CROSS HARBOR FREIGHT PROGRAM

Needs Assessment

U.S.Department of Transportation
Federal Highway Administration

THE PORT AUTHORITY
OF NY & NJ

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A. PROBLEM IDENTIFICATION AND OPPORTUNITIES

The greater New York/New Jersey/Connecticut region is the financial center of the United States economy, the nation's largest consumer market, and a major hub of entertainment, services, fashion, and culture. The region receives, processes, and distributes raw materials, intermediate products, and finished consumer goods, which move to and from the rest of the United States and countries around the world. To fully understand the existing freight market for the region and forecast its future conditions, a 54-county, multi-state Cross Harbor modeling study area has been established, comprising portions of southern New York, northern and central New Jersey, western and southern Connecticut, and a portion of eastern Pennsylvania (see Figure 1).

In 2007, more than 920 million tons of freight moved to, from, within, and through the 54-county Cross Harbor modeling study area by surface transportation modes (truck and rail). Excluding through traffic, nearly 690 million tons were handled, and 93.2 percent of this tonnage was handled by truck. By 2035, it is forecast that nearly 1.2 billion tons of freight will be moved to, from, within, or through the study area by truck and rail. Excluding through traffic, more than 860 million tons will be handled by truck and rail, and 92.5 percent of this tonnage will be handled by truck. Between 2007 and 2035, the study area truck tonnage will increase by around 160 million tons and rail tonnage will increase by around 18 million tons (excluding through traffic). This represents a total tonnage growth of around 26 percent compared to a 2007 base year.

The region's highway system, especially the bridge and tunnel crossings and connecting routes, suffers from significant peak period congestion which continues to expand in duration beyond the typical hours. Planned highway improvements will address some chokepoints, but will not significantly alleviate congestion. Because the region is so dependent on trucking, highway congestion has a tremendous impact on freight movement—it increases the costs and environmental impacts, while decreasing reliability, speed, and safety of goods movement. With future growth in freight movement, truck vehicle miles of travel (VMT) will increase, and the current impacts and inefficiencies will grow.

Overall, the region has a well-developed freight rail system, but it is far better developed west of the Hudson River than it is east of the Hudson River. Many historic and geographic reasons account for this condition, including that critical connections to the east-of-Hudson market are remote, inefficient, or have capacity restrictions, but the result is that east-of-Hudson counties are far more dependent on highway transportation.

This modal imbalance is a significant problem because east-of-Hudson counties comprise about one-third of total surface transportation tonnage, and about half of long-haul tonnage moving more than 500 miles. Six of the top ten freight receiving counties in the study area are located east-of-Hudson. As a result, a huge part of the region's freight demand essentially has limited choices in terms of how it is transported. Highways leading to and serving the east-of-Hudson counties, and the communities that traverse, will continue to receive the greatest proportion of surface freight transportation impacts and freight shippers, receivers, and carriers throughout the region will suffer the growing negative effects of highway congestion.

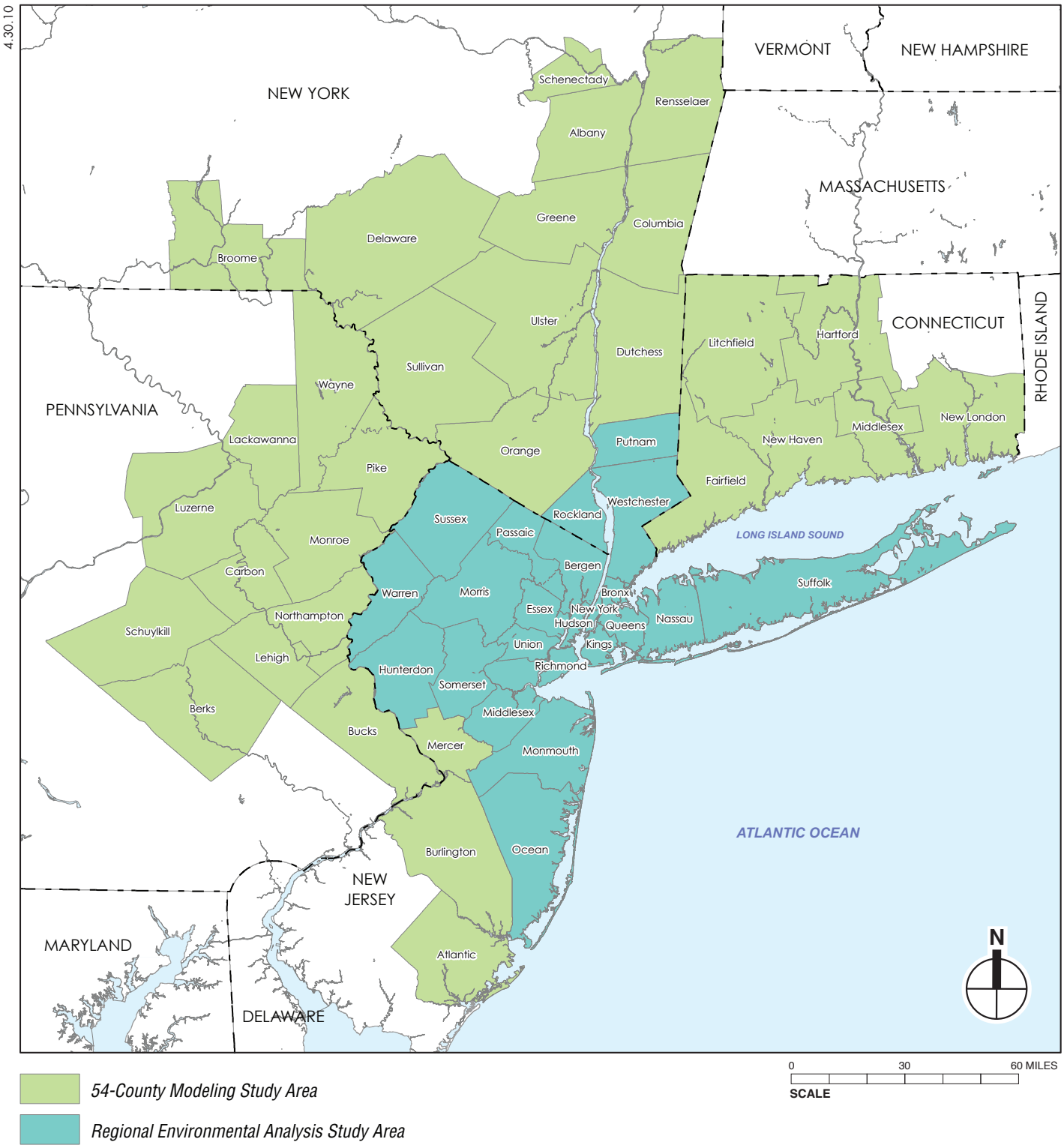

FIGURE 1

Study Areas

CROSS HARBOR FREIGHT PROGRAM

What actions can be taken to address this problem? Growing the share of surface transportation demand handled by non-highway modes is one significant opportunity. This idea is not new. Historically, the east-of-Hudson region was served by an extensive network of "railcar floats," where railcars were placed onto barges in New Jersey and floated across the Hudson to terminals in New York; a vestigial float service still operates today. A limited container barge also operates between Port Newark/Elizabeth and Brooklyn. Existing infrastructure accommodates a limited amount of freight rail service via the existing Hell Gate rail bridge over the East River, but significantly increasing the region's ability to accommodate freight using non-highway modes will require a new comprehensive multi-modal strategy. Possibilities include expanding and upgrading the service of waterborne modes, the introduction of regional Cross Harbor rail connections, and the upgrade of east-of-Hudson rail infrastructure.

These opportunities must be studied systematically and comprehensively, taking into account planning and growth over the entire 54-county Cross Harbor modeling study area, and also considering highway-related strategies (transportation system management, transportation demand management, safety and capacity enhancements) that could be implemented. The analysis must also recognize that freight movement is primarily a private commercial activity, contracted for and carried out between private partners, utilizing a combination of publicly and privately owned equipment and infrastructure. To be effective and sustainable, strategies to increase the contributions of non-highway modes must address the needs of freight shippers and receivers.

From previous studies and current thinking, four potential types of surface freight movement have emerged as potential candidates for greater freight handling by non-highway modes, providing benefits to study area counties both east and west of the Hudson:

1. Historic and current east-of-Hudson rail freight commodities. The opportunity is to serve commodity types that are generally most amenable to rail service, but do not fully utilize rail because of infrastructure or service limitations.
2. Long-haul rail trips that terminate at rail yards west-of-Hudson, and then continue by truck to destinations east-of-Hudson, and vice-versa. The opportunity is to move the transfer point between truck and rail to the east-of-Hudson region, reducing truck VMT and eliminating Hudson River truck crossings. The location and utilization of distribution centers, where truck and rail loads would be consolidated and de-consolidated, is a critical factor.
3. Long-haul truck trips (500 miles or more) that originate or terminate in the east-of-Hudson region. Typically, rail is most competitive for freight moving 500 miles or more. Many potential reasons explain why these trucks do not use rail today: rail infrastructure and service limitations, competitive pricing factors, and/or special handling requirements. The opportunity is to address as many of these factors as possible.
4. Shorter-haul truck trips (less than 500 miles). Rail "unit trains" comprise a single type of traffic that can be effective at shorter distances, provided that corridor volumes are high. Many regions, including New York/New Jersey, are investigating these "shuttle train" services.

Critical issues and considerations in moving forward are addressed in the following sections.

B. HIGHWAY SYSTEM

The limited role of rail for freight movement results in trucks accounting for approximately 93 percent of freight movements within the 54-county Cross Harbor modeling study area. Trucks hauling freight in the region share an extensive highway and roadway system with passenger cars, buses, and other non-freight vehicles. This condition contributes to high levels of traffic congestion leading to the New York Harbor/Hudson River crossings, as well as to and within the east-of-Hudson region. Northern and southern crossings of the Hudson River, as well as travel conditions on the regional highways in the east-of-Hudson region, generally are at or near a failing level of service. Moreover, highways in the east-of-Hudson region have numerous segments that are operating at 40 to 100 percent over capacity.

CONGESTION

In much of the region, where major highways are overly congested, long-haul trucks can use different alternate routes. This condition is not ideal, but it keeps freight and other traffic moving. However, it also results in localized congestion, environmental impacts, and excessive roadway wear and tear. In the study area, however, traffic traveling to and from New York City and Long Island or New England must funnel through a limited number of bridges, tunnels, and highway corridors. If these facilities are congested, no alternative local artery or crossing is available. These bridges and facilities are congested throughout most of the day and into the night. Delays of up to 45 minutes to enter the Lincoln and Holland Tunnels or to traverse the George Washington Bridge are common. The George Washington Bridge, which accommodates an average of 300,000 vehicles per day, is the only crossing that is part of the National Highway Network—the designated system of highways for 53-foot trailers[1]. Thus, it is the only option for these vehicles west of the Hudson River, bound for Long Island and New England. Tractor-trailer trucks can also travel from New Jersey to Staten Island and the Verrazano-Narrows Bridge, which carries approximately 196,000 vehicles per day to Brooklyn. However, this route entails negotiating narrow, substandard lanes on either the Outerbridge Crossing or Goethals Bridge, or the Bayonne Bridge to reach Staten Island. According to the New York Metropolitan Transportation Council (NYMTC) Draft 2009 Congestion Management Process Status Report, current vehicle demand at both crossings already exceeds capacity.

Ultimately, when trucks arrive in Brooklyn, the Gowanus Expressway, which connects to the Verrazano-Narrows Bridge, is severely congested and cannot accommodate 53-foot trailers. Continuing farther north, the Brooklyn/Queens Expressway has height limitations that force larger trucks on to local streets. The various tunnel crossings impose restrictions on vehicle height, weight, length, and cargo (hazardous materials prohibited), which effectively preclude their use by most long-haul freight carriers.

Based on NYMTC projections, total truck traffic on the Cross Harbor facilities are expected to increase by 35 percent by 2035. Specifically, truck volumes would increase from approximately

[1] All trucks carrying trailers 53 feet or longer, regardless of what they are carrying, are prohibited from traveling within or through New York City, except for a portion of the Interstate System that allows regional 53 foot trailers to travel through the New York City region to points north and south, and areas to the east in Long Island. These larger tractor-trailers must utilize portions of the New England Thruway and Bruckner Expressway (I-95), the Throgs Neck Expressway/Throgs Neck Bridge (I-295) and portions of the Long Island Expressway (I-495) to accomplish this movement.

10 million to 14 million by 2035 on the George Washington Bridge, and from 5.7 million to 7.4 million on the Verrazano-Narrows Bridge (see Figure 2). The total percentage of trucks on the Verrazano-Narrows Bridge is projected to increase from 10 percent to 16 percent in 2035.

According to the INRIX 2009 National Traffic Scorecard, the country's worst bottleneck since 2007 is the Cross Bronx Expressway/I-95 in the Bronx, which provides direct access to the George Washington Bridge. The segment leading to the Bronx River Parkway, Exit 4B interchange, was congested 94 hours of the week, with an average speed while congested of 11.4 miles per hour (mph). Between 4 and 5PM on Fridays, vehicles on this stretch averaged just 5 mph, i.e., the slowest location and time in the United States in 2009.

Increased congestion can be expected in the future due to growth in population, employment, and regional travel. Congestion on the major river crossings will be prolonged, and spatially extended to adjacent highways. In New York, most major roads will be congested, especially east-west-bound highways in geographic Long Island (see Figure 3). Currently congested roads will become "connected" as a congested network; this condition reduces the possibility of detouring in the system. In New Jersey, significant congestion increases will occur on north-south highways as well as their east-west-bound connectors.

Based on NYMTC's Best Practices Model (BPM), the daily VMT for the regional roadway system in 2010 is estimated at 131.6 million. This daily VMT is projected to increase by 16.4 percent, to 153.2 million by 2035[1]. NYMTC uses a roadway congestion index to identify total recurring delay on both freeways and arterials. A congestion index equal to or greater than 1.0 indicates that congested conditions exist area-wide; a congestion index less than 1.0 indicates that congestion is not a major problem. The advantage of using the congestion index is that it allows head-to-head comparison of areas with varying sizes and populations. The region-wide roadway congestion index for 2010 is 1.06—this value is projected to increase to 1.22 by 2035. This indicates that recurring delay on both freeways and arterials is projected to increase between 2010 and 2035.

Daily vehicle hours of delay (VHD) estimates by NYMTC for 2010 is 2.35 million and projected to increase by 42.6 percent to 3.35 million by 2035[1]. According to the North Jersey Transportation Planning Authority (NJTPA), considering a typical weekday, approximately 1.6 million hours are spent in congestion by travelers in the NJTPA region each year. This average delay will increase approximately 46 to 54 percent over current levels, depending on future transportation funding for freight improvement.

INFRASTRUCTURE

The region's heavy dependence on trucks results in wear and tear on the region's roads, bridges, and tunnels, as well as severe chronic congestion and associated diminished air quality. For example, nearly two-thirds of the $2.5 billion allocated each year to the NJTPA region's transportation system is used for maintaining existing facilities in good working order. Many key transportation facilities in the region were built 50 years ago or more, and are due for major overhaul or replacement. Maintaining and improving these roads and bridges are exacerbated by the amount of travel in the region, since the heavy travel increases wear on roads and bridges, and increases repair costs, since work has to be conducted to avoid disruptions to key travel

[1] NYMTC Best Practice Model, "2005 Base Year Scenario" and NYMTC Best Practice Model, NYMTC "2035 Forecast Scenario"

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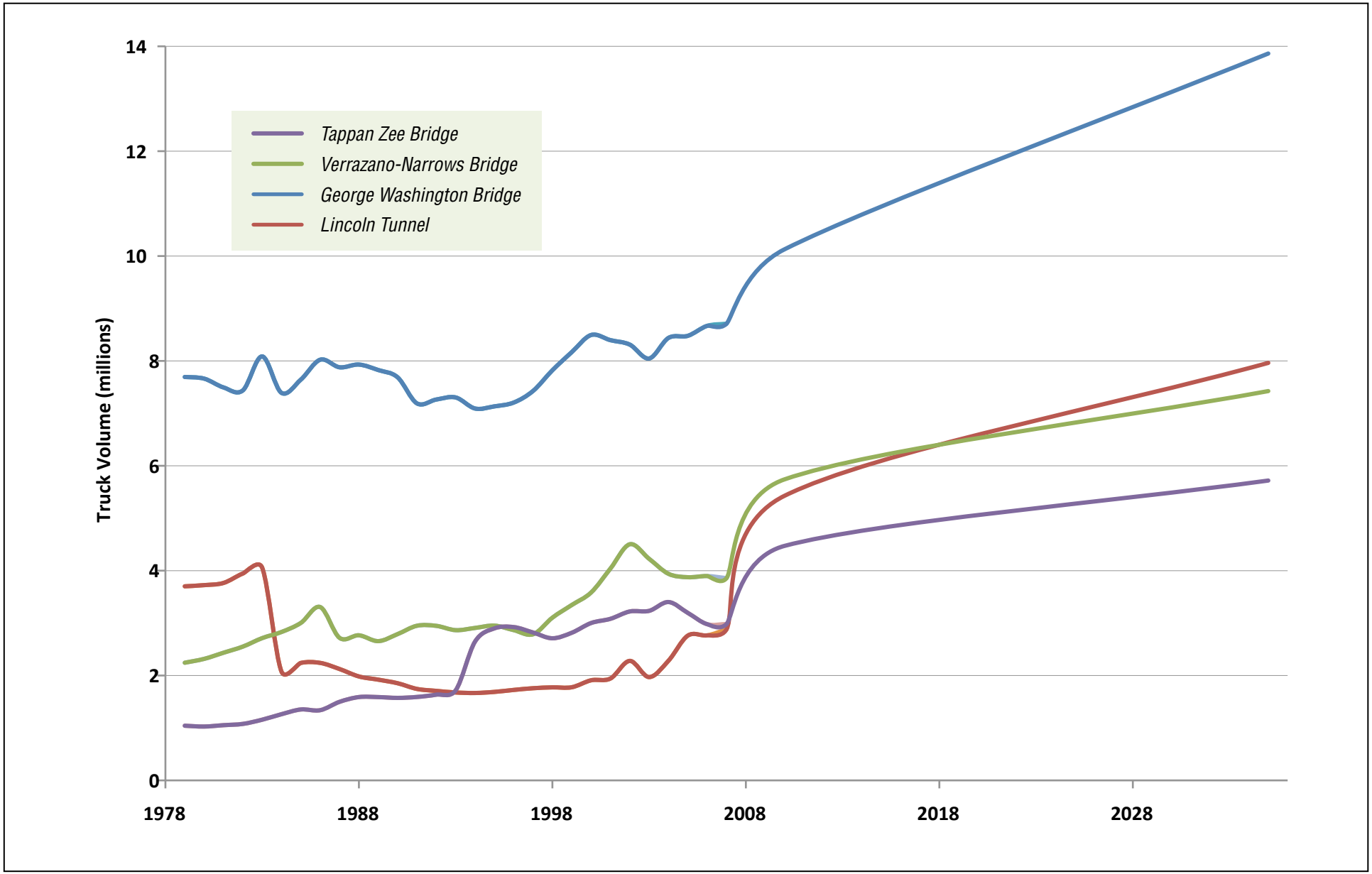

Sources: NYMTC, 2007 Truck Toll Volumes
NYMTC, Regional Transportation Statistical Report, 2000-2001
NYMTC, 2035 BPM Model

FIGURE 2

Truck Volumes at Cross Harbor Facilities (1979-2035)

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Source: NYMTC, 2035 BPM Model

2035 Congested Major Roads: V/C > 0.8

Major Road

Freeway

FIGURE 3

Projected Highway Congestion, 2035

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routes. Approximately 33 percent of the NJTPA region's bridges are considered functionally obsolete, and approximately 11 percent are structurally deficient. State-of-good-repair projects collectively comprise the single largest category of investments in the NYMTC Regional Transportation Plan. Over the next 25 years, greater than $290 billion will be needed to maintain state-of-good-repair conditions through replacement and refurbishment of equipment and facilities. In addition, over $661 billion will be needed to maintain and operate the regional transportation system.

A 1997 Federal Highway Administration (FHWA) report estimated that the cost of pavement wear caused by trucks can be up to 100 times greater than that caused by passenger cars. With the projected increases in vehicle miles traveled over the next 25 years, pavement wear will increase.

C. FREIGHT RAIL SYSTEM

NATIONAL PERSPECTIVE

From the mid-1880s through the mid-20th century, railroads accommodated the majority of domestic freight throughout the country, and supported a thriving industrial base with ample access to rail.

After World War II, the creation of the Interstate Highway System in 1956 (authorized by the Federal-Aid Highway Act) resulted in the construction of new and improved highways and roadways which, combined with the explosive growth of suburban development and the decentralization of regional economies, fostered the rapid transition to personal automobile use and a decline in rail passenger traffic. Construction of the 42,500-mile Interstate Highway System, and federal law regarding truck weight limits initially set at 73,208 pounds, facilitated the use of larger trucks carrying heavier loads at a lower per-mile cost. Regions of the country that lacked efficient rail or water access, but were desirable for other reasons, experienced tremendous growth, creating new "truck-dependent" consuming and producing regions. As a result, the trucking industry experienced steady and rapid growth.

Rail freight responded to market share losses by contracting service on low volume lines and by consolidating into fewer business units, enabling them to focus on moving the most profitable rail-oriented commodities. Railroads were also successful in developing new markets and services, principally intermodal, which is now a significant share of their business. Many of the leading customers for rail intermodal services are trucking companies, and therefore this service is both a competition and a partnership.

Following deregulation of the industry (via the 1980 Staggers Act), the nation's rail industry has significantly grown its ton-mileage and sustained its profitability. Since 1980, rail freight ton-miles have steadily increased nationwide, from 932 billion annually in 1980 to over 1.5 trillion in 2006. This amount is expected to continue to rise as shippers seek more efficient and faster means of transporting their products, and as highways steadily become more congested. Railroading has experienced a recent renaissance, with profits and ton-mileage steadily increasing. Increased service levels associated with this renaissance have not been experienced since World War II. Freight ton-miles have more than doubled since the mid-1940s, with railroads hauling about 43 percent (the most) of the transportation types, and freight revenue reached approximately $57 billion in 2007.

WEST-OF-HUDSON FREIGHT RAIL SYSTEM

The west-of-Hudson freight rail system, as part of the national freight system, is included in this success story with significant intermodal and non-intermodal traffic and extensive facilities, many of which have been recently upgraded. Its success helps the region avoid hundreds of millions of truck vehicle VMT every year. Any discussion of rail improvements serving the study area counties east of the Hudson River must first consider conditions in the west-of-Hudson, because connections between the east-of-Hudson and the rest of the nation must traverse the west-of-Hudson infrastructure. Rail system issues and needs have been identified and, based on availability of funding, are being addressed by the railroads, the Port Authority of New York and New Jersey (PANYNJ), the State of New Jersey, and local and regional governments.

CAPACITY

Unlike the east-of-Hudson region, several freight-only mainlines serve the region as part of the national rail network. However, some of these lines are functioning near capacity during critical portions of each day. Terminals, yards, and connecting freight railroads in northern New Jersey are also operating at or near capacity. CSX Corporation (CSX) and Norfolk Southern Corporation (NS) have worked with PANYNJ, NJDOT, NYSDOT, NJ Transit, Conrail, AMTRAK, and other regional partners to identify and coordinate various improvement programs in the west-of-Hudson region. Some of the key bottlenecks and improvements are identified below**.**

Connecting Railroad

Consolidated Rail Corporation (Conrail) reports that significant portions of the freight-only connecting railroad network that links the serving yards, classification yards, and intermodal terminals in northern New Jersey are in need of upgrade. Service delivery would be enhanced if some segments were double-tracked with signal and speed improvements.

The New Jersey Department of Transportation (NJDOT) Statewide Freight Plan (2007) identified a lack of adequate capacity for such lines as the North Jersey Shared Assets Area (NJSAA) Lehigh Line, NS Lehigh Line, Passaic and Harsimus (P&H) Line, and Chemical Coast Line, with the CSX River Line close to capacity. Accommodation of forecasted growth in total freight traffic will require a significant increase in capacity along key rail lines and terminals in New Jersey if railroads are to maintain market share, let alone add service to increase it.

CSX and NS have formulated a program, including approximately 10 projects, to upgrade trackage in northern New Jersey. Based on availability of funding, it is expected that the private carriers, the Port Authority, the state of New Jersey, and NJ TRANSIT will work in public-private partnership to cooperatively fund these necessary enhancements. Projects underway include improvements to the River Line, New York Susquehanna and Western Railway, Belvidere Delaware Railroad, and Morristown and Erie Railway.

Yards and Terminals

Capacity at the main receiving and classification yards can be an issue when traffic levels are high, and with further growth will become an increasing challenge. The NJDOT Statewide Freight Plan (2007) recognized a need for terminal area throughput capacity improvements at Croxton Yard, Waverly Yard, and Oak Island Yard.

HIGHWAY ACCESS TO RAIL FACILITIES

Currently, most rail traffic bound for the east-of-Hudson region arrives at railheads in northern New Jersey, and is trucked across the Hudson River for delivery to regional destinations. Despite plans to improve rail connections and expand east-of-Hudson rail service, northern New Jersey is likely to remain the dominant rail transfer point for the immediate future. Because of this condition, access between rail terminals in northern New Jersey and New York is an integral part of the region's rail freight system. Highway access to support the planned expansion of rail freight activity at Greenville Yard will be particularly important. Cross Hudson drays experience constrained river crossings, and pay bridge tolls to access the point of final delivery. These additional barriers translate into higher overall prices for regional shippers to offset higher operator toll and congestion costs, as well as reduced delivery reliability in the face of chronic congestion on river crossings.

ACCESS TO EAST-OF-HUDSON FREIGHT CUSTOMERS

Freight access from the main rail hubs in New Jersey to Long Island and other points east is limited to either a circuitous overland route or a cross harbor float railroad. Approximately one fifth of those intermodal shipments grounded in northern New Jersey are drayed to and from the east-of-Hudson service area. A substantial amount of carload freight waybilled from northern New Jersey is also produced or consumed in the east-of-Hudson subregion. With better access to the east-of-Hudson subregion, more traffic would be carried across the Hudson River by rail that could also benefit northern New Jersey. Less traffic would need to be drayed from intermodal yards, transload terminals, and warehouses by trucks crossing the George Washington and Verrazano-Narrows Bridges.

EAST-OF-HUDSON FREIGHT RAIL SYSTEM

BACKGROUND HISTORY

Beginning in the mid-19th century, freight movement throughout the New York and New Jersey region was extensively served by railroads. Trunk line railroads wanting to tap into the Port of New York, the largest in the United States since the 1820s, had difficulty getting across the Hudson River. Therefore, railroads established one or more waterfront terminals, and from them served every part of the region by waterborne modes. As shown in Figure 4, railroad terminals lined the New Jersey, Brooklyn, and Manhattan waterfronts. Major carriers into the New York/New Jersey area from the west had extensive fleets of tugs and barges moving from the New Jersey waterfront to the New York City waterfront. Some of these barges handled railcars to float bridges, and other barges lightered goods unloaded from railcars at docks in New Jersey directly to customers in New York City.

Railroad car floating was the predominant mode for transporting freight cars in New York Harbor in the 1930s, with approximately 5,300 cars per day moved in 1937. Notably, a terminal for the Long Island Rail Road (LIRR) Bay Ridge Branch was located at 65th Street in Bay Ridge, Brooklyn (65th Street Yard). From this facility, carfloats transported freight to Greenville in Jersey City, New Jersey. During World War II, the Greenville-Bay Ridge interchange operated 24 hours a day, handling 2,160 cars per day at its peak. The New York, New Haven & Hartford Railroad interchanged cars with the float service in Brooklyn, and provided direct service to/from Connecticut, Rhode Island, and Massachusetts and, through interchanges, provided service to the remainder of New England.

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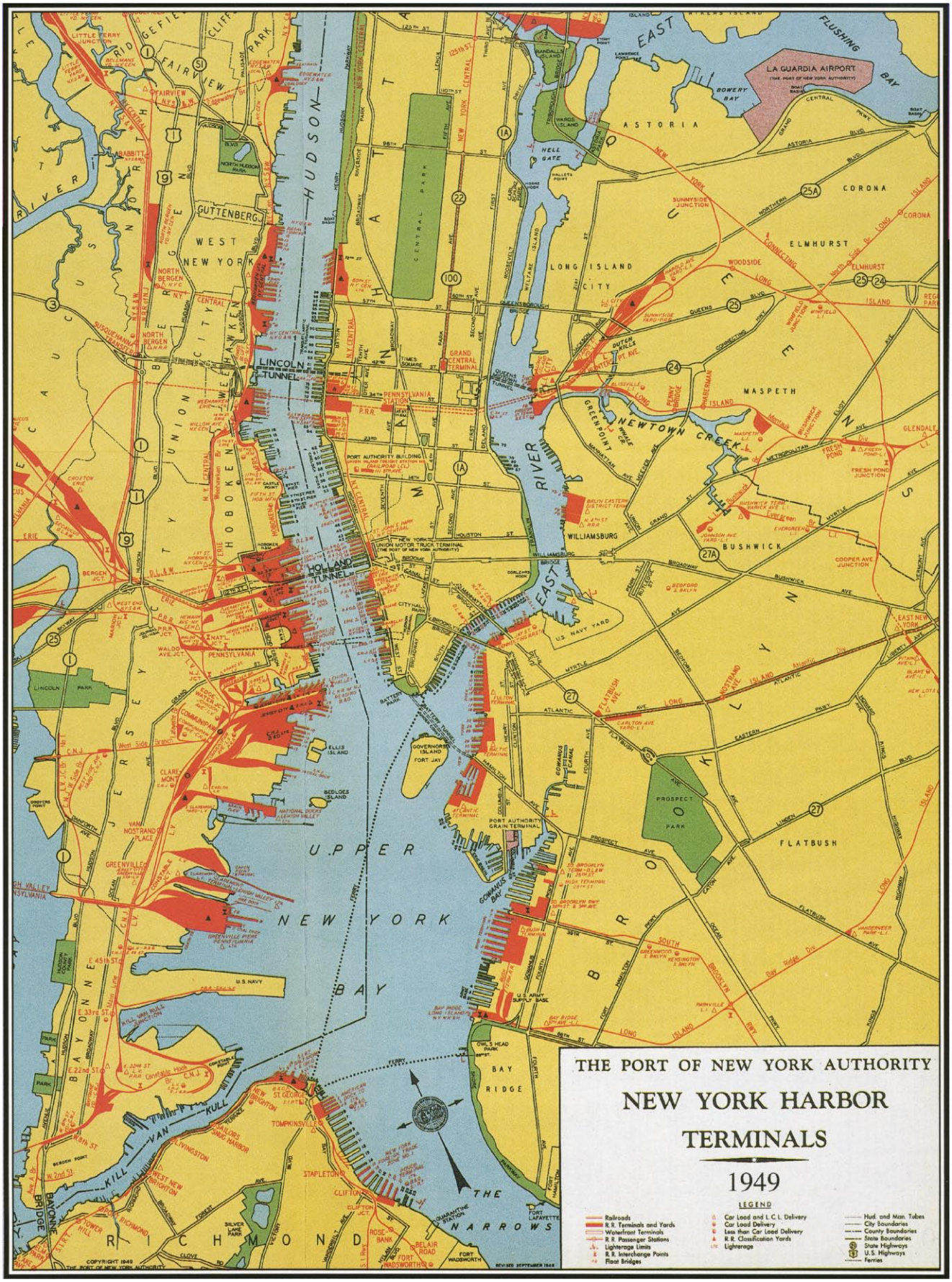

FIGURE 4

New York Harbor Terminals – 1949

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A steep decline in float traffic began in the 1950s; within 25 years, only a single car float operation remained across New York Harbor—between Greenville Yard and Bush Terminal in Brooklyn, (a 6-acre facility located on the Brooklyn waterfront at First Avenue between 43rd and 51st Streets). A significant factor in the New York City railroad freight industry's decline was that public monies were invested in vehicular crossings of the harbor and the Hudson River, rather than in rail crossings. This investment included the construction of the Tappan Zee Bridge in 1955, the third tube of the Lincoln Tunnel in 1957, addition of a lower deck to the George Washington Bridge in 1962, and construction of the Verrazano-Narrows Bridge in 1964. Barge movement of railcars across the Hudson River has not advanced significantly in the last century, and has become slow, more sporadic (less than daily), and more expensive per car to provide, relative to trucking and intermodal options that operate on publicly provided infrastructure.

In 1983 a group of investors purchased the float operation between Greenville Yard and Bush Terminal that had once been owned by the Penn Central Railroad. It was named the New York Cross Harbor Railroad. Though ownership changed, the name was retained until the operation was purchased by the Port Authority of New York and New Jersey (PANYNJ) in 2008 and renamed New York New Jersey Rail (NYNJ). NYNJ now operates the only railcar float service in the New York region. It leases approximately 27 acres of Conrail's Greenville Yard in Jersey City, which provides connections with CSX and NS. In Bay Ridge, Brooklyn, Bush Terminal Yard connects to the New York and Atlantic Railway's Bay Ridge Branch and the South Brooklyn Railway.

Prior to World War II, the majority of freight that passed to and from the New York Metropolitan region moved by rail on some of the most storied railroads in U.S. history (including the Pennsylvania, the New York Central, and the Erie Railroads). However, based on the various national and local changes to the freight industry described above, the railroads began experiencing financial problems. The Pennsylvania Railroad sold LIRR to the state of New York in 1966 due to the lack of direct movement of rail freight to the east side of the Hudson River, as well as growing losses from the commuter service. In 1968, the merger of the Pennsylvania and New York Central Railroads (the Penn Central) failed as the company filed for bankruptcy. This event created a ripple effect throughout the entire northeast, as other railroads that depended on the Penn Central to haul traffic no longer had a means to move their freight.

Realizing the severity of the situation, the federal government established Conrail, which comprised the skeletons of several bankrupt northeast carriers, beginning operations on April 1, 1976. With federal backing, Conrail's financial position began to improve; by the late 1980s, it was a profitable railroad, although by that time, thousands of miles of excess trackage, primarily from Penn Central, were abandoned or sold.

The combined effect of these changes dramatically minimized rail freight access to New York City which was historically already quite isolated from national freight rail network due to its island location and limited rail crossings. The one rail tunnel under the Hudson was, and still is, used for passenger traffic and has never handled significant amounts of freight traffic. The nearest rail bridge across the Hudson River was the Poughkeepsie-Highland Bridge which formed a direct route to/from New England but was a bit circuitous for New York traffic. It added an additional carrier that took a division of revenue from the other carriers, and consequently most New York destined traffic was handled via marine services into the New York market. The Poughkeepsie Highland Bridge was permanently closed to rail traffic after a fire in 1974, leaving Albany as the only freight rail bridge crossing the Hudson River, increasing the circuity of all rail movements to New York, especially from the south.

The rise of intermodal traffic (first trailer-on-flatcar and then container-on-flatcar) resulted in the development of large intermodal terminals in New Jersey. Population growth, cheaper land prices, and the better transportation infrastructure west of the Hudson River shifted the "center of gravity" for distribution activities to New Jersey. The state of New York attempted to revitalize rail traffic across the Hudson through the Oak Point Intermodal Terminal and the Oak Point Link projects in the 1990s. Neither project dramatically increased rail traffic directly to/from New York, since the only direct rail route into and out of New York was via a circuitous Hudson River crossing at Albany and it included conflicts with passenger services and clearances on the Metro-North Railroad (MNR) Hudson Line. In addition, most of the distribution infrastructure for the New York area is located west of the Hudson River. A limited amount of direct traffic moves directly by rail or intermodal into the New York area without first being handled at a distribution facility on the west side of the Hudson. The most important rail growth area in the last 20 years has been outbound Municipal Solid Waste and Construction and Demolition Debris, which originates by rail east of the Hudson. The increase in this type of traffic has developed recently and taken advantage of the improved clearances and separation from passenger traffic afforded by the Oak Point Link project.

The Bay Ridge Branch is an example of a freight-only rail line through Brooklyn and Queens that is currently underutilized due to the difficulty in serving customers. The complexity of getting railcars to and from the Branch, as well as the associated time implications, causes difficulties for the customers on the Bay Ridge Branch line to secure competitive rates. While it is true that there has been a general decline in the demand for rail freight services over time, declines in railcar demand along the Bay Ridge Branch are in excess of nationwide averages. The Bay Ridge Branch was once a major rail freight corridor during the peak of rail float operations across the harbor. At one time the Bay Ridge Branch carried 600,000 railcar-loads per year, but now carries less than 3,000 carloads per year. The Bay Ridge Branch began as a narrow-gauge seasonal railroad serving Brooklyn beaches. It attained its highest state of service and capacity as a result of improvement projects (years 1914-to-1925) that featured high-voltage AC electrification and grade-separated multiple track. This upgrade was designed as a predominantly four-track facility, with intermittent sections of two-track right-of-way.

Today, the Bay Ridge Branch has only one active track, with passing sidings. It has no signals, with train movements controlled by track warrant (direct approval from a dispatcher). The existing yards of significance are at Bay Ridge 65th Street and at Fresh Pond. The existing East New York Tunnel on the line has four bores, but with only one tube in service. Two other tunnel tubes have tracks in place, but are not connected. The fourth tunnel tube is sealed and conveys a petroleum pipeline. The Bay Ridge Branch is entirely grade-separated, with 44 overhead structures or bridges in the segment of the line between East New York and Bay Ridge. Five of the 44 bridges have clearances of 17'6" or less (minimum clearance for trailer-on-flatcar), while 30 of these 44 bridges have a 20'6" or less clearance (minimum clearance for high-cube double-stack railcars). The LIRR freight service New York and Atlantic Railway (NY&A) operates the Bay Ridge Branch. Shippers and consignee demand on this rail line is generally on an as-needed basis, and averages only about one freight train per day.

CAPACITY BARRIERS

A review of the existing characteristics and needs for the east-of-Hudson rail system identified four types of barriers to growth of rail freight traffic:

1. **Conflicts with passenger service** limit the flexibility, reliability and transit times of freight operations;
2. **Clearance issues** prevent freight carriers from operating their most modern and efficient rail equipment in the study area;
3. **Weight restrictions** prevent freight carriers from operating their highest volume and lowest cost bulk equipment in the study area; and
4. **Yards and terminals** are adequate for current volumes of traffic, but would require additions to accommodate increased freight demand and provide more efficient service.

Conflicts with Passenger Service

Most of the rail lines east-of-Hudson are publicly owned and maintained. The public agencies that acquired the lines were primarily motivated to maintain (and later expand and improve) passenger rail services that are critical to the economy of this region. During the ensuing decades, public agencies have invested large sums of money in improving and expanding rail passenger services in the region. The government has been much less active in the freight arena, which has traditionally been a for-profit private enterprise.

The NY&A (New York and Atlantic Railway) was formed in May 1997 to handle the freight operations on Long Island Railroad infrastructure across Long Island, serving a total of 269 route miles. This privately-owned railway is headquartered in Glendale New York, and moves approximately 20,000 carloads per year utilizing its own fleet of locomotive and crew assets. CSX continues to own the Fremont Secondary which allows the Class 1 railroad to operate trains between their Oak Point Yard in the Bronx, and Fresh Pond Yard in Glendale, Queens, which is the interchange location with NY&A Railway.

The Metropolitan Transportation Authority (MTA)-LIRR owns and maintains most of the conventional railroad lines on geographic Long Island, and is the most heavily traveled commuter railroad in North America. The MTA-MNR owns and maintains most of the railroad lines in the Bronx, and in Westchester, Putnam, and Dutchess counties. It also maintains the rail lines owned by the State of Connecticut extending to New Canaan, Danbury, Waterbury, and New Haven. Amtrak owns the lines leading to New York's Pennsylvania Station from New Rochelle in the north, and Washington, DC in the south. The Amtrak tunnels are the only conventional railroad crossings of the Hudson River south of Albany.

The principal mission of the public agencies that own and control these critical regional railways is the prompt and safe movement of passenger trains, which are completed successfully. Only about 20 daily freight trains operate east-of-Hudson. Eighteen of these trains share tracks with the extensive network of passenger service, in excess of 250 passenger trains a day on some line segments, which are given scheduling priority over freight movements. This condition limits the capability of freight railroads to compete for certain time-sensitive commodities that must arrive or depart during passenger peaks. It also prevents freight railroads from serving customer industries on weekdays, when they are typically staffed, which is an important consideration for many rail shippers. In addition, if passenger operations become delayed or off-schedule, freight railroad reliability is severely impacted because freight trains are typically the lowest priority trains on the railroad, especially when the passenger railroad (in this case, Long Island Railroad) is in operational control of the rail infrastructure. If the window of operation is missed by the freight operator, due to a self imposed issue, a customer issue, or another train interference issue, it is oftentimes very difficult for the freight operator to regain access to the passenger railroad.

Clearances

The rail lines in the east-of-Hudson region were designed and engineered when the railcar fleet in the U.S. was lighter and less tall than many of today's cars. As recently as 30 years ago, the disparity in dimensions between freight and passenger rail vehicles was not great, and the rail lines east-of-Hudson accommodated most freight cars. Freight carriers, however, are increasingly relying on cars that are too tall to be operated east-of-Hudson.

- Clearance envelopes on Long Island range from 14'6" to single-level container-on-flatcar clearance (17'6").
- None of the track east-of-Hudson, except for a portion of the Hudson Line from Albany to Tarrytown, is cleared for enclosed auto racks. Similarly, double stacked containers (20'6") or higher will not clear rail lines.

Weight Restrictions

The maximum weights of commonly used freight cars are also growing. When fully loaded, the newest generation of bulk freight cars does not fit within maximum allowable weight restrictions in place for the LIRR.

- Class I freight carriers are increasing their reliance on heavier, 286,000-pound gross weight cars, and even starting to move to 315,000-pound gross weight cars in some markets.
- General maximum allowable weight for any railcars operating on the LIRR network is 263,000 pounds.
- CSX River Line, the NY&A First Avenue Line, and a short segment of the Fremont Secondary immediately north of Fresh Pond, are the only rail segments east-of-Hudson capable of handling 286K cars.

Yards and Terminals

Due to very low rail freight volumes east of the Hudson River, the few existing yards and terminals can accommodate current demand. However, freight traffic levels will not be able grow very much without some expansion and enhancement to terminal facilities.

For most yards and terminals in the downstate study area, some investments in trackage, connections, and control systems would be required to increase utilization rates of these underutilized yards to the levels of activity found west-of-Hudson. Support and leadership from public officials will almost certainly be required to expand these facilities. Required support will likely include assistance with permitting, negotiations with neighbors, environmental mitigation, and possible financing.

RAIL CONNECTION

The principal deficiency with respect to connections is the lack of a direct route between the east-of-Hudson region and the national rail hubs in northern New Jersey. The nearest conventional railroad crossings of the Hudson River are owned by Amtrak, and are restricted to passenger service. Freight to and from NY&A on Long Island, destined for customers across the Hudson, must either complete the 48-hour (300-mile) trip via Fresh Pond Yard in Queens and the old New York Central Bridge in Selkirk, New York, or travel via the New York Cross Harbor Railroad (NYCH) on a car float service between Bay Ridge (51st Street Yard) and Greenville. The CSX Corporation and Canadian Pacific Railway offer freight service from Albany directly to Queens and the Bronx. The only overland freight line connecting Long Island

to the continental United States is the Hell Gate Bridge in Astoria, Queens. Two other short-line carriers, the Providence and Worcester Railroad (P&W) and the Housatonic Railroad, operate service in Connecticut. The P&W relies on a CSX trackage agreement to operate freight service from New Haven to Fresh Pond Yard.

HIGHWAY ACCESS TO RAIL FACILITIES

One of the principal deficiencies for rail facilities east of the Hudson River is the lack of direct access to regional highways and major truck routes, requiring trucks to travel long and circuitous distances on the local street network. These indirect connections add to shipment time, cost, and potential for service interruptions. Large numbers of trucks maneuvering on local streets also create safety hazards, and increase the impact on surrounding communities. Specific examples of circuitous connections include:

- Rail facilities on the Brooklyn waterfront, such as the Bay Ridge 65th Street Yard, can only be served from the Gowanus Expressway via a roundabout route using heavily trafficked Third Avenue.
- Trucks accessing the rail facilities at Hunts Point and Oak Point Yard must use Bruckner Boulevard. Since this arterial runs in the footprint of the elevated Bruckner Expressway, it is difficult for trucks to negotiate left turns, U-turns, or other maneuvers around the expressway's support piers.
- Fresh Pond Yard is adjacent to a residential community, and is five miles from the Long Island Expressway and six miles from the Brooklyn/Queens Expressway. Immediate access is provided only by Metropolitan Avenue and Fresh Pond Road.
- Truck drays are also subject to general chronic regional congestion and price surcharges.

D. CURRENT AND FUTURE FREIGHT FLOWS IN THE STUDY AREA

Current and projected future freight flows to, from, and within the 54-county Cross Harbor modeling study area were developed from the TRANSEARCH database. TRANSEARCH, a commercial data product, draws information from public agencies, private survey research, and econometric forecasts. It is important to note that the TRANSEARCH forecasts assume current modal shares by commodity and trade lane—potential effects of policies to encourage non-highway surface transportation modes are not taken into account.

EXISTING FREIGHT FLOW

In 2007, more than 920 million tons of freight moved to, from, within, and through the 54-county Cross Harbor modeling study area by truck and rail. Excluding through traffic, nearly 690 million tons were handled, with approximately 93 percent handled by truck (see Table 1). Long-haul traffic entering the east-of-Hudson region largely includes chemicals and allied products, food and kindred products (required for the manufacture and processing of food), lumber/wood, primary metal, and transportation equipment.

Table 1
Existing 2007 Regional Truck and Rail Freight Flows by Weight (54 County Area)

Direction	Truck Tons	Carload Tons	Intermodal Rail Tons	Total Rail Tons	Total Truck and Rail Tons
Inbound/Outbound	266,825,782	33,430,961	12,493,980	45,924,941	312,750,723
Intraregional	374,133,348	794,248	560	794,808	374,928,156
Through	183,843,090	45,799,788	4,238,880	50,038,668	233,881,758
Total	**824,802,220**	**80,024,997**	**16,733,420**	**96,758,417**	**921,560,637**
Total Excluding Through	**640,959,130**	**34,225,209**	**12,494,540**	**46,719,749**	**687,678,879**
Mode Share Excluding Through	93.2%		6.8%		100.0%

Source: Global Insight; Preliminary Estimate Only.

2035 FUTURE FREIGHT FLOW

By 2035, it is forecast that nearly 1.2 billion tons of freight will be moved to, from, within, or through the study area by truck and rail. Excluding through traffic, more than 860 million tons will be handled by truck and rail, and 92.5 percent of this tonnage will be handled by truck. Between 2007 and 2035, the study area truck tonnage will increase by around 160 million tons and rail tonnage will increase by around 18 million tons (excluding through traffic). This represents a total tonnage growth of around 26 percent compared to a 2007 base year.

Table 2
Future 2035 Regional Truck and Rail Freight Flows by Weight (54 County Area)

Direction	Truck Tons	Carload Tons	Intermodal Rail Tons	Total Rail Tons	Total Truck and Rail Tons
Inbound/Outbound	365,091,457	46,694,285	17,660,402	64,354,687	429,446,144
Intraregional	435,190,454	788,530	693	789,223	435,979,677
Through	250,952,684	54,789,878	5,669,388	60,459,266	311,411,950
Total	**1,051,234,595**	**102,272,694**	**23,330,482**	**125,603,176**	**1,176,837,771**
Total Excluding Through	**800,281,911**	**47,482,816**	**17,661,095**	**65,143,910**	**865,425,822**
Mode Share Excluding Through	92.5%		7.5%		100.0%
Mode Share Excluding Through, Percentage Growth, 2007-2035	**24.9%**		**39.4%**		**25.8%**

Source: Global Insight; Preliminary Estimate Only.

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