City area with farm products and was known as a resort area for wealthy New Yorkers. Also by this time, the basic road network that serves the area was in place. This included the 'hub and spoke' road network that is centered on the Village of Hempstead, with Old Country Road in the north and Hempstead Turnpike in the south.

In 1834, the Long Island Rail Road Company (LIRR) was chartered to create a connection from New York City to Boston. Due to the difficult terrain across southern Connecticut, the connection was to be via rail to Greenport on Long Island's North Fork and then by ferry to Stonington, Connecticut, where passengers would continue to Boston by rail. Since its plan was to serve long distance transportation, the LIRR did not serve existing communities along the shores of Long Island, but rather ran through the middle portion of the Island. In 1850, a rail route through Connecticut was constructed and the new rail line siphoned off passengers from the Long Island route. LIRR soon changed its emphasis to local service and constructed branches off its main line to connect to existing shoreline villages to increase ridership. By the late 1860s, other railroad companies built their own routes to fill voids within the system, many of which were later sold or leased to the LIRR. Many of these original rail stations are at the heart of Nassau County's traditional downtowns including Mineola, Westbury, Garden City and Hempstead Village in the Study Area and Hicksville, Rockville Center, Freeport and Merrick in the Regional Study Area. Train service was supplemented at first by private trolley lines, and later by private bus lines. In 1973 the remaining 11 private bus lines were consolidated as part of Nassau County's takeover of the system, with the day-to-day operations managed by the Metropolitan Transportation Authority (MTA) under a lease and operating agreement with the County. Some of the MTA Long Island Bus (LI Bus) routes today are a legacy of the private operators.

The most significant increase in Nassau County's population occurred after World War II when returning veterans moved to Long Island and started families. This growth was supported by the earlier development of Long Island's network of parkways that were first constructed in the 1920s and 1930s to provide access to the Island's natural and scenic beauty. They included the Meadowbrook Parkway within the Study Area and the Northern State Parkway and Wantagh and Southern State Parkways in the Regional Study Area. The full parkway system in the Study Area was not completed until 1956 when, with the closing of Mitchel Field, the last section of the Meadowbrook Parkway was constructed through the former military base. In the late 1950s, the portion of the Long Island Expressway just north of the Regional Study Area was constructed, thereby strengthening connections to New York City. Development followed the parkways and highways, and Long Island began its transformation as the paradigm of America's suburbs. Perhaps the best known of these new post-war suburbs is Levittown, located in the eastern portion of the Regional Study Area. In May of 1947, Levitt and Sons announced

their plan to build 2,000 mass-produced homes. Demand was so great that they announced plans for an additional 4,000 houses. The auto-oriented community had its own schools, shopping centers, playgrounds, and community center. The impact of Levittown was so significant that in 1950 William Levitt was featured on the cover of Time Magazine. Just a year later Levitt and Sons had constructed close to 17,500 homes in Levittown and the surrounding areas.[1]

This development pattern predominated and led to Nassau County's status throughout the mid-to-late 1900s as a bedroom suburb to New York City. The population doubled in 10 years, from 1950 to 1960, increasing from 672,000 to 1,300,700, reaching a peak of 1,428,838 in 1970. As suburban development and the reliance upon the automobile for transportation increased following World War II, the parkways, which had been designed for recreational use, came under increasing pressure from commuter and other increases in traffic.

Historically, the Study Area developed in a piecemeal fashion that encouraged low-density sprawl and the use of private automobiles. When capacity improvements were needed, the typical solution was to widen the travel ways and/or add lanes, which likewise encouraged the use of private automobiles. Transportation has always driven the development pattern and today, Nassau County is served by a multitude of transportation systems designed to serve earlier eras: a local road network laid out in colonial times, a rail system first laid out in the 1800s, remnants of private bus networks, a parkway system first planned over 75 years ago, and an expressway designed for earlier generations.

2.2 Transportation Network

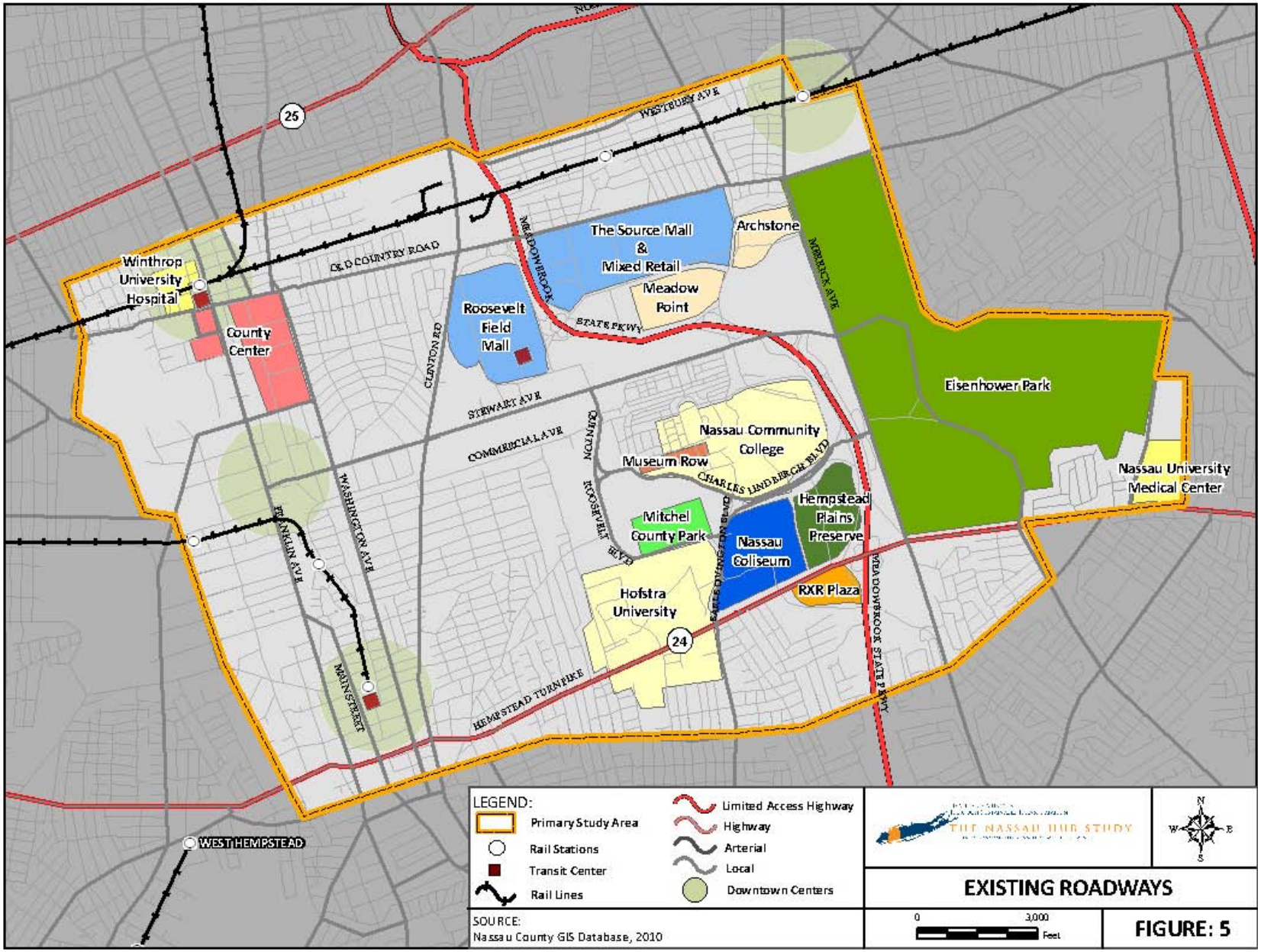
2.2.1 Description of Existing Roadway Network

The Study Area contains a network of roadways comprising State, County, and local roads. Figure 5 indicates the primary routes in and around the Study Area.

The Meadowbrook State Parkway (MSP) is the primary north-south travel route, and provides connections to other regional roadways, such as I-495/Long Island Expressway (indirectly), the Northern State Parkway, and the Southern State Parkway. The MSP is a limited-access, grade-separated highway consisting of three traffic lanes in each travel direction and separated by a median. Within the Study Area, full or partial interchanges are provided to east-west travel routes and are located at Old Country Road (Exit M1), Zeckendorf Boulevard (Exit M2), Merchants Concourse and Stewart Avenue (Exit M3), and Hempstead Turnpike (Exits M4 and M5).

[1] Levittown Historical Society. *Levittown History*. http://www.levittownhistoricalsociety.org/history.htm (August 25, 2010)

Figure 5-Existing Roadway Map



The primary east-west travel routes in the Study Area are Old Country Road (under Nassau County Department of Public Works jurisdiction) and Hempstead Turnpike (under New York State Department of Transportation [NYSDOT] jurisdiction).

Old Country Road is a major east-west roadway within the Study Area that contains a varying number of travel lanes, attributable both to available right-of-way and to adjacent land uses that generate substantial traffic demands that have necessitated a wider cross-section. Some sections have four travel lanes with or without street parking, while other sections have six to eight lanes with no parking. Old Country Road contains numerous curb cuts to allow access to adjacent land uses while major intersections are controlled by traffic signals. The roadway typically has a 40 mile-per-hour (mph) speed limit throughout, except for 30 mph limits posted in Carle Place and Mineola. Left- and right-turn lanes are also provided at many locations, such as intersections with major north-south streets and at access points to major activity areas.

Hempstead Turnpike (NYS Route 24) is a principal arterial with a wide median along much of its length (until it enters the Village of Hempstead), and generally has three travel lanes in each direction plus left- and right-turn lanes at major intersections. West of Oak Street (in Uniondale) and approaching the Village of Hempstead downtown, Hempstead Turnpike's cross-section narrows to two lanes in each direction. Hempstead Turnpike also has numerous curb cuts to allow access to adjacent land uses; major intersections are controlled by traffic signals. Hempstead Turnpike has a 40 mph speed limit throughout the Study Area, except in the Village of Hempstead where the limit is 30 mph.

Other significant east-west roads, such as Stewart Avenue, also serve many of the area's major commercial and institutional developments as well as passing through primarily residential sections of Garden City.

The Study Area is also crossed by several other roads that provide access to major development areas or internal circulation within or between major activity centers. These include Zeckendorf Boulevard, Merchants Concourse, Ellison Avenue, Charles Lindbergh Boulevard, Earl Ovington Boulevard, Endo Boulevard, Quentin Roosevelt Boulevard, and Commercial Avenue.

Many of the Study Area intersections have been improved to include through lanes or auxiliary lanes. Since these roadways have been expanded to the extent possible, given available rights-of-way, further widening would now be infeasible or, at least, extremely expensive and would involve significant right-of-way acquisition.

2.2.1.1 Overview of Roadway Congestion

One of the most prevalent transportation issues in Nassau County, in general, and the Study Area, in particular, is persistent and recurring traffic congestion on major roadways. The private automobile is the dominant mode of transportation into and around the Study Area, serving as the travel mode for the vast majority of all Study Area trips; non-work trips (shopping, entertainment, and recreational) are more likely to be auto-oriented than commuting trips that are somewhat more likely to be made via transit.

The peak commuter hours typically occur on weekdays from 8:00 to 9:00 AM and 5:00 to 6:00 PM, but traffic volumes are also consistently high throughout the midday period.[2] Congestion often occurs from the midday through the late afternoon/early evening peak period. Several roadways, such as Old Country Road and Hempstead Turnpike, experience high traffic volumes and high levels of congestion, even on

[2] Peak period refers to the time period(s) of the day in which the background traffic and/or project-generated traffic is at or anticipated to be at its highest level.

weekends. In addition to congestion related to commuting hours, the area is characterized by land uses that are event-based resulting in non-standard traffic patterns. For example, the Nassau Veterans Memorial Coliseum generates high volumes of traffic related to sporting and entertainment events held in the evenings and on weekends. Of particular note, evening events tend to have start times that partially overlap the peak hours, further exacerbating traffic conditions in the Study Area.

The Meadowbrook State Parkway (MSP) is characterized by traffic volumes that, at times, exceed 6,400 vehicles per hour (vph), which surpasses the roadway's capacity. This results in substantial traffic volumes and queuing at interchange ramps and in weaving areas along the MSP during peak weekday commuter and shopping periods, as well as many off-peak periods throughout the week. Traffic exiting the MSP, where interchange exit ramps are regulated by traffic signals or yield signs, can form long queues that back up onto the Parkway's travel lanes, creating potentially dangerous conditions. Volumes entering onto and exiting from the MSP vary widely for the seven entrances/exits in the Study Area, with over 1,000 vph occurring just on the northbound off-ramp at Old Country Road. The Study Area has only this one free-flowing highway or parkway; all other travel occurs on arterials and local streets.[3]

Many of the Study Area's principal arterials experience severe congestion along much, if not all, of their length during peak commutation hours as well as midday and weekend shopping, recreational, and entertainment hours. Old Country Road and Hempstead Turnpike, the two primary east-west arterials in the area, carry substantial traffic volumes, at times reaching close to 3,000 vph. At numerous locations where these two primary east-west arterials intersect with major north-south roads, the capacity of those intersections cannot adequately accommodate the volumes traveling through them. A major source of traffic congestion occurs at the many locations where key east-west and north-south roads intersect.[4]

Examples of this are at the intersections of Old Country Road and Glen Cove Road/Clinton Road, Old Country Road and Merrick Avenue/Post Avenue, and Hempstead Turnpike and Merrick Avenue, which operate at congested overall level of service (LOS) E or F in both the morning and evening peak hours, and at numerous other intersections that operate at LOS E or F in at least one of the two peak hours, if not both.[5] An intersection operating at overall LOS E or F generally means that either one specific traffic movement is operating at severe congestion levels or that multiple movements are operating at LOS E or F conditions. According to the year 2008 analyses published in the *DGEIS for the Lighthouse at Long Island*, seven of 27 intersections analyzed in the Study Area and along key feeder routes leading to it, operate at overall LOS E or F conditions under existing conditions in the weekday AM peak hour and another eight intersections operate overall LOS D. In the weekday PM peak hour, 11 of the 27 intersections operate at overall LOS E or F and another 10 operate at overall LOS D. In the Saturday midday peak hour, four operate at overall LOS E or F and another eight operate at overall LOS D (see Table 1 and Figures 6 through 8). Congestion delays at many of these intersections are already severe. Even at overall marginally acceptable/unacceptable LOS D, one or more traffic movements may be operating under congested conditions.[6]

[3] DGEIS for the Lighthouse at Long Island.
[4] Ibid.
[5] Level of service (LOS) represents overall operating conditions confronting a motorist, based on traffic congestion, and travel speed. LOS criteria, as defined in the *Highway Capacity Manual 200 (HCM 2000)*, are stated in terms of the average stopped delay per vehicle. Levels of service range from "A" to "F," with "A" representing free flow conditions and "F" constituting breakdown or congested conditions. Typically, LOS A through C are considered acceptable with LOS D considered marginally acceptable. LOS E and F are at or near failing conditions.
[6] Ibid.

Table 1-Overall Intersection Traffic Level of Service (2008 Existing Conditions)

INTERSECTION	WEEKDAY AM	WEEKDAY PM	SATURDAY MIDDAY
OLD COUNTRY ROAD & MINEOLA BLVD / FRANKLIN AVE	○	◑	○
OLD COUNTRY ROAD & WILLIS AVE	N/A	N/A	N/A
OLD COUNTRY ROAD & ROSLYN ROAD / WASHINGTON AVE	N/A	N/A	N/A
OLD COUNTRY ROAD & GLEN COVE ROAD / CLINTON ROAD	●	●	●
OLD COUNTRY ROAD & ROOSEVELT FIELD ENTRANCE	○	●	●
OLD COUNTRY ROAD & MEADOWBROOK PARKWAY SB EXIT RAMP	N/A	N/A	N/A
OLD COUNTRY ROAD & MEADOWBROOK PARKWAY NB EXIT RAMP	N/A	N/A	N/A
OLD COUNTRY ROAD & EAST GATE BLVD	N/A	N/A	N/A
OLD COUNTRY ROAD & ZECKENDORF BLVD	N/A	N/A	N/A
OLD COUNTRY ROAD & ELLISON AVE / MERCHANTS CONCOURSE	○	●	○
OLD COUNTRY ROAD & POST AVE / MERRICK AVE	●	●	◑
OLD COUNTRY ROAD & SCHOOL STREET / SALISBURY PARK DRIVE	◑	◑	○
FULTON AVE & NORTH FRANKLIN STREET	○	●	◑
FULTON AVE & PENINSULA BLVD	○	○	○
HEMPSTEAD TURNPIKE & OAK STREET	○	◑	○
HEMPSTEAD TURNPIKE & HOFSTRA BLVD / CALIFORNIA AVE	◑	○	●
HEMPSTEAD TURNPIKE & EARLE OVINGTON BLVD / UNIONDALE AVE	◑	●	●
HEMPSTEAD TURNPIKE & GLENN CURTISS BLVD	◑	◑	○
HEMPSTEAD TURNPIKE & MERRICK AVE	●	●	◑
HEMPSTEAD TURNPIKE & PARK BLVD / EAST MEADOW AVE	◑	●	○
HEMPSTEAD TURNPIKE & CARMAN AVE	●	◑	○
HEMPSTEAD TURNPIKE & NEWBRIDGE ROAD	●	●	◑
STEWART AVE & FRANKLIN AVE	●	◑	◑
STEWART AVE & WASHINGTON AVE	N/A	N/A	N/A
STEWART AVE & CLINTON STREET	◑	◑	○
STEWART AVE & ROOSEVELT FIELD RING ROAD (WEST)	○	○	○
STEWART AVE & QUENTIN ROOSEVELT BLVD	○	●	○
STEWART AVE & MERCHANTS CONCOURSE / ENDO BLVD	◑	●	◑
STEWART AVE & MERRICK AVE	◑	◑	◑
CHARLES LINDBERGH BLVD & EARLE OVINGTON BLVD	○	○	○
CHARLES LINDBERGH BLVD & MERRICK AVE	○	○	○
MERRICK AVE & CORPORATE DRIVE	○	○	○
FRONT STREET & UNIONDALE AVE	○	◑	○
FRONT STREET & MERRICK AVE	●	◑	◑

Legend:

○ Level of Service A,B,C (acceptable)
◑ Level of Service D (marginally acceptable/unacceptable)
● Level of Service E,F (unacceptable)

Notes:

1. Levels of service are for the overall intersection. LOS E and F indicate congestion or severe congestion, potentially for multiple traffic movements at the intersection. Overall LOS C and D may also have one or more individual traffic movements at congested LOS E or F.
2. Levels of service (LOS) A,B and C indicate acceptable conditions, LOS D indicates increased delays, while LOS E and F indicate congested or severely congested conditions.
3. N/A = Not analyzed

Source: DGEIS for the Lighthouse at Long Island

Figure 6-Overall Intersection Traffic Levels of Service: 2008 Existing Conditions-Weekday AM Peak Period

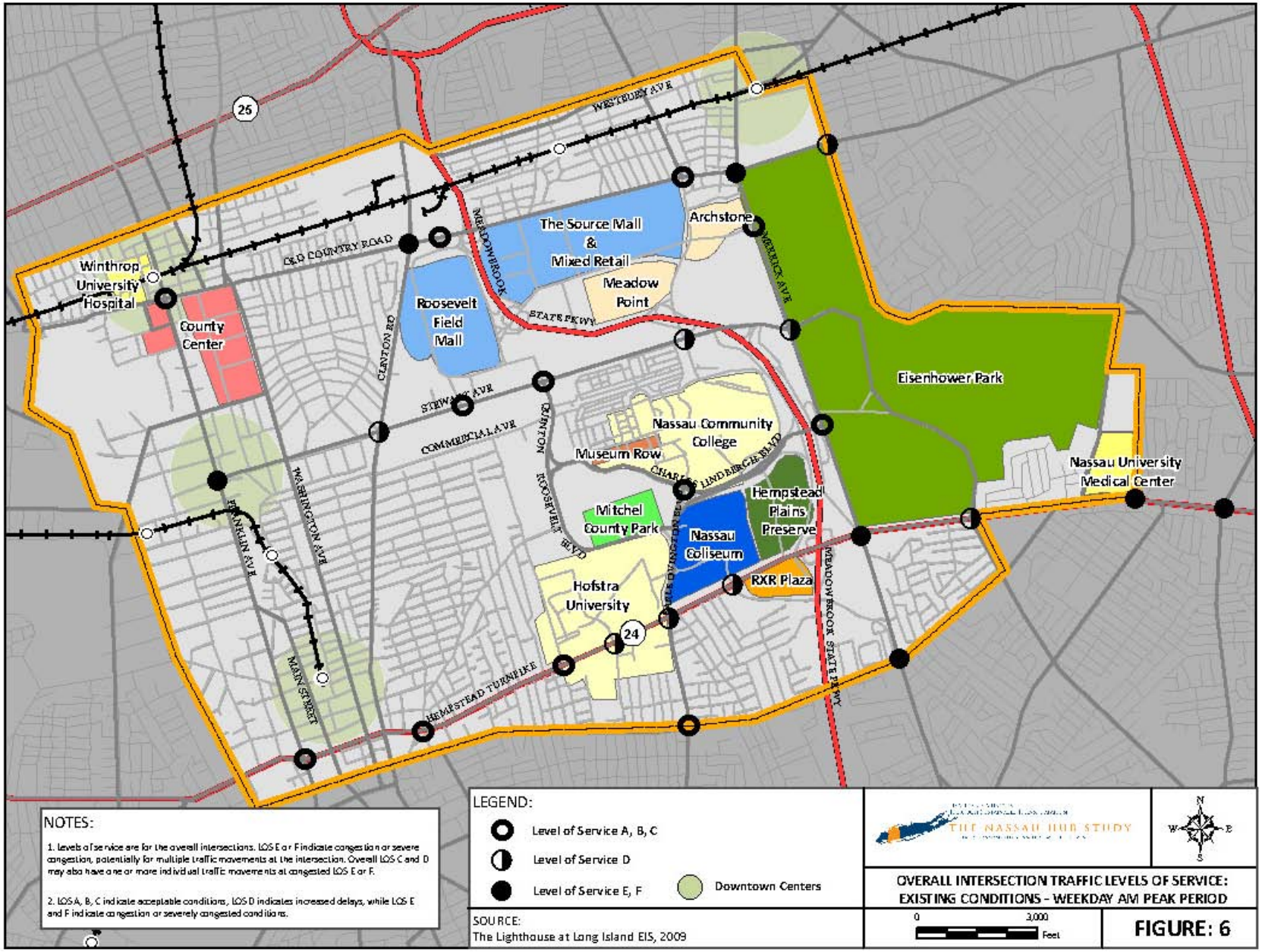


Figure 7-Overall Intersection Traffic Levels of Service: 2008 Existing Conditions-Weekday PM Peak Period

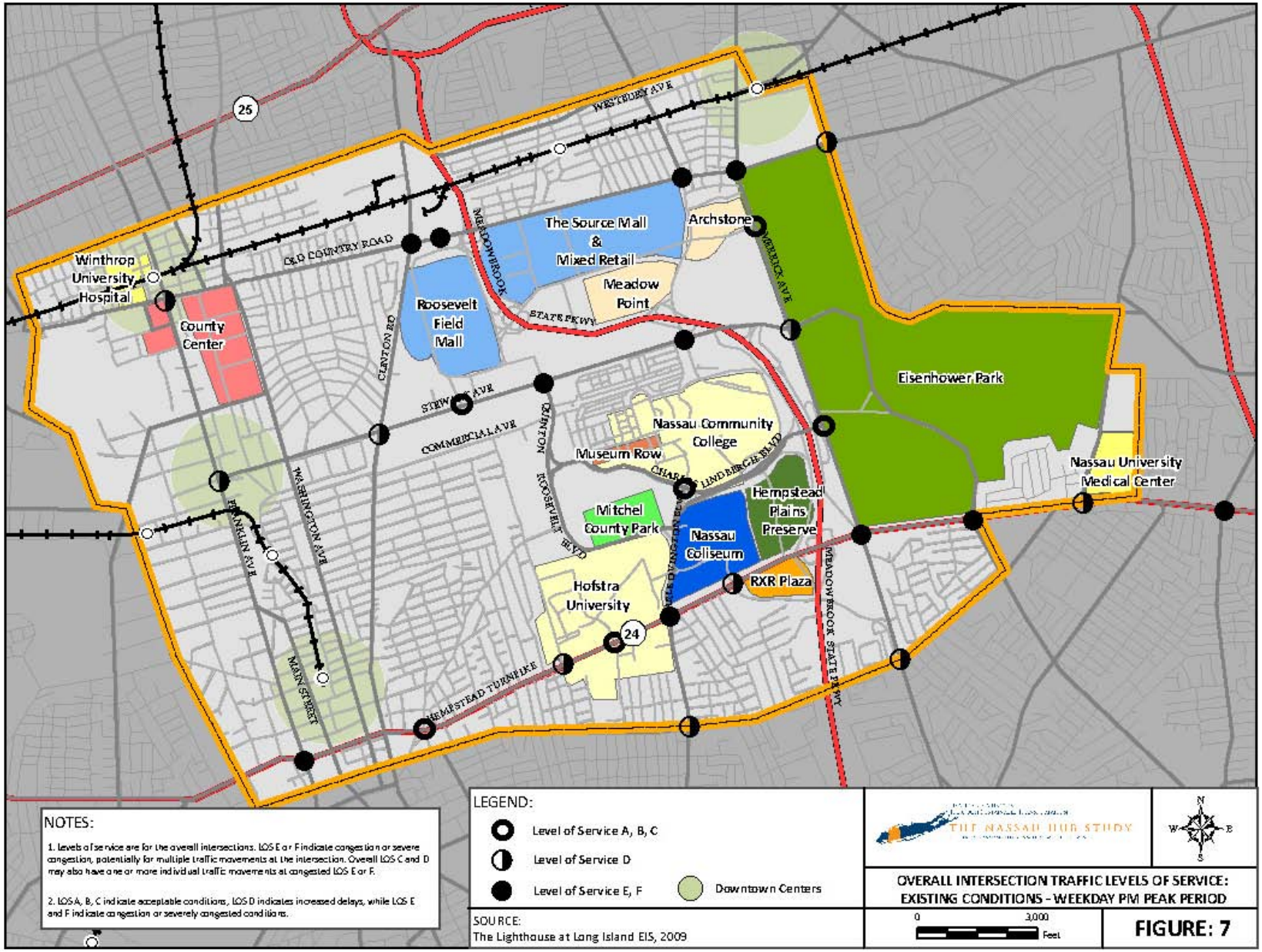
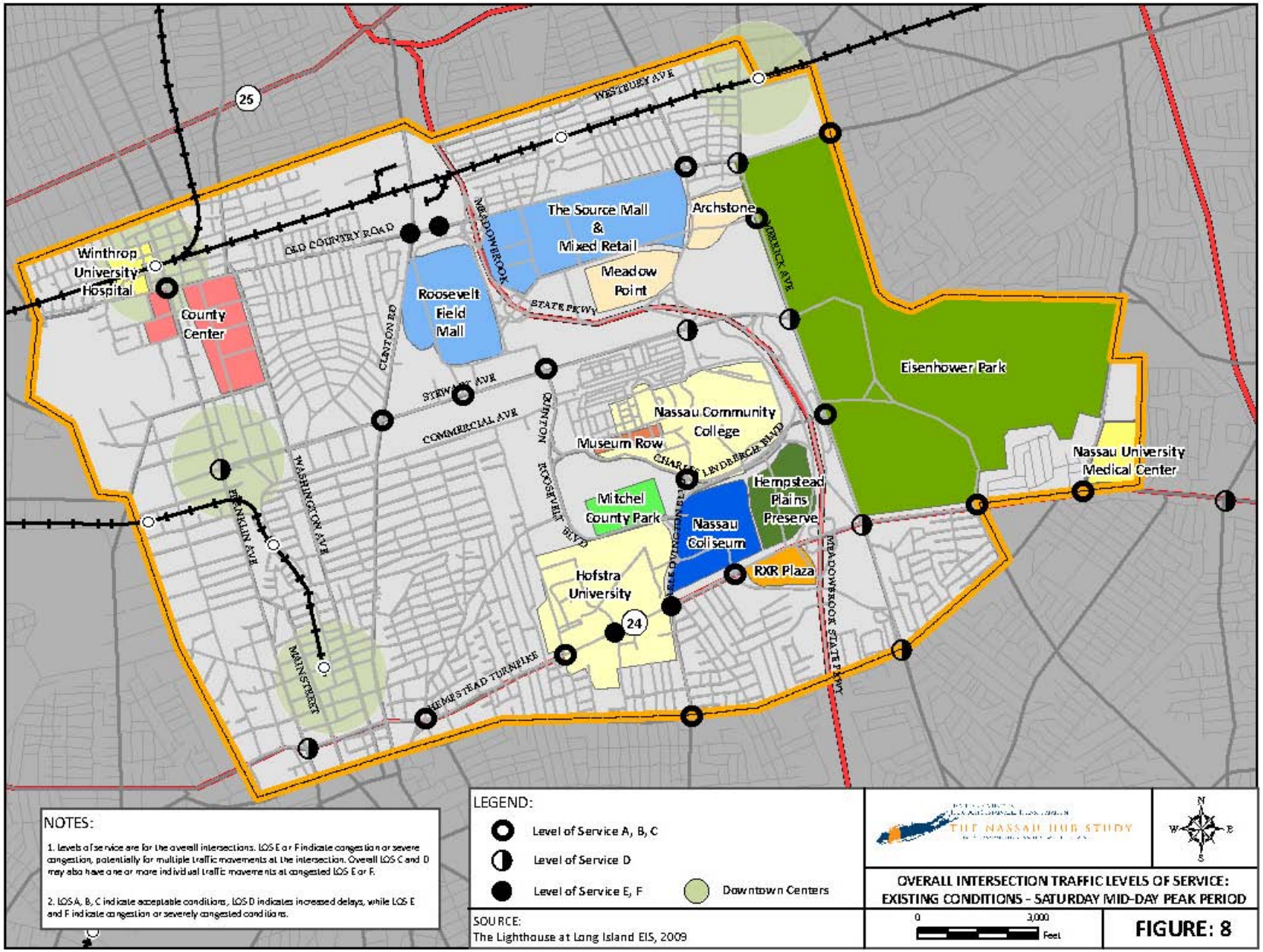


Figure 8-Overall Intersection Traffic Levels of Service: 2008 Existing Conditions-Saturday Midday



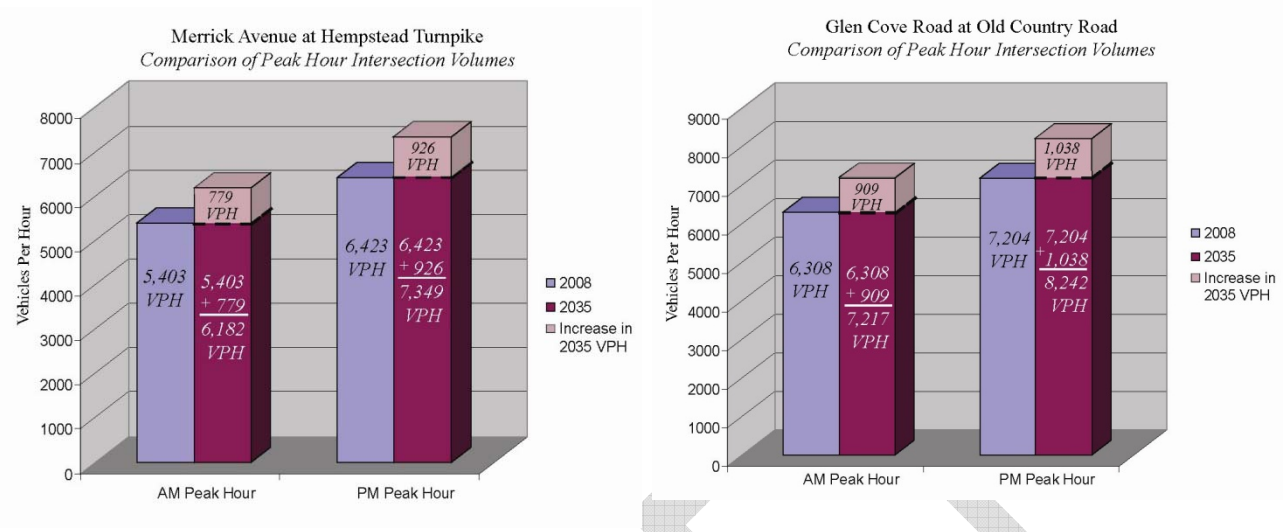
In order to accommodate existing traffic demands, many of the area's roadways have already been widened at critical locations with left-turn lanes and/or right-turn lanes and curb parking has been prohibited to improve roadway operations. One prominent example is the intersection of Old Country Road and Glen Cove Road/Clinton Road, where there are seven westbound lanes (two left-turn lanes, four through lanes, and a right-turn lane), six eastbound lanes (two left-turn lanes, three through lanes, and a right-turn lane), and four to five travel lanes per direction along Glen Cove Road/Clinton Road.

Even though these measures have added much-needed capacity, this intersection still operates at severely congested levels of service as 6,500 to more than 7,000 vehicles pass through it during peak hours. This intersection is currently operating at LOS E conditions during weekday and weekend peak hours, which indicates that it does not have the capacity to adequately process even existing volumes. There are numerous other examples throughout the Study Area.

NYSDOT forecasts that traffic in the Study Area will increase by approximately 0.5 percent per year. The Highway Data Services Bureau is responsible for collecting and reporting highway data (including volume counts) in New York State. The NYSDOT Traffic Monitoring System obtains 24-hour traffic count data on all State roads and many local roadways to determine current conditions and to project prior-year traffic counts into the current and future years. NYSDOT currently utilizes the 0.5-percent annual growth to project future traffic conditions on roadways within the study area. The use of this growth rate is justified based upon historic data and an ongoing traffic count program. This data source was used to determine ambient traffic growth. The New York Metropolitan Transportation Council (NYMTC) has developed a Best Practices Model (BPM) for the entire New York Region. The NYMTC BPM was intended as a mathematical representation of trip generation, assignment and mode choice for the entire NYMTC region. The scale of the model precludes its ability to forecast trips and traffic volumes in smaller model subareas – such as the Study Area – which comprise a myriad of individual intersections and road segments.

By the year 2035 (the Nassau Hub Study's Build Year), overall traffic volumes are expected to increase by almost 15 percent compared to existing volumes. Even without any significant land development or redevelopment projects, vehicle traffic within the Study Area is expected to increase by thousands of vehicles, and it is logical to conclude that congestion and delays throughout the Study Area will increase substantially. Applying this growth rate to key intersections in the Study Area adds hundreds of additional trips, as shown in Figures 9 and 10. With this projected traffic growth, all Study Area intersections currently operating at overall congested LOS E or F conditions will deteriorate further and incur substantially increased delays. It is also likely that Study Area intersections currently operating at overall marginally acceptable/unacceptable LOS D conditions will deteriorate to congested LOS E or F. In the most critical weekday peak hour between 5:00 and 6:00 PM, this would mean that 20 of the 27 intersections presented would be classified as failing. With no physical room and right-of-way to make improvements to handle this additional traffic, congestion and delays will worsen, causing traffic diversions to "lower order roads", potentially including residential streets. This condition will be common throughout the entire Study Area.

Figures 9 and 10- Merrick Avenue at Hempstead Turnpike and Glen Cove Road at Old Country Road – Comparison of Peak-Hour Intersection Volumes



Source: DGEIS for the Lighthouse at Long Island, 2008 Traffic Counts; NYSDOT growth rate for Town of Hempstead

2.2.2 Planned or Committed Roadway Improvements

The NYSDOT Region 10 Transportation Improvement Program (TIP) lists federally funded projects with money allocated through the next several fiscal years. The current TIP (dated August 3, 2010) extends through October 1, 2012, the beginning of Federal Fiscal Year (FFY) 2012. The region is in the process of developing projects for the 2012-2015 TIP and this should be adopted by September 30, 2011.

A review of the current TIP shows only standard maintenance and operations projects are expected to be implemented within the Study Area. The TIP projects include improvements to the Nassau County traffic signal computer system on some roadways (which would improve capacity somewhat by streamlining signal coordination-related delays), and State mode-choice programs to encourage carpooling (which would "move" the same number of people in fewer vehicles). However, there are no significant, comprehensive projects that would improve roadway capacity in the Study Area.

2.2.3 Existing Transit Network

The two main components of the existing transit network are local bus and commuter rail. Each comprises a significant service and physical infrastructure presence within the Study Area. While the existing transit network serves a relatively large number of passengers, service is not optimized to Study Area travel needs.

2.2.3.1 MTA Long Island Rail Road

The Long Island Rail Road (LIRR) is a heavy-rail commuter system that handles about 287,000 one-way passenger trips per weekday on ten branches.[7] Three of those branches (Port Jefferson, Oyster Bay, and Hempstead) provide daily service to the outskirts of the Study Area. The Oyster Bay Branch alone offers LIRR north-south connectivity. A fourth branch (West Hempstead) terminates within one-half mile of the Study Area perimeter, and currently provides only weekday service.

[7] Metropolitan Transportation Authority. *The MTA Network, December 2009*. http://www.mta.info/mta/network.htm (September 10, 2010)

East-west LIRR service is geared to bringing large volumes of commuters to and from Manhattan, predominantly in the peak travel direction (i.e., AM - westbound, PM - eastbound). The major anchors of the LIRR's east/west orientation are Jamaica and Hunterspoint Avenue/Long Island City Stations (Queens), Atlantic Terminal (Brooklyn) and Pennsylvania Station (Manhattan).

Access to the Study Area via the LIRR is provided at six stations, all of which are located along the western and northern perimeters. There is no direct rail service to the southern or eastern sections, or to many of the major destinations located within the Study Area. A seventh station, on the West Hempstead Branch, is approximately one-half mile west of the Study Area and is included for discussion purposes.

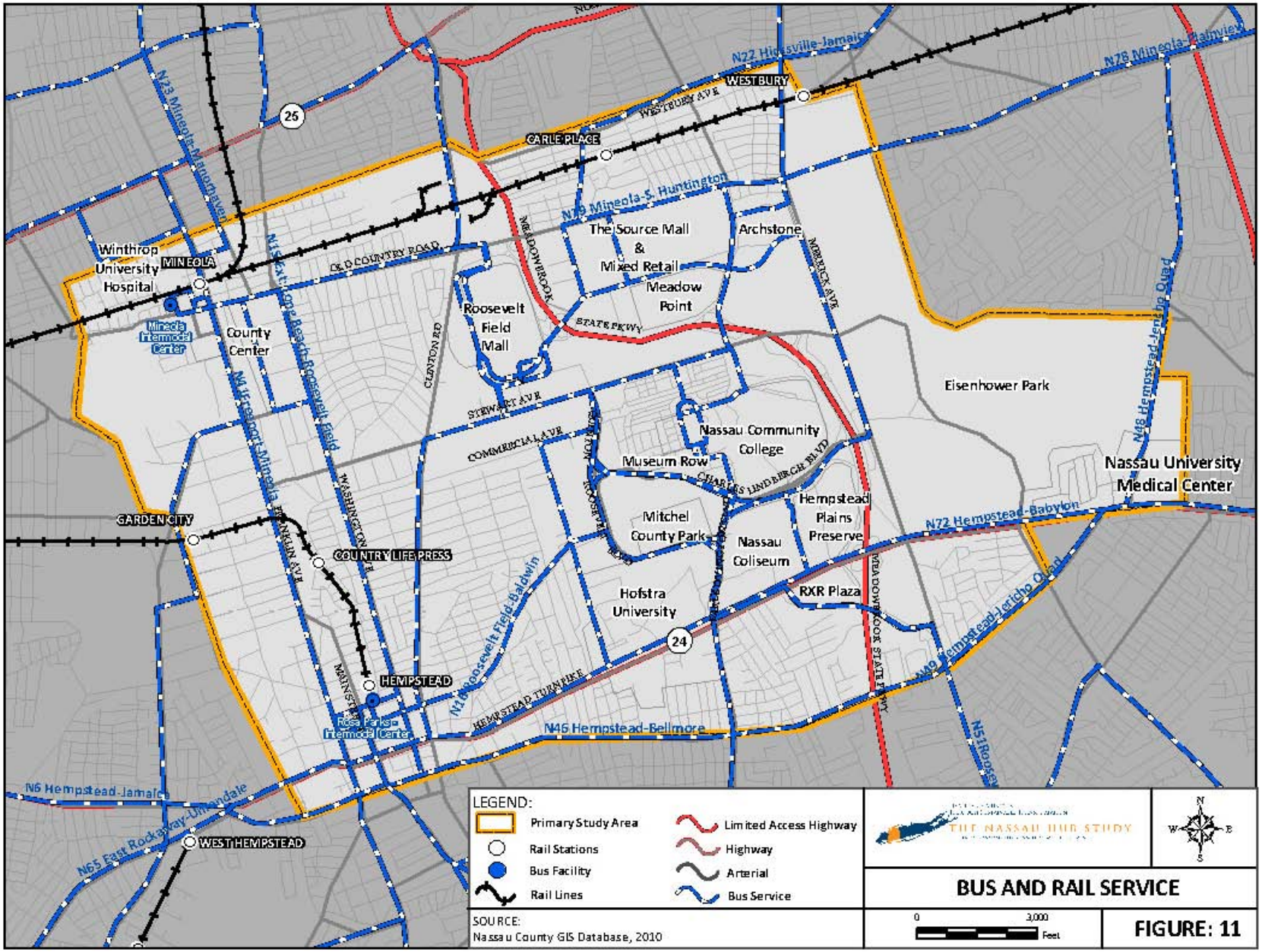
Mineola Station on the Port Jefferson Branch enjoys the highest levels of service, greatest number of parking spaces, and the fastest travel times to Manhattan due to scheduled express services. It also is the busiest, accommodating almost as many boardings and alightings as the other six Study Area stations combined (Table 2). Current LIRR travel time between Manhattan and Mineola ranges between 32 and 42 minutes. On the other branches where express services are not operated, travel time from Pennsylvania Station to Hempstead ranges from 50 to 53 minutes and between 49 and 53 minutes to West Hempstead. These significantly slower travel times, are compounded by the potential need to transfer at Jamaica for many trips.

Table 2-LIRR Total Weekday Boardings and Alightings at Stations within the Study Area

LIRR Line / Station	Boardings	Alightings
Port Jefferson Branch		
Mineola	5,522	4,826
Carle Place	411	361
Westbury	2,073	1,830
Hempstead Branch		
Garden City	650	751
Country Life	653	583
Hempstead	1,763	1,851
West Hempstead Branch		
West Hempstead	170	143

Source: 2006 LIRR Origin and Destination Study, Total Boardings Eastbound and Westbound

Figure 11-Bus and Rail Service in Study Area, July 2010



2.2.3.2 MTA Long Island Bus

The second component of the existing Study Area transit network is MTA LI Bus, operated under a lease and operating agreement with Nassau County. The entire 53-route LI Bus network operates along public streets. Twenty-seven of these routes serve the Study Area today (see Figures 11 and 12 and Table 3). The majority of these routes (nine) provide service to and from areas south of the Study Area, five connect destinations to/from the east, two to/from the west and two to/from the north.

Table 3-MTA LI Bus Service Within the Study Area

LI Bus Route	Route Description	Service to/from	Average Weekday Ridership
N6	Hempstead - Jamaica via Hempstead Tpke	West	14,749
N15	Long Beach - Roosevelt Field via Long Beach Rd	South	6,472
N16	Roosevelt Field - Baldwin via Hempstead Av	South	3,160
N22	Hicksville - Jamaica via Westbury Av/Hillside Av	East	7,264
N23	Mineola – Manorhaven	North	2,044
N24	Jamaica - Roosevelt Field/Mitchel Field/East Meadow	West	4,708
N27	Hempstead - Glen Cove	North	2,058
N31	Hempstead - Far Rockaway	South	1,904
N32	Hempstead - Far Rockaway	South	4,020
N35	Westbury - Baldwin Harbor	South	3,536
N40	Freeport – Mineola	South	4,785
N41	Freeport – Mineola	South	4,640
N43	Freeport - Roosevelt Field via Uniondale Av	South	1,544
N45	Bellmore - Roosevelt Field	South	377
N46	Hempstead - East Meadow – Bellmore	East	415
N47	Hempstead - East Meadow – Bellmore	East	308
N48	Hempstead - Jericho Quad via Front St	East	1,304
N49	Hempstead - Jericho Quad via Front St	East	1,445
N51	Roosevelt Field – Merrick	South	215
N55	Hempstead - Sunrise Mall - Amityville via Jerusalem Av	South	1,084
N54	Hempstead - Sunrise Mall - Amityville via Jerusalem Av	South	1,001
N70	Hempstead - Melville/Sunrise Mall/Babylon via Hempstead Tpke	East	1,539
N71	Hempstead - Melville/Sunrise Mall/Babylon via Hempstead Tpke	East	1,127
N72	Hempstead - Melville/Sunrise Mall/Babylon via Hempstead Tpke	East	2,938
N78	Mineola - Plainview - South Huntington	East	800
N79	Mineola - Plainview - South Huntington	East	1,350

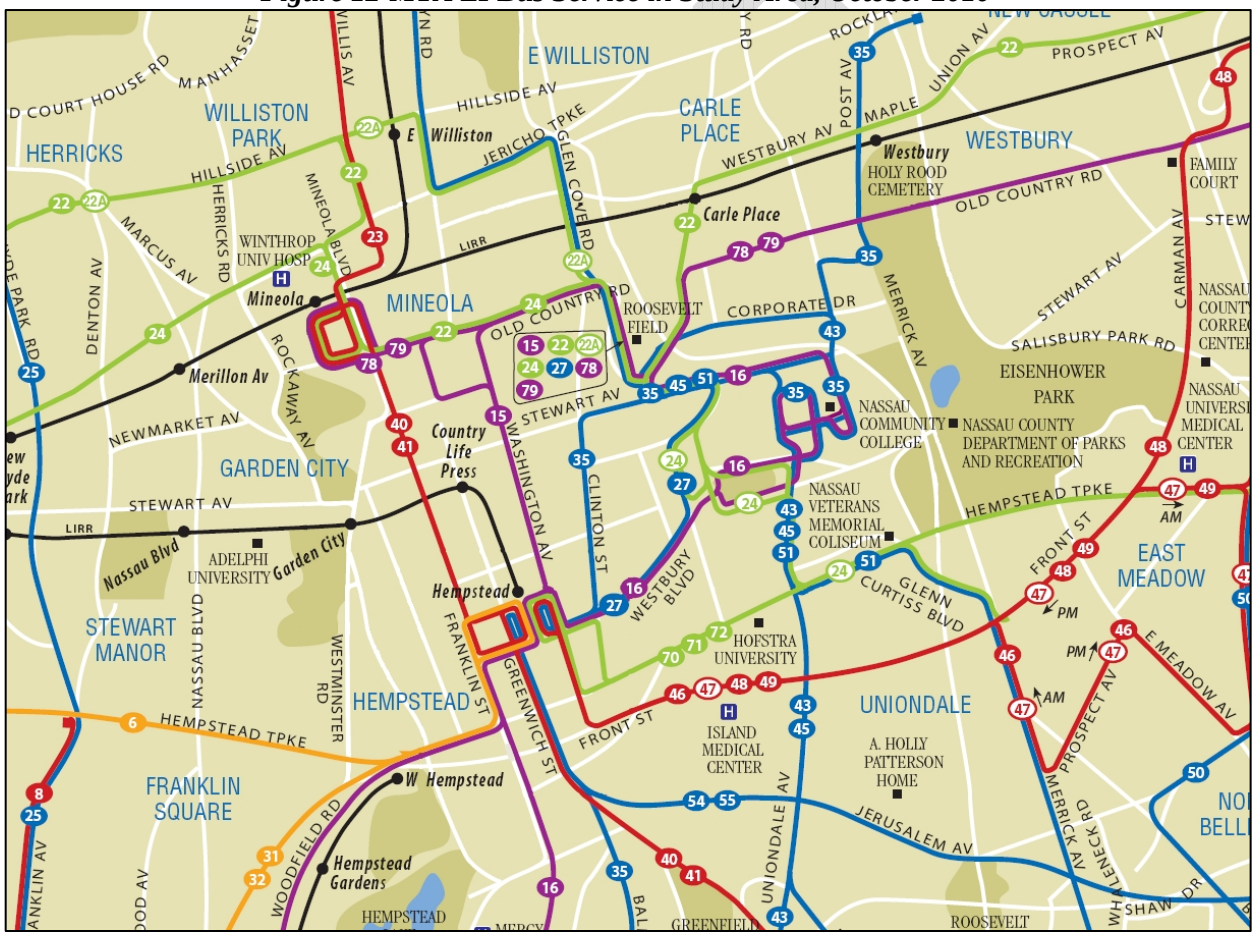
Source: Long Island Bus Map, Bus Schedules July 2010 (www.mta.info); LI Bus 13 Year Comparison of Average Weekday Ridership - MTA LI Bus

Average total weekday passenger trips on the entire LI Bus network approached 111,000 and annual ridership reached 32.7 million in 2008. These volumes represent a 22 percent increase over the preceding decade and was likely fueled by an expanding national economy, demographic changes, the MTA-wide

ridership spike brought on by the implantation of free transfer and unlimited-ride options under MetroCard, and route combination/extensions (N35&37; N31-32/36 as examples). The 11-year trend of increased ridership was reversed in 2009, when declining economic conditions resulted in a six percent drop in ridership. Ridership resumed an upward trend in the first half of 2010, with weekday passenger trips of 105,000 still short of 2008 levels.

Scheduled bus speeds currently average around 12 mph on the more heavily used routes, and around 16 mph on the longer, more lightly used routes. The limited-stop, peak-period service operated on route Route N6: Hempstead - Jamaica via Hempstead Tpke averages 15 mph (22 percent better than its local counterpart). These speeds will likely decline in the future due to the projected increase in roadway congestion.

Figure 12-MTA LI Bus Service in Study Area, October 2010



Source: Metropoltain Transportation Authority, October 2010

The Study Area is home to three off-street transit centers, two of them intermodal, and one for buses only. Both the Rosa Parks – Hempstead Transit Center and the Mineola Intermodal Transit Center are intermodal (offering physically convenient transfers among buses and to the LIRR), while the Roosevelt Field Bus Transfer Facility serves bus riders only. Two of these facilities are on the periphery of the Study Area and intercept and terminate bus routes as they first enter the Study Area. The Hempstead center is a modernized and slightly relocated version of a terminal that served Hempstead in the 1950s, when it was the retail and employment center of the County. When the County consolidated private bus

operations in 1974, it was envisioned as the center of a hub-and-spoke arrangement, with extensive transferring activity. The Mineola Intermodal Center functions most strongly as an LIRR connection for City-bound trips, and for the medical/commercial/governmental activities that are within walking distance of it. The Roosevelt Field terminal was created to accommodate the relocated demand for retail and recreational uses and employment, and coincidentally became a bus transfer facility.

2.2.4 Study Area Travel Patterns

The Study Area encompasses a range of activity centers including residential, office, government services (i.e., courts and administration), retail, manufacturing, cultural, and recreational uses. As such, it generates extensive demands on the existing transportation system, especially on roadways serving it. 2010 travel patterns in the Study Area were analyzed and are illustrated in "tripshed" maps (see Figures 13 and 14). "Tripshed" maps graphically depict travel behavior of people traveling to and within the Study Area). These graphics illustrate the number of trips that are attracted to the Study Area (or "receiving area") from all surrounding zones ("sending areas"), showing both the distribution and intensity of trips attracted to the Study Area.

These "Traffic Analysis Zones" (TAZs) are commonly used in transportation planning models to represent areas with unique or significant travel characteristics. The TAZ is the analysis unit used in the New York Metropolitan Transportation Council (NYMTC) Best Practice Model.[8] to analyze the travel patterns across the different geographies that encompass the NYMTC region. As such, the following population density overview is discussed at the TAZ level rather than by municipality.

These data are useful in providing insights in to the origins of trips into the Study Area, predominant directions of travel, and the number of trips made into the Study Area. These data will assist in evaluating whether there are adequate access and mode choices to travel to the Study Area as well as informing the development of specific routings and/or alignments for the alternatives to be developed in this Study.

2.2.5 Travel Patterns to the Study Area by Direction

Table 4 and Figures 13 and 14 depict predominant travel patterns by direction for trips originating from the surrounding traffic analysis zones, or TAZs, ("sending areas") and traveling to destinations in the Study Area ("receiving area"). Predominant travel patterns depict the AM peak period (6:00-10:00 AM) trips, as defined in NYMTC's BPM. The data are categorized by their NYMTC groupings. For Highway trips, they are "Drive Alone" (i.e., single-occupant vehicle trips), "Carpool" (i.e., 2-person and 3-person high-occupancy vehicle [HOV] ride share), "Trucks, "Externals" (i.e., trips from outside the NYMTC region to the Study Area) and "Other Commercial." For Transit trips, the data are categorized as "Walk to Transit" (i.e., bus), "Drive to Transit" (i.e., bus), "Walk to Commuter Rail," and "Drive to Commuter Rail."

As shown in Table 4, in 2010, the Study Area attracts a considerable number of trips, including 97,000 trips in the AM peak period (6:00-10:00 AM). Eighty percent of trips entering the Study Area are highway trips and 20 percent are transit trips, such as MTA LI Bus and MTA LIRR commuter rail. While the share of transit trips would appear to be higher than expected for a suburban area, viewed in context, the Study Area is not a typical suburban setting. It is unique due to its high concentration of destinations

[8] The Best Practice Model (BPM), which is NYMTC's regional travel demand forecasting model, predicts changes in future travel patterns in response to changes in demographic profiles and transportation systems within the NYMTC region. The BMP incorporates transportation behavior and relationships that have been developed with an extensive set of data that includes a major travel survey of households in the region, land-use inventories, socioeconomic data, traffic and transit counts, and travel times.

and activity centers, including two regional malls (Roosevelt Field and the Source Mall), several large office parks, downtown cores for Villages of Garden City, Mineola, and Hempstead, two large colleges (Nassau Community College and Hofstra University), the Nassau University Medical Center and the Nassau County Government Complex. As this area developed over time, transit services, particularly bus service, have been introduced to try to serve these destinations. Still, as will be shown in this section, the automobile is the predominant mode used for traveling to the Study Area.

Table 4 - 2010 Travel Patterns by Direction to the Study Area in the AM Peak Period

Sending Area	Highway Trips	% Highway	Transit Trips	% Transit	Total Trips	% Total Trips
Northbound	20,808	76.2%	6,493	23.8%	27,301	28.1%
Southbound	12,489	85.0%	2,198	15.0%	14,687	15.1%
Westbound	25,718	83.5%	5,079	16.5%	30,797	31.6%
Eastbound	18,748	76.4%	5,784	23.6%	24,532	25.2%
Total	**77,763**	**79.9%**	**19,554**	**20.1%**	**97,317**	**100.0%**

Source: NYMTC, Best Practice Model for AM Peak Period (Year 2010)

The NYMTC data for 2010 show that the predominant direction of travel to the Study Area is westbound, or from areas located to the east, accounting for just over 31 percent of all AM peak-period trips (30,797 trips). Conversely, southbound travel (i.e., from areas to the north) produced the lowest share of trips representing only 15 percent of total trips bound for the Study Area (14,687 trips). In terms of the transit share of trips made to the Study Area by direction, the highest levels occur heading northbound (6,493 trips) and eastbound (5,784 trips).

2.2.6 External and Internal Travel Patterns of the Study Area

Table 5 displays internal travel patterns (i.e., trips beginning and ending *within* the Study Area) and external travel patterns (i.e., trips originating from areas *outside* of the Study Area that end *inside* the Study Area). The data are further organized by Highway trips and Transit trips. These data provide further understanding of travel behavior, provide an overview of where trips begin and end, and which modes of travel are used to make these trips.

During the AM peak period, 85 percent of all trips (both Highway and Transit trips) made to the Study Area originate from areas outside of it. The remaining 15 percent of the total trips are internally generated. These percentages are generally the same for both internal and external Highway and Transit trips. Comparing internal to external trips for Highway trips only, 14.5 percent of Highway trips originate within the Study Area and 85.5 percent originate outside of it. Internally generated transit trips are slightly higher (17.7 percent) compared to external Transit trips (82.3 percent).

Figure 13 - Total AM Peak-Period Trips to Study Area ("Tripshed") - Year 2010

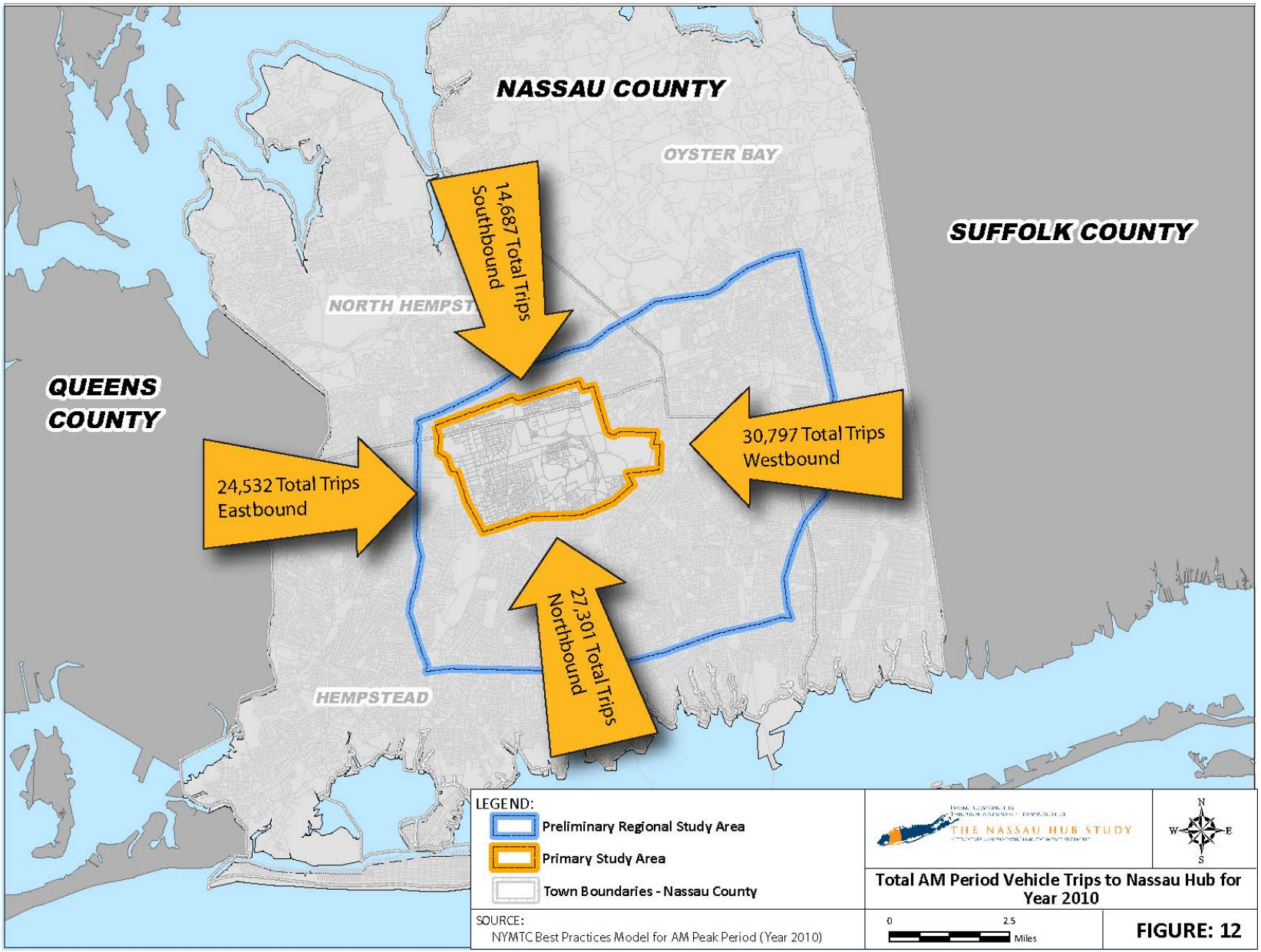


Figure 14 - Transit Use for AM Peak-Period Trips to the Study Area – Year 2010

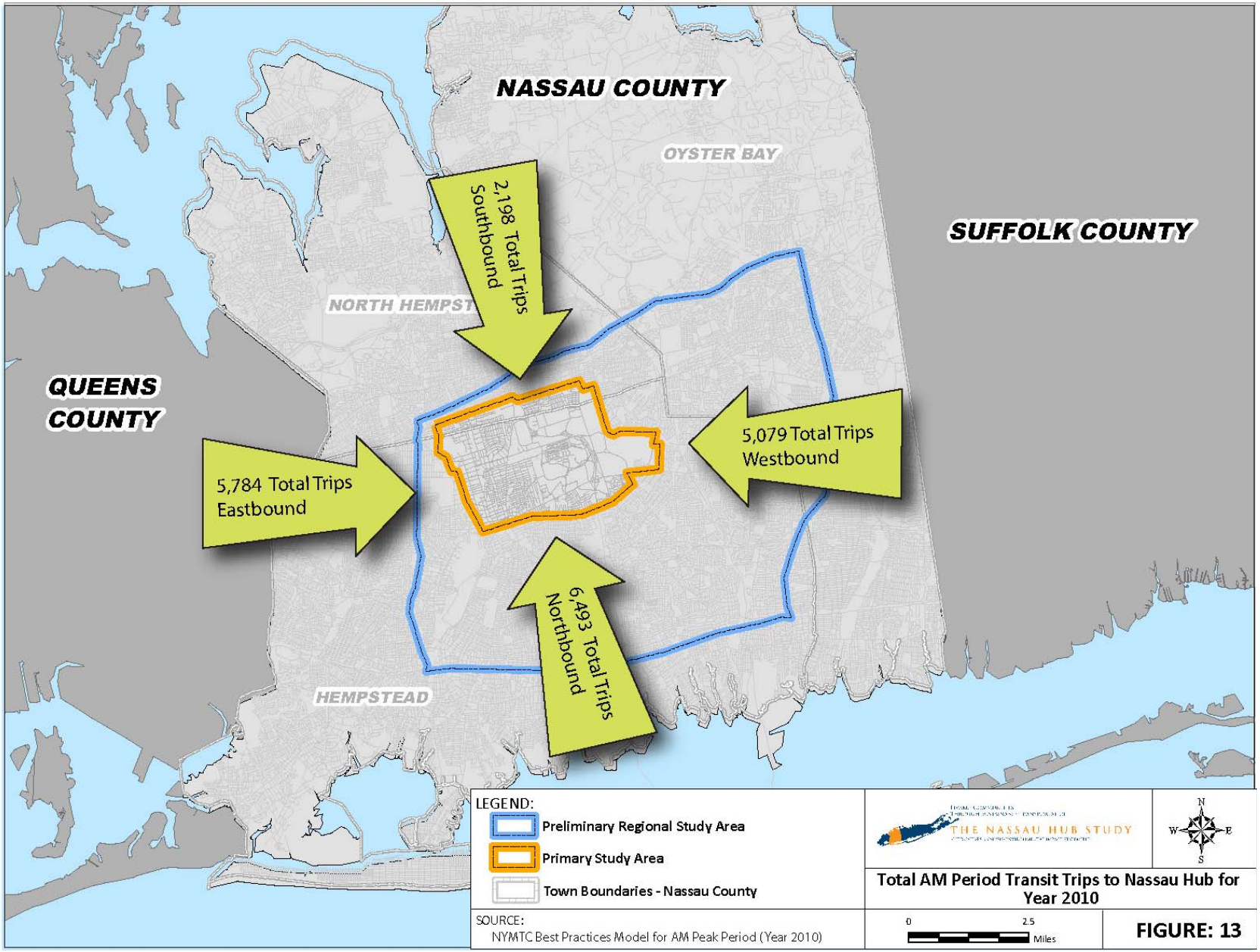


Table 5 - 2010 AM Internal and External Trips by Mode for the Study Area in the AM Peak Period

Highway Trips

Mode	Internal	External	Total	% of Total Highway Trips
Drive Alone	6,399	46,292	52,691	67.8%
Carpool[9]	2,947	17,490	20,437	26.3%
Trucks[10]	1,363	2,101	3,464	4.5%
Other Commercial	530	641	1,171	1.5%
Subtotal	**11,239**	**66,524**	**77,763**	**100.0%**
% of Total Highway Trips	14.5%	85.5%	100.0%	

Transit Trips[11]

Mode	Internal	External	Total	% of Total Transit Trips
Walk to Transit (Bus)	3,217	13,161	16,378	83.8%
Drive to Transit (Bus)	34	375	409	2.1%
Walk to Commuter Rail	163	1,275	1,438	7.4%
Drive to Commuter Rail	41	1,288	1,329	6.8%
Subtotal	**3,455**	**16,099**	**19,554**	**100.0%**
% of Total Transit Trips	17.7%	82.3%	100.0%	
GRAND TOTAL	**14,694**	**82,623**	**97,317**	
% of Total Trips	**15.1%**	**84.9%**	**100.0%**	

Source: NYMTC, Best Practice Model for AM Peak Period (Year 2010)

The automobile is the predominant mode of travel for Highway trips. During the AM peak period, 94 percent of all Highway trips to the Study Area are “Drive Alone” and “Carpool”, accounting for over 73,000 trips. The remaining six percent of Highway trips are truck and other commercial vehicles (approximately 4,600 trips).

In terms of Transit trips to the Study Area, trips made by bus account for nearly 86 percent of all Transit trips (approximately 16,800 trips were made using bus). Commuter rail represents only 14 percent of the share of Transit trips or just over 2,700 trips. People traveling by commuter rail were almost as likely to drive and park at a station (1,329 trips) as they were to walk to a station (1,438 trips). However, given the fact that there are four LIRR stations within the Study Area, this share is low, but helps illustrate the fact that commuter rail is not being used extensively as a means of traveling to and within the Study Area.

[9] Carpool = 2-person and 3-person HOV ride share.
[10] Trucks plus "Externals" (i.e., trips from outside NYMTC region to Study Area, though minimal at only 63 trips).
[11] The NYMTC model defines Transit as bus and commuter rail trips, accessed by walking or driving.

2.2.7 Predominance of Automobile Usage in Travel Patterns

Automobiles are the predominant mode of transportation in Nassau County, and approximately 93.1 percent of County residents have access to at least one vehicle for use.[12] Similarly, the majority of travel to and within the Study Area relies on the automobile. According to the 2000 U.S Census, of the 619,586 workers over the age of 16 who lived in Nassau County, 69.4 percent drove to work alone, 8.6 percent carpooled and 15.7 percent took transit[13].

While there are four LIRR branch lines—the Port Jefferson Branch, the Oyster Bay Branch, the Hempstead Branch and the West Hempstead Branch—either within or near the Study Area, all serve the periphery rather than the heart of the Study Area. LIRR service is primarily oriented to serve commuter trips to/from New York City for the journey-to-work trip market, and less toward intra-county or reverse commute trips. Another factor limiting greater use of transit for travel to the Study Area is the low off-peak (9:00 AM to 4:00 PM and 8:00 PM to 12:00 AM) service frequencies (i.e. one bus every 60 minutes) for a number of LI Bus routes that serve the Study Area. These low frequencies may result in a relatively long wait time for single vehicle transit trips and even longer wait times for trips that require a transfer. These factors make it difficult to use transit for intra-County trips and tend to discourage wider transit use

As shown in Table 4, the number of Study Area-bound transit trips originating from the north is the lowest compared with other quadrants of the county, with only 15 percent of all southbound trips being made using transit. The LIRR Oyster Bay Branch extends north from Mineola to Oyster Bay and provides commuter rail service with a stop in Mineola (located in the northwestern corner of the Study Area). Between 6:00 and 10:00 AM three westbound trains originate at Oyster Bay and stop at Mineola.

Two bus routes from the north serve the Study Area, the N23 (Mineola – Manorhaven) and N27 (Hempstead - Glen Cove). The N23 originates in Manorhaven and terminates at the Mineola Intermodal Station. Travelers wishing to continue further south to destinations in the Study Area must transfer to the N40/41, which travels south on Franklin Avenue. As many major activity centers are located to the east of Franklin Avenue, it is necessary to transfer again at the Rosa Parks – Hempstead Transit Center for bus routes serving these portions of the Study Area. The N27 originates in Glen Cove and terminates at the Rosa Parks – Hempstead Transit Center. For those wishing to travel further east into the Study Area, a transfer to another bus route is required to complete the trip.

Further encouraging the use of the automobile as the primary travel mode is the dispersed pattern of activity and employment centers in the Study Area. The Study Area is characterized by large, single-purpose land uses (i.e., single-use residential, retail, office and industrial developments) and the predominance of large parking fields separating these uses from one another. If reliance on the automobile as the primary mode of travel is to be reduced in the future, improved, direct, faster, high capacity, high quality, attractive transportation options must be provided to encourage a larger segment of travelers to use transit instead of their cars for travel to/from and within the Study Area.

[12] U.S. Census Bureau. *2009 American Community Survey: Selected Housing Characteristics*.
[13] U.S. Census Bureau, Census Transportation Planning Package, 2001;
(http://download.ctpp.transportation.org/home/ny/Nassau_County/Nassau_County.htm)

2.2.8 Transit Network Limitations

The existing LIRR and LI Bus networks face a number of challenges in attracting new transit riders, and adequately accommodating Study Area-bound and intra-Study Area travel for those who have no other alternatives. These challenges include:

- Rail Limitations
    - LIRR service is oriented east/west, to take people to/from Nassau and New York City.
    - Train stations are located on the outskirts of the Study Area, beyond the typical one-half mile walking distance of much of Study Area activity centers.
    - Reverse-peak rail service tends to be slower, infrequent, and has AM and PM peak period gaps.
    - There is no direct rail access from the south shore to the Study Area.
- Bus Limitations
    - Bus distributor routes serving Study Area destinations from train stations are infrequent, part-time, and not schedule-coordinated.
    - There are only five bus routes that currently offer frequent service to the Study Area all day; two of them serve only the outskirts.
    - Intra-Study Area bus service tends to be fragmented and infrequent, which can be confusing to potential riders.
    - There are no priority bus treatments (i.e., exclusive bus lanes, signal priority, bus bulbs) in the Study Area; with buses often subject to delays and irregular service due to existing general traffic congestion.
    - Almost all of the north shore and the southeast quadrant of Nassau County lacks any direct transit connection to the Study Area.

2.2.8.1 MTA Long Island Rail Road

LIRR service and route structure is oriented east/west toward journey-to-work trips destined to/from New York City and provides limited service to the Study Area. The potential for LIRR to serve Study Area-bound commuters residing to the north, east and west is limited by slow, infrequent or express services that bypass some stations in the peak direction (westbound in the AM, eastbound in the PM). Allowing for a typical one-half mile catchment area around each station still leaves over 75 percent of the Study Area – including many existing major trip attractions and many potential development locations – beyond walking distance of any branch of the rail system. Distribution of LIRR customers to/from the Study area and for all intra-Study Area travel is therefore largely dependent upon other modes. Stations are located close enough together to make intra-Study Area trips feasible, but this would be more viable if there were more stations located throughout the Study Area. The fare for all intra-Study Area LIRR travel is $2.50 ($1.25 for elderly and handicapped), which compares favorably to the $2.25 bus fare.

The potential for reverse commuting to the Study Area from areas to the west is limited by the LIRR's operating procedure of converting both of its Main Line tracks to AM westbound operation to meet demand that exceeds the capacity of one track. Consequently, this prevents operation of any eastbound

service to Mineola for over 1½ hours during the AM peak period. Eastbound trains are scheduled to arrive at Mineola at 6:39 AM, 8:15 AM, 8:22 AM, 8:42 AM, and 8:51 AM. This limits reverse commuters to later arrivals and may further discourage trips requiring a bus transfer to reach the final destination. The planned third LIRR Main Line track that would remedy this situation is not funded during the next 10 years of the MTA's capital program.

The Oyster Bay Branch provides the only LIRR service to the North Shore, and no rail service is provided to/from the South Shore. An additional LIRR challenge involves the West Hempstead and Oyster Bay Branches, which together account for less than 2 percent of all system boardings. Of the 3,806 total boardings on these two branches, 85 percent occur in the peak direction during the peak period. Both branches offer access to or near the Study Area from communities that are underserved by Study Area-bound transit, but suffer from slow speeds and infrequent service. Low population densities, high costs and limited main line capacity limit the potential for additional services at frequencies that would be attractive to riders.

2.2.8.2 MTA Long Island Bus

Direct north-south transit service to the Study Area is limited. This situation results in duplicative, overlapping services that might operate more efficiently and attract additional riders should they be converted to through-services. Even with 27 bus routes serving the Study Area, there are areas of the County that continue to have limited or no transit accessibility to the Study Area. Figure 14 shows that areas to the west of the Study Area generate 30 percent (5,784) of transit trips in the AM peak. But in the southeast quadrant of the County, from Bellmore to Suffolk south of Hempstead Turnpike, there is only one route-pair that offers direct service to the Study Area. In the entire northern tier of the County – north of Hillside Avenue / Jericho Turnpike, from Queens to Suffolk – there are only two bus routes offering direct service to the Study Area.

Poor existing and projected traffic conditions at Study Area intersections referenced earlier in this report, have the potential to impact the speed and reliability of buses. This makes it difficult to maintain schedules and timed transfers and impacts transit as an attractive travel option.

The three intermodal transit centers intercept and terminate bus routes and require some passengers to transfer to another bus to reach their final destinations. This increases customer trip time and inconvenience. Transferring passengers may face long wait times that could dissuade discretionary users, since the schedules of Study Area bus routes are uncoordinated, operate at infrequent headways (less than 5 peak trips/hour; less than 3 midday trips/hour), or operate no midday service.

The LIRR's ability to maximize its role in providing Study Area access is contingent upon having a means for its customers to be able to reach destinations beyond station areas. Feeder transit services to/from LIRR stations are limited and schedules are uncoordinated. This affects not only dedicated feeder/circulator routes, but also connections with through buses that serve areas beyond the Study Area.

For example, of the eight LIRR westbound AM peak period arrivals at Mineola, passengers transferring from two of those trains would have no viable connection to the N24 bus, while passengers from one train would have to wait more than fifteen minutes[14]. Average wait time for passengers arriving on the other five trains is between 3 and 15 minutes.

[14] Source: Metropolitan Transportation Authority. Long Island Rail Road, Port Jefferson Branch Timetable, effective May 17 – Sep 12, 2010

2.3 Land Use

2.3.1 Existing Land Use

The Study Area comprises the largest concentration of commercial uses within Nassau County, including two regional malls, numerous office complexes and a wide variety of shops, restaurants and service establishments. And, with its equally expansive and diverse collection of community services, the Study Area easily establishes itself as Nassau County's heart of commercial, cultural, educational and governmental activities.

Figure 15 locates several of the major activity centers within the Study Area. These include significant cultural, educational, medical and recreational destinations such as the Nassau Veterans Memorial Coliseum, Mitchel Field, Museum Row, Eisenhower Park, Hofstra University, Nassau Community College, Nassau University Medical Center and Winthrop University Hospital. The locations of the Study Area's two regional malls, Roosevelt Field and the Source Mall, are also shown on Figure 15.

The Study Area also supports large office parks including the Nassau West Corporate Center (1.1 million square feet) just west of Mitchel Field and the RXR Plaza (1.1 million square feet), which is adjacent to the Nassau Veterans Memorial Coliseum. As listed in Table 6, there are 11 other office buildings and corporate parks that are larger than 200,000 square feet. These large complexes alone account for over 5.3 million square feet of office space, and do not include the numerous other office buildings and complexes within the Study Area.

Table 6-Office Buildings Larger than 200,000 Square Feet in the Study Area

Office Buildings	Square Feet
RXR Plaza	1,100,000
Nassau West Corporate Center	1,064,932
100-400 Garden City Plaza	573,000
Franklin Avenue Plaza	464,785
711 Stewart Avenue	300,000
One Old Country Road	269,000
The Pavilion	259,874
90 Merrick Avenue	234,202
Atria West	233,000
Imperial Square	230,000
60 Charles Lindbergh Blvd	219,066
Eisenhower Atrium Center	220,000
Atria East	203,000
Total	**5,370,859**

Source: Long Island Business News 2010 Book of Lists

The downtown cores of the Villages of Westbury, Hempstead, Garden City and Mineola and the Hamlet of Carle Place are also significant commercial centers that support a variety of local stores, offices and service establishments. The Nassau County Government Complex, situated in the northwestern quadrant of the Study Area, includes the County courts and the offices for many of the County's departments and bureaus. Finally, Figure 15 and Table 7, show that the Study Area also contains large residential areas, particularly in the central western, northeast and southeast portions of the Study Area.

In terms of the relative composition of existing land use, Table 7 provides a summary of the percent coverage of land use by type within the approximately 11.7 square-mile Study Area. Approximately 36 percent of the land is dedicated to commercial and community services, which account for 17.8 percent and 18.5 percent of the land use, respectively. Residential uses occupy 1,941 acres or approximately 26 percent of the total land area. Parks and other recreational uses account for another significant land use, occupying about 1,131 acres or 15.1 percent of the total. Much of this is the 930-acre Eisenhower Park, which includes a natatorium, golf, athletic fields, courts, picnic areas, playgrounds, and fitness trails. The remaining land (i.e., 2.7 percent of the total) comprises industrial, public services, vacant and conservation uses.

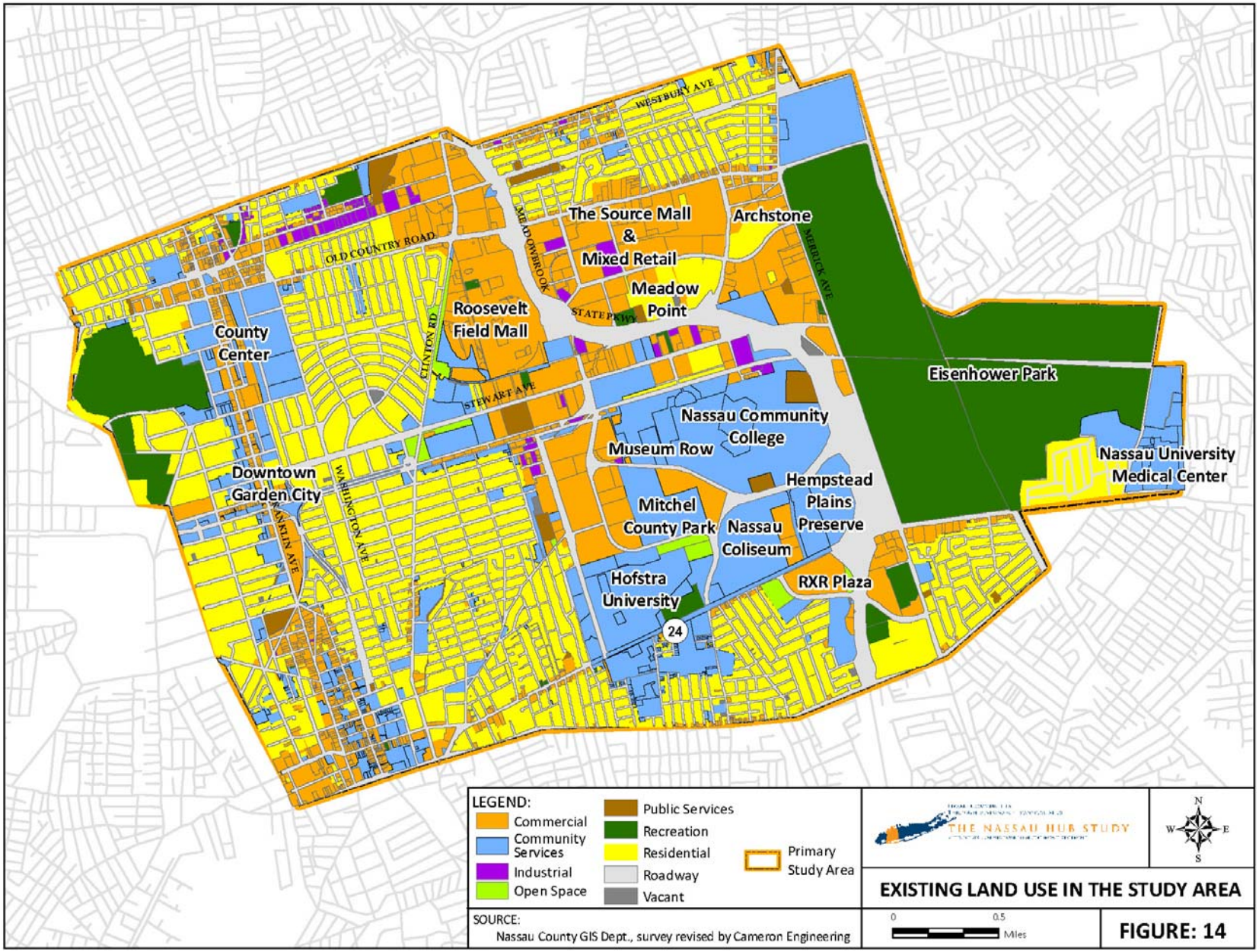
Table 7-Existing Land Use Summary for the Study Area

Land Use	Description	Acreage	Percent of Study Area
Residential	Areas used for housing	1,941	26.0%
Roadways	Areas for highways, collectors and local roads	1,476	19.8%
Community Services	Areas used for educational, health, cultural and government services	1,384	18.5%
Commercial	Areas used for offices, retail, services and other commercial uses	1,330	17.8%
Recreation/ Parks	Areas used for recreation uses (parks, playgrounds, golf courses, etc)	1,131	15.1%
Public Services	Areas for electrical, water and other utilities	70	0.9%
Industrial	Areas for used for manufacturing	69	0.9%
Conservation	Areas used for nature preserves	45	0.6%
Vacant	Areas of unused land	19	0.3%

Source: Nassau County GIS updated with 2010 field surveys

The Study Area is the County's center; however, the various destinations and activity nodes within the Study Area are themselves dispersed and poorly connected. The major activity centers in the Study Area tend to be isolated by large parking lots and multi-lane arterial roadways which function as physical barriers. Additionally, the location of Eisenhower Park, with no major east-west through roads, presents a physical obstacle to linking facilities to the east to the remainder of the Study Area. Based on these conditions, the current transportation system does not efficiently link uses within the Study Area. These challenges will pose potential constraints to future development in the Study Area should no transportation improvements be implemented.

Figure 15-Existing Land Use in the Study Area



2.3.2 Surface Parking

The Study Area contains an extensive supply of off-street parking, and represents a significant land use feature of the area (see Table 8). Much of this supply, approximately 25 percent, consists of surface parking dedicated to seasonal or event use, which is not needed to meet a regular demand. The majority of the identified surface parking in the Study Area is associated with various retail uses (e.g., Roosevelt Field Mall, the Source) and the Coliseum. Parking for these uses is typically defined for a peak-demand period and, in the case of the Coliseum, for a limited number of events. In all, the Study Area contains over 600 acres (approximately 75,000 spaces) of parking, which represents approximately 9 percent of the total land cover of the Study Area. The inability to share these parking facilities during varying peak demands requires additional travel without the ability to link trips. Parking usage is difficult to quantify as it varies greatly based on a number of variables including time of day, season, and use. Given these conditions, parking acreage has the potential with improved transit and reduced parking requirements to be redeveloped for more productive uses. With transit-supportive zoning, there is an opportunity in the Study Area for future transit-oriented developments that combine retail, commercial and housing uses.

Table 8- Existing Surface Parking in the Study Area

Subarea	Surface Parking in Square Feet
Mineola/County Center	1,825,600
Garden City	1,931,200
Hempstead	2,283,300
Coliseum	5,120,200
Mitchel Field	2,773,400
Roosevelt Field Mall	3,854,800
Carle Place	2,065,500
Source Mall / Westbury Plaza Vicinity	6,750,100
Totals	**26,604,100**

Source: Jacobs Team, 2010

2.3.3 Land Use Development Trends

The Study Area is undergoing many changes, in terms of both future planning initiatives and recent and proposed developments, that will significantly affect its future. Recent developments completed in the Study Area include the LIRR's Mineola Intermodal Center, higher-density residential developments (such as Archstone Meadowbrook Crossing and Meadowbrook Pointe on Corporate Drive in the Roosevelt Raceway area), the Nassau County Firefighters Museum along Museum Row, decommissioning of some County offices on County Seat Drive (with possible redevelopment as residences) and the relocation of the Nassau County Department of Health and Human Services to Charles Lindbergh Boulevard.

There are a number of development initiatives in varying stages of the planning process that are currently underway in and near the Study Area that will further change the character of the Study Area. While the specific redevelopment potential of the Nassau Veterans Memorial Coliseum property is still under consideration, 10.6 million square feet of mixed-use development, including 2,300 residential units, was proposed, but in June 2010 the Town of Hempstead announced a preliminary rezoning for this area that would allow 5.4 million square feet of development, including 500 new housing units, a Floor Area Ratio of 1.6 and building heights of 100 feet. While less dense than the initial development proposal, this still represents a major potential development at this property, the final density of which will be determined upon conclusion of the State Environmental Quality Review (SEQR) process. Also planned within the

Regional Study Area in the near future are the addition of a medical school to Hofstra University and a major expansion by NuHealth at their Nassau University Medical Center Campus.

Additional projects contemplated over a longer timeframe and noted in the *Nassau Hub MIS* include:

- up to 800 new residential units and 915,000 square feet of non-residential space at Nassau Community College;
- mixed-use development on existing surface parking lots at Roosevelt Field Mall and light industrial uses south of the mall, including up to 715 new housing units and 1.9 million square feet of non-residential space;
- improvements at Mitchel Field, including streetscape enhancements, connectivity with transit and the introduction of office flex space, potentially adding 305 housing units and 2.1 million square feet of non-residential space;
- up to 420,000 square feet of new retail and entertainment space at Museum Row along with a greenway to provide connectivity to Study Area sublocales and Eisenhower Park; and
- redevelopment of underutilized soft sites within the Study Area, yielding an additional 7 million square feet of development based on existing zoning.

Due to the growth potential of the Study Area, Nassau County projects that over 22 percent of all new commercial space in the County, or approximately 4.3 million square feet, will be located within the Study Area. The County's commercial space projections are listed in Table 9 below.

Table 9-Summary of 2030 Commercial Development Projects for The Study Area and the remainder of Nassau County

Commercial Development Project	Commercial Increase (SF)	Employment Increase (400 sf/ employee)
The Study Area	4,327,600	10,819
Other	4,515,000	11,288
18 Analyzed Downtowns	10,391,178	25,978
County Total	**19,233,778**	**48,084**

Source: Nassau County, 2009

Nassau County's Master Plan Update, which is currently in progress, includes initiatives to focus growth and new development in specific areas such as targeted downtowns, greyfields, brownfields and the Study Area. Four municipalities located in the Study Area are identified as targeted downtowns: the Villages of Garden City, Hempstead, Mineola and Westbury. The downtowns initiative seeks to support revitalization and expansion with goals of 11,000 new residential units, 10.4 million square feet of new commercial development, and creation of 26,000 new jobs. Of these, over 25 percent of the growth would be in the four downtowns within the Study Area based on a draft 20-year growth allocation prepared for Nassau County in 2009 (see Table 10).

Table 10-Projected Growth in Downtowns

Downtown	New Commerical Development	New Jobs
Garden City	326,416	816
Hempstead	758,450	1,896
Mineola	986,880	2,467
Westbury	722,174	1,805
Total	**2,793,920**	**6,984**

Source: Nassau County, 2009

With the volume of proposed and potential new development, the future development and redevelopment of the Study Area is being directed away from the current automobile-dependent land use patterns. Recent and current proposals imply a trend where the future land use pattern of the area would transition from single-use automobile-dependent developments to mixed-use, higher-density and transit- and pedestrian-friendly developments that provide linkages to existing and proposed developments and multimodal transit centers. Several municipalities within the Study Area have initiated planning and zoning initiatives to promote this type of development.

In addition to the Mitchel Field Mixed Use Zoning District proposed by the Town of Hempstead, the Village of Hempstead recently approved a proposed zoning change to allow redevelopment of a vacant property into a 5-story apartment building with an integrated parking garage, as an early step in the revitalization of its downtown, and is reviewing proposals for mixed-use, mixed-income, transit-oriented redevelopment of the 26-acre North Main Street Urban Renewal Area. The Village of Mineola has a Development Incentive Bonus Law, which has encouraged higher-density projects in the Business District. The Village of Westbury has actively encouraged downtown revitalization with development of vacant parcels, redevelopment of sites, a new 5-story assisted-living facility and an upgrade of the train station.

Outside of the Study Area, throughout the County, there are more planned growth, visioning initiatives, and transit-supportive land use planning initiatives underway. Three major redevelopment projects at the former Grumman Bethpage facility (located within the Regional Study Area) and the Glen Cove Waterfront (north of the Study Area) account for over 2 million square feet of mixed-use development with over 1,000 residential units. Aside from the Village of Hempstead, discussed above, community visioning has occurred in Elmont, along the Glen Cove-Cedar Swamp Road Corridor, in New Cassel, and in Port Washington.

The Town of Hempstead is developing a mixed-use, transit-oriented project in Baldwin, and has approved a rezoning for a new apartment complex in West Hempstead near the train station. The Village of Freeport is looking at redevelopment of North Main Street and transit-oriented development by the train station. These projects, within the Study Area and the Regional Study Area, and throughout the larger County, indicate a growing trend away from suburban, car-oriented sprawl toward compact, mixed-use, transit-oriented development in areas with access to the existing transit provided by the LIRR. The remaining proposed developments have the potential to further exacerbate the County's existing and worsening traffic conditions if transit options are not enhanced.

2.4 Socioeconomic Conditions and Trends

2.4.1 Population

Based on data obtained from NYMTC's BPM, the 2010 population for the Study Area is estimated to be 121,742 persons (Table 11).[15] The Study Area population represents approximately 9.2 percent of

[15] At the time of this technical memorandum, data from the U.S. Census for 2010 were not yet available. Accordingly, the BPM, which is NYMTC's regional travel demand forecasting model, was utilized to obtain current and projected socioeconomic data for both the Study Area and Nassau County. The BPM predicts changes in future travel patterns in response to changes in demographic profiles and transportation systems within the NYMTC region. NYMTC socioeconomic forecasts for Nassau County are based on national economic projections, historic economic and demographic data for the region, and input from the Nassau County Planning Department. These forecasts are incorporated into the model and used, in part, to predict future travel characteristics. More specifically, employment forecasts help to project whether a region is generating or losing jobs, thereby influencing travel patterns in a region. Population forecasts provide information regarding travel habits and help to identify potential transportation investments that can improve the mobility of a population. Demographic and socioeconomic forecasts through 2035 were adopted on September 24, 2009, as part of the 2010-2035 Regional Transportation Plan.

Nassau County's total population of 1,316,927. Between 2010 and 2035, the population in the Study Area is projected to slowly but steadily increase by over 14,000 persons (11.9 percent) to 136,204 persons. This trend is slightly higher than the County's projected population increase of 10.9 percent by 2035.

Table 11-Population and Projected Population Change 2010 – 2035

Year	Study Area		Nassau County	
	Population	Percentage Changer per Decade	Population	Percentage Change per Decade
2010	121,742	-	1,316,927	-
2020	125,452	3.0%	1,334,724	1.4%
2030	132,936	6.0%	1,421,877	6.5%
2035	136,204	2.5%	1,459,969	2.7%
Change 2010 - 2035	14,462	11.9%	143,042	10.9%

Source: NYMTC, Best Practice Model 2035 Forecast Series, based on 2005 base population and employment data

Historically, Nassau County experienced tremendous population growth from the end of World War II through the 1960s. The County's population doubled in the 10 years from 1950 to 1960, increasing from 672,000 to 1,300,700, before reaching a peak of 1,428,838 residents in 1970.[16] Subsequently, between 1970 and 2005, the County experienced a population decline of approximately 90,000 residents.[17]

As evidenced by the historic population trends described above, Nassau County experienced enormous population growth resulting in suburban development considerably earlier than many of the other suburban counties in the region. As a result, since it is an already mature suburban county, Nassau is anticipated to gain residents only gradually through 2035. Factors contributing to this gradual but slow population growth include projected increases in the County's elderly population as well as an out-migration of young adults between the ages 20 and 34.

Net migration forecasts by age cohort through 2030 for Nassau County are provided in Table 12. Totals in parentheses are negative indicating an out-migration, or people moving away from Nassau. Numbers without parentheses are positive indicating an in-migration to the County. Net migration trends from 2010 through 2020 project individuals moving from the County, albeit at lower rates than in previous years (2000 to 2005). However, from 2020 through 2030, this out-migration is anticipated to reverse as a result of greater numbers of people moving into the County. Highlighted rows in the table show that over the next 20 years more adults ages 30 to 44 and children ages 5 to 14 will enter the County than leave it.[18] This population growth includes an increase in families as the Millennial generation, defined as persons born in the 1980s and 1990s, begins having children and establishing families within the County. Additionally, more senior citizens ages 75 to 79 will enter Nassau than leave it.

2.4.2 Population Density

Population densities for the Study Area were calculated at the TAZ level. The Village of Hempstead contains the highest population densities in the Study Area, with the two TAZs located along the southwestern extent of the Study Area containing more than 15,000 persons per square mile and the southwestern-most TAZ having a population density of between 10,000 and 15,000 persons per square mile. The Village of Garden City has significantly lower population densities, ranging between 2,500 and

[16] Nassau County. *History of Nassau County.* https://www.nassaucountyny.gov/website/EN/facts_stats_maps/history_of_NC.html (August 25, 2010).
[17] Nassau County 2010 Master Plan DRAFT. Chapter 1. p. 1-1.
[18] Nassau County 2010 Master Plan DRAFT. Chapter 1. p. 1-7.

Table 12-Nassau County Net Migration by Age, 2000 - 2030

Age	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030
Under 5	(5,707)	(1,421)	(1,533)	(1,665)	(1,765)	(1,964)
5 - 9	(876)	6,901	7,272	7,936	8,462	9,166
10 - 14	(942)	4,743	5,971	6,576	7,276	7,803
15 - 19	(2,024)	(2,895)	(2,110)	(461)	1,359	2,101
20 - 24	(6,203)	(10,253)	(9,462)	(9,460)	(5,855)	(3,699)
25 - 29	(6,314)	(4,017)	(4,762)	(4,738)	(1,623)	(536)
30 - 34	(113)	5,668	5,528	4,680	7,565	7,313
35 - 39	889	10,056	10,052	9,958	12,472	12,600
40 - 44	1,086	4,321	4,107	3,232	5,187	5,012
45 - 49	1,549	(2,282)	(2,595)	(2,817)	(222)	(1,166)
50 - 54	435	1,536	885	(395)	2,117	1,759
55 - 59	789	(3,487)	(4,580)	(5,549)	(2,213)	(1,882)
60 - 64	(145)	(5,320)	(6,430)	(8,386)	(4,955)	(4,409)
65 - 69	(3,581)	(4,481)	(5,373)	(5,386)	(5,740)	(5,321)
70 - 74	(3,483)	(663)	(747)	(841)	(818)	(794)
75 - 79	(584)	1,122	1,197	1,483	1,931	2,040
80 - 84	(846)	(415)	(347)	(336)	(392)	(451)
85 & Over	(5,219)	(4,697)	(5,244)	(5,201)	(5,282)	(5,900)
Total	(31,288)	(5,584)	(8,172)	(11,370)	17,504	21,672

Source: Nassau County 2010 Draft Master Plan

5,000 persons per square mile. The Mitchel Field TAZ contains the lowest population density in the Study Area due to the concentration of commercial, recreational and institutional land uses in this area. The portions of Mineola, Carle Place, and Uniondale that are located within the Study Area are characterized by low to moderate population densities ranging from 5,000 to 15,000 persons per square mile. Overall, population densities within the Study Area tend to be concentrated outside of the Roosevelt Field and Mitchel Field areas, highlighting the separation of land uses among residential, commercial, and employment centers.

By comparison, Nassau County (as a whole) is more densely populated than other suburban counties in New York State, such as Suffolk, Westchester, and Rockland counties. While Suffolk County has a slightly higher total population than does Nassau County, the population density of Suffolk County is lower and more dispersed as it contains significantly more land than Nassau. Communities in the western portion of Suffolk County, including the Towns of Huntington and Babylon, contain low population densities with areas of moderate density interspersed, while the eastern portion of the County contains minimal population density. Rockland County is generally characterized by low population density with minimal density to the west and moderate pockets of density in Haverstraw and Spring Valley. Population densities in the southern portion of Westchester County in areas such as White Plains, Yonkers, New Rochelle and Mount Vernon are similar to those found in Nassau County; however, the northern half of Westchester County predominantly contains minimal population density.

2.4.3 Employment

Employment data illustrate where jobs are concentrated, which is a useful component in planning for new and updated transportation services. As shown in Table 13, there are currently nearly 124,000 jobs in the Study Area with retail- and office-based employment accounting for the largest segments of employment.

These segments are roughly equal in size with retail-based employment comprising approximately 35 percent and office-based employment making up 33 percent of total employment within the Study Area. The Nassau University Medical Center is also a sizeable employer with approximately 3,400 employees in its system (see discussion below for further detail on healthcare employment sector).[19] The high concentration of employment in the Study Area is due to activity centers (i.e., malls and offices) concentrated principally in Roosevelt Field and Mitchel Field. Commercial uses comprise approximately 18 percent of land use within the Study Area (Table 7). The Study Area houses several major office complexes including RXR Plaza, the Omni at 333 Earle Ovington Boulevard, the office buildings located at 50, 55, and 60 Charles Lindbergh Boulevard. Additionally, the County Government Complex in Mineola and office complex along Franklin Avenue in Garden City are significant office concentrations in the Study Area. The Roosevelt Field Mall and the Mall at the Source represent major retail activity centers.

Overall employment in the Study Area, based on County-wide forecasts, is anticipated to increase by more than 10,000 jobs (8.4 percent) between 2010 and 2035.[20] Both retail- and office-based employment is projected to grow during this period. Overall, office-based employment is anticipated to grow by more than 9 percent with retail employment increasing by more than 8 percent. By comparison, employment growth throughout the region is projected to be significantly higher than in Nassau County between 2010 and 2035. During this time period, employment in Suffolk County is anticipated to increase by approximately 23 percent, while employment in Rockland and Westchester Counties is projected to grow by 27 percent and 26 percent, respectively.[21]

Table 13-Study Area Employment and Projected Employment Change 2010 -2035

Year	Total Employment		Retail Based Employment		Office Based Employment	
	Number	% change	Number	% change	Number	% change
2010	123,990	-	43,336	-	41,799	-
2020	127,247	2.6%	44,273	2.2%	43,233	3.4%
2030	131,167	3.1%	45,638	3.1%	44,565	3.1%
2035	134,364	2.4%	46,755	2.4%	45,655	2.4%
Change 2010 – 2035	10,374	8.4%	3,419	7.9%	3,856	9.2%

Source: NYMTC, Best Practice Model 2035 Forecast Series, based on 2005 base population and employment data

2.4.4 Healthcare and Educational Factors

Nassau County has developed a market for educational and medical services as related institutions represent the fastest growing sectors of the County's economy, employing over 100,000 individuals as of 2006.[22] These institutions are a significant presence within Nassau County and the Study Area itself. As described above, Nassau University Medical Center, a major employer within the Study Area, is anticipated to develop a mix of new healthcare facilities, medical offices and affordable housing within the Study Area as part of its capital investment program. In 2009, the Nassau University Medical Center provided inpatient care to approximately 23,000 patients.[23] Located in Mineola, the nearly 600-bed Winthrop-University Hospital is within walking distance of the LIRR Mineola Station. The hospital employs 6,000 staff and in 2009 provided inpatient care to more than 33,000 patients. Located beyond the

[19] NuHealth. *Raising the Bar*. http://www.numc.edu/raisingthebar.asp (August 25, 2010).
[20] NYMTC. *2010-2035 NYMTC Regional Transportation Plan*
[21] NYMTC. *2010-2035 NYMTC Regional Transportation Plan*. Chapter 2, Table 2.2. p. 2-9. September 2009.
[22] Nassau County 2010 Master Plan DRAFT. Chapter 2. p. 2-30.
[23] NuHealth. *Raising the Bar*. http://www.numc.edu/raisingthebar.asp (October 4, 2010).

Study Areas limits, North Shore – Long Island Jewish Hospital (North Shore-LIJ) is the County's largest medical institution employing approximately 40,000. Currently, North Shore-LIJ is developing a new facility in Lake Success, and is upgrading or planning to reconfigure several of its facilities over the coming decade. Due to its size and the number of facilities within the North-Shore LIJ system, employee access to transportation and housing are major considerations.

Nassau County is home to a number of academic institutions including 11 colleges and universities with a combined total enrollment of over 78,000 students. Two institutions, Hofstra University and Nassau Community College (NCC), are located within the Study Area. Hofstra University has a total enrollment of approximately 12,000, while approximately 22,000 full- and part-time students and 15,000 continuing and professional education students are enrolled at NCC. Projected enrollment at Nassau's academic institutions is anticipated to increase approximately 9 percent to 86,000 students by 2030.

Major medical facilities often collaborate with academic institutions. This cooperation is exemplified with the North Shore-LIJ's planned construction of a medical school and dormitories on the Hofstra Campus. In addition, Adelphi University, with a total enrollment of approximately 8,000 students, is located in Garden City, just east of the Study Area.[24] This academic institution is the fourth largest nursing school in the nation and offers clinical service support for the Nassau University Medical Center.

These academic and healthcare uses, as well as retail and commercial destinations noted above, function as workforce destinations in the Study Area and the broader County. Accordingly, these uses serve as assets for the County in that they attract individuals to the facilities including transit users, and employees traveling through the County as well as from points beyond.

2.4.5 Commercial Development

In September 2009, an analysis of commercial and residential growth was conducted to determine the distribution of commercial and residential growth for the Study Area and 18 selected downtowns within the County through 2030.[25] This study, conducted by Urbanomics on behalf of Nassau County and titled *20 Year Downtown Growth Allocation*, indicated that approximately 22.5 percent of the 19.2 million square feet of commercial development projected for all of Nassau County is allocated to the Study Area with the remainder dispersed among 18 downtowns, large-scale redevelopment projects and other County-wide development. The analysis contained within the *20 Year Downtown Growth Allocation* was based on the maximum build out scenario developed from the *Nassau Hub MIS* and adjusted to incorporate input from County planning staff. While the distribution of potential future development may change, the study reinforces the importance of the Study Area as a central component to development in Nassau County.

2.4.6 Summary of Socioeconomic Conditions and Trends

As indicated above, based on projections derived from NYMTC's BPM 2035 Forecast Series, the Study Area will continue to grow in the future, in terms of population, employment, and university enrollment. A slow but steady increase in population is anticipated within the Study Area through 2035. Additionally, out-migration is projected to reverse as greater numbers of people move into the County. Educational uses are well-established within the Study Area with student enrollment representing nearly 60 percent of the County total. This enrollment is anticipated to increase in the future. Similarly, the

[24] Adelphi University. *Quick Facts*. http://www.adelphi.edu/about/facts.php (September 7, 2010).

medical sector, which is a significant employer within the Study Area and County, is projected to continue to grow. New investment in health care and educational facilities, described above, can contribute to the County's long-term economic vitality by attracting jobs and reinvigorating older centers. Conversely, this growth will put additional strain on the Study Area's infrastructure and services, which, while home to only 9 percent of the County's total population, has over 20 percent of the County's employment. As such, the Study Area serves as an employment destination and one-quarter of the County's office jobs are located within the Study Area.

3. PROBLEM STATEMENT

Based on the conclusions of the previously completed MIS and the current review of pertinent data and trends, Nassau County has determined that a number of key pervasive transportation and related problems exist within the Study Area. These problems stem from current and projected roadway congestion; the lack of frequent, direct and convenient transit service; and, large lot, dispersed development patterns that encourage auto trips and contribute to environmental degradation. These problems limit the County's ability to grow, capitalize on economic development opportunities, and preserve the high quality suburban lifestyle that residents and businesses have come to expect.

Four overarching problems have been identified. Each problem has a series of "sub-problems" that together help explain and support the nature and significance of the larger problem.

3.1 Traffic congestion is currently pervasive and recurrent at many locations within the Study Area making it difficult to travel to, from and within the Study Area.

The Study Area contains a diverse mix of uses ranging from employment centers to retail, residential, recreation, and entertainment destinations, all of which generate high levels of traffic on the road network. Currently, roadways throughout the Study Area are severely congested, exacerbating travel to destinations within and through the Study Area. The issues detailed below, relate to existing and future congestion as well as the inability to implement viable roadway capacity expansions. These conditions threaten quality of life as well as the overall economic growth potential of the Study Area.

- *Severe congestion currently exists at numerous locations.*

  Congestion often occurs within the Study Area during the morning peak period and from midday through the late afternoon/early evening peak period. In addition, several area roadways also experience high levels of traffic volume and congestion on the weekends. Numerous locations along the main traffic routes through the Study Area are frequently congested, most notably where major east-west and north-south roadways intersect, such as at the intersection of Old Country Road and Glen Cove Road/Clinton Road. Eleven out of 27 assessed intersections in the Study Area and their key feeder routes operate at overall LOS E or F during the weekday PM peak hour. An additional 10 intersections operate at LOS D, which is considered to be marginally acceptable and, in some cases, includes individual traffic movements that experience LOS E or F conditions.

- *Major roadway choke points have been expanded to their limit.*

  Many of the critical locations in the Study Area have been widened, signal timing and cycle lengths have been maximized, and capacity improvements have been introduced over the years with little remaining opportunity to further improve traffic flow. Additional capacity improvements are not practical at many Study Area intersections that have already reached their physical limit as a result of the magnitude of traffic or the limited availability of remaining right-of-way. Roadway widening is not an adequate long-term solution to the Study Area's congestion and mobility problems.

- *Congestion is projected to increase in the future.*

  Population and employment within the Study Area is growing and will continue to grow over the next two decades with an attendant increase in the number of trips to, from and within the Study Area. Even without major new development initiatives or redevelopment projects, congestion and vehicle traffic within the Study Area would increase as a result of the natural increase in background traffic. Assuming a conservative background traffic growth rate of ½ percent per year, already congested intersections and roadway segments will worsen in the future.

- *Economic development initiatives within the Primary Study Area will increase congestion.*

  The implementation of any large economic development projects in the Study Area that predominantly rely on auto access will potentially increase this congestion even more. Severely congested roadways will degrade significantly and traffic from these roadways may divert to currently less congested lower-order roadways. Conditions on these lower-order roads would also likely deteriorate. The existing transportation system, which is already burdened by current travel demands, cannot adequately sustain future automobile trips without engendering severe levels of congestion.

- *Land use patterns and the existing road network layout limits choices for accessing Study Area destinations.*

  Traffic congestion is further exacerbated by the area's disjointed land use pattern. Residential neighborhoods, retail stores, and commercial areas are generally separated by major roadways or in areas with negligible transit access. Additionally, the dispersed large-lot land uses found in portions of the Study Area disrupt the street grid, making it difficult to travel between uses on foot, public transit, or even by automobile. Since the roadway network is influenced by the area's land use pattern, travel routes through and within the Study Area are circuitous and inefficient.

3.2 Transit Service within the Study Area does not adequately serve trips to, from and within the Study Area.

Transit service to the Study Area is provided via LI Bus and LIRR commuter rail service. LIRR service is not well-suited to address intra-Study Area transit needs, as its service is primarily oriented to east-west Manhattan-bound travel, lines are located at the periphery of the Study Area, its stations connect few attractions within the Hub, service operates infrequently at most times, and a number of stations are skipped by express service during peak hours. There is no service between the Study area and the South Shore, or any meaningful north-south rail service. Some north-south bus lines serve multiple Study Area destinations, but none directly links areas north and south of the Study Area. Due to these factors, transfers between vehicles are required in order to complete a large share of transit trips to Study Area destinations. Transit network challenges within the Study Area are described below.

- *Transit accessibility to Study Area destinations is limited by the uncoordinated nature of the various bus routes and their connection to the LIRR system.*

  The Study Area includes two intermodal transit facilities and one bus transfer facility. Their operation is not fully coordinated to enhance overall Study Area access or circulation. These facilities have become the end-point for many bus routes as they first enter the Study Area, forcing many transit users to transfer to another bus to reach Study Area destinations. In addition,

most routes within the Study Area do not follow a common path between common points, fragmenting service and reducing effective headways.

- *There is a lack of direct LIRR service to many major Study Area destinations.*

  Since the LIRR stations are located on the Study Area's periphery, the majority of activity centers are not within acceptable walking distance of existing rail service. With little direct service to activity centers, rail transit trips often require a transfer to another mode to reach Study Area destinations. LIRR lines directly serve the downtowns of Hempstead, Mineola, Westbury and Garden City, which originally developed around the LIRR stations. Newer retail, commercial, and recreation development has sprung up beyond their reach over the past 50 years. Most of the vacant and low-density properties that are likely locations for future development are also beyond the reach of the LIRR.

- *The Study Area currently lacks a fast, coordinated and efficient distribution system to/from the LIRR stations along the Study Area's edges.*

  The LIRR's potential to enhance the Study Area as a regional attraction is dependent upon on the presence of a frequent, reliable distribution system to deliver its customers to Study Area destinations that are beyond walking distance. At present, rail and bus schedules are not fully coordinated for trips to/from the Study Area, resulting in extended transfer wait times and long trips for transit users. Prior efforts at dedicated feeder/circulators have lacked customer-convenient attributes, such as frequent headways and quick schedule connections.

- *Infrequent service levels during off-peak periods and in the reverse-peak direction limits transit access to major destinations within the Study Area.*

  LIRR service is oriented for peak period commute trips to and from Manhattan. As such, reverse peak and off-peak service to stations within the Study Area is not prioritized and travel options are limited at certain times of the day. Additionally, only six of the 27 bus routes serving the Study Area offer peak and off-peak service levels that would be attractive to discretionary riders. The balance have only limited amounts of service available, particularly during off-peak and reverse-peak periods, creating long wait times for single-vehicle trips and very long wait times for trips requiring a transfer. As many of the Study Area's activity centers (Hofstra University, Nassau Community College, Roosevelt Field and Nassau Veterans Memorial Coliseum, etc.) attract people during off-peak hours (evenings and on weekends), the reduced availability of transit service at these times creates further difficulty and disincentive for using transit at these times.

- *Gaps in transit service limit access to the Study Area.*

  There are large segments of Nassau County that have either no transit service to the Study Area, or services that are so inconvenient as to deter all but those with no other option. Nearly the entire County north of Jericho Turnpike falls in to this category. The entire southeast quadrant of the County either lacks direct transit connectivity to the Study Area (most bus service is oriented to Hicksville), or has infrequent and geographically distant service. This discourages transit use for the large population in these areas and exacerbates projected traffic congestion in the Study Area. The LIRR cannot tap the Study Area-bound travel market from the populous South Shore (from Lynbrook to southwest Suffolk) due to the absence of coordinated connecting bus service from its stations. The LIRR Babylon branch bisects the populous south shore offering all the

service attributes (frequent peak and reverse-peak service, and at least half-hourly service for 18 hours each day) that could make transit a viable option for Study Area-bound travel. The one true North Shore to South Shore transit service in the County (Route N25) is one of the most heavily used bus routes in the County, but its routing bypasses the Study Area.

3.3 Dispersed and disjointed land use patterns within the Study Area limit transit service and increase reliance on auto travel.

Contemporary development patterns within the Study Area and County as a whole have been geared primarily toward automobile-based travel. These automobile-dependent land use patterns are characterized by the dispersion of uses (i.e., single-use residential, retail, office and industrial developments), wide arterial highways and a predominance of large parking lots.

- *The ability to pursue more transit-friendly economic development opportunities is constrained by the limited transit choices within the Study Area.*

  Nassau County's economic growth has stagnated with respect to other counties and regions, and new investments are needed to support sustainable development. Suburban centers in the New York City area, such as Stamford, CT, and White Plains, NY, have transformed themselves from suburban 'Main Streets' into 24-7 mixed-use centers that reflect the latest trends in development. In contrast, the lack of transportation options and increasing traffic congestion in the Study Area are discouraging businesses from locating or expanding there. If current development patterns continue and transportation problems remain unaddressed, the economic vitality of the Study Area and the County as whole will be further constrained in the future.

  National development and redevelopment trends are shifting away from automobile-dependent land use patterns towards mixed-use and higher-density developments. The Village of Hempstead is reviewing proposals for a 26-acre, mixed-use, transit-oriented development in its downtown and Westbury has redeveloped its downtown. While both of these areas are within walking distance of LIRR stations, there are considerable additional opportunities for redevelopment of the Study Area that are not currently well-served by transit. These include Nassau Veterans Memorial Coliseum, the Nassau University Medical Center and the former Mitchel Field where the Town of Hempstead has proposed a mixed-use zoning district. A "soft site" analysis undertaken during the MIS process identified approximately 318 acres in the Coliseum area in the Town of Hempstead, 38 acres in the County Center area in the Village of Garden City, and 50 acres in the Hempstead Village area with redevelopment potential.

- *Transit infrastructure is insufficient to support the Study Area's transition from automobile-dependent to transit-friendly development patterns.*

  The County, and with a number municipalities within the Study Area including Hempstead, and Westbury, are adopting plans and policies that support sustainable and transit-friendly development. The framework for these redevelopment initiatives focuses on the concepts of mixed-use and denser development and improved connectivity. Major proposed and pending developments within the Study Area, such as Hempstead's North Main Street project and the redevelopment of the Nassau Veterans Memorial Coliseum site, will most likely consist of a mix of residential, retail and/or recreational uses. Nassau County's Draft Master Plan and NYMTC's Regional Transportation Plan both identify the Study Area as a growth area. Redevelopment of

certain locations in the Study Area, including the expansion of the Nassau University Medical Center and the redevelopment of the Grumman Facility in the Regional Study Area can create major economic development opportunities.

The limited reach of stations, corridors and other transit infrastructure will constrain the creation of synergies among the developments, uses and users. For these developments to reach their full economic development potential they will need to be complemented by a comprehensive transit network. Future residents, employees and visitors will require an alternative to supplement the existing automobile-dominant transportation system. New investments in transit will be needed to support these higher-density, mixed-use developments, while maintaining a balance with the quality-of-life ideals and values of residents.

- *Land use patterns in large areas of the Study Area are not transit-supportive.*

  The development of the Study Area, like much of the County, has been predominantly auto-dependent. The current land use patterns within the Study Area were established after the closing of Roosevelt Field and Mitchel Field. At the time these airfields were redeveloped, distance between land uses was considered desirable and the redevelopment of these areas were typified by large parcels with single uses (big box retail, recreational areas) that were isolated from each other by surface parking and roadways. The development pattern in the Roosevelt Field Mall and Mitchel Field areas is dominated by commercial buildings that are separated by vast parking lots. This development pattern has resulted in low-density land use and a reliance on the automobile as the primary means of transportation, resulting in high levels of traffic congestion. As illustrated in Section 2.3.2, *Surface Parking*, the Study Area contains large areas of off-street parking. Much of this surface parking supply is used for special event or seasonal use and not needed to meet a regular demand. There is little shared parking. Typically, the retail, industrial, and office development present within the Study Area is set back from roadways and encircled by expansive surface parking areas. This existing development pattern and the physical barriers presented by these parking areas contribute to further reliance on auto travel within the Study Area.

- *Development patterns and inconsistent pedestrian infrastructure discourage walking.*

  The orientation of buildings in the Study Area reinforces the automobile as often the only viable means of travel. Single-use developments are bounded by wide, multiple-lane roadways with limited pedestrian facilities. Buildings are set back from their access roadways and are surrounded by surface parking lots. Separated and disconnected single-use development effectively hinders the ability to create convenient transit and/or pedestrian and bicycle connections between Study Area destinations. Uses may be separated by fences or have limited pedestrian access points or require long walks through surface parking lots. This auto-oriented development pattern discourages pedestrian access because of long walking distances between activity centers, lack of pedestrian access points and linkages, and unsafe or unattractive pedestrian environments. While portions of the Study Area, particularly west of Clinton Road, are characterized by a grid of short, walkable blocks, few connections are available to major destinations such as Roosevelt Field Mall or Nassau Community College.

3.4 The lack of transit choices within the Study Area limits the County's ability to positively affect environmental quality and sustainability and degrades the area's livability.

Nassau County is characterized by suburban development patterns that emphasize the separation of land uses. This reinforces driving as the dominant mode of transportation and creates a dependence on automobiles travel for most trips. Over time, this type of development has lead to roadway congestion, encouraged sprawling consumption of land, and deprioritized the historic urban centers within the Study Area. This development pattern has negatively impacted quality of life and is no longer sustainable.

- *Air quality in the County is currently in non-attainment and therefore impacts livability and public health.*

  Nassau County, like much of the New York/New Jersey metropolitan region, has been designated as a non-attainment area for particulate matter ($PM_{2.5}$) and ozone. Particulate matter can be emitted into the atmosphere from multiple sources including vehicular emissions. The prevalence of automobile usage and resulting roadway congestion has contributed to air quality problems in Nassau County. Additionally, exposure to poor air quality has the potential to result in public health impacts. The continued growth in auto trips to, through and within the Study Area will diminish the County's ability to move toward air quality conformity.

  Section 107 of the 1970 Clean Air Act Amendments (CAAA) requires the USEPA and states throughout the country to identify those areas not meeting the National Ambient Air Quality Standards (NAAQS). An area which does not meet a standard is referred to as being in non-attainment. If an area fails to attain the NAAQS for any criteria pollutant, the CAA requires each state to develop and maintain a state implementation plan (SIP) that demonstrates the state's air pollution control strategy for meeting the NAAQS. Any federal action that occurs within an area that has not attained the NAAQS must show conformance with the SIP.

- *The County is within an EPA-designated Sole Source Aquifer and the reliance on auto travel and the land use patterns that support it limit the County's ability to meet EPA water quality standards.*

  The Nassau-Suffolk Sole Source Aquifer system underlies Nassau County and the Study Area. Due to the prevalence of auto travel and historically dispersed land use patterns that have been favorable to the automobile, the Study Area contains large areas of impervious surface comprising primarily parking lots and roadways, which contribute to water quality degradation. New development strategies are needed to reduce water quality impacts within the County. These include creating higher density, compact, and walkable developments. Future developments oriented toward transit, as well as the inclusion of impervious surface treatments, would help to improve water quality within the Study Area. Attempts to alleviate roadway congestion by expanding capacity will only increase impervious surfaces and reduce recharge to the sole source aquifer, thereby resulting in less ground water being available to the region.

- *Severe traffic congestion results in travel delays, degraded air quality, noise, and traffic accidents that diminish the quality of life for County residents, businesses, and visitors.*

  These issues limit the County's ability to grow, capitalize on economic development opportunities, and ensure the continued maintenance of the high quality suburban lifestyle

expected by County residents and businesses. As a result, the County has instituted several environmental policies, including Healthy Nassau, a multi-dimensional environmental campaign to improve the County's environment, and sustain the health and quality of life of its residents.

4. NEXT STEPS

The Study Area problems articulated in this Technical Memorandum will be used to identify the area's transportation needs and the purpose of proposed transit improvements, and serves as the foundation to guide the project through the alternatives development, screening and ultimately the selection of an LPA.