Rail, Ferry or Bus?

Improving Suburban Access to Lower Manhattan

March 13, 2003

Schaller Consulting
94 Windsor Place, Brooklyn, NY
(718) 768-3487
schaller@schallerconsult.com
www.schallerconsult.com

Table of Contents

Acknowledgements

This report was prepared by Bruce Schaller, Principal of Schaller Consulting, and Alexander N. Cohen, Graduate Assistant.

Mr. Schaller consults to local and federal agencies and for-profit and non-profit organizations seeking to satisfy customer needs in all forms of urban transportation including bus, rail, taxicab, livery and auto. Prior to establishing Schaller Consulting in 1998, Mr. Schaller was Deputy Director for Marketing Research and Analysis at New York City Transit, Director of Policy Development and Evaluation at the New York City Taxi and Limousine Commission, and Senior Economist at the New York City Office for Economic Development. He has a Masters of Public Policy from the University of California at Berkeley and a B.A. from Oberlin College. He is also a Visiting Scholar at New York University's Rudin Center for Transportation Policy and Management.

Mr. Cohen is a graduate student in City Planning at the Massachusetts Institute of Technology. He has also worked for the Boston Redevelopment Authority and U.S. Census Bureau, where he collected population and housing data for the 2000 census. He collaborated on a previous Schaller Consulting report, *Commuting, Non-Work Travel and the Changing City.*

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Executive Summary

In the wake of the September 11, 2001 terrorist attacks, the Downtown business community renewed its longstanding calls for direct commuter rail service to Lower Manhattan. Discussion has focused on a proposal to connect the Long Island Rail Road's Jamaica transfer station to Lower Manhattan. A similar plan was endorsed by Mayor Michael Bloomberg in his vision for Lower Manhattan. But the Downtown business community's plan encountered strong opposition due to its price tag (estimated at $1.9 billion to $5 billion or more) and because it would use an existing East River subway tunnel and thus disrupt subway service. The issue of suburban access to Lower Manhattan thus continues to be an important and contentious issue.

This report seeks to put the debate over LIRR service to Lower Manhattan into a larger context by posing two fundamental questions: (1) What should be the focus of commuter access improvements? (2) What modes would best serve those needs?

Based on a review of past studies of Lower Manhattan commuter access options and available data on travel patterns, we conclude that focusing on direct commuter rail service from Long Island does not address Lower Manhattan's most critical suburban access needs. Improving the commute from the Metro North service area north of the city is much more important than improving the commute from Long Island:

- *Travel times from Long Island are relatively competitive between Lower Manhattan and much of Midtown.* The travel time difference is only two to six minutes for Long Island commuters destined for East Midtown – the center of gravity for Midtown jobs – as compared with those going to Downtown offices. Commutes to East Midtown and Downtown are also similar in that commuters must transfer between the LIRR and the subway or bus.

- *Midtown, on the other hand, enjoys a major travel time advantage for suburban commuters traveling from Metro North's service territory in Westchester County, Connecticut and other northern suburbs.* The travel time difference is 10 to 15 minutes shorter for Metro North commuters working in East Midtown compared with Downtown. The Downtown trip also requires a transfer to the crowded Lexington Avenue subway or other transportation, whereas most Metro North commuters who work in Midtown can walk to work from Grand Central Terminal on East 42 Street.

- *Surveys of businesses in Lower Manhattan substantiate our conclusion that improved access from north of the city is the most critical need.*

- *The significance of differences in LIRR versus Metro North travel times is evident in commuting data.* Twenty-one percent of all Long Islanders commuting to Manhattan work in Lower Manhattan compared with 16% of workers living in Metro North's service territory. Suburban commuters who live north of the city are more likely to avoid the long Metro North/subway commute to Lower

Manhattan than are LIRR commuters, for whom travel times to Midtown and Downtown are more comparable.

Lower Manhattan business interests have focused on achieving direct LIRR commuter access because it is seen as relatively feasible compared with building a direct Metro North connection. There is no doubt that a direct Metro North connection to Lower Manhattan is a remote possibility at best. Rail should not be assumed to be the only suitable mode for improving suburban access to Lower Manhattan, however. Other modes – specifically ferry service – should be considered in addressing the pressing needs for better access to Lower Manhattan.

- *While many people think of rail as synonymous with suburban commuting, in fact, commuter rail accounts for only 44% of suburban commuting to Manhattan* (including commuters from the New Jersey suburbs as well as New York and Connecticut suburbs). Led by extensive bus service from New Jersey that takes advantage of the Lincoln Tunnel bus lane, express buses and ferries carry about one in five suburban commuters to Manhattan. In thinking about suburban commuting, then, it is important to bear in mind that commuter rail is not the only viable public transportation mode.
- *High-speed commuter ferries from coastal suburbs in New Jersey and Long Island to Manhattan can offer substantial travel time savings over commuter rail service.* A recently discontinued ferry service from Glen Cove, Long Island to Pier 11 at the foot of Wall Street was over 20 minutes faster than an LIRR trip to Penn Station – not even including the travel time from Penn Station to Lower Manhattan. This and other examples of high-speed commuter ferries illustrates that ferries can offer superior travel times for suburban commuters.
- *The total cost of providing ferry and rail services (when including government subsidies) is roughly comparable.*
- *Ferries offer a capacity commensurate with the need.* The handful of high-speed, longer-distance commuter ferries currently operating serve 5,000 passengers per weekday, a sizeable ridership when compared with the 19,000 Lower Manhattan commuters served by Metro North. Ferries could serve a much higher volume of passengers where demand merits greater service levels.

Thus, we conclude that a network of high-speed, high-amenity ferry services between selected suburbs and Pier 11 near Wall Street and/or the World Financial Center offers the opportunity to substantially improve the accessibility of Lower Manhattan. Ferry service could operate along the Hudson River to points in Westchester and Rockland counties and via the East River to points in Westchester and Connecticut. Existing service to New Jersey and the North Shore of Long Island could also be expanded. Thus, current governmental efforts to establish or evaluate ferry service from north and east of the city should be supported and expanded.

Ferries offer a number of advantages. New ferry services can be implemented quickly and with manageable capital costs. Ferries also make full use of Lower Manhattan's best

natural advantage – the business district's proximity to the water, its compactness and high density of office space. The large majority of Downtown workers are within walking distance of either Pier 11 on the East River or piers at the World Financial Center.

At the same time, high-speed ferry service also raises important issues concerning cost, possible government subsidies and overseeing subsidized ferry services. The task of siting new ferry terminals is also an important issue.

A second mode also deserves serious attention – express bus service from New Jersey. More New Jersey residents commuting to Manhattan as a whole take express buses to get to work than any other single mode including commuter rail. Yet the vast majority of express buses terminate at the Port Authority Bus Terminal on West 42 Street. The travel time differential to Lower Manhattan as compared with Midtown is greater for these commuters than for LIRR riders. A few routes serve Downtown Manhattan directly, but the travel times are very extensive due to traffic congestion at the Holland Tunnel.

Speeding up express bus service to Lower Manhattan is a challenging task. The Holland Tunnel's two tubes are not conducive to adding exclusive bus lanes. Traffic congestion at the Manhattan approaches and exits to the tunnel are an important source of delay. Other approaches are worthy of consideration, such as linking express bus service to PATH in Hoboken once downtown PATH service reopens toward the end of 2003 or to ferries on the New Jersey side of the Hudson River. These options merit further analysis as possible ways to improve access to Lower Manhattan relatively quickly and affordably.

In sum, Lower Manhattan's suburban access needs will not be met with one mode – be it rail, ferry or bus. Neither ferries nor express buses are panaceas to Lower Manhattan's transportation needs. But expanding ferry and express bus service to Downtown offers clear advantages in addressing critical access needs in a timely fashion. Development of ferries and express buses thus deserve at least as much attention and energy in the planning for Lower Manhattan's economic recovery as do improvements to commuter rail access.

Introduction

Since the September 11, 2001 terrorist attacks, much attention has been focused on the issue of improving mass transit to Lower Manhattan. In February 2003, Governor George E. Pataki announced plans to allocate federal funding for Lower Manhattan to several projects. The projects include a new PATH terminal at the World Trade Center site, revamping the Fulton Street complex and its maze of subway lines, and connecting both transit terminals with an underground pedestrian concourse. These proposals would rationalize and unite the Trade Center and Fulton Street transportation hubs and create a transportation terminal with a strong identity, similar to Grand Central.

The governor's plan will also rebuild the subway terminal at South Ferry and connect the station with the Whitehall Street subway station and a new Staten Island Ferry Terminal. In the South Ferry station, the obsolete single-track 5-car station would be replaced with a 10-car, three-track, two-platform terminal. These improvements would cut down on delays on the 1/9 line and thus speed commuter access between Lower Manhattan and Penn Station, a key goal for Lower Manhattan.

These transit projects would tremendously improve the functioning and convenience of several busy transit stations and terminals. They would not, however, add to the transportation network serving Lower Manhattan. More ambitiously and more controversially, the Downtown business community has called for direct commuter rail access to Lower Manhattan. The Downtown business community argues that rail access is crucial for the future of the Lower Manhattan business district. This stance is the heart of "Key Principles in Rebuilding Lower Manhattan," a white paper released in September, 2002 by the Alliance for Downtown New York, the Association for a Better New York, the New York City Partnership and the Real Estate Board of New York."[1] The white paper argues that "commuter and airport access improvements are essential to maintain and enhance Downtown's role as an economic engine for the region."[2]

In December, Mayor Bloomberg endorsed the idea of a new tunnel between Downtown and Kennedy International Airport and thus through the AirTrain system connect Lower Manhattan to the Long Island Rail Road station in Jamaica.

This report assesses commuter access needs for Lower Manhattan based on currently available data and studies conducted by public agencies over the past decade. Analysis of this information provides a fuller picture of the strengths and weaknesses of the Lower Manhattan transportation system and helps to identify opportunities for improvement. We conclude with recommendations about ferry and express bus services that we believe would best address the commuter access problems – and do so relatively quickly and at relatively little cost. These recommendations are intended to further discussion about improving suburban and airport access to Lower Manhattan in a

[1] "Key Principles in Rebuilding Lower Manhattan," Alliance for Downtown New York, Association for a Better New York, New York City Partnership, and Real Estate Board of New York, September 2002.
[2] "Key Principles in Rebuilding Lower Manhattan," p. 2

direction that will be constructive to Lower Manhattan's economic vitality. Clearly, additional studies will be needed to further develop feasible and effective proposals.

The Problem: Poor Commuter Access as a Competitive Disadvantage

Commuter rail access to Lower Manhattan is considered to be particularly imperative because it is seen as a competitive advantage that the Midtown business district has over Downtown. The "Key Principles" paper states that, "Downtown has lost market share to midtown Manhattan and the suburbs over the past half century, principally due to its poor rail service to areas of the region beyond the city line."[3] In his December speech, Mayor Bloomberg declared, "We must invest in making Downtown more accessible – both to the rest of the world and to residents of the metropolitan region." Midtown, of course, has direct commuter rail access to Penn Station and Grand Central while Downtown does not. To reach Lower Manhattan, Metro North and Long Island Rail Road commuters must transfer to the subway and NJ Transit commuters must transfer to the subway, PATH trains or ferries.

Calls for commuter rail access are not new. Lack of commuter rail access has long been seen as an issue that has put Downtown at a disadvantage compared to Midtown. This position was clearly articulated, for example in the "Lower Manhattan Transportation Access Economic Benefits Study," a 1996 report prepared for the Empire State Development Commission, the New York City Economic Development Corporation and the Alliance for Downtown New York.[4] This report presented the results of interviews with "senior representatives of Midtown growth industries, downtown tenants and real estate professionals."[5] Interviewees compared the Midtown and Downtown business districts, and Downtown did not fare favorably in the comparison. According to the report, the interviewees stated that the only advantage for Downtown was "the relatively low cost of space." Interviewees cited several advantages for Midtown, including "amenities" such as restaurants and shopping; greater availability of "large floor plates" in Class A office space; and "ease of access" for commuters. Inferior transportation access thus was seen as one of several disadvantages facing the Downtown business district.

When asked to consider possible commuter transportation improvements to improve the competitiveness of Downtown, interviewees desired alternatives that would "significantly reduce travel time and crowding, as well as augment comfort." They felt that either "direct commuter rail access" or a "shuttle service" with "seamless"

[3] "Key Principles in Rebuilding Lower Manhattan," p. 2
[4] "Lower Manhattan Transportation Access Economic Benefits Study," Empire State Development Corporation, New York City Economic Development Corporation, and the Alliance for Downtown New York, Winter 1996.
[5] "Lower Manhattan Transportation Access Economic Benefits Study," pp. 20-22.

connection to commuter rail would achieve those goals.[6] Nearly all agreed that "extension of both Metro North and LIRR service would be most desirable," but that "if only one could be extended, it should be Metro North."

There have been a number of proposals and studies in recent years focused on improving access to Lower Manhattan. These include calls for a "regional rail system" that would greatly eliminate the transportation differential between midtown and Lower Manhattan;[7] building new rail tunnels to Lower Manhattan to accommodate a pair of "super shuttles" linking Lower Manhattan to Penn Station and Grand Central;[8] and a "Regional Express Rail" that would connect Metro North tracks at Grand Central to Lower Manhattan and the LIRR terminal in downtown Brooklyn.[9] A full-length Second Avenue subway, now undergoing environmental reviews, would improve access to Lower Manhattan from Grand Central by relieving the severe overcrowding now experienced on the Lexington Avenue line.

Attention to Lower Manhattan's transportation needs obviously intensified after the Sept. 11, 2001 terrorist attacks. The greater sense of urgency has prompted a search for solutions that would be less costly and therefore more rapidly implemented, than either the Second Avenue subway or any plan involving entirely new commuter rail tunnels. Brookfield Properties, one of the largest real estate interests in Lower Manhattan, released a study outlining one such idea in February, 2002.[10] Under the Brookfield plan, a "super shuttle" would run from the Jamaica LIRR station to Lower Manhattan. Trains would operate along existing tracks – via the LIRR Atlantic Branch from Jamaica to Downtown Brooklyn and then into Lower Manhattan via the Cranberry Street subway tunnel presently used by the A and C subway lines. A short stretch of new tunnel within Lower Manhattan would bring the shuttle to its terminus in the World Trade Center area and some tunneling would be required to link the two existing lines in Brooklyn.

To make room for the shuttle in the Cranberry Street tunnel, the C train would be rerouted to the Rutgers Street tunnel that is used by the F train. The C would thus run directly from Downtown Brooklyn to the Lower East Side, bypassing Lower Manhattan. The A train would not be re-routed but would need to carry riders who currently use the C train to reach Lower Manhattan; these riders would need to transfer to the A train at Jay Street in Downtown Brooklyn.

The Brookfield proposal is intended as a cost-effective solution to the Lower Manhattan access problem, but some of the specifics of the plan are not ideal. LIRR commuters would not need to transfer to the subway to reach Lower Manhattan, but they would

[6] "Lower Manhattan Transportation Access Economic Benefits Study," p. 24
[7] "Plan for Lower Manhattan," New York Department of City Planning, October 1993.
[8] "Lower Manhattan Transportation Access Economic Benefits Study," pp. 54-7.
[9] "Transportation and Circulation" in "Planning Framework: A Report of the Civic Alliance to Rebuild Downtown," available: www.civic-alliance.org/pdf/Framework-trans.pdf.
[10] Randy Kennedy, "Old Idea for Downtown Rail Line From Long Island Gains Favor," *New York Times*, February 23, 2002; Charles V. Bagli and Randy Kennedy, "Old or New? Debate Rages Over Transit Downtown," *New York Times*, October 12, 2002.

still have to transfer from commuter trains to the super shuttle at Jamaica. The shuttle would make only one stop in Lower Manhattan, so many commuters – particularly those in the Wall Street area – would have to walk some distance to reach their destinations. More fundamentally, the plan focuses only on Long Island. It offers no solutions to the problems of access for Metro North and NJ Transit commuter rail riders.

While the cost of the Brookfield proposal is said to be less than that of other ideas, it is still considerable, particularly since some new tunneling in Manhattan and Brooklyn would be involved. John Zuccotti, Chairman of Brookfield Properties, says that the plan would cost $1.9 billion while other reports put the cost at $5 billion or more.[11] It also has other drawbacks as well, since it would disrupt an existing subway line and require Brooklyn C train riders to transfer to the A train to reach Lower Manhattan.

The next section takes a step back from the specifics of the Brookfield proposal and other plans for improving Lower Manhattan commuter access to ask two fundamental questions: what should be the focus of commuter access improvements? What modes would best serve those needs?

[11] David W. Dunlap, "Planners Urge Decisions on Downtown," *New York Times*, October 24, 2002.

Lower Manhattan's Commuter Access Needs

Several considerations are important to identifying priorities for improved commuter access to Lower Manhattan:

1. **Relative travel times:** which geographic markets most need to be better served with quicker travel times? Specifically, to what suburban locations does Midtown currently enjoy significantly shorter travel times? After currently planned enhancements are in place, where will travel times to Midtown be significantly better? These areas should be prioritized when considering Lower Manhattan transportation improvements.

2. **Place of residence of suburban commuters:** where do most suburban commuters to Lower Manhattan live? Where do commuters to Midtown and other parts of Manhattan live? Improvements to Lower Manhattan transportation should address the needs of current commuters destined for Lower Manhattan. Improvements should also address situations where relatively few commuters journey Downtown due to overly long travel times.

3. **Mode of travel**: what mode is needed to transport the anticipated volume of passengers? What modes are cost-effective and can be built in an acceptable time frame?

In assessing these questions, we keep in mind the need to identify solutions that can be implemented in a relatively short time period (on the order of a few years, at most, not decades) and at a cost commensurate with the benefits.

1. Travel Times

Rail Access

Discussion of the Lower Manhattan commuter access problem has focused on differences in travel times to Midtown versus Downtown. Underlying the discussions is the perception that Midtown commuters can take commuter trains directly to their offices while Downtown commuters must transfer to the subway to reach their destinations. In fact, transfers often are required to reach Midtown destinations as well and travel times are quicker to Downtown offices from some suburban areas.

While Midtown does have direct commuter rail access, much of the service is to Penn Station, a considerable distance from the heart of the business district on the East Side. To reach the area around the Citicorp building (53rd Street and Lexington Avenue), for example, a subway transfer is required. Some NJ Transit rail service terminates in Hoboken and transfers are required to reach either Midtown or Downtown. Downtown commuters on some NJ Transit trains have an advantage because they can take a shortcut to Lower Manhattan by transferring to PATH at Newark.

As a result, it is not uniformly true that Midtown has better commuter rail access than Downtown. From some suburbs, access to Midtown is considerably faster than access to Downtown while from others Downtown has a travel time advantage. The table below illustrates these differences. All of the suburbs shown are 25 miles from Lower Manhattan "as the crow flies," and all have commuter rail stations. The travel times listed in the table below include the total in-vehicle time, including the time spent riding commuter rail and connecting subway/PATH service, but do not include transfer and walk time.

Relative travel times to Lower Manhattan and East Midtown by commuter rail [12]

County	Suburb	Railroad	Difference in Time (min.)	Difference in No. of Transfers
Faster to Midtown				
Westchester	Rye	Metro North	10-15	1
Westchester	White Plains	Metro North	10-15	1
Westchester	Irvington	Metro North	10-15	1
Nassau	Bellmore	LIRR	2-6	0
Nassau	Hicksville	LIRR	2-6	0
Nassau	Locust Valley	LIRR	1	0-1
Same to Midtown and Downtown				
NJ – Morris	Morristown	NJ Transit	0	0
Faster to Downtown				
NJ – Middlesex	New Brunswick	NJ Transit	0-5	0
NJ – Monmouth	Red Bank	NJ Transit	10-12	0
NJ – Bergen	Ramsey	NJ Transit	11-12	1
Rockland	Pearl River	NJ Transit	11-12	1

Midtown has a major advantage over Downtown only for Metro North service to Grand Central. Commuters from Westchester (as well as Dutchess and Putnam counties, and Connecticut) have direct access to the East Midtown business district at Grand Central but must transfer to the subway and spend 10-15 minutes of additional travel time to reach Lower Manhattan.

In contrast, there is only a slight travel time advantage for Long Island Rail Railroad riders bound for East Midtown versus those bound for Lower Manhattan. With regards to NJ Transit commuter rail service, there is no advantage for Midtown at all. Indeed, on some lines, travel times to Lower Manhattan are as much as 10-12 minutes faster than travel times to East Midtown and may even require one less transfer.

[12] See Appendix A for details.

Thus the problem of better commuter rail access to Midtown than Downtown is most of all a problem of better Metro North access to Midtown than to Downtown. Proposals that offer benefits only to LIRR commuters, such as the Brookfield proposal for a "super shuttle" from Lower Manhattan to Jamaica, do not address the much greater problem of Metro North access.

It should be noted, however, that several recent commuter rail infrastructure improvements favor Midtown, as listed in the following table:

Recent commuter rail infrastructure improvements with benefits to Midtown service [13]

Project	Railroad	Status	Benefit to Midtown service
Kearny Connection	NJ Transit	Completed	Direct service to Penn Station for several Hoboken lines
Montclair Connection	NJ Transit	Completed	
Secaucus Transfer	NJ Transit	Construction	One-transfer Penn Station access
East Side Access	LIRR	Design	Direct service to Grand Central

The Kearny Connection and the Montclair Connection have allowed direct service to Penn Station on several NJ Transit lines that previously only served Hoboken. This "Midtown Direct" service is responsible for the equal travel times to Midtown and Downtown from Morristown, New Jersey, for example (noted in the table above). Riders headed for East Midtown can travel to Penn Station and transfer to the subway and riders headed for Lower Manhattan can travel to Hoboken and transfer to PATH.

The Secaucus Transfer, presently under construction, will provide a similar benefit to other Hoboken lines, including those that serve Ramsey in Bergen County and Pearl River in Rockland County. Direct service to Penn Station will not be provided but an easy transfer from Hoboken trains to Penn Station trains will be provided at Secaucus.

Most ambitiously, the MTA has plans to route many LIRR trains to Grand Central, rather than Penn Station, via the unused 63rd Street tunnel under the East River. This project, known as East Side Access, is at least a decade away from completion but it will significantly enhance Midtown's competitive advantage with respect to LIRR access.

In light of these projects, the issues of LIRR and NJ Transit rail access to Lower Manhattan should not be ignored. Nevertheless, Westchester and Connecticut service should be the top priority for near-term improvements, because it is Metro North service where Midtown presently enjoys the biggest advantage.

[13] "Major Capital Projects," *New Jersey Online,* http://www.nj.com/njtransit/projects.html; "MTA / Long Island Rail Road East Side Access," Metropolitan Transportation Authority, http://www.mta.info/planning/esas/index.html

Express Bus Access

While discussion about suburban access to Manhattan often focuses on commuter rail, express buses are also an important mode, especially for New Jersey commuters.

This is another area where Downtown suffers a competitive disadvantage compared with Midtown. The great majority of express bus service from New Jersey terminates at the Port Authority Bus Terminal on West 42 Street in Manhattan. Bus riders debarking at the Port Authority can walk to Midtown offices or select from several subway lines including the 42 Street subway shuttle to Grand Central Terminal. Bus riders bound for Lower Manhattan must take the subway or other transit to reach their offices. Since the Port Authority is closer to most Midtown offices than is Penn Station, Downtown experiences a greater competitive disadvantage in travel times for bus riders than commuters arriving at Penn Station.

Although most express buses operate via the Lincoln Tunnel to Port Authority, selected routes operate via the Holland Tunnel to curbside bus stops in Lower Manhattan. In some cases, express buses operate to both Lower Manhattan and Midtown. The table below compares travel times from selected origins to both Lower Manhattan and the Port Authority Bus Terminal in the AM peak.

Selected New Jersey express bus travel times to Port Authority and Lower Manhattan [14]

From	Bus Line	Travel time to Port Authority	Travel time to Lower Manhattan
East Brunswick	NJ Transit Rtes. 134, 138	44 min.	65 min.
Red Bank	Academy	70-85 min.	90-115 min.
South Brunswick	Suburban Transit	60-65 min.	75 min.

The travel times to Lower Manhattan are strikingly longer than the travel times to Port Authority, even though the Holland Tunnel is geographically closer to these buses' origins than the Lincoln Tunnel. The main reason for the disparity is that there is an exclusive bus lane in the Lincoln Tunnel, so Port Authority buses are not slowed by rush hour tunnel congestion. Also, the Port Authority is directly connected to the Lincoln Tunnel while buses to Lower Manhattan must travel nearly one mile downtown from the Holland Tunnel on congested Manhattan streets. It is likely that travel times on the Lower Manhattan buses are also less reliable, for the same reasons.

[14] Fall 2002 online schedules for NJ Transit, Academy, and Suburban Transit

2. Place of Residence of Suburban Commuters

Another way of prioritizing Lower Manhattan access improvements is to consider how many commuters would benefit. Transportation improvements should bear in mind two somewhat competing factors: benefiting current travelers who are destined for Lower Manhattan and benefiting travel routes that people tend to avoid due to long travel times or other factors.

According to the 1990 census, 33% of the Lower Manhattan workforce commutes from the suburbs. The table below shows where these people live, by commuter railroad service area.

Residence of suburban commuters to Lower Manhattan, by railroad service area, 1990 [15]

Lower Manhattan workers by residence		As a percentage of total…	
Residence	**Workers**	**Suburbanites**	**Workforce**
NJ Transit service area	72,590	61%	20%
LIRR service area	27,897	23%	8%
Metro North service area	18,519	16%	5%
Total suburban commuters	119,006	100%	33%
New York City (5 boroughs)	244,831		67%
Total Lower Manhattan workforce	363,837		100%

A sizeable majority of suburban commuters to Lower Manhattan live in the NJ Transit service area – west of the Hudson River, including Rockland, Orange and Ulster Counties as well as New Jersey. Far smaller numbers of commuters live on Long Island or in the Metro North service area (Westchester, Putnam and Dutchess Counties and Connecticut).

To some extent, these numbers indicate that people "vote with their feet." Because Metro North service to Lower Manhattan is problematic, only 16% of Lower Manhattan workers live in the Metro North service area; this compares with 25% of suburban commuters who work elsewhere in Manhattan.[16] An ambitious program of commuter transportation improvements could increase commutation between the Metro North service area and Lower Manhattan.

On the other hand, projects that would improve access for commuters residing west of the Hudson would benefit a much larger share of the existing Lower Manhattan workforce. Considering that NJ Transit service already is better to Downtown than to

[15] See Appendix B for details.
[16] See Appendix B.

Midtown, further improvements to Lower Manhattan access from New Jersey would help Downtown play to its strengths.

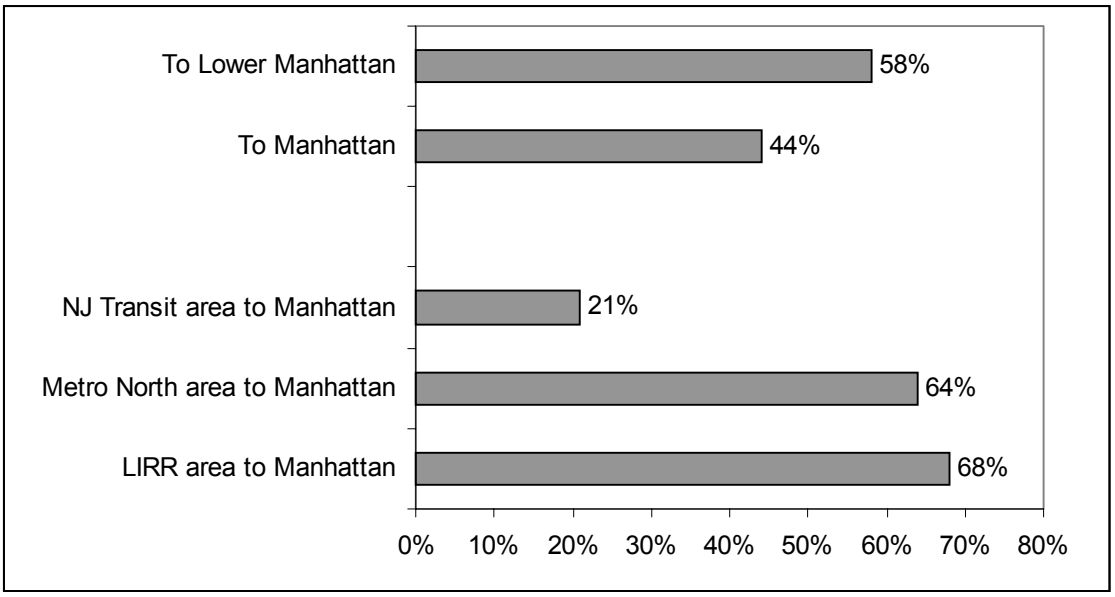
3. Mode of Travel

Commuter access is far from synonymous with commuter *rail* access for suburban commuters coming into Manhattan. According to the 1990 census, only 58% of suburban commuters to Lower Manhattan commute by railroad. Auto, subway, PATH, ferry and other modes carry the remainder of commuters.

Commuter rail assumes an even smaller share of suburban commuters to all of Manhattan. Only 44% of suburban commuters to anywhere in Manhattan commute by railroad.

Rail's share varies considerably by commuter railroad service area. While 68% of commuters from the LIRR service area to Manhattan travel by railroad, commuter rail carries only 21% of commuters residing west of the Hudson in the NJ Transit service area (New Jersey, Rockland and Orange counties).

Percentage of suburban commuters using commuter rail, by railroad service area, 1990 [17]



The important lesson from these data is that it is possible to provide commuter access without building tunnels and laying tracks. Rail should not be assumed to be the most suitable mode for improving commuter access to Lower Manhattan. Other modes such

[17] 1990 Census. See Appendix C for detailed statistics and data sources.

as express bus and ferry can be more appropriate to meeting a given set of travel needs. The choice should be governed by geography, capacity and cost considerations.

Current express bus and ferry services illustrate the viability of these modes to serving suburban access needs.

High-Speed Ferry Service from New Jersey and Long Island

High-speed commuter ferry service is a new (or to be precise, newly revived) and potentially very attractive mode.

Many people think of ferries only in terms of the behemoth, sluggish Staten Island ferry, or in terms of the numerous small boats that shuttle across the Hudson River. In the past few years, a new type of ferry service has emerged in the New York region – express service between far-flung suburbs and Manhattan, in high-speed, high-amenity boats.

Long-distance ferries operate from five points on Central Jersey to Pier 11 on the East River at the foot of Wall Street in Lower Manhattan. (See map on page 16.) These ferries are privately-operated, profitable services run by three competing companies. Ridership on these services has increased from 3,200 in November 2001 to nearly 5,000 passengers each weekday in November 2002.[18]

These ferries can be competitive or substantially faster than commuter rail alternatives, as the table below indicates. A trip from Glen Cove to Manhattan has been at least 20 minutes faster by ferry than by LIRR, for example.

Travel times to Manhattan by ferry and commuter rail from selected suburbs [19]

Suburb	To Pier 11 by ferry	To Penn Station by rail
Glen Cove, NY	45 min.	65-72 min. (LIRR)
South Amboy, NJ	45 min.	43-65 min. (NJ Transit)

In part, these ferries are faster than rail because their routes over water are more direct than the train's routes overland. In part, these ferries are simply fast. Ferries are particularly attractive for journeys to Lower Manhattan, because they operate directly to Pier 11 at the foot of Wall Street.

Although this type of high-speed, longer-distance commuter ferry service is new to New York, it is not a new idea. A similar type of service has operated in Boston for decades. Ferries carry commuters from Hingham, a suburb on the South Shore of Massachusetts Bay, to the heart of the Boston financial district. The trip time is 35 minutes by boat, versus a 20 mile drive on some of the region's most congested highways.[20] Unlike the

[18] See Appendix D for details.
[19] See Appendix D for details.
[20] Fall 2002 online schedules, Massachusetts Bay Transportation Authority (MBTA)

services in New York, this service is operated under contract to the regional transit authority and is publicly subsidized. Although Boston has an extensive commuter rail network, Hingham has no commuter rail station nearby. The transit authority has proposed extending commuter rail service to Hingham but the local community has resisted, arguing that the existing ferry service is superior to rail.[21] Many local residents have argued for increased ferry frequencies and expanded parking at the Hingham ferry terminal instead of rail service.

Express Bus Service from New Jersey

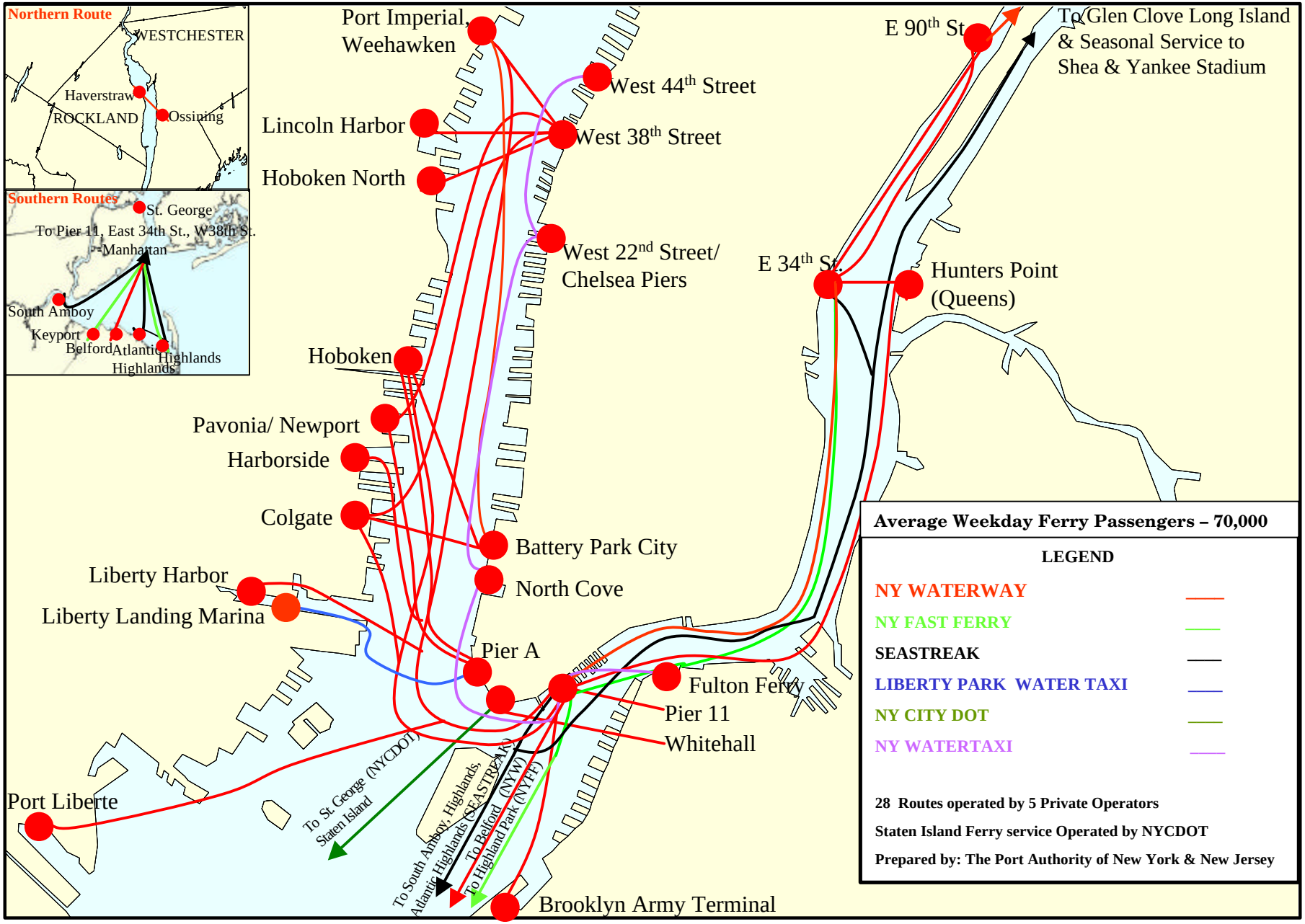
Express bus service is the single most popular means of travel to Manhattan for west-of-Hudson commuters. According to the 1990 census, 34% of commuters from west of the Hudson to Manhattan commute by bus compared with 21% by rail.[22]

There are two basic types of New Jersey commuter bus service. Short-distance services operate as local bus routes in Bergen County, for example, and from large park-and-ride lots in Bergen County close to both the Turnpike and the Lincoln Tunnel. Some of these short-distance services operate with frequencies nearly comparable to the subway or PATH, especially in the peak hour.

There are also long-distance that serve outlying suburban communities. These routes are more comparable to commuter rail. They typically make several local stops within an outlying suburb, or adjacent suburbs and then run express to Manhattan. Service frequency varies considerably among routes. Some routes may have only a few trips in the peak hour and no off-peak service. Private bus lines such as Academy and Suburban Transit operate the majority of this service, some of which is operated by NJ Transit.

[21] This long-running dispute has been well-documented in the Massachusetts press. For representative articles, see: Coleen O'Hanley, "Commuter buses, boats better alternatives to Greenbush rail," South Weekly, *The Boston Globe*, 14 March 1999; John Bewick, "AFTA objectives not just 'another anti-Greenbush ploy,'" *The Patriot Ledger* (Quincy, MA), 28 April 2001; Carrie Levine, "Greenbush foes file expected suit against MBTA," *The Patriot Ledger* (Quincy, MA), 21 September 2001.
[22] See Appendix C for details.

New York Harbor Ferry Routes, December 2002



Assessing the Viability of Ferries and Express Buses to Serve Lower Manhattan's Suburban Access Needs

How viable is express bus and ferry service as an alternative to direct commuter rail for Lower Manhattan? What obstacles do these modes face in achieving competitive travel times and costs for Lower Manhattan commuters?

Long-distance, high-speed ferries

Ferry service would take advantage of one of Lower Manhattan's natural strengths – the fact that it is surrounded by water. Lower Manhattan already has several well-situated ferry piers that could be used for increased suburban ferry service, including Pier 11 at Wall Street and piers at the World Financial Center. The large majority of Downtown workers are within walking distance of one or both of these terminals.

Ferries performed admirably in the wake of Sept. 11, with ridership on privately operated ferries doubling in the past year to 65,000 passengers a day in November 2001. New York Waterways accounted for most of this growth and has expressed considerable interest in further expansion of its services. It has already improved access to Lower Manhattan, connecting by ferry a LIRR station in Long Island City with Pier 11, although ridership is relatively low due to the small number of trains serving the Long Island City station.

The Glen Cove ridership was very modest (about 150 per weekday) and was discontinued as of November 1, 2002. It was apparently the victim of high fares, difficult access to the ferry slip and limited service frequency – the ferry originally ran only three trips each way during the morning and peak commuting periods and by this past fall was down to one peak-hour trip each way.

On the other hand, the Atlantic Highlands and Highlands ferry services, with about 3,500 passengers per weekday, have been successful in finding a market of commuters willing to pay premium prices for a premium service, both in terms of travel time and on-board amenities. These ferries provide some midday and evening as well as peak service, offering travel flexibility that increases their attractiveness.

Commuter ferries could be used to create a network of high-speed, high-amenity ferry services between Pier 11 and/or the World Financial Center and selected suburbs throughout the region. Ferry service could operate along the Hudson River to points in Westchester and Rockland counties and via the East River to Westchester, Connecticut and Long Island. Existing service to New Jersey could be expanded.

Several possible long-distance ferry services are currently in the works or being examined. The City of Yonkers has selected a ferry operator for a route that would connect Yonkers with West 38 Street and the World Financial Center in Lower

Manhattan. The trip to Lower Manhattan would take about 45 minutes. These ferries could possibly stop at Dyckman Street and 125 Street in upper Manhattan as well, and might in the future extend north of Yonkers to a location near the Tappan Zee Bridge. The Yonkers service is likely to commence this summer or fall.

The New York Metropolitan Transportation Council together with two transportation planning agencies in Connecticut is exploring the potential for expanding the use of the Long Island Sound for waterborne transportation. These agencies are currently completing a series of public meetings and data collection to evaluate potential new services and strategies for expansion.

One of the main issues with ferry service is cost. Currently, ferry commuters pay about $5 more per trip than rail commuters, as illustrated in the table below.

Ferry and commuter rail one-way fares to Manhattan

Ferry Service to Pier 11			Rail to Penn Station	
Suburban Terminal	**Company**	**Fare**	**Nearest Station**	**Fare***
Glen Cove, Long Island**	Fox Navigation	$10.40	Glen Cove	$3.85
Atlantic Highlands, NJ	SeaStreak	$11.74	Middletown	$6.75
Highlands, NJ	NY Fast Ferry	$10.83	Middletown	$6.75
Highlands, NJ	SeaStreak	$11.74	Middletown	$6.75
Keyport, NJ**	NY Fast Ferry	$10.83	Hazlet	$6.63
South Amboy, NJ	SeaStreak	$9.58	South Amboy	$5.78

*Not including subway transfer.
**Recently discontinued.
Commuter rail fares are based on the price of a monthly ticket, assuming 40 trips / month
Ferry fares are based on the price of multiple-ride tickets, at whatever quantity affords the greatest discount over a single ticket (typically 120 trip tickets); 40 trip tickets are available on all ferries at slightly higher prices

Source: Fall 2002 online fares for Fox Navigation, SeaStreak, NY Fast Ferry, LIRR and NJ Transit

The differences in fares are largely a product of differences in governmental subsidies. Ferry fares are higher because they are rarely subsidized by government. Until recently, the cost of ferry operations and capital costs of the boats were paid out of fare revenues.[23] Public dollars have been used to build or restore ferry slips as well as to improve local parking and road access, at least in some locations. Costs for these public subsidies vary depending on the scope of improvements and ferry ridership; a reasonable estimate is that the costs range from 50 cents to $2.50 per passenger trip over the life of

[23] Federal emergency aid funding has been allocated to ferry services from Hunters Point in Long Island City, Hoboken and the upper east side of Manhattan. See Randy Kennedy, "Service Expanding on East River Ferry Route to Wall Street," *New York Times*, Nov. 14, 2002.

the capital investment.[24] It should be noted that these landside subsidies can be critical to the profitability of the services.

By contrast, a substantial portion of commuter rail operating expenses are subsidized by government and capital expenditures are generally subsidized as well. Including both operating and capital costs, Metro North and LIRR commuter fares are subsidized about $5 to $7 per trip. Thus, if ferries were subsidized at about the same rate, ferry and rail fares would be much more competitive.

Another important issue with ferry service is providing landside facilities. Coastal and river towns do not necessarily welcome the auto traffic that is attracted to ferry terminals. Providing adequate parking can also be a major problem.

Even when ferry terminals are available, geography naturally limits the areas that ferries can serve. Commuting from locations that are substantially inland, such as central parts of Westchester County, is clearly less convenient by ferry than commuter rail.

In sum, while not a panacea, ferries offer a substantial opportunity to improve access to Lower Manhattan from selected suburban areas, provided that landside facilities can be provided with access to substantial portions of the commuter population.

Express buses

The main issue with express bus service from New Jersey involves travel times. The earlier discussion showed that travel times to the Port Authority Bus Terminal are attractive while travel times to Lower Manhattan are significantly longer. In light of the travel time disparities, it is not surprising that Lincoln Tunnel buses carry far more passengers than Holland Tunnel buses. Cordon counts from 2000 indicate that between 8:00 and 9:00 am, 2,500 bus passengers travel to Manhattan via the Holland Tunnel, whereas 32,000 bus passengers travel to Manhattan via the Lincoln Tunnel.[25]

Unfortunately, each of several approaches to improving express bus travel times to Lower Manhattan has clear obstacles. For example, it would be difficult to replicate the Lincoln Tunnel bus lane in the Holland Tunnel. The Holland Tunnel has only four lanes of traffic (two tubes) compared with the Lincoln Tunnel's six lanes. Converting one of

[24] According to Port Authority staff, landside facilities than include a barge, ramp, cover from the weather and a parking lot cost $1 million to $1.5 million. Over an assumed 20-year life of the facilities, assuming daily ridership of between 250 and 1,000 passengers, the cost of these improvements per passenger trip ranges from $0.41 to $2.47 at 8% interest rates ($0.41 assuming $1 million cost and 1,000 passengers per weekday and $2.47 assuming $1.5 million cost and 250 passengers per day). This calculation is meant to be illustrative of the landside subsidies involved in modest government-built ferry facilities suitable at suburban locations. At the other end of the scale, the World Financial Center ferry terminal will cost $40 million, but of course has the potential to serve many more passengers.

[25] New York Metropolitan Transportation Council, "The Hub Bound Travel Counts By Points of Exit and Entry from and to New Jersey," http://www.nymtc.org/nj.html

the Holland Tunnel's two in-bound lanes to bus-only operation would cut in half the capacity for all other vehicles. In addition, the Holland Tunnel empties into congested Manhattan streets. Even if buses could travel quickly through the Holland Tunnel, the Manhattan approaches and exits to the tunnel would likely need to be modified to achieve desirable bus travel times to Lower Manhattan.

Another approach is for buses to connect into a PATH station in New Jersey, most likely, Journal Square, Grove Street or Exchange Place. In essence, this approach moves the subway transfer from the Port Authority in Manhattan to a PATH station in New Jersey. It would substitute a 10-11 minute PATH trip to the World Trade Center for the Hoboken to the Port Authority portion of the bus trip – which takes approximately 30 minutes – and the subway trip from the Midtown to Lower Manhattan. In concept, the travel time savings could be substantial. How much time it would take buses to get from the New Jersey Turnpike to a PATH station is not clear, however, nor is it clear whether adequate bus staging facilities could be made available at a PATH station. In addition, offices at the southern tip of Manhattan are a fairly long walk from the World Trade Center PATH station.

A third approach is to connect express buses to cross-Hudson ferry service. Officials examining tourist bus access to the eventual Trade Center memorial have considered routing buses to a ferry terminal in New Jersey; tourists would deboard their tourist buses in New Jersey and complete their trips by ferry. This facility could potentially be used for commuter buses as well.

If express buses were rerouted to a PATH station or a ferry, likely candidates include Academy Bus lines that serve the Route 9 corridor in central New Jersey, an area that lacks commuter train service. High-frequency bus service from the Bergen park-and-ride lots to Lower Manhattan might also prove popular.

In sum, expanded express bus service to Lower Manhattan would be valuable, especially to sections of New Jersey that lack commuter train or PATH service. A prerequisite to expanded service is to offer clear travel time advantages through improvements that would speed buses through the Holland Tunnel or make effective connections to PATH or cross-Hudson ferry services.

Conclusions

In recent months discussions about improving suburban commuter access to Lower Manhattan have raised the issue of direct commuter rail service from Long Island. From our analysis of current commuter travel times and the competitive position of Lower Manhattan, we conclude that improved commuter rail service from Long Island does not address Lower Manhattan's most critical suburban access needs. Access from Long Island is not, in fact, Lower Manhattan's main problem as shown by the fact that travel times from Long Island are relatively competitive between Lower Manhattan and the heart of Midtown office space.

Lower Manhattan's biggest competitive disadvantage clearly involves commuters who live in Westchester and other points north of the city. Travel times are much longer to Lower Manhattan than to Midtown from these areas. Not surprisingly, relatively few Lower Manhattan employees live north of the city. Surveys of businesses in Lower Manhattan substantiate our conclusion that improved access from north of the city is the most critical suburban access need.

Focusing on Westchester, Connecticut and other locales to the north requires flexible thinking about mode. Direct commuter rail access from the northern suburbs to Lower Manhattan is a remote possibility at best. Commuter ferries, however, could be used to create a network of high-speed, high-amenity ferry services between Pier 11 and/or the World Financial Center and selected suburbs throughout the region. Ferry service could operate along the Hudson River to points in Westchester and Rockland counties and via the East River to points in Westchester and Connecticut. Existing service to New Jersey and the North Shore of Long Island could also be expanded.

Ferries offer a number of advantages. Ferry service can be implemented relatively quickly. High-speed ferries can be substantially faster than commuter rail and they make full use of Lower Manhattan's best natural advantage – the business district's proximity to the water.

High-speed ferry service also raises important issues. One important issue is cost; fares for long-distance ferry services are higher than for commuter rail for comparable distances. In theory, development of transit services for a given market would be "mode neutral," meaning that the mode of transportation that is best suited to serving the market would be chosen. In reality, transit agencies in the New York area tend to specialize in one or two modes. The MTA offers rail (commuter and subway) and bus service, for example, but has never operated ferry service. The New York City Department of Transportation focuses on promoting ferry services and overseeing the privately operated franchise bus companies. Transportation agencies tend to be reticent to invest in other modes out of concern that doing so would divert funding and ridership from their existing services.

With a few exceptions related to 9/11, thus far governmental subsidies have been restricted to landside infrastructure such as ferry slips, parking and access roads. In debating multi-billion dollar projects, however, it is critical that decisions not be governed simply by which agency is involved but on the best use of available funds. It may in fact be best for governmental support for ferry services to focus on supportive planning and underwriting landside costs such as ferry terminals, parking lots or transit services to the ferries. In particular cases, however, subsidy of ferry operating costs or capital costs (e.g., of the boats) may be worthy of consideration. Operating subsidies would mark an important watershed for ferry policy and raise important policy questions. Should ferry operating costs be subsidized like commuter rail? What would be the source of the funding? What level of subsidy is appropriate? How would the subsidies be allocated? What government agencies would oversee subsidized ferry service? Would government commit to services that never generate a market large enough to justify the subsidy? Would subsidies undercut the entrepreneurialism that has been a notable hallmark of ferry developments to date?

Our analysis also shows that improved accessibility from New Jersey to Lower Manhattan deserves attention. New Jersey is an important market since the majority of suburban commuters to Lower Manhattan live in New Jersey. Access from New Jersey will become more important because improvements to rail access to Midtown from New Jersey will increase the appeal of Midtown for employers with workers commuting from across the Hudson. In terms of travel times to Lower Manhattan, the most immediate need involves express bus service. Several potential approaches need further examination, including ways to speed buses' trips through the Holland Tunnel and connecting express buses to either a PATH station or ferry terminal in New Jersey.

In sum, suburban commuter access to Lower Manhattan is a critical to Lower Manhattan's revival and health as an office center. The recent focus on rail access from Long Island, however, should be broadened geographically to suburbs north of the city and in New Jersey, and should be broadened modally to encompass not only rail but also ferry and express bus. While ferries and express buses are not panaceas to Lower Manhattan's transportation needs, they offer clear advantages in addressing critical access needs in a timely fashion. Development of ferries and express buses thus deserve at least as much attention and energy in the planning for Lower Manhattan's economic recovery as do improvements to commuter rail access.

Appendix A: Travel Times to Midtown and Downtown From Selected Suburbs

Suburb	Journey to Midtown	Journey to Downtown
Long Island		
Bellmore	LIRR to Penn Station, 43-49 min. E subway to 53rd/Lex., 8-9 min.	LIRR to Penn Station, 43-49 min. Various subways, 10-15 min.
Hicksville	LIRR to Penn Station, 39-50 min. E subway to 53rd/Lex., 8-9 min.	LIRR to Penn Station, 39-50 min. Various subways, 10-15 min.
Locust Valley	LIRR to Penn Station, 66-73 min. (Transfer at Jamaica is required on most trips) E subway to 53rd/Lex., 8-9 min.	LIRR to Flatbush Av., 65-70 min. (Transfer at Jamaica is required on all trips) 2/3 or 4/5 subway, 10-15 min.
Westchester		
Rye	MN to Grand Central, 36-57 min.	MN to Grand Central, 36-57 min. 4/5 subway, 10-15 min.
White Plains	MN to Grand Central, 31-45 min.	MN to Grand Central, 31-45 min. 4/5 subway, 10-15 min.
Irvington	MN to Grand Central, 38-57 min.	MN to Grand Central, 38-57 min. 4/5 subway, 10-15 min.
Rockland		
Pearl River	NJT to Hoboken, 52-59 min. PATH to 33rd/6th, 14 min. V subway to 53rd/Lex., 7-8 min.	NJT to Hoboken, 52-59 min. PATH to WTC, 10 min.
New Jersey		
Ramsey	NJT to Hoboken, 44-56 min. PATH to 33rd/6th, 14 min. V subway to 53rd/Lex., 7-8 min.	NJT to Hoboken, 44-56 min. PATH to WTC, 10 min.
Morristown	NJT to Penn Station, 56-63 min. E subway to 53rd/Lex., 8-9 min.	NJT to Hoboken, 54-62 min. PATH to WTC, 10 min.
New Brunswick	NJT to Penn Station, 45-55 min. E subway to 53rd/Lex., 8-9 min.	NJT to Newark, 28-44 min. PATH to WTC, 20 min.
Red Bank	NJT to Penn Station, 69-89 min. E subway to 53rd/Lex., 8-9 min.	NJT to Newark, 47-66 min. PATH to WTC, 20 min.

See notes and sources on next page.

Travel times to Lower Manhattan and East Midtown by commuter rail:

Suburb	Downtown		Midtown		Downtown vs. Midtown		
	Time (min)	Trans-fers	Time (min)	Trans-fers	Advantage	Time (min)	Trans-fers
Long Island							
Bellmore	53-64	1	51-58	1	Midtown	2-6	0
Hicksville	49-65	1	47-59	1	Midtown	2-6	0
Locust Valley	75-85	2	74-84	1-2	Midtown	1	0-1
Westchester							
Rye	46-72	1	36-57	0	Midtown	10-15	1
White Plains	41-60	1	31-45	0	Midtown	10-15	1
Irvington	48-72	1	38-57	0	Midtown	10-15	1
Rockland							
Pearl River	62-69	1	73-81	2	Downtown	11-12	1
New Jersey							
Ramsey	54-66	1	65-78	2	Downtown	11-12	1
Morristown	64-72	1	64-72	1	Tie	0	0
New Brunswick	48-64	1	53-64	1	Downtown	0-5	0
Red Bank	67-86	1	77-98	1	Downtown	10-12	0

These tables compare travel times to the Lower Manhattan business district and the East Midtown business district. Subway stations at and below Chambers Street, and the PATH terminal at the World Trade Center, are considered to be in Lower Manhattan. Travel times to Lower Manhattan vary by a few minutes depending on which subway station is used. The subway station at 53rd Street and Lexington Avenue, and Grand Central Terminal, are considered to be in East Midtown.

Travel times are the time spent riding commuter rail and on connecting subways. Not included are transfer times and walk times to riders' final destinations.

Each of the selected towns is 25 miles from Lower Manhattan "as the crow flies" and has a commuter rail station. Commuter rail travel times are based on Fall 2002 online schedules. Travel times are based on trains arriving at Penn Station, Grand Central, Flatbush Ave., Hoboken, or Newark weekdays between 6:00 am and 10:00 am. Commuter rail travel times vary significantly, because some trains operate express, and some make all stops.

For LIRR service to Lower Manhattan, generally travel times via Penn Station and via Flatbush Ave. are very similar. Direct subway service is available from each terminal to several Lower Manhattan subway station, and subway service from each terminal takes about 10-15 minutes. From Bellmore and Hicksville, travel times to Lower Manhattan are slightly faster via Penn Station, and from Locust Valley, travel times are slightly faster via Flatbush Ave.

Appendix B: Workforce

Lower Manhattan workers by place of residence, 1990

Lower Manhattan workers by residence		**As a percentage of total…**	
Residence	**Workers**	**Suburbanites**	**Workforce**
Manhattan	61,732		17%
Outer boroughs	183,099		50%
NYC total	**244,831**		**67%**
New Jersey	59,470	50%	16%
Orange, Rockland, Ulster	13,120	11%	4%
NJ Transit area total	**72,590**	**61%**	**20%**
Connecticut	3,404	3%	1%
Dutchess, Putnam, Westchester	15,115	13%	4%
Metro North area total	**18,519**	**16%**	**5%**
Nassau, Suffolk – LIRR area total	**27,897**	**23%**	**8%**
Total suburban commuters	119,006	100%	33%
Total workforce	363,837		100%

For these figures, the northern boundary of Lower Manhattan is Chambers Street from the Hudson River to West Broadway, Worth Street from West Broadway to St. James Place, and the Brooklyn Bridge from St. James Place to the East River.

Total Lower Manhattan workers excludes 2,553 workers (less than 1% of the Downtown workforce) who lived elsewhere (e.g. in Pennsylvania).

Source: "Final Scoping Document for Lower Manhattan Access Alternatives Study MIS/DEIS," Metropolitan Transportation Authority, September 1999 (1990 census data)

Manhattan suburban commuters by commuter railroad service area, 1990

	Place of Work					
Residence	Total Manhattan		Lower Manhattan		Other Manhattan	
NJ Transit area	242,195	49%	72,590	61%	169,605	46%
Metro North area	112,681	23%	18,519	16%	94,162	25%
LIRR area	135,710	28%	27,897	23%	107,813	29%
Total suburbanites	490,586	100%	119,006	100%	371,580	100%

NJ Transit area includes New Jersey and West Valley (Orange, Rockland and Ulster counties). Metro North area includes Connecticut and East Valley (Dutchess, Putnam and Westchester counties). LIRR area includes Long Island (Nassau and Suffolk counties).

Source: Total Manhattan data from "Journey-to-Work in the New York Metropolitan Transportation Council (NYMTC) Area and the Surrounding Tri-State Metropolitan Region," NYMTC, October 1999, Appendix B, Table 1-A; Lower Manhattan data from "Final Scoping Document for Lower Manhattan Access Alternatives Study MIS/DEIS," MTA, September 1999 (1990 census data)

Appendix C: Journey to Work

Commutation by mode to Manhattan and Lower Manhattan, 1990

Mode	Manhattan Workers		Manhattan Workers From Suburbs		Lower Manhattan Workers	
Railroad	249,909	12%	216,446	44%	69,129	19%
Bus	274,906	13%	89,199	18%	47,299	13%
Subway	897,630	44%	39,648	8%	160,088	44%
Drive/Carpool	327,938	16%	137,602	28%	61,852	17%
Other	288,337	14%	7,691	2%	25,469	7%
Total	2,038,720	100%	490,586	100%	363,837	100%

The modes listed here are the modes that carry commuters the longest distances during their daily commutes. Many riders, in fact, use more than one mode each day. For example, railroad riders may transfer to subway to complete their commutes.

Many of the 39,648 Manhattan workers from suburbs who took subways to work are PATH riders from New Jersey; however, some PATH riders may have indicated that they commute by railroad.

Source: Total Manhattan data from "Journey-to-Work in the New York Metropolitan Transportation Council (NYMTC) Area and the Surrounding Tri-State Metropolitan Region," NYMTC, October 1999, Appendix B, Tables 8-A, 10-A, 11-A and 19A; Downtown Manhattan data from "Final Scoping Document for Lower Manhattan Access Alternatives Study MIS/DEIS," MTA, September 1999

Data: 1990 Census

Commutation by mode from suburbs to Manhattan, 1990

	Residence of Suburban Commuters to Manhattan					
Mode	NJ Transit area		Metro North area		LIRR area	
Railroad	51,906	21%	72,402	64%	92,138	68%
Bus	82,608	34%	3,970	4%	2,621	2%
Subway	27,304	11%	5,584	5%	6,760	5%
Drive/Carpool	75,934	31%	28,760	26%	32,908	24%
Other	4,443	2%	1,965	2%	1,283	1%
Total	242,195	100%	112,681	100%	135,710	100%

Source: Total Manhattan data from "Journey-to-Work in the New York Metropolitan Transportation Council (NYMTC) Area and the Surrounding Tri-State Metropolitan Region," NYMTC, October 1999, Appendix B, Tables 8-A, 10-A, 11-A and 19A

Data: 1990 Census

Appendix D: Commuter Ferries

Weekday travel times to Manhattan by suburban ferry service, and by comparable rail

Ferry Service to Pier 11			Rail to Penn Station	
Suburban Terminal	**Company**	**Minutes**	**Nearest Station**	**Minutes**
Glen Cove, Long Island**	Fox Navigation	45	Glen Cove	63-72
Atlantic Highlands, NJ	SeaStreak	30-40	Middletown	61-73
Highlands, NJ	NY Fast Ferry	40-45	Middletown	61-73
Highlands, NJ	SeaStreak	38-60	Middletown	61-73
Keyport, NJ*	NY Fast Ferry	50	Hazlet	55-71
South Amboy, NJ	SeaStreak	45	South Amboy	43-65

Hazlet is adjacent to Keyport but Middletown is several miles from either Atlantic Highlands or Highlands.

Source: Fall 2002 online schedules for Fox Navigation, NY Fast Ferry, SeaStreak, LIRR, and NJ Transit. Travel times are for the inbound AM peak period.

Long-distance commuter ferry average weekday ridership

Route	Company	Nov. 2002	Nov. 2001	Aug. 2001
Belford - Pier 11	New York Waterway	1,303	-	-
Highlands - Pier 11 E. 34th St.	Seastreak	1,200	1,200	1,693
Atlantic Highlands - Pier 11	Seastreak	816	693	797
South Amboy - Pier 11	Seastreak	547	-	-
Highlands - Pier 11/E.34th St.	New York Fast Ferry	1,076	794	1,229
Keyport - Pier 11*	New York Fast Ferry	35	325	-
Glen Cove**	Fox Navigation	-	160	250
Total		4,977	3,172	3,969

Source: Port Authority of New York and New Jersey.

*Keyport Service stopped operation on Nov. 7, 2002.
**Glen Cove Service from Long Island stopped operation on Oct. 31, 2002.