



COMPREHENSIVE CITYWIDE FERRY STUDY

This Ferry Service Feasibility Study was prepared for the New York Department of State with funds provided under Title 11 of the Environmental Protection Fund

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION.....	21
PART ONE: COMMUTER FERRY SITE PROFILES	23
1.1 Identifying sites for analysis.....	23
1.2 Defining the site profiles	24
1.3 Site profile summaries.....	31
1.4 Site profile prioritization criteria	41
1.5 Conclusion	47
PART TWO: SITE AND CORRIDOR FEASIBILITY ANALYSIS	48
2.1 Defining corridors for further analysis.....	48
2.2 Corridor analysis methodology.....	51
2.3 Results of corridor feasibility analyses.....	58
2.4 Analyzing the impact of adding sites to the four Service Level 1 corridors.....	59
PART THREE: OVERVIEW OF NYHARBORWAY SITES	64
3.1 Governors Island	65
3.2 Brooklyn Bridge Park	67
3.3 The Battery	68
3.4 Liberty State Park, New Jersey	70
3.5 East River Waterfront Esplanade and South Street Seaport.....	71
3.6 Liberty & Ellis Island.....	72
3.7 Hudson River Park.....	74
PART FOUR: INTEGRATING COMMUTER AND RECREATIONAL FERRY SERVICE	76
4.1 Business models.....	76
4.2 Relationship to commuter services	76
4.3 Other recreational service characteristics	77
4.4 Options for joint commuter-recreational ferry service	77
4.5 Integrating other recreational sites	84
PART FIVE: OVERVIEW OF OTHER REGIONS	84
PART SIX: GOVERNANCE AND FUNDING	86
6.1 Agencies involved	86
6.2 Existing Governance Structure.....	91
6.3 Possible Governance Approaches	92
6.4 Existing and Potential Funding Sources.....	95
6.5 Potential sources for assistance with operating costs.....	96
6.6 Expanding ferry service beyond the East River pilot project - public interest criteria	103
6.7 Service evaluation standards.....	112
6.8 Services operating outside a governance structure	106
6.9 Conclusions and recommendations	107

PART SEVEN: CONCLUSIONS AND NEXT STEPS	108
APPENDIX A: EXPERIENCE IN OTHER REGIONS	112
Nationwide and Worldwide Models of Ferry Service	112
Nationwide Models of Fare Collection and Fare Integration.....	122
APPENDIX B: SITE PROFILES	129
APPENDIX C: ADDITIONAL RIDERSHIP ANALYSIS.....	130
APPENDIX D: LOWER MANHATTAN COMMUTER/NYHARBORWAY TERMINAL.....	138
8.1 Identification of candidate locations.....	138
8.2 Assessment	140
APPENDIX E: USING FERRIES FOR TRANSIT REDUNDANCY AND EMERGENCY PREPARATION	156
APPENDIX F: SUMMARY OF RIDERSHIP ANALYSIS ASSUMPTIONS	163
APPENDIX G: USE REGULATIONS FOR DOCKS SERVING COMMERCIAL PASSENGER VESSELS.....	164
APPENDIX H: SURVEY RESULTS PARK VISITORS, EAST RIVER COMMUTER AND NY HARBORWAY, WATER TAXI RIDERS.....	165

TABLE OF CONTENTS

TABLES AND FIGURES

TABLES

Table 1: Discounted one-way fare from Monmouth and Hudson County, ferry and transit (as of spring 2010).....	43
Table 2: Ferry site prioritization criteria	44
Table 3: Weights assigned to each criterion	45
Table 4: Site prioritization based on demand factors.....	46
Table 5: Site prioritization results	47
Table 6: Service level 1 corridors for feasibility analysis	50
Table 7: Peak and off-peak/weekend headways (minutes)	51
Table 8: Number of ferry trips, market size and effective capture rates, by market area, 2009.....	52
Table 9: Approximate time competitiveness of a ferry trip vs. a transit trip, by market area	53
Table 10: Cost of a one-way ferry trip vs. a one-way transit trip	54
Table 11: Percent of households in the market area with household income greater than \$75,000, 2009.....	54
Table 12: Capture rates, adjusted by percent of households with income greater than \$75,000.....	54
Table 13: Time competitiveness of ferry vs. transit, South Brooklyn corridor market areas (in minutes)	55
Table 14: Cost competitiveness of ferry vs. transit, South Brooklyn corridor market areas.....	56
Table 15: Capture rate calculation, South Brooklyn corridor	57
Table 16: Commuters to Lower and Midtown Manhattan by South Brooklyn market area in 2009, and estimated ferry ridership during peak periods based on calculated capture rates	57
Table 17: Estimated annual ridership (minus 15 percent), by Service Level 1 corridor.....	58
Table 18: Estimated annual subsidy and subsidy per one-way trip (minus 15% ridership), by corridor	59
Table 19: Base corridors and additional sites.....	59
Table 20: NY HarborWay destination parks and ferry landings.....	64
Table 21: Existing, proposed and potential NYHarborWay recreational services, by business model and relationship to commuter service	77
Table 22: Agency roles and responsibilities	87
Table 23: MTA funding sources, 2010	89
Table 24: Sales tax rates in selected jurisdictions.....	97
Table 25: City of New York tax sources.....	98
Table 26: Summary of Ferry Service	113
Table 27: Summary of Ferry Service - International Cases	116
Table 28: Vessel Fleet Summary	118
Table 29: Capital and Operating Fund Sources by Ferry Agency.....	120
Table 30: Types of Fares.....	123
Table 31: Fare Collection	125
Table 32: Fare Transfers	126
Table 33: East River Brooklyn/Queens capture rate calculation	130
Table 34: East River Brooklyn/Queens Corridor Ridership	131
Table 35: East River Manhattan capture rate calculations.....	132
Table 36: East River Manhattan ridership, revenues and subsidy analysis	133
Table 37: Hudson River capture rate calculation	134
Table 38: Hudson River ridership analysis results.....	135
Table 39: South Brooklyn capture rate calculations	136

Table 40: South Brooklyn ridership analysis results.....	137
Table 41: Staten Island Capture rate calculation	137
Table 42: Maritime Vessel Routes	157

FIGURES

Figure 1: Map of ferry sites analyzed	24
Figure 2: Map of the Red Hook primary and secondary market areas.....	25
Figure 3: Map of the Red Hook driving market area (3-minute drive time)	26
Figure 4: Map of primary Lower Manhattan commuter landings and employment centroids.....	28
Figure 5: Map of primary Midtown Manhattan commuter landings and employment centroids	28
Figure 6: Map of Manhattan sites	31
Figure 7: Map of Brooklyn sites	33
Figure 8: Queens landing sites.....	36
Figure 9: Bronx ferry landing sites	38
Figure 10: Map of Staten Island landing sites	40
Figure 11: Average annual wage and salary income, by mode of commutation to Manhattan, 2005-2007	42
Figure 12: Average travel time to work, commuters from the New Jersey, Monmouth County, and Hudson County catchment areas, by mode of transportation, 2005-2007	43
Figure 13: Map showing the relative market size and time competitiveness to Lower Manhattan	49
Figure 14: Map showing the relative market size and time competitiveness to Midtown Manhattan	49
Figure 15: Service Level 1 commuter corridors.....	51
Figure 16: Map of New Jersey sites used for baseline analysis	53
Figure 17: Map of northern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites.....	60
Figure 18: Map of northern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Average subsidy approach	61
Figure 19: Map of southern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Incremental subsidy approach.....	62
Figure 20: Map of southern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites.....	63
Figure 21: Map of Governors Island and existing and planned ferry landings	65
Figure 22: Total Governors Island visitors, 2006-2009.....	66
Figure 23: Governors Island visitors by day of the week, 2009	67
Figure 24: Map of Brooklyn Bridge Park	68
Figure 25: Map of the Battery and proposed developments	69
Figure 26: Map of Liberty State Park	70
Figure 27: Map of East River Esplanade area	71
Figure 28: Map of the ferry routes to Liberty and Ellis Islands.....	72
Figure 29: Liberty and Ellis Island visitors, 2000 and 2007-09	73
Figure 30: Liberty and Ellis Island visitors, by month, 2009	73
Figure 31: Illustrative Coney Island development map	75
Figure 32: Map of the Service Level 1 corridor East River Brooklyn/Queens service with an integrated	

recreational loop.....	79
Figure 33: Map of the Service Level 1 East River Manhattan corridor with integrated recreational stops.....	80
Figure 34: Map of the South Brooklyn Service Level 1 service integrated with a single-boat recreational loop.....	81
Figure 35: Map of the Hudson River Service Level 1 Corridor with integrated recreational stops	82
Figure 36: Attendance at Liberty and Ellis Island, 2000 and 2007-09	83
Figure 37: Transit subsidy levels	105
Figure 38: Alaska's Marine Highway System.....	114
Figure 39: Washington State Ferries	114
Figure 40: Massachusetts Bay Transportation Authority Ferry.....	115
Figure 41: Sydney Ferries Service	116
Figure 42: Nessoden Line Service Map.....	117
Figure 43: WETA Ferry.....	117
Figure 44: Washington State Ferry.....	118
Figure 45: Smart Card System	124

EXECUTIVE SUMMARY

1. WHAT IS THE COMPREHENSIVE CITYWIDE FERRY STUDY?

The Comprehensive Citywide Ferry Study (study) was conducted jointly by the NYHarborWay and the New York City Economic Development Corporation (NYCEDC), in conjunction with the New York City Department of Transportation (DOT). The study was initiated at the request of the City Council, which wanted a comprehensive look at the potential for ferry transit in the city.

In many waterfront neighborhoods throughout the City, residents are calling for using the waterways to expand available transit options. The study examines the potential markets for ferry service at over forty sites throughout the city, prioritizes those sites, identifies possible future service corridors and analyzes the potential for recreational services to complement commuter services.¹ The study also includes a review of possible funding sources for ferry service and assesses issues of governance and oversight.

Included in the appendices of the report are reviews of other national and international ferry systems, a discussion of fare integration with other modes of transit, the assumptions and methodologies used in the report, an assessment of the potential for a NYHarborWay terminal and the detailed site profiles themselves.

By measuring market potential in a consistent way, the study provides the NYHarborWay, NYCEDC, DOT and other decision makers with the information and analysis necessary to make well-informed planning, policy and budgetary decisions regarding the future of waterborne recreational and commuter passenger transportation. Information collected and presented in the study will help determine whether to move forward with expanding commuter and recreational ferry services. The study provides useful baseline information that would be supplemented by more detailed market and ridership analysis prior to instituting any new services, as well as engineering studies to evaluate specific landing sites.

The study reviews the East River Ferry Service Pilot program scheduled to begin service in the Spring of 2011. While the study provides extensive information about market potential, the pilot will test many of the study's concepts and assumptions in a real-world setting.

2. WHAT IS THE NYHARBORWAY?

The NYHarborWay is an initiative of NYC & Company, New York City's official marketing, tourism, and partnership organization. The mission of NYC & Co. is to "maximize travel and tourism opportunities throughout the five boroughs, build economic prosperity and spread the dynamic image of New York City around the world". The NYHarborWay is intended to establish nine harbor destinations as must-see sites for residents and visitors alike. To that end the NYHarborWay was interested in determining whether any synergies exist between commuter service and recreational service and whether those two markets could complement one another. Table ES-1 lists the nine destinations that comprise the NYHarborWay.

As of 2010, all nine destination parks are, in some way, served by ferries. In addition to the NYHarborWay sites, a number of potential commuter ferry landings could serve a substantial number of recreational users. These include Yankee Stadium; Citi Field, Coney Island, Orchard Beach, and Rockaway / Riis Landing.

¹The term "ferry" is used generically in this report. Under the City's zoning, ferry and water taxi are specifically defined and have certain use and parking restrictions. See Appendix G.

Table ES-1: List of NYHarborWay sites

Destination
Governors Island
Ellis Island
Liberty Island
The Battery
East River Esplanade
South Street Seaport
Liberty State Park
Brooklyn Bridge Park
Hudson River Park

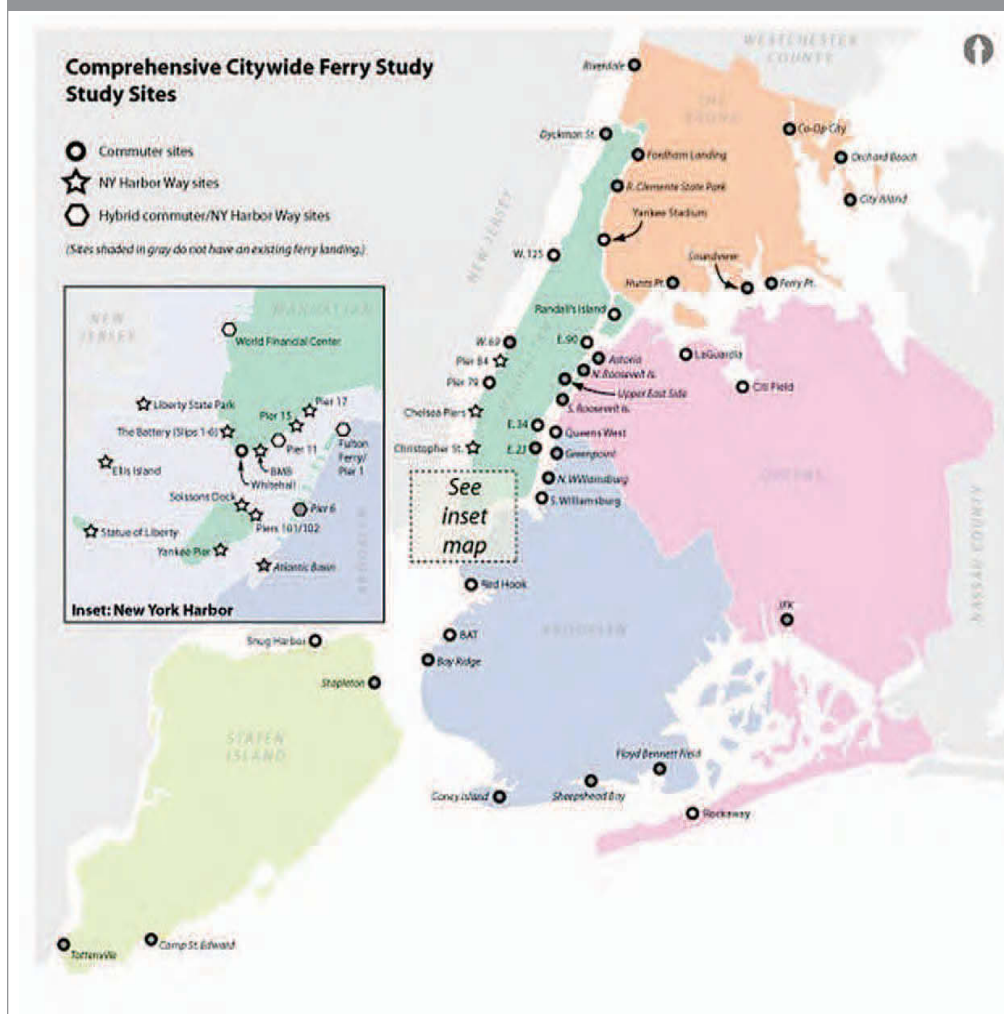
3. WHAT SPECIFICALLY DID THE STUDY ANALYZE?

Market demand

The first and most important assessment in the study was to examine the market demand and potential ridership from sites throughout the City. At a series of public meetings conducted in 2009, residents were asked to suggest sites to be analyzed. That input and information from prior reports, meetings with city agency staff, and elected officials, generated 43 sites for commuter ferry analysis. The sites selected are shown in Figure ES-1. Destinations of the NYHarborWay also are included.

This figure notes whether a ferry landing exists or would need to be constructed at each site. While this study focuses on the operating costs and subsidy associated with ferry services, the capital costs necessary to build the dock and barge infrastructure at any one particular site could run into the millions of dollars. A detailed assessment of those costs and funding sources will be needed before deciding whether to fund the additional operating costs associated with new services.

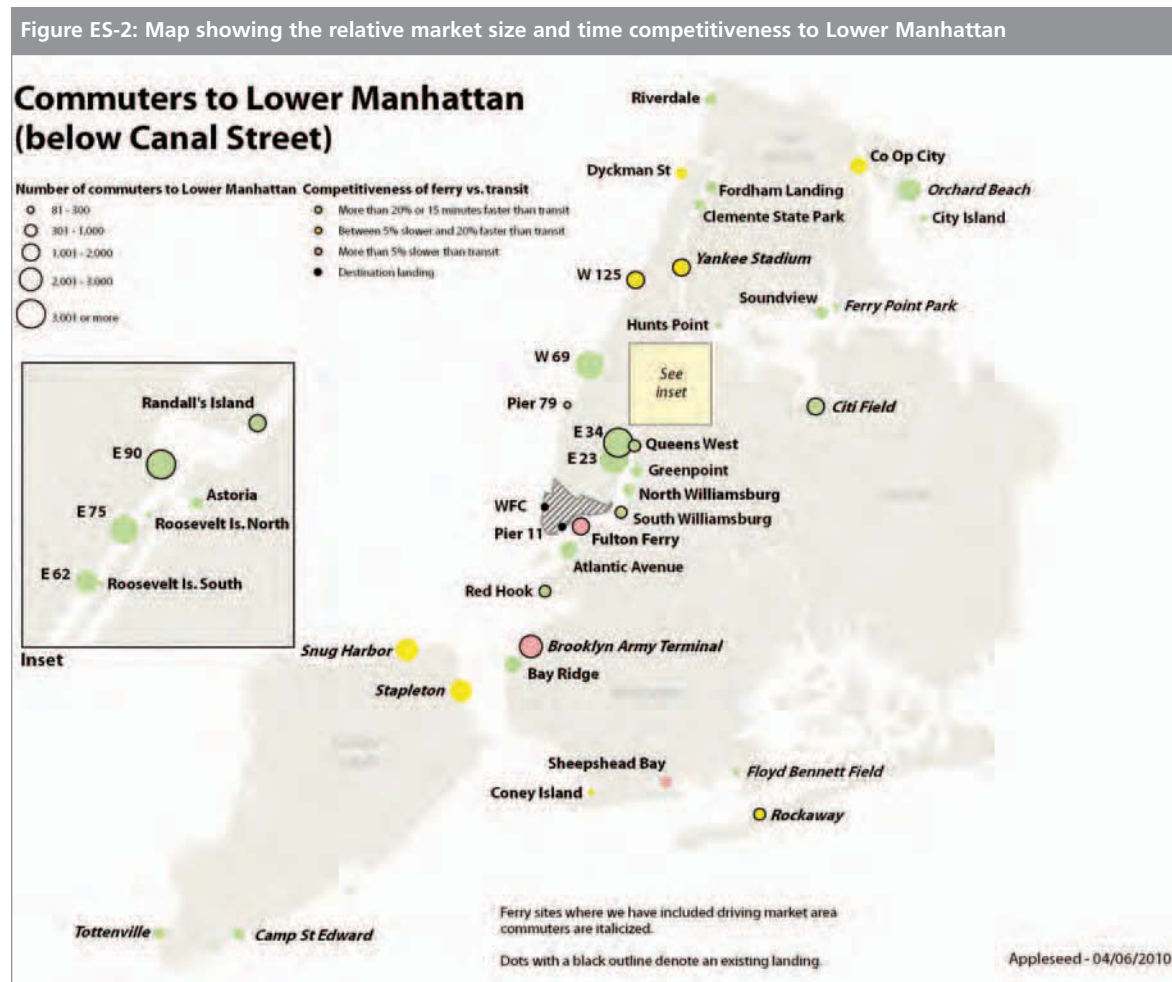
Figure ES-1: Map of commuter and NYHarborWay sites



Information from various sources was compiled into detailed site profiles to understand a site's market size, alternative transportation options, future development opportunities, and other factors that could contribute to the market for a ferry service.

The standard site profile helps compare sites with information on demographics, journey-to-work, time- and cost-competitiveness versus existing transit, local demand generators, potential for new development, and access to parking (if applicable). (Detailed site profiles are available in Appendix B and summarized in Part One.) By pulling together information for more than 40 sites, the study consistently evaluates all the sites against similar criteria.

The relative market size of each site was evaluated and the competitiveness of a ferry trip to Lower Manhattan and Midtown Manhattan compared with an existing transit trip. The results of the Lower Manhattan analysis are shown in Figure ES-2. A simple color coding reflects the travel time savings from each site to lower Manhattan. Sites colored green provide a significant travel time advantage over the current transit trip. Sites colored yellow are either on a par with or somewhat faster than a current transit trip and sites that are colored red are slower than transit. The relative size of the market is shown using circles, so a site with a large green circle reflects a location with a relatively large commuter market and where a ferry would offer a faster travel time. A similar map for midtown Manhattan can be found in Part Three. Since the heart of the employment areas in midtown are some distance from the water, in general the travel times are not as competitive by ferry. Overall, Lower Manhattan represents a more promising ferry market.



Site prioritization

Figure 2 compares the sites with respect to two of the critical criteria that went into the site prioritization travel time savings and the size of the commuter market. But a number of other factors were analyzed. A set of prioritization criteria was employed to rank the sites using data collected during the site profile process. The prioritization criteria are listed in Table ES-2. Information regarding the noted criteria was collected for each of the sites.

The feasibility of a ferry site is based on both the demand factors like those shown in Table ES-2, and cost factors. The cost of operating a service to a site is primarily based on the frequency of service and the number of vessels needed to maintain that frequency (a site closer to the Manhattan Central Business Districts will need fewer boats to maintain frequent service).

Table ES-2: Ferry site prioritization criteria

Criterion	Data used
Size of Lower and Midtown Manhattan commuter market	Journey-to-work data for the entire walk-on market to workplaces from the Battery to Canal Street and from 23rd Street to 59th Street. (For Manhattan sites, we used 1/3 of a mile as the walk-on market, and for other sites ½ of a mile.) Journey-to-work data for 20 percent of the park-and-sail market to workplaces between the Battery to Canal Street and from 23rd Street to 59th Street.
Estimate of time savings - ferry vs. transit	Comparison of ferry vs. transit time to Lower and Midtown Manhattan
Estimate of time savings - ferry vs. auto	Comparison of ferry vs. drive time to Lower and Midtown Manhattan
Estimate of cost savings vs. transit	Comparison of ferry vs. transit cost to Lower vs. Midtown Manhattan
Estimate of cost savings vs. auto	Comparison of ferry vs. auto cost to Lower vs. Midtown Manhattan
Potential for growth in the commuter market as a result of new waterfront development	Number of new residential units that could be developed as-of-right (or are under development) in walk-on market
% of local market with household income greater than \$75,000	Demographic data for the walk-on market
Congestion relief	The total number of auto commuters to Manhattan from the market area

Sites were assigned to groups based on the number of vessels required to maintain adequate service frequency (boats departing approximately every 20-25 minutes during rush hour) to the Central Business Districts. Sites closer to the Manhattan Central Business District could maintain these frequencies with two to three vessels (Site Group 1); moderate distance sites would require four vessels (Site Group 2), and; farther sites would require five or more vessels (Site Group 3). The three site groups – within which sites are ranked by their demand score calculated from the criteria in Table ES-2 – are shown in Table ES-3 below. ²

Table ES-3: Site prioritization results		
SITE GROUP I: 2 or 3 vessels	SITE GROUP II: 4 vessels	SITE GROUP III: 5 or more vessels
1. W. 69th Street	1. Snug Harbor	1. Riverdale
2. E. 23rd Street	2. Stapleton	2. Tottenville
3. E. 90th Street	3. Soundview	3. Fordham Landing
4. Roosevelt Island	4. Clemente State Park	4. Camp St Edward
5. Atlantic Avenue	5. Dyckman Street	5. Ferry Point Park
6. E. 34th Street	6. Hunts Point	6. Orchard Beach
7. E. 71st Street	7. Yankee Stadium	7. Coney Island
8. Greenpoint		8. City Island
9. E. 62nd Street		9. Citi Field
10. Fulton Ferry		10. Co Op City
11. Pier 11		11. Rockaway
12. South Williamsburg		12. Sheepshead Bay
13. North Williamsburg		13. Floyd Bennett Field
14. Queens West		
15. Bay Ridge (69th Street Pier)		
16. World Financial Center		
17. Astoria		
18. W. 125th Street		
19. Pier 79 (W. 38th Street)		
20. Red Hook		
21. Brooklyn Army Terminal		

² This table contains only sites with the potential to generate demand for commuter ferry service. It does not include NYHarborWay sites without a residential component, and does not include the Kennedy and La Guardia airport sites.

Potential service corridors

The prioritization criteria are useful in helping to determine the potential market from each of the 3 sites. However, in and of themselves, they cannot form the basis of determining whether to establish ferry service from any one particular location. So while the information generated for each site profile is useful, it is also necessary to define potential service corridors, in which a number of destinations are linked into a transit-like route. By combining sites in routes, one can increase the potential available market and decrease the service subsidy that might be required.

These results were examined and it was determined that the focus of the analysis should be the four corridors in which the service subsidy was roughly the same or less than other premium transit services such as express bus or commuter rail services. Services that operated at subsidy levels significantly beyond that were considered not to be viable.

Therefore, three service corridor levels were established:

- Level 1 services are those that can maintain peak-period headways within 20-25 minutes with two or three boats;
- Level 2 services are those that can maintain peak-period headways within 20-25 minutes with four boats;
- Level 3 services are those that can maintain peak-period headways within 20-25 minutes with five or more boats;

The placement of sites in service corridor levels enabled the next critical step in the study—the development of the service corridors. Five service corridors were examined comprising all three levels of service:

- **Hudson River Corridor**

This corridor stretches from Riverdale in the north to the World Financial Center in the south. Services between W. 69th St. and World Financial Center would require two boats to maintain service headways, while sites to W. 125th St. would require three boats, and services to Dyckman Street and Riverdale would require five boats.

- **East River Corridor, Manhattan/Bronx**

This corridor runs from Pier 11 on Wall Street to Coop City in the Bronx. Sites above East 90th St. would require four boat services during the peak period, while sites above Soundview would require five boat service to maintain headways.

- **East River Corridor, Brooklyn/Queens**

This corridor runs from Pier 11 on Wall Street to Astoria in Queens. It includes all of the stops planned in the East River pilot program that is scheduled to begin in Spring 2011. Service above Queens West would require four boats to maintain headways.

- **South Brooklyn Corridor**

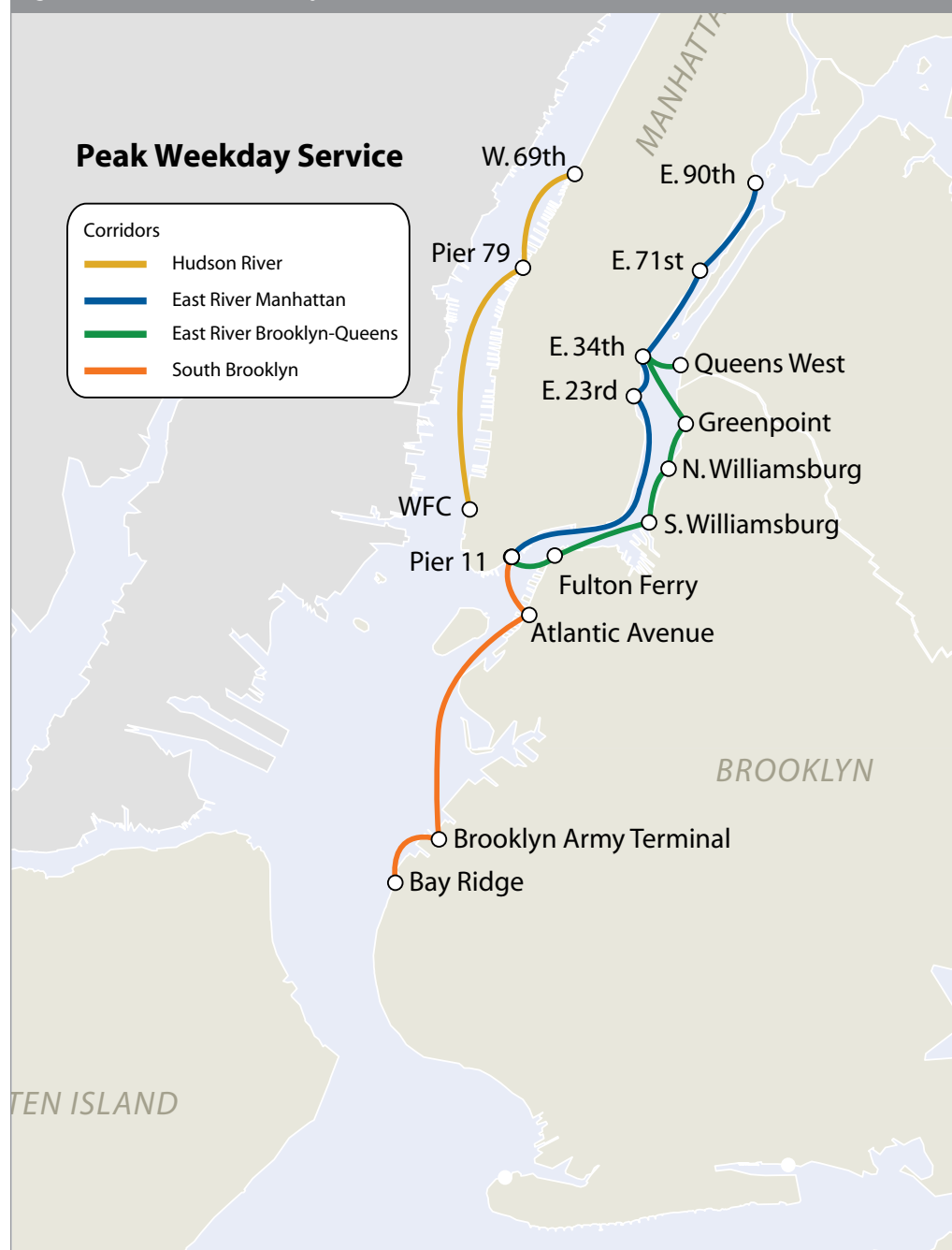
The South Brooklyn corridor runs from Pier 11 on Wall St. to Rockaway and Riis Park. Service below Bay Ridge would require four boats in the peak period while services beyond Coney Island would require five vessels to maintain 20-25 minute headways.

- **Staten Island Corridor**

The Staten Island Corridor runs from Pier 11 on Wall Street to Camp St. Edward on the south shore of Staten Island, serving Stapleton as an intermediate stop. Given the limited market potential at these two locations, only a two-boat service was examined and costs estimated.

The corridors, along with the sites in each corridor are shown in the Figure ES-3.

Figure ES-3: Service level 1 ferry corridors



A methodology was developed to obtain preliminary ridership estimates for the sites in each corridor. Detailed information was gathered about three ferry routes from the New Jersey waterfront to Midtown and Lower Manhattan, and then those data were used as a baseline from which to adjust ferry “capture rates” from the sites in the study. For Manhattan corridors capture rates used were based on prior commuter services in effect on the East River. Capture rates are what percentage of commuters use a particular service given the overall market. For example, the study examined the travel time data and adjusted the projected ridership from the New York sites based on the experiences in New Jersey. The same was done for factors such as cost of the comparable transit trip. If the cost of the overall trip in New York was cheaper with respect to the New Jersey trip, then one would expect more riders to take advantage of the ferry service. If the cost of the trip in New York was more relative to NJ, then one would expect lower ridership. A more detailed review of this approach is provided in Part Two. This exercise provided a more refined estimate of the potential ridership from these sites than was available in the site profiles.³

For each of the defined service corridors, the study analyzed the following:

- Annual ridership
- Annual subsidy required
- Subsidy per riders
- Number of vessels required to operate the service

Figures ES-4 and ES-5 show these five corridors and include the information noted above. The information is summarized for the Service Level 1 services. For services in Service Level 2 and Service Level 3 the maps show how much total corridor ridership would be generated with that stop included, what the cost per rider would be given the increase in required fleet and what the subsidy per rider would be, for the entire corridor. This analysis assumed the reasonable peak headway of 20-25 minutes, a consistent service span of 7:00 am to 9:00 pm and an average \$5.00 ticket price for all landings, without regard to distance from the central business districts. Part Two also includes an analysis of the incremental ridership and the cost and subsidy per additional riders for each of the stops in Service Levels 2 and 3.

The figures show the following results averaged across stops in each of the corridors (before recreational service has been evaluated or added):

- The annual subsidy on the Service Level 1 East River Brooklyn-Queens service is about \$4.3 million, or about \$9.30 per ride. With Astoria, the average subsidy per ride is \$11.59.
- The annual subsidy on the Service Level 1 East River Manhattan service is about \$4.3 million, or about \$9.15 per rider. With Soundview, the average subsidy per ride is \$11.99; and with Co-Op City, the average subsidy per ride is \$14.84.
- The annual subsidy on the Service Level 1 Hudson River corridor is about \$2.8 million (about \$14.28 per rider). With West 125th Street, the average subsidy per ride is \$23.01; with Dyckman Street, the average subsidy per ride is \$33.13; and with Riverdale, the average subsidy per ride is \$29.17.
- The annual subsidy on the Service Level 1 South Brooklyn corridor is about \$4.7 million, or about \$11.07 per ride. With Coney Island, the average subsidy per ride is \$13.35; with Sheepshead Bay, the average subsidy per ride is \$17.24; and with Rockaway the average subsidy per ride is \$16.90.
- The annual subsidy on the Service Level 1 Staten Island corridor to Stapleton is about \$5.9 million, or about \$30.92 per ride. With Camp St. Edward included, the subsidy increases to about \$13.9 million or about \$55.55 a ride.

³ As discussed in Part Three, a 2004 commuter service to East 90th Street was used as the baseline for the Manhattan sites.

Figure ES-4: Potential service corridors--north

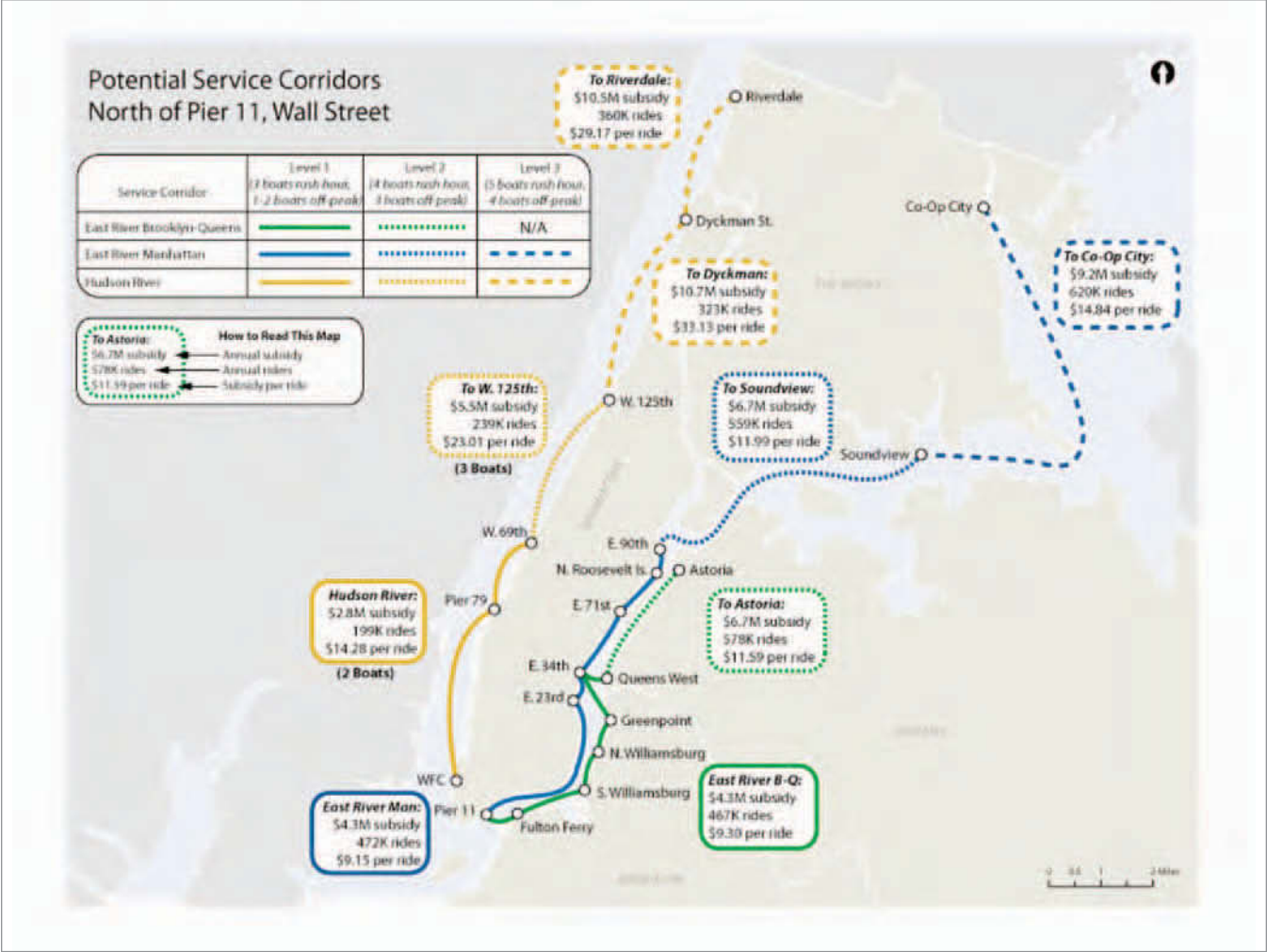
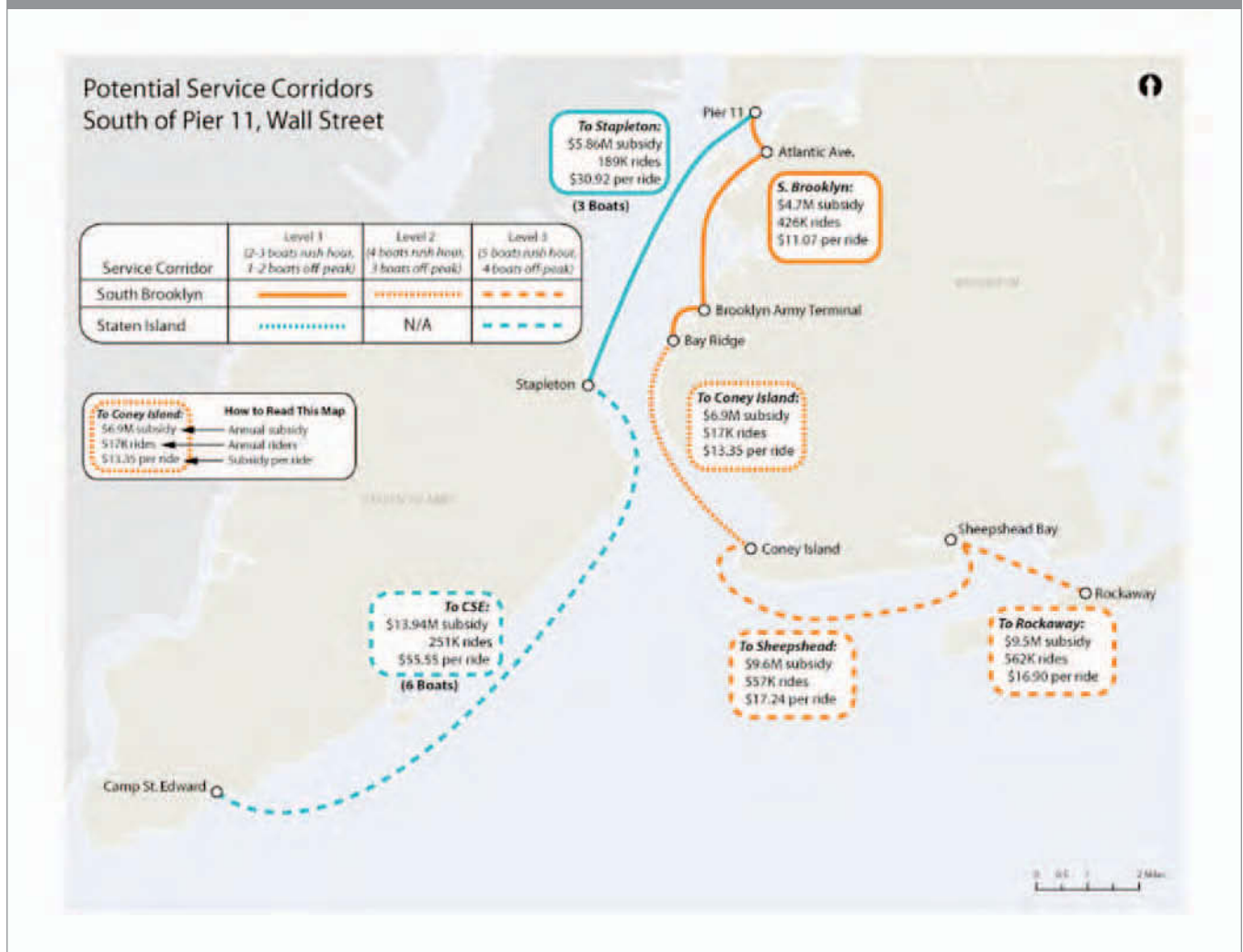


Figure ES-5: Potential service corridors-south



Recreational service integration

The study then evaluates the contribution that recreational service could play in supplementing and improving the ridership on these corridors, particularly during off-peak hours and on weekends when vessel demand for commuter service is low. This analysis also provides information on the impact on the required annual operating subsidy from adding a recreational component.

Several business models can be applied for operating ferry services to recreational destinations. The study notes how these business models can interact with commuter ferry service. The corridor analyses described above were then integrated with recreational sites that comprise part of the NYHarborWay.

The study identifies several potential options for developing new ferry service to NYHarborWay sites using the integrated service and modified routes models. They include:

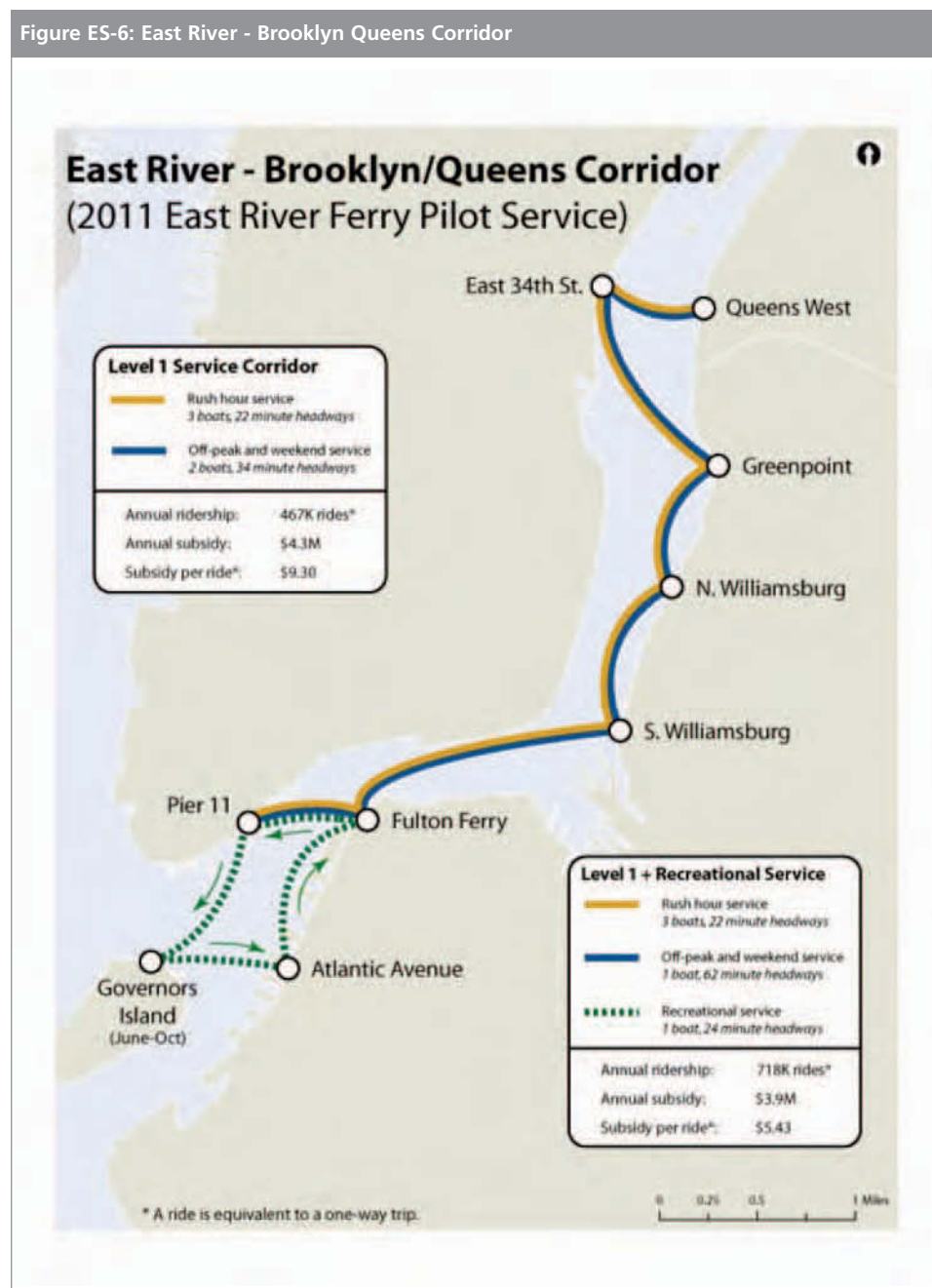
- Modification of the proposed East River route serving Brooklyn and Queens to provide off-peak and weekend service to Atlantic Avenue and Governors Island during the summer and fall;
- Modification of the proposed South Brooklyn commuter service on summer/fall weekends, deleting the weekday stop at Brooklyn Army Terminal and adding Red Hook and Governors Island.
- Modification of the proposed Hudson River off-peak and weekend service, adding stops at Chelsea Piers and Christopher Street all year, and a stop at Governors Island during the summer, in addition to extending service to Pier 11.
- Modification of the proposed East River route serving Manhattan to provide off-peak and weekend service to Atlantic Avenue and Governors Island during the summer and fall.

It should be noted that while the recreational loop between Pier 11, Governors Island, Atlantic Avenue and Fulton Ferry was examined for its effect on several of the Service Level 1 service corridors, this service would only be implemented in conjunction with a single route.

While there are a number of ways to integrate the East River Brooklyn-Queens commuter service with a service to four NYHarborWay destinations – Brooklyn Bridge Park, Governors Island, the Battery and East River Esplanade, the recommended scenario is described below. It includes the same 3-boat commuter service defined earlier.

In the recommended scenario, during off-peak hours and weekends only one boat serves the Brooklyn/Queens East River sites with headways of 62 minutes (meaning a boat arrives every 62 minutes), and one boat performs the recreational service between Fulton Ferry, Atlantic Avenue, Governors Island and Pier 11 described above. The headways for this recreational service would be about 24 minutes. As in the example above, the fare for a one-way trip on the recreational service loop is assumed to be \$2.50.

Figure ES-6 shows the approximate annual cost, revenue and subsidy for the core service and the most cost-effective recreational scenario on the East River Brooklyn-Queens route.



Figures ES-7, ES-8 and ES-9 show the other three routes and provide the same information regarding costs, subsidy and headways. One can see that by adding recreational service, ridership can be increased and the overall subsidy levels reduced, even while charging a \$2.50 fare that is half that of the peak period service. The synergies between recreational and commuter service that the study set out to examine appear to be there.

Figure ES-7: East River Manhattan Corridor

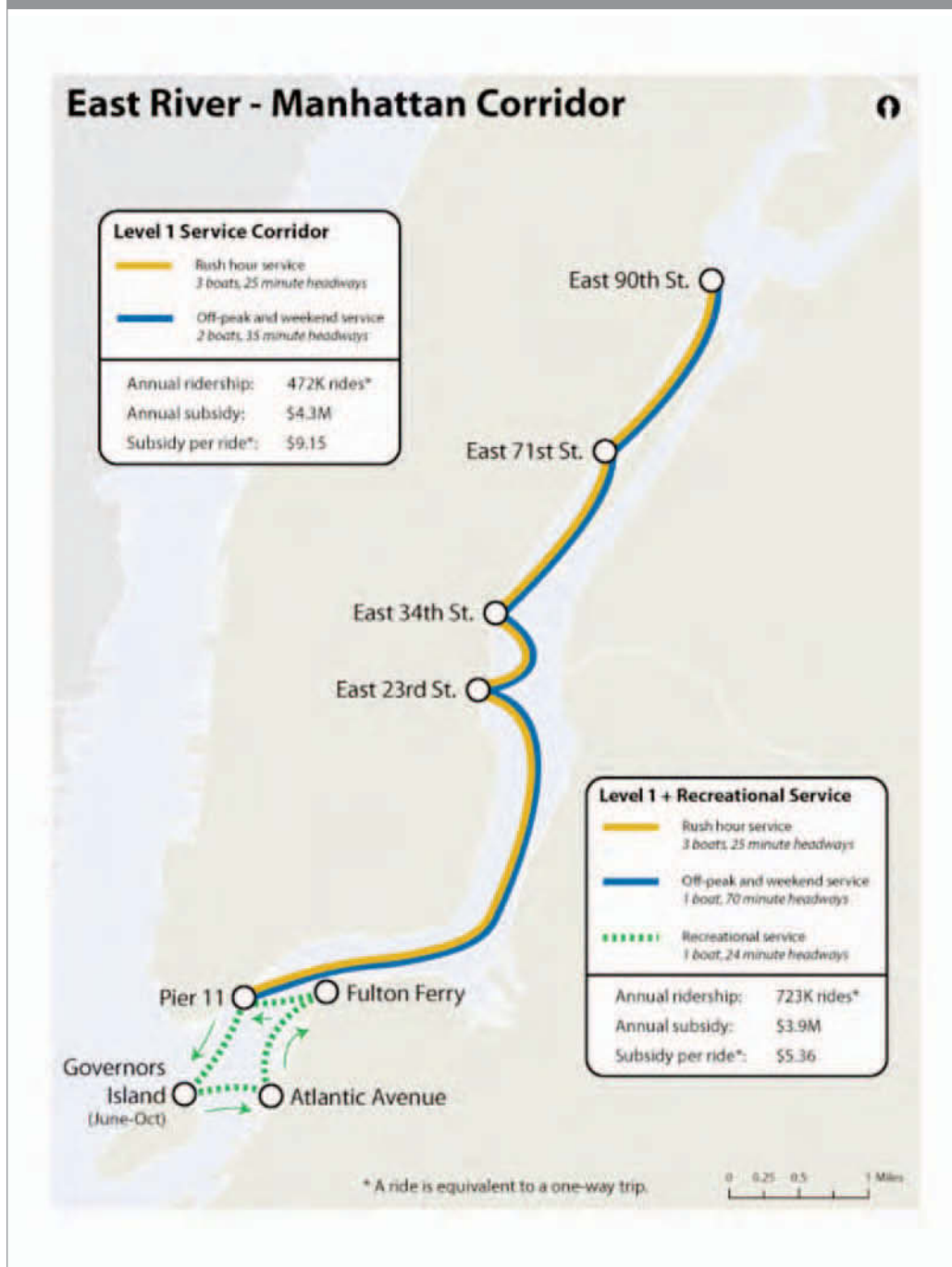


Figure ES-8: Hudson River Corridor

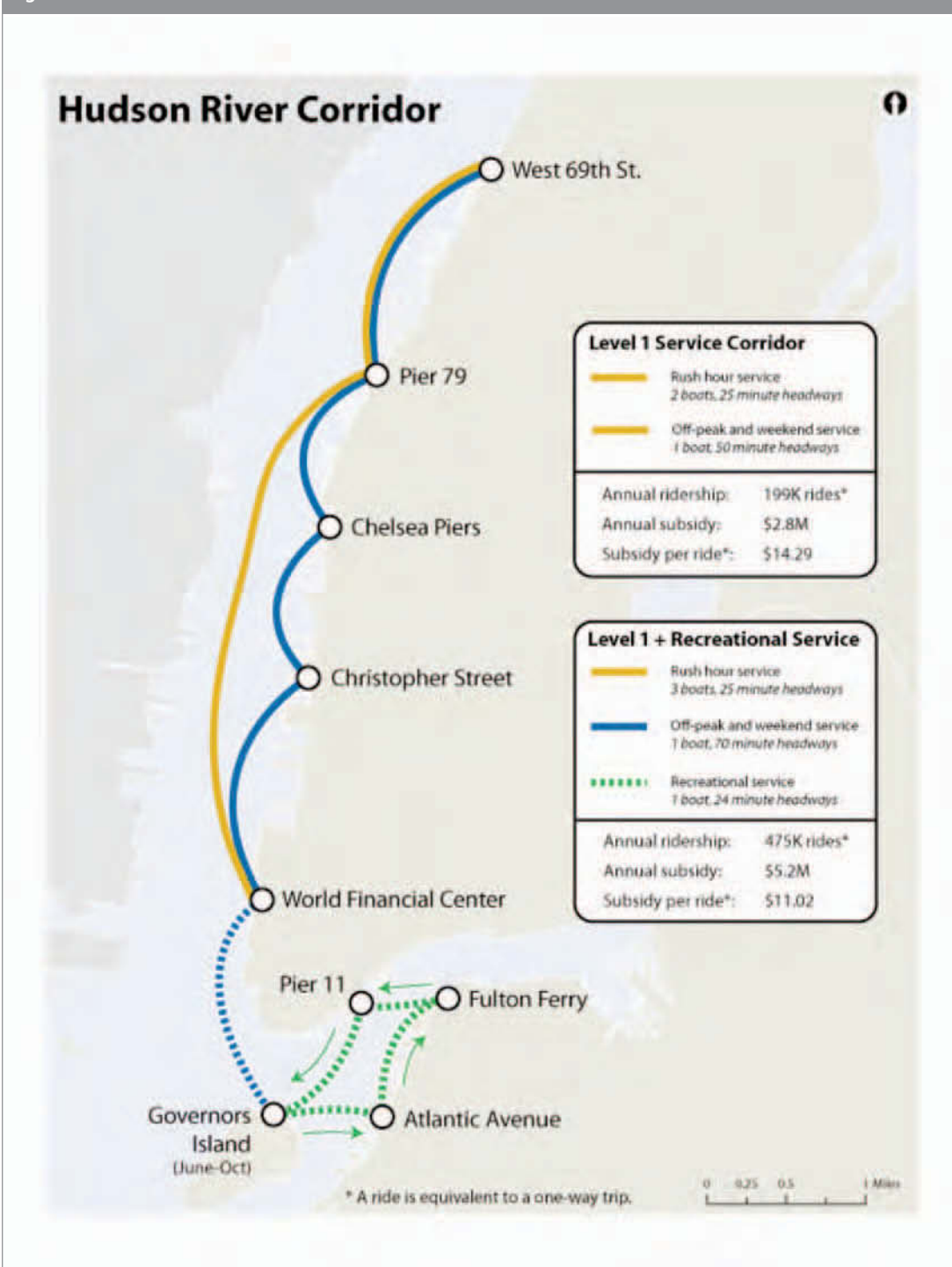
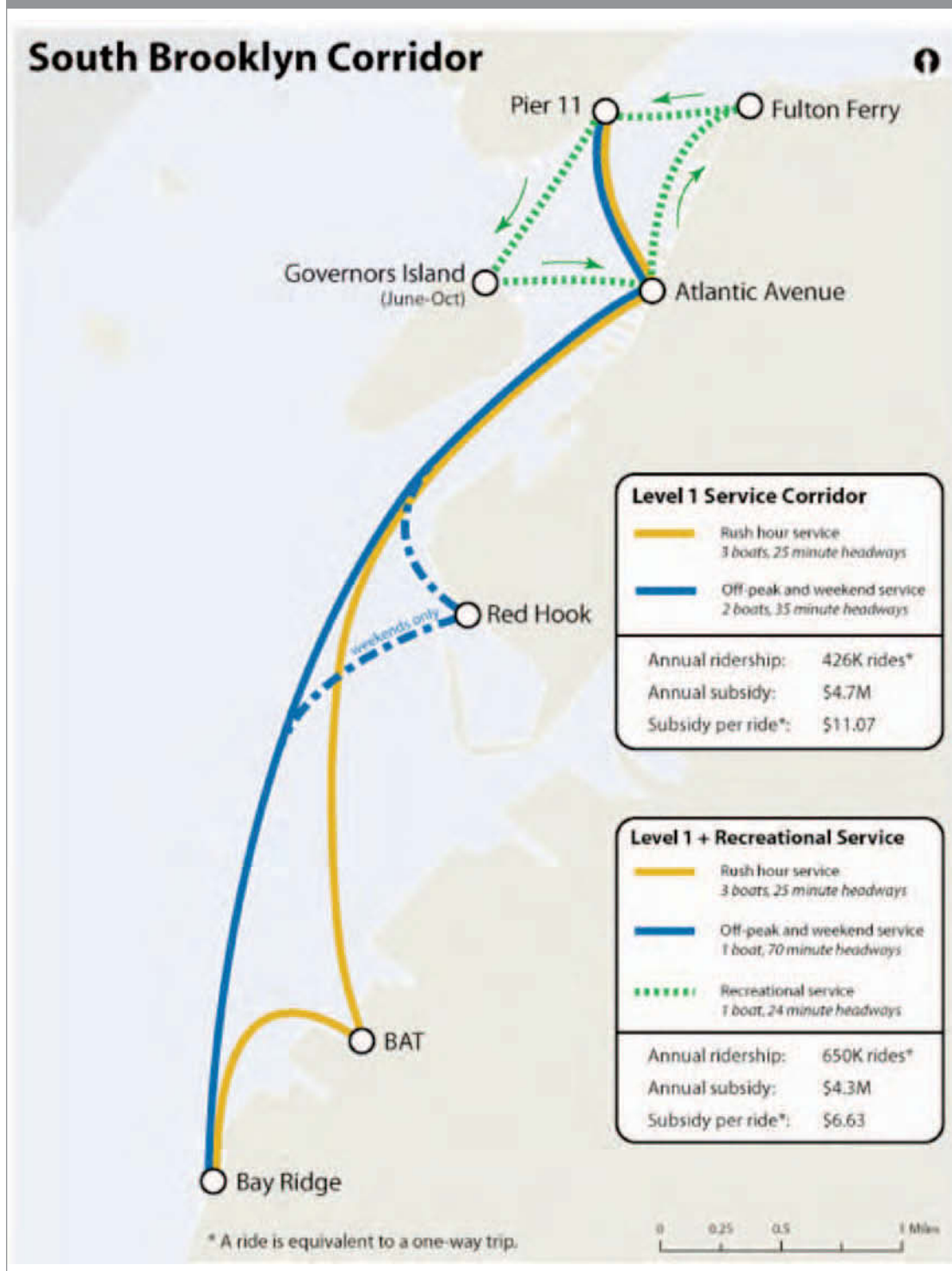


Figure ES-9: South Brooklyn corridor



The analysis also suggests that some City sites have limited potential for commuter service, but ferry service could enhance the value of the site as a recreational destination (as in the case of Coney Island), could improve access to the site (as in the case of Randall's Island), or could simply provide an alternative means of transportation (as in the case of Yankee Stadium and Citi Field). However, as these sites are outside the NYHarborWay and as the unique nature of events and attractions at each of these destinations would require a more detailed analysis than is presented in the site profiles, we have not tried to assess the market potential for recreational service to these sites.

NYHarborWay Terminal Analysis

Included in Appendix D is an assessment of eight locations that could serve as a terminal for the NYHarborWay ferry service. The assessment considers factors such as waterfront infrastructure needed to accommodate the NYHarborWay service and availability of space.

4. HOW DOES CURRENT FERRY SERVICE IN NY COMPARE WITH FERRY SERVICE IN OTHER REGIONS AND AROUND THE WORLD?

Often lost in the ridership numbers for more traditional transit services such as subways and buses, is the fact that the New York region has the most robust ferry network in the nation. The bulk of the ridership is carried on the Staten Island Ferry with over 21 million people a year, but almost 10 million more ride a network of ferry services, mostly focused on connections between midtown and lower Manhattan and New Jersey. Unlike the Staten Island ferry, these services are somewhat unique in that the direct costs of their operation are not subsidized by the public sector. This model is not replicated in the United States or in most places in the developed world where passenger-only ferries operate. The private sector model is seen much more often in ferry services that combine auto and cargo transport with passenger transport. In reviewing these other systems, governance, financing and fare integration were considered. More detailed information can be found in Appendix A.

The analysis considered seven different ferry systems: Washington State Ferries (WSF); Water Emergency Transportation Authority (WETA) in the San Francisco Bay Area; Massachusetts Bay Transportation Authority (MBTA); Alaska's Marine Highway System; the Sydney Ferries system in Australia; the Istanbul Seabuses and Fast Ferries, Inc. ("IDO") system in Turkey; and the Oslo ferry system in Norway. Some of the general conclusions were as follows:

Funding

- There is no single ferry system identified that compares to the New York-New Jersey ferry system. All of the systems studied rely on various sources of public funding in addition to the fare revenue that they generate.

Governance

- The systems are generally overseen by government entities, even if their operation is contracted to private providers. Examples range from the Washington State system, which features a government workforce, to Boston in which the transit agency, MBTA, oversees privately contracted services. In San Francisco, a stand-alone authority, the Water Emergency Transportation Authority oversees the funding and coordination of services. Similarly in King County Washington, a separate ferry district provides passenger-only ferry services using contracted service providers.

Fare Integration

- When looking to propose fare integration with privately operated ferries, the King County Ferry District, WETA and MBTA integrate fare collection methods and subsidized transfers. Furthermore, the MTA has demonstrated its own ability to integrate fares with non-MTA operators like the Roosevelt Island Tramway, PATH and AirTrain. A much more detailed discussion of fare integration can be found in Appendix G.

Common Traits

- In reviewing ferry services from around the nation and the globe, several general conclusions can be drawn. Particularly in the United States, ferry services tend to be seen as a premium transit service alternative that offers a higher level of comfort to passengers. In New York, ferry service is more akin to the express bus network as opposed to the local bus or subway network. As a result premium fares are charged for the service. Ferry service also tends to supplement existing transit services with faster service to the central business districts. For those that live at or near the water, ferry service can provide in some cases significant travel time advantages. And although not traditional mass transit as such, ferry service will generally require public support and subsidy as do other forms of transit.

Financing Options

■ Comparative Transit Subsidies

Some of the key characteristics of transit service in the New York harbor are discussed above. Ferry service is more akin to commuter rail service or to express bus service in which all passengers have seating and fewer intermediate stops are made between the origin and the destination of the trip. These services also have higher fares than does New York City Transit subway and express bus service.

This is reflected in the subsidy per passenger for these services. For example, the Long Island Rail Road has a subsidy per passenger of a little more than six dollars, while the New York City Transit Express bus system has a subsidy of slightly over twelve dollars per passenger. The subsidy levels in the four service corridors described in the ferry study are in the nine to fourteen dollar range, and can be somewhat reduced from that level when recreational service is added.⁴

5. WHAT FUNDING SOURCES ARE AVAILABLE FOR SUPPORTING FERRY SERVICE?

The analysis also discussed potential funding sources and their strengths and weaknesses, including federal, state and local options.

Federal Sources

Federal support of ferry service comes from three agencies in the US Department of Transportation, the Federal Transit Administration, the Federal Highway Administration and the Maritime Administration. Almost all of the funding provided by these agencies is available only for capitolly eligible projects.

■ Federal Highway Administration

The City has competed for ferry boat discretionary funding from the Federal Highway Administration. A wide range of capital projects are eligible for funding from this source as long as they support the provision of ferry service. The New York State Department of Transportation administers this competitive grant program. One disadvantage is that the size of the grants is limited to around \$2 million.

■ Federal Transit Administration

The FTA has two large formula funding programs for which ferry services are eligible. These funds are allocated by the New York Metropolitan Transportation Council (NYMTC). The Section 5309 funding--known as fixed guideway modernization funds--in this region are allocated exclusively to the MTA. Section 5307 funding comes to the region through a complex formula that includes route and passenger mileage in establishing the regional allocation. Ferry services help contribute to the overall funding received from the federal government. Those funds are allocated at NYMTC according to a very precise formula in which the MTA receives the bulk of the funding. The City of New York receives less than one percent of each dollar allocated to the region. The funds are also restricted to capital purposes. There is a provision in the federal regulations that allow the funds to be used for the "capital cost of contracting." The FTA allows up to 40% of the total operating costs of a contracted service to be paid for using 5307 funding since a significant portion of operating costs reflect the cost of acquiring and maintaining capital assets such as vessels.

■ Maritime Administration

The Maritime Administration or MARAD offers a federal ship financing program in which the government will guarantee privately secured loans for the purchase of vessels.

State Sources

Three key programs are offered at the state level that assists with transit costs. All are administered by the State Department of Transportation.

■ Statewide Mass Transportation Operating Assistance

One of the few programs that provides operating assistance, STOA funding is awarded on a per passenger and per mile basis. Private operators are eligible if they are sponsored by a City, County or Regional Transit Authority. However, a 1993 amendment to the State Transportation Law prohibited new commuter ferry services from receiving this operating assistance.

⁴ It should be noted that many express buses serve neighborhoods more distant from the Manhattan Central Business Districts with fewer transit options.

- **State Omnibus and Transit Purpose Program**

This funding source is available only to non-MTA agencies. It provides one half of the required 20% local match for FTA grants. However, it is available for capital costs only and not operating assistance.

- **Multi-Modal Program**

One of the categories in which the multi-modal program provides funds is for fixed ferry facilities. So the supporting infrastructure for ferry service would be eligible, but not vessels or operating assistance.

Local Sources

- **Broad Based Tax Sources**

Included in this category are property taxes, income taxes and sales taxes. Since everyone pays them, either directly or indirectly, a small increase the tax rate generates large amounts. However, these are the foundational sources for funding general government operations. Were ferry service to be funded from these sources, it would have to compete against a host of other priority programs.

- **Other Taxes**

A variety of special taxes such as cigarette, beverage and hotel taxes are collected in the City of New York. Often funding from these sources has been linked to the funding of specific programs. Special taxes are often seen as difficult to implement and face opposition from specific constituency groups.

- **Developer Contributions**

This source depends on voluntary funding for the support of ferry service as an amenity for purchasers or renters. Along the East River, the Schaefer Landing condominium has contributed funding toward the current service provided by New York Water Taxi. However, the funding is not guaranteed and can be reduced or eliminated. And not all developments in the area would contribute to the service.

- **Tax Assessment Districts**

In New York City, tax assessment districts are known as business improvement districts. A group of businesses petition the City Council to create a special assessment district in which funds are used in a variety of ways that benefit the area. A similar concept could be explored for ferry service in which businesses and residents alike contributed to a district whose purpose would be to provide ferry service.

6. WHAT GOVERNANCE OPTIONS ARE THERE FOR FERRY SERVICE?

The study examined issues associated with governing ferry services in the New York Harbor, including a review of the notion of the public interest and criteria under which it might be appropriate to subsidize the operating cost of ferry service.

The governance and operational structure for ferry service in New York harbor is fragmented. Many agencies control pieces of the overall puzzle, but no one agency is responsible for governance and for funding. The Staten Island Ferry represents an example of completely public ownership and operation. The private ferry providers in the harbor, with some exceptions, do not rely on public operating subsidies. The public sector has funded most of the capital infrastructure used by these services, however, including dock improvements and terminals.

Several publicly subsidized services have been established over the years, most recently, the Rockaways and Yonkers service. These services did not meet their projected ridership targets and were terminated. The Metro North Rail Road continues to subsidize two cross-Hudson services that provide connections to their rail service. And starting in the Spring of 2011 the East River Ferry Service Pilot Program will bring service from Queens West, Greenpoint, North and South Williamsburg and the Fulton Ferry landing to lower and midtown Manhattan.

The strengths and weaknesses of several governance structures are reviewed in the study, including:

- Centralized control spanning both New York and New Jersey (with or without public operation) in which an entity like the Port Authority would be involved;
- Transit agency oversight in which an entity like the Metropolitan Transportation Authority would be involved;

- Ferry district or ferry authority funding (which has been used in other locations such as King County Washington and the San Francisco Bay Area);
- City oversight in which an entity like the New York City Department of Transportation would be involved; and
- The status quo in which private operators continue to provide service while the public sector invests in capital infrastructure.

The three-year East River ferry service pilot could be an opportunity to further explore the implications and possible applicability of these governance models and investigate the feasibility of additional funding sources.

7. WHAT IS THE EAST RIVER FERRY SERVICE PILOT PROGRAM AND HARBOR WAY PILOT SERVICE AND HOW WILL THESE SERVICES BE EVALUATED?

East River Ferry Service Pilot Program

The Spring of 2011 will see the commencement of the East River Ferry Service Pilot, serving Brooklyn, Queens and Manhattan. Service will run from Queens West, to East 34th St. and then to Greenpoint, North Williamsburg, South Williamsburg and Fulton Ferry before ending at Pier 11 on Wall St. The ferry service will run in both directions and will feature 20-25 minute service during the peak periods and hourly service during the off peak period. A recreational loop service is also being considered to connect Fulton Ferry, Pier 11, Governors Island and Pier 6 (Atlantic Ave.).

Figure ES-6 provides an overview of the service. The annual estimated subsidy for the pilot program including the recreational service is approximately \$3.9 million. This figure should decrease somewhat over time as new riders are attracted to the service. These figures are preliminary pending the development of a detailed schedule, scope and fare structure and completion of negotiations with operators. The Office of Management and Budget has allocated about \$8.9 million to the program.

The pilot is designed to test and answer a number of questions.

- A. Is there a market for ferry service from this destination and how robust is it?
- B. Can commuter and recreational service be integrated successfully and can recreational service help to reduce overall subsidy levels by providing more popular off-peak and weekend service?
- C. What are the key market drivers that would encourage people to take advantage of the service?
- D. How effective are ticketing machines versus manual ticketing?
- E. What are the reasonable fare levels for this premium service? What kinds of multi-trip discounts and passes should be offered?
- F. How can the service improve multi-modal connectivity with buses and bikes? Can a fare integration arrangement be put in place with other transit providers?
- G. Will customers be satisfied with the service and the supporting capital infrastructure? Are there other amenities or facilities that would be needed?
- H. Is there a way to bring other funding resources to the table to reduce the required subsidy?
- I. Who should oversee the service over the long term? What is the appropriate governance mechanism?

NYHarborWay Pilot Service

A pilot recreational service by the NYHarborWay was started in the summer of 2010. Operated by New York Water Taxi, this service ran between the South Street Seaport, Fulton Ferry and the new dock at Pier 6 at the foot of Atlantic Ave. During the summer of 2010, market research was conducted with those using the pilot program and with other potential recreational ferry users in lower Manhattan in order to better understand the market and smoothly integrate the recreational loop service into the Spring 2011 East River Ferry Service Pilot (see Appendix H).

Service Evaluation

Prior to starting the East River service, clear expectations must be established. This study and work conducted previously have estimated ridership levels for the service, given the service frequency and span of service (how many hours a day it operates). It will be important to establish a timeline for success--how many riders is the service expected to generate according to selected milestone dates? In general, services should be given 18-24 months to mature and build ridership. So at six months, twelve months and eighteen months ridership should be measured against the criteria for success.

In addition, it is critical to understand what is motivating the people who are taking the service and how satisfied they are with it, but also to understand why people are not taking advantage of it. A rider/non-rider survey should be conducted and sufficient funds included over the course of the pilot program to adjust a marketing and advertising campaign in response to the results.

Finally, it is important to report the performance results back to the community and to have the community invested in the success and or failure of the pilot program. If this premium transit option is important to them, they should participate in efforts to increase ridership. If the service is not meeting expectations, the community should be put on notice regarding possible cuts in service or its termination.

8. WHAT BROAD CONCLUSIONS CAN BE DRAWN FROM THE COMPREHENSIVE CITYWIDE FERRY STUDY?

Several broad conclusions can be drawn from the analyses presented in this report

- 1) While the total number of New Yorkers likely to use ferries as their primary means of traveling to work is relatively small when compared to the number who travel by subway and bus, commuting by ferry could nevertheless represent an attractive option for thousands of New Yorkers, albeit one requiring public subsidy.
- 2) Based on the analyses presented in Parts Two and Four, the most promising corridors for provision of commuter ferry service appear to be:
 - A corridor connecting sites on the Queens and Brooklyn East River waterfront with East 34th Street and Pier 11 in Manhattan;
 - A South Brooklyn corridor, connecting Bay Ridge, the Brooklyn Army Terminal, and Pier 6/Atlantic Avenue with Pier 11 and East 34th street;
 - An north-south East River corridor that connects East 90th Street with East 71st Street, East 34th Street, east 23rd Street and Pier 11; and
 - A north-south Hudson River corridor that connects West 69th Street, Pier 79 and the World Financial Center. ⁵
- 3) While the subsidy per rider required to support a robust commuter service with a \$5.00 average fare would on most of the corridors analyzed in Parts Two and Four be greater than the current average subsidy per subway rider, it would be comparable to – and in most cases lower than – the current average subsidy per rider for express bus service.
- 4) There are other sites within the five boroughs for which ferry service could represent an attractive option – in terms of convenience, comfort and time savings relative to mass transit – but with a \$5.00 average fare, significantly higher subsidies would be needed to sustain ferry service to and from these neighborhoods.

⁵The report does not forecast the effects on ridership levels of a complete system build out of these four corridors. As more destinations are added to a transit network, there should be more passengers attracted given the added connections made and destinations served.

- 5) The assessment of opportunities for integrating commuter and recreational services suggests that these two types of service are complementary in several respects, and that in some corridors, combining commuter and recreational services may reduce the level of required operating subsidies.
- 6) While ferry service would not be financially self-sustaining at a \$5.00 average fare in any of the corridors analyzed in Parts Two and Four, the analysis of options for financing the East River Pilot Project presented in Part Six includes the concept of exploring dedicated local funding through the creation of a ferry district.
- 7) Before undertaking any further expansion of ferry service (beyond the East River Service Pilot Program that will start in 2011) the City should work with New York State, New Jersey, the MTA, the Port Authority, New Jersey Transit and other agencies as appropriate to develop a more coherent regional framework for development, financing and governance of ferry services. In particular opportunities for integrating fares with those of other regional transit providers should be investigated.
- 8) A more detailed analysis of the capital costs and challenges associated with building new ferry landings at locations lacking them will need to be conducted.

9. WHAT ARE THE NEXT STEPS?

During the three-year life of the East River Pilot Project, the City can continue to explore some of the issues and opportunities cited in this study, including:

- Exploring possible sources of start-up funding or on-going subsidy other than City tax revenues;
- Working with regional transportation agencies (including PA, MTA, NJT) to develop an appropriate structure for overseeing and supporting the continued development and operation of private ferry services;
- Developing mechanisms for integration of ferry fares with other transit fares;
- Working with the New York City Department of City Planning regarding issues relating to the definitions of “water taxi” and “ferry” service under the City’s current zoning rules, and their implications for future development of ferry service; and
- In the event that interest is expressed in exploring the feasibility of additional ferry services beyond the East River Pilot Project, the following factors will need to be taken into account:
 - Market potential and anticipated subsidy requirements including operating costs, fare structures, and projected ridership;
 - Potential for integrating ferry sites within the five boroughs into regional ferry routes;
 - Capital requirements including costs for any needed infrastructure; and
 - Siting, environmental and waterfront access issues

INTRODUCTION

After many decades of decline, New York City began in the 1980's to reclaim its waterfront. During the past decade, the revival of the City's waterfront has accelerated. Among the forces driving this ongoing transformation have been:

- The continued growth of the City's population
- Rezoning of several waterfront neighborhoods
- Major public investments - in parks, transportation and environmental infrastructure, and other facilities
- A surge of private investment in new residential, commercial and recreational development

During the next twenty years, revitalization of the City's waterfront will continue to affect where New Yorkers live, work and play. As the City's economy revives, residential development is likely to resume in waterfront neighborhoods in all five boroughs. New commercial development will also occur along the waterfront - in part as a result of the increasing attractiveness of these areas, and in part because some of City's largest potential development sites are situated near the water. Investments in waterfront parks - such as Hudson River Park, Brooklyn Bridge Park, Governor's Island, the Harlem Piers, Randall's Island, Coney Island and Baretto Point Park - will provide recreational opportunities close to home for millions of New York residents, and will attract millions of visitors to the city each year.

The revitalization of the waterfront has also renewed New Yorker's awareness of the potential value of the City's waterways as a transportation resource. Ferry service has always provided an essential connection between Staten Island and Manhattan, and since the 1980's, private ferries have once again become a regular means of commutation between New Jersey and New York. Ferries also bring millions of visitors to Liberty and Ellis Islands.

To date, however, privately-operated ferry service has played only a limited role in transportation within New York City. There is currently limited commuter service on the East River, and a pilot service between Rockaway and Lower Manhattan recently ended; several recreational and tourist-oriented services; and intermittently, ferry service to waterfront sites where special events are being staged.

At the same time, NYC & Company and the New York City Economic Development Corporation have been exploring opportunities for the development of new ferry services that would bring both New York City residents and visitors to established and newly-developed recreational sites in New York Harbor. In 2009, the New York State Department of State provided funding for NYC & Co. to undertake a more detailed examination of the potential for development of such services.

To bring together these two dimensions of ferry service - commuter and recreational - NYCEDC, NYCDOT and NYC & Co., with assistance from several consulting firms,⁶ undertook a review of the potential for developing privately-operated commuter ferry services connecting various New York City neighborhoods with Midtown and Lower Manhattan; and for integrating commuter ferry operations with ferry service to recreational destinations in New York Harbor.

This report presents the results of that review.

- Part One of the report summarizes the results of the analysis of 43 waterfront sites throughout New York City, and the areas surrounding those sites, in terms of their potential as markets for commuter ferry service.
- Based on the analysis presented in Part One, Part Two groups individual sites together in several corridors that appear to have the greatest potential for development of new commuter ferry services, provides preliminary estimates of

⁶ Including STV Inc., Appleseed Inc., Audience Research and Analysis and Zetlin Strategic Communications

the number of riders that ferry service in these corridors might attract and assesses the levels of public subsidy might be required to support commuter ferry operations in these corridors.

- Part Three provides an overview of nine recreational destinations in New York Harbor, and of existing ferry service to those sites.
- Part Four examines several different approaches to integrating commuter operations with service to the recreational sites described in Part Three and examines the effects on overall subsidy levels from doing so.
- Part Five provides a brief discussion of ferry operations, and of how ferry service is governed and financed, in several other cities.
- Part Six discusses options for regional governance of an expanded ferry network, and identifies possible sources of funding to support ferry operations.
- Part Seven presents some overall conclusions on the findings of the study and outlines several additional steps that can be taken to support continued development of new ferry services, both commuter and recreational.

The appendices include:

- Appendix A, a discussing the operation, governance, and fare models used in other cities and regions.
- Appendix B, detailed site profiles of each site discussed in Part One.
- Appendix C, detailed tables as backup to Parts One and Three.
- Appendix D, a discussion of several sites in Lower Manhattan that could potentially serve as a central location for ferry service to recreational sites in New York Harbor, and assessment of the potential of each of these sites.
- Appendix E, a discussion of using ferries for transit redundancy and during emergencies.
- Appendix F, a list of the assumptions used in the ridership analyses presented in Parts Three and Four.
- Appendix G, a description of the applicable zoning regulations for water taxis and ferries in a chart labeled “Use Regulations for Docks Serving Commercial Passenger Vessels.”
- Appendix H, summary results of surveys conducted of potential users of recreational ferry service and of riders on NYHarborway’s summer 2010 service.

PART ONE:

COMMUTER FERRY SITE PROFILES

The potential of any particular waterfront location as a site for commuter ferry service depends on a variety of factors, such as the number of residents commuting to Midtown and Lower Manhattan, existing transportation options, and future development opportunities. In order to assess the feasibility of commuter ferry service from various sites in New York City, information on these and other factors were collected, and detailed profiles were prepared of 43 locations that have been suggested as possible sites for ferry service.

Using information gathered for the site profiles, a set of prioritization criteria that could be used to rank the sites on the basis of their potential for ferry service were developed.

This section of the report describes:

- The process that was used to identify sites for analysis;
- The approach to developing commuter ferry landing site profiles;
- A brief summary of each site (the complete site profiles are included in Appendix B);
- The methodology and criteria that was used to prioritize commuter ferry sites; and
- The results of the site prioritization.

1.1 IDENTIFYING SITES FOR ANALYSIS

Several sources were used to identify possible ferry landing sites for analysis. The sources included:

- Sites where ferry service already existed, such as South Williamsburg, Fulton Ferry, West 39th Street (Pier 79), and Rockaway.
- Sites where a ferry landing exists, but there is no active commuter service, such as East 90th Street in Manhattan, Yankee Stadium, and Snug Harbor on Staten Island.
- Sites where ferry service has been proposed - either by community groups, elected officials or city agency staff, such as Bay Ridge, Soundview, Astoria, and Tottenville.

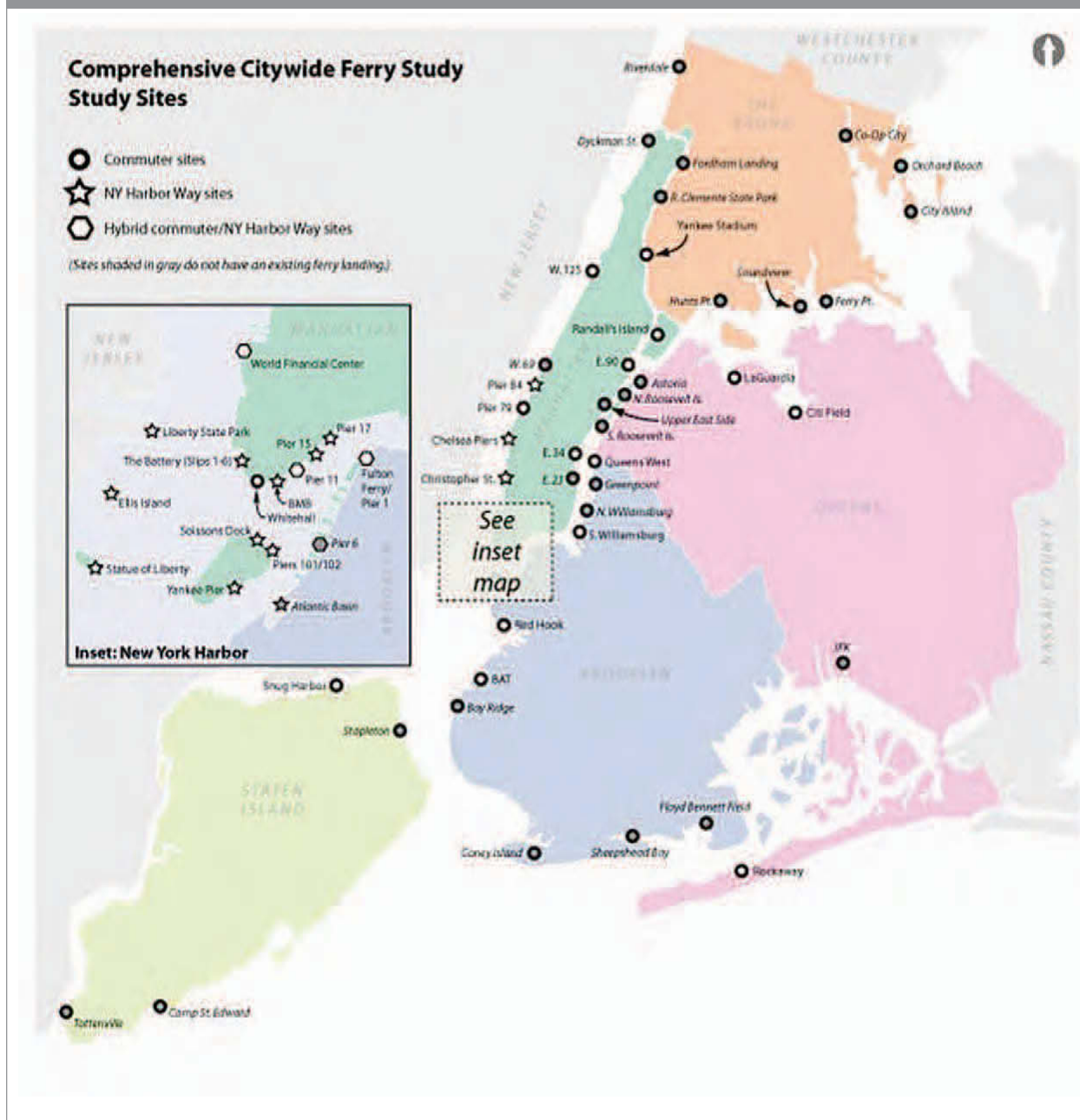
Using a preliminary set of sites, the project team conducted a series of outreach meetings with representatives of City agencies, elected officials and the public to identify gaps. Public meetings on ferry services held during 2009 included:

- A meeting with City Council members and staff at City Hall on May 27, 2009;
- A public meeting at Queens Borough Hall in Queens on July 21, 2009;
- A public meeting at Kingsborough Community College in Brooklyn on July 22, 2009.
- A public meeting at Riverdale Temple in the Bronx on July 30, 2009; and
- A public meeting at Hunter College in Manhattan on October 5, 2009.

In total, 43 commuter ferry sites were identified for analysis.

These sites are shown in the map in Figure 1.

Figure 1: Map of ferry sites analyzed



1.2 DEFINING THE SITE PROFILES

Once the commuter sites were identified for analysis, detailed site profiles were developed for each of them. The site profiles are focused primarily on each site's market potential. They do not, except in a limited way, take into account possible physical constraints, such as height restrictions due to bridges, shallow water depths, and landside access issues. Any future planning - especially at locations that do not already have ferry landings - will need to explore these issues in greater detail.

The cost of adding the capital infrastructure necessary to support ferry service also was not taken into account in our analysis. Capital investments can run into millions of dollars per site, particularly in locations where piers would have to be built or improved.

1.2.1 DEFINITION OF THE MARKET AREAS

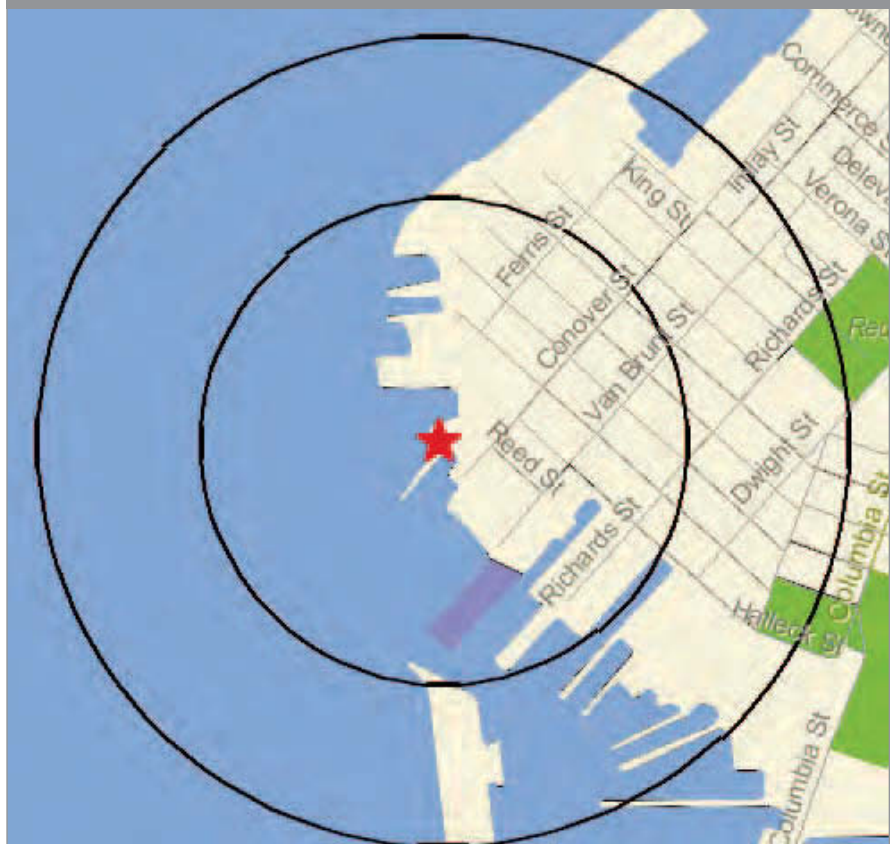
For sites with a walk-on market, a primary and secondary market area was defined. The primary market area is defined as a 1/3-mile radius around each ferry landing site; the secondary market area is defined as the area between 1/3-mile and 1/2-mile around each site. Where possible Census Block Groups were used to define the boundaries of the market areas.⁷ For sites in Manhattan, data was gathered for the 1/2-mile radius around each site, but included only the 1/3-mile radius in the site prioritization and market analysis because of the relative proximity of subway lines to the neighborhoods on the waterfront.

Figure 2 shows an example of the primary and secondary market areas for Red Hook. The first ring is a 1/3-mile radius around the Red Hook ferry landing site; the second ring is a 1/2-mile radius around the Red Hook ferry landing site.

The driving market area differs slightly by landing, but generally includes the area between the 1/2-mile radius and a 4- to 7-minute drive around each site, depending on the geography of the area. The driving market area was defined in such a way that drivers in the market area would generally make forward progress toward Manhattan in their trip to the ferry landing.

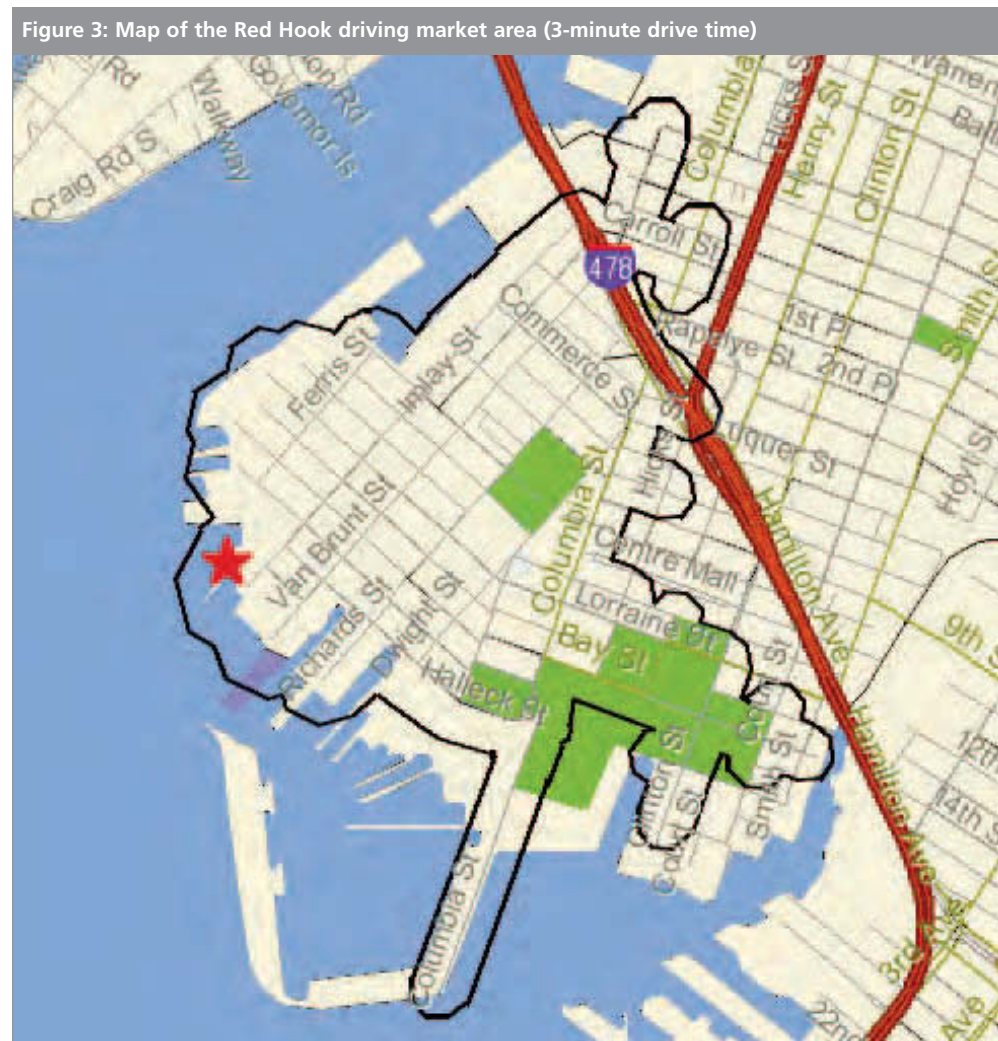
It is important to point out that the size of the driving market does not take into account constraints such as parking availability at the landing site.

Figure 2: Map of the Red Hook primary and secondary market areas



⁷ A Census Block Group is a cluster of Census blocks - the smallest geographic unit for which data is collected by the U.S. Census Bureau. Census tracts are generally composed of one or more block groups.

Figure 3 below shows the driving market area defined for Red Hook.



1.2.2 DEMOGRAPHIC DATA

Data was collected on population, household income, labor force and employment from DemographicsNow. The source of DemographicsNow data for the year 2000 is the U.S. Census Bureau. DemographicsNow develops its own estimates and projections for the current year (either 2008 or 2009 in our analysis) and five years in the future (2013 or 2014 in our analysis).

1.2.3 JOURNEY-TO-WORK DATA

For the analysis of the potential ferry commuter market, it was decided to focus on commuters to the two major central business districts in Manhattan: Lower and Midtown Manhattan. We defined Lower Manhattan as the area below Canal Street, and Midtown Manhattan as the area between 23rd Street and 59th Street.⁸

Generally, reverse commuters were not included in the analysis. Some sites outside of Lower and Midtown Manhattan could potentially be both a point of origin and a destination, for ferry commuters; but in most cases the market for such a service is small (Brooklyn Army Terminal, for example) or will not develop a critical mass for at least a decade (Columbia's new campus near 125th Street, for example). It may, nevertheless, be useful in the future to consider the potential for reverse commuting at a limited number of sites.

⁸ In our journey-to-work analysis, we further subdivided Midtown into the areas above and below 34th Street. In these instances, Midtown refers to the area between 34th Street and 59th Street; Midtown South refers to the area between 23rd Street and 34th Street.

Journey-to-work data from each of the origin market areas was obtained - including the number of commuters from the market areas to Manhattan and the mode split for commuters - from the U.S. Census Bureau's Transportation Planning Package for 2000. Because the most recent CTPP data is for the year 2000, it was assumed that the mode split and Manhattan destination split would be the same in 2008/09 as in 2000.⁹

1.2.4 TRAVEL TIME ESTIMATES

Rough estimates were developed of the amount of time required to commute from the market area to the four destination centroids by ferry, auto and transit (see figures 19 and 20). Assumptions are outlined in this section.

Ferry time estimates

In order to estimate the ferry travel time, the ferry trip was divided into three segments:

- The trip to the ferry landing;
- The ferry trip to the destination landing; and
- The trip from the ferry landing to the destination point.

The following assumptions were used to develop these estimates:

- For each ferry landing, a starting point was identified in a residential neighborhood within the market area.
- For the Lower Manhattan and Midtown Manhattan central business districts, two destination intersections were used based on an analysis of the densest employment in the Lower Manhattan and Midtown Manhattan central business districts. These destination points included:
 - 46th Street & Sixth Avenue and 45th Street & Lexington Avenue in Midtown; and
 - Broad Street & Stone Street and Wall Street & Hanover Street in Lower Manhattan. We also used the intersection of West Street & Vesey in Lower Manhattan to evaluate the time competitiveness of ferry service on the Hudson River.
 - A 5-minute wait time for all ferries was assumed, given that the ferries would run on a standard schedule, and that passengers would have a short wait before boarding.
 - The distance was calculated, in miles, over water from origin landing to destination landing, without any intermediate stops.
 - Two estimates of average ferry speed were included - 20 miles per hour and 25 mile per hour. Generally, ferries with longer trips over open water could achieve greater average speeds than ferries covering only a short distance.
 - The walking time (or the fastest walk-bus trip in the case of Midtown Manhattan) was calculated between the destination landing and the employment centroids in the destination market area.

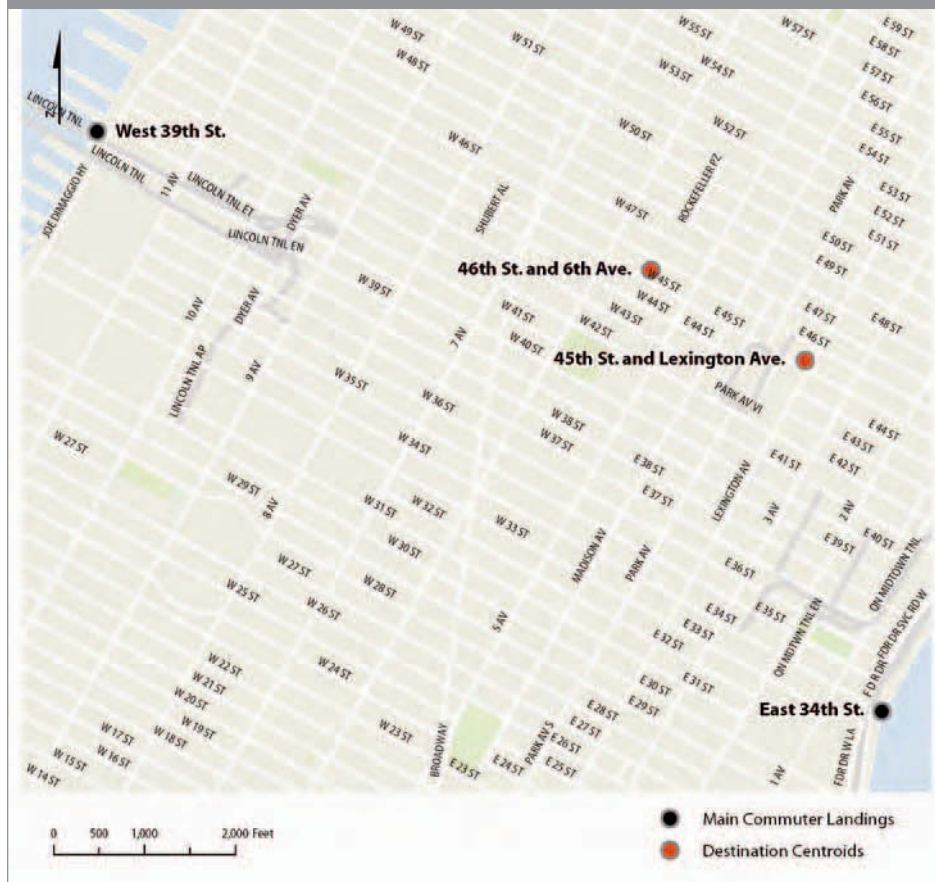
Figure 4 and Figure 5 show the centroid points used in Lower and Midtown Manhattan.

⁹It will be useful to update the Journey-to-Work data when new results from the American Community Survey are released in about three years.

Figure 4: Map of primary Lower Manhattan commuter landings and employment centroids



Figure 5: Map of primary Midtown Manhattan commuter landings and employment centroids



Drive time estimates

Google Maps were used to develop estimates of the amount of time required during a commute to the four centroids.

- Google Maps provides an estimate of the distance of a trip. When two trips had similar distances, selected the route without a bridge toll was selected (if one was available). It was assumed an average speed of 20 miles-per-hour for all trips - which would be somewhat slower than the free-flow speed - to account for traffic congestion.
- It was also assumed that drivers to Manhattan would pay market rate for parking and would park in the garage nearest the employment centroids. Based on the location of parking garages near the centroids, this was assumed to add 4 minutes of walking time to each auto trip.

Transit time estimates

The following assumptions were used to develop estimates of the time required to commute by transit:

- A 5-minute initial wait time for the first leg of the transit trip. (Google's transit application builds in transfer/wait times for subsequent legs as part of the overall trip time.)
- Google Maps was used to identify the fastest transit trip from the market area to the centroids. (In some cases, we have included two transit trips - one using bus/subway and another using express bus or commuter railroad.)
- The trip would begin at 8:00am on a weekday to ensure that the time estimates would take into account the most frequent commuter service available and be comparable with peak-period ferry services.
- Commuters would choose the fastest transit mode available, and that all transit commuters would use that mode.

1.2.5 COST ESTIMATES

Estimates were generated of the one-way cost of commuting via each mode, including the cost of driving (including gas, maintenance, ownership costs and parking), the cost of transit (whether New York City Transit or other mode).

For auto commuters, data was provided by the American Automobile Association in the 2009 edition of its annual Your Driving Costs brochure. AAA estimates an average cost of about \$0.16 per mile in operating expenses (including gas, maintenance and tires) for a medium-sized sedan and \$0.30 per mile in ownership costs (including insurance, registration, taxes and depreciation) for drivers who drive at least 20,000 miles per year.¹⁰

It was also understood that drivers would pay for parking and - for some commutes - would also pay bridge tolls (at the EZ-Pass rate). The following daily parking rates were used based on a monthly parking space, depending on the prices at parking garages near the destinations:

- \$24.00 per day for Broad and Stone;
- \$25.00 per day for Wall and Hanover;
- \$20.00 per day for 46th and 6th Ave; and
- \$30.00 per day for 45th and Lexington Ave.¹¹

Some employers pay for employees' parking. The analysis assumed that all parking costs would be paid out-of-pocket.

For transit trips, the fare of New York City Transit or Metro-North Railroad to estimate the trip costs was used.

Where available, the weekly or monthly fare (for example, the 30-day unlimited Metrocard or 7-day Express Bus Plus) was used to generate per-trip costs.

For ferry services, a one-way fare of \$5.00 was assumed.

¹⁰This level of annual driving reflects the fact that the market areas for which auto trips would "compete" with ferry trips are mostly some distance from Manhattan. A 10-mile commute by car would consume about 5,000 miles per year on its own. (It can also be noted that parking costs in Manhattan far outweigh the cost of gas, maintenance, insurance, and depreciation.)

¹¹All parking rates from <http://nyc.bestparking.com>

1.2.6 LOCAL DEMAND GENERATORS

Some of the existing or proposed ferry-landing sites are located in areas with significant employment (such as the landings near the hospital corridor in East Midtown) or seasonal recreational uses, (such as Coney Island and Orchard Beach). These sites have the capacity to attract reverse commuters or to attract off-peak recreational passengers. Where available, data on the scale of the employment centers or recreational uses in the local demand generators section was provided.

As discussed above in 6.2.3, our analysis does not take into account the potential for these local demand generators to generate reverse commute trips. Further analysis of a more limited number of sites may be able to account for the potential to generate reverse commuter demand.

Reverse commuter trips can be valuable to a ferry service as they can generate revenue without necessarily placing additional demands on capacity.

1.2.7 PROJECTED GROWTH

Due to rezonings or major public investments, the market areas for some landing sites could see significant residential, commercial or entertainment growth over the next five to ten years. For some sites with significant on-going development (including Queens West, Greenpoint and the two Williamsburg landings), projects underway were researched at the building-level. For other large-scale developments with longer time horizons (Coney Island and Willets Point, for example), only the total number of residential units to be developed at full build-out were included.

The Department of City Planning was consulted on the estimates of developable units.

The projected growth numbers are used in two ways:

- For new residential developments that could be occupied through early 2010, the ridership analysis in Part Three takes into account the potential new commuters.
- For longer-term developments, the numbers in the site prioritization were incorporated to reflect that ferry service could help shape - or accelerate - future development, but do not take them into account when analyzing the ridership potential of proposed ferry corridors discussed in Part Three.

1.3 SITE PROFILE SUMMARIES

This section briefly summarizes each of the commuter site profiles. The complete site profiles are included in Appendix B.

1.3.1 MANHATTAN SITES

A map of the twelve Manhattan sites we analyzed is shown in Figure 6.

East 90th Street

An East 90th Street site would serve an area with a large concentration of commuters, with 14,541 commuters to Midtown, Midtown South and Lower Manhattan living within one-third of a mile from the proposed landing site - the largest concentration of such commuters among any of the sites studied. About 54 percent of all households in this area had incomes greater than \$75,000 in 2009. For many commuters from the area, ferry service would provide a moderately faster trip to Lower Manhattan, with typical time savings of about 6 minutes door-to-door; and similar savings for many commuters to Midtown as well.

East 71st St.

An East 71st Street site would serve one of the largest concentrations of commuters of any of the sites studied, with 10,760 commuters living within one-third of a mile from the proposed site at 71st Street. About 50 percent of all households in this area had incomes greater than \$75,000 in 2009. Ferry service could provide a substantially faster trip to Lower Manhattan, with typical time savings of about 10 minutes door-to-door; but would provide no time savings for most commuters to Midtown. An East 71st Street landing could also serve commuters and visitors to hospitals and other institutions in the areas, including New York Hospital, Memorial Sloan-Kettering Cancer Center, the Hospital for Special Surgery, Rockefeller University and Weill-Cornell Medical College.

Roosevelt Island

In 2008, 3,254 commuters to Midtown, Midtown South and Lower Manhattan lived on Roosevelt Island. In 2008, 51 percent of the Island's households had incomes greater than \$75,000. For many commuters to Lower Manhattan, ferry service from Roosevelt Island would provide a significant time saving relative to commuting by subway, with door-to-door travel times roughly 10 to 13 minutes faster than commuting by subway. For Island residents who work in east Midtown, ferry and subway commuting times would be roughly comparable; for most residents who work in west Midtown, however, commuting by ferry would typically take about 14 minutes longer than commuting by subway.

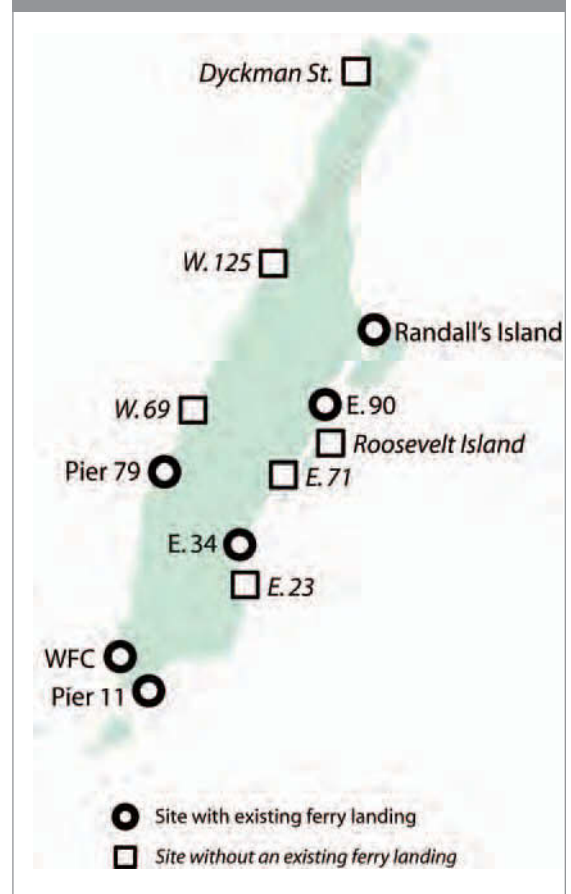
East 34th Street

The East 34th Street landing would primarily serve commuters to Midtown and Midtown South, including employees of the health care institutions along First Avenue. However, the landing could also serve commuters from the surrounding area to Lower Manhattan. The number of commuters living within one-third of a mile from the proposed landing site is relatively small - only 756. About 54 percent of all households in this area had incomes greater than \$75,000. (More commuters, however, live just outside this radius; an additional 2,497 commuters to lower Manhattan live between one-third and one-half mile from the site.) For many commuters who live within a third of a mile from the landing, ferry service would provide a moderately faster trip to Lower Manhattan, with typical time savings of about 6 minutes door-to-door.

East 23rd Street

An East 23rd Street landing would serve a substantial number of commuters, with 6,757 commuters to Midtown and Lower Manhattan living with one-third of a mile from the proposed landing site. About 48 percent of all households in this area had incomes greater than \$75,000. For many commuters from the area, ferry service would provide a significantly faster trip to Lower Manhattan, with typical time savings of about 11 minutes door-to-door. The proposed landing could also serve some commuters from other locations who work at the health care institutions along First Avenue.

Figure 6: Map of Manhattan sites



Pier 11

While the Pier 11 landing primarily serves commuters to Lower Manhattan, it could also serve commuters from Lower Manhattan to Midtown; 3,820 commuters to Midtown live within one-third of a mile from the landing, and the working population of the area has been growing. About 59 percent of all households in this area had incomes greater than \$75,000. Due to the density of transit connections in Lower Manhattan, however, mass transit service would for most commuters to Midtown be a faster option than ferry service.

Randall's Island

While there are no residential areas within walking distance from the site, the existing Randall's Island ferry landing located on the west side of the island, adjoining the Randall's Island Event Area - could potentially serve commuters as a site for park-and-sail service. While there is no parking immediately adjacent to the landing, the Island's major lots are within a few minutes' walk. In 2009, 5,281 commuters to Midtown, Midtown South and Lower Manhattan lived within a 5-minute drive from the ferry landing. This neighborhood, however, is unlikely to generate significant demand for park-and-sail service.

Park-and-sail service at this site may have greater potential for diverting auto commuters from the north who would otherwise be driving into Manhattan via the RFK Bridge. According to NYS DOT traffic counts from the fall of 2009, about 3,500 vehicles per morning peak hour pass a point on the Deegan Expressway just before the Randall's Island turnoff. However, the need to use the RFK Bridge to access the site (thus requiring payment of a \$5.50 cash toll) may significantly reduce the site's potential for diverting commuters from the highway. For most events on Randall's Island, parking is \$10.00.

While its potential as a commuter site may be limited, Randall's Island's role as a recreational site could generate increased demand for ferry service. The island's existing landing is already used for special events; and expanded ferry service could potentially enhance the value of Randall's Island as a recreational resource.

Dyckman Street

In 2009, 2,229 commuters to Midtown, Midtown South and Lower Manhattan lived within a half-mile from the site of a proposed Dyckman Street ferry landing. About 19 percent of all households in the area had incomes greater than \$75,000 in 2009. Assuming an average ferry speed of 20 miles per hour, ferry service for most commuters to Lower Manhattan would provide a door-to-door trip roughly comparable in length (typically about 50 minutes) to commuting by subway. For commuters to Midtown, however, transit would provide a faster trip.

West 125th Street

In 2009, 5,220 commuters to Midtown, Midtown South and Lower Manhattan lived within a half-mile from the site of the West 125th Street ferry landing, with 1,245 living within one-third of a mile from the landing. About 19 percent of all households in the half-mile area had incomes greater than \$75,000 in 2009. Ferry service would for most commuters to Lower Manhattan provide a door-to-door trip slightly slower than commuting by subway. For most residents of the area who work in Midtown, however, commuting by ferry would typically take 10 to 15 minutes more than commuting by subway.

In the future, the development of Columbia's Manhattanville campus could create potential demand for ferry service to West 125th Street. During the next 20 years, the University estimates that about 6,000 new jobs will be created in Manhattanville - just a short walk from the West 125TH Street ferry landing.

West 69th Street

In 2009, 12,802 commuters to Midtown, Midtown South and Lower Manhattan lived within one-third of a mile from the site of the proposed West 69th Street ferry landing. (There is currently a recreational pier at this site, but no ferry landing.) About 59 percent of all households in this area had incomes greater than \$75,000. For some residents of the area who work in Lower Manhattan, commuting by ferry could provide a modest time saving when compared with commuting by subway. For commuters to Midtown, transit would still provide a substantially faster trip.

West 39th Street (Pier 79)

In 2008, 2,473 commuters to Lower Manhattan lived within a half mile from the site of the existing Pier 79 landing. About 40 percent of all households in this area had incomes greater than \$75,000 in 2008. For many commuters from the area, ferry service would provide a moderately faster trip to Lower Manhattan, with typical time savings of about 10 minutes door-to-door.

World Financial Center

In 2008, 3,824 commuters to Midtown and Midtown South lived within a half-mile from the World Financial Center ferry landing site. About 68 percent of all households in the area had incomes greater than \$75,000 in 2008. Assuming an average ferry speed of 20 miles per hour, transit would for most commuters to Midtown Manhattan provide a faster trip than a ferry.

1.3.2 BROOKLYN SITES

A map of the eleven existing and potential Brooklyn ferry landing sites is shown in Figure 7.

Fulton Ferry

In 2009, 3,853 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half a mile from the site of the existing Fulton Ferry landing. (This number is likely to grow during the next several years, with the projected development of more than 1,100 new housing units.) About 57 percent of all households in this area had incomes greater than \$75,000 in 2009. For many commuters from the area to Lower Manhattan, ferry service would provide a door-to-door trip roughly comparable to commuting by subway. For most residents of the area who work in Midtown, however, commuting by ferry would typically take 5 to 12 minutes longer than commuting by subway.

South Williamsburg

In 2009, 2,180 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of the existing South Williamsburg landing. (This number is likely to increase during the next several years, as a result of additional residential development in the area.) In 2009, about 40 percent of all households in this area had incomes greater than \$75,000. Commuters to east Midtown could also realize significant time savings. For those working in west Midtown, commuting by ferry would be comparable to or somewhat slower than commuting using transit. Commuters to Lower Manhattan would realize time savings of 6 to 10 minutes using a ferry rather than existing subway and bus connections.

North Williamsburg

In 2009, 2,117 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of the North Williamsburg landing (now under construction). The number of commuters from this area could increase substantially during the next several years, as a result of the potential development of more than 2,900 additional units in the area. In 2009, about 50 percent of all households in this area had incomes greater than \$75,000; this proportion is likely to increase in the future as a result of new residential development. For many commuters from this area to Lower Manhattan, ferry service would provide time savings relative to transit - typically 2 to 7 minutes. For most commuters to Midtown, however, ferry service would be 5 to 12 minutes slower than commuting by subway.

The North Williamsburg landing would serve an area that is not only a residential community but also a destination in itself, with retail, restaurants and cultural and entertainment venues that draw people from Manhattan and from other Brooklyn neighborhoods. When completed, the new Williamsburg-Greenpoint waterfront park could also be a source of off-peak ferry traffic.

Figure 7: Map of Brooklyn sites



Greenpoint

In 2009, 2,665 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Greenpoint landing. The number of commuters from this area could increase substantially in the future, as a result of the potential development of nearly 7,800 additional units in the area. In 2009, about 50 percent of all households in this area had incomes greater than \$75,000; as with the number of commuters to Manhattan, this proportion is likely to increase in the future as a result of new residential development in the area.

For commuters to Lower Manhattan, ferry service from Greenpoint would provide very substantial time savings relative to transit - typically on the order of 15 to 20 minutes. In both relative and absolute terms, the time savings from Greenpoint to Lower Manhattan are among the greatest for any of the sites studied. For most commuters to east Midtown, the ferry would, however, offer only marginal time savings - typically about 2 minutes. For those who work in west Midtown, commuting by ferry would take more time than using mass transit.

Atlantic Avenue

In 2009, 5,904 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Atlantic Avenue landing. The number of commuters to Manhattan living in the area could increase during the next years, due to the expected completion of about 1,000 new units of housing. In 2009, about 56 percent of all households in this area had incomes greater than \$75,000.

For commuters to Lower Manhattan, ferry service from Atlantic Avenue would provide moderate time savings relative to transit - typically on the order of 6 to 8 minutes. For commuters to east Midtown, the ferry would, however, offer commuting times that are comparable to - but in most cases not faster than - commuting by subway; and for those who work in west Midtown, commuting by ferry would take more time than using mass transit.

An Atlantic Avenue ferry landing would also provide access from Manhattan to the southern end of Brooklyn Bridge Park, which could in the future attract significant numbers of off-peak and weekend riders. The ferry landing at Atlantic Avenue's Pier 6 opened in June of 2010.

Red Hook

In 2009, 447 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the existing ferry landing at the foot of Van Brunt Street in Red Hook; another 202 lived outside this half-mile radius, but within a five minute drive. In 2009, 13 percent of all households in the half-mile area had incomes of more than \$75,000. While the existing Red Hook commuter market is very small, the reductions in commuting time that ferry service could offer are quite substantial - 30 to 35 minutes for Red Hook residents who commute to Lower Manhattan, and 10 to 20 minutes for those who commute to Midtown.

Ferry service could also provide access to a variety of destinations in Red Hook, including Fairway and other retailers, the local arts scene and the Red Hook recreational complex. Moreover, the dramatic improvement in Manhattan commuting times that ferry service would offer could greatly enhance the neighborhood's attractiveness to potential residents who work in Manhattan.

Brooklyn Army Terminal

In 2009, 2,907 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the existing ferry landing at the Brooklyn Army Terminal; another 4,818 lived outside this half-mile radius, but within a five minute drive. In 2009, 26 percent of all households in the half-mile area had incomes of more than \$75,000. BAT is one of only a few of the sites studied where parking is already available at the landing, and is free of charge. The site thus has the potential to draw "park and sail" commuters from the surrounding area, and to intercept auto commuters who now travel via the Gowanus Expressway. For residents of the half-mile area, however, the trip from BAT via ferry is relatively slow. For most of those commuting to Lower Manhattan, commuting by subway would be 5 to 8 minutes faster than commuting by ferry; and for those who work in Midtown, commuting by subway would be 18 to 22 minutes faster.

With 70 tenants and approximately 2,500 employees, the Brooklyn Army Terminal also has the potential to generate some traffic to the site. BioBAT - a facility for growing biotech companies on First Avenue that is managed by SUNY Downstate - is also nearby.

Bay Ridge

In 2009, 3,641 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed ferry landing (at an existing recreational pier) in Bay Ridge. Another 10,210 lived outside this half-mile radius, but within a five minute drive from the landing site; however, there is very little parking available near the site. In 2009, 39 percent of all households in the half-mile area had incomes of more than \$75,000. For many commuters from the half-mile area to Lower Manhattan, ferry service would be somewhat faster than express bus service, with typical time savings of 2 to 8 minutes door-to-door. For many residents of the area who commute to east Midtown, ferry service could provide modest time savings; but for those who work in west Midtown, express bus service would be faster.

Coney Island

In 2009, 718 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a potential ferry landing at Steeplechase Pier in Coney Island. Another 8,147 lived outside this half-mile radius, but within a five minute drive from the landing site; however, there is very little parking available near the site. In 2009, 9 percent of all households in the half-mile area had incomes of more than \$75,000. For some residents of the area who commute to Lower Manhattan and work within a few blocks from the landing at Pier 11, ferry service could save about 5 minutes relative to commuting by subway; for those who work elsewhere in Lower Manhattan, ferry service would generally provide no time savings. For those who work in Midtown, ferry service would take 10 to 20 minutes longer than commuting by subway.

Especially as plans for redevelopment of the area are implemented, ferries could potentially serve a growing number of off-peak and weekend visitors to Coney Island. NYCEDC is currently conducting a study to evaluate in further detail the feasibility of ferry services to Coney Island.

Sheepshead Bay

In 2009, 1,538 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed ferry landing in Sheepshead Bay. Another 3,497 lived outside this half-mile radius, but within a five minute drive from the landing site. In 2009, 39 percent of all households in the half-mile area had incomes of more than \$75,000. While Sheepshead Bay may have some potential as a park-and-sail market, parking along Emmons avenue is limited.

For most commuters to Lower Manhattan, ferry service would provide a slight time savings relative to transit - about 3 minutes on a trip of more than an hour - but would allow commuters to avoid multiple transfers. For most residents of the area who work in Midtown, commuting by ferry would take 10 to 20 minutes longer than commuting by subway.

While it is primarily a residential area, ferry service to Sheepshead Bay may also have some potential to attract off-peak and weekend visitors.

Floyd Bennett Field

Unlike most of the sites studied, a proposed Floyd Bennett Field ferry landing would function exclusively as a park-and-sail site. In 2009, 726 commuters to Midtown, Midtown South and Lower Manhattan lived within a five-minute drive from the site of the proposed ferry landing. In 2009, 40 percent of all households in this area had incomes greater than \$75,000. For those who work in Lower Manhattan, ferry service would be comparable in time to commuting by auto, and would provide a somewhat faster trip than mass transit - typically saving about 6 to 8 minutes from a trip that takes more than an hour. For those who work in east Midtown, commuting times by ferry and by transit would be roughly equal; for those who work in west Midtown, commuting by ferry would take somewhat longer - typically about 5 minutes more than commuting by transit. Commuting to Midtown by ferry would take 10 to 15 minutes longer than commuting by automobile - but would cost substantially less.

1.3.3 QUEENS SITES

A map of the six existing and potential Queens ferry landing sites is shown in Figure 8.

Rockaway

While Rockaway has an existing ferry landing at Riis Landing (maintained by the National Park Service), the number of commuters to Midtown, Midtown South and Lower Manhattan who live within a half-mile radius of the landing is small, totaling only 66 as of 2008. Another 705 commuters to these Manhattan business districts live within a five-minute drive from the landing site; “park and sail” customers can use parking areas, located near the landing, that serve visitors to Jacob Riis Park. In 2008, 42 percent of all households in this area had incomes greater than \$75,000.

Until the end of June, 2010, New York Water Taxi operated a City Council-subsidized pilot service from Rockaway to Lower Manhattan, with two scheduled departures from Riis Landing to Pier 11 during the morning peak and two return trips in the evening. The service was later changed to one morning departure and one evening departure. For most commuters to Lower Manhattan, ferry service offers commuting times comparable to those available by transit, with a slight advantage for those who work within a few blocks from Pier 11 and a slight disadvantage for those who work further west. For most residents of the area who work in Midtown, commuting by ferry would typically take 8 to 10 minutes longer than commuting by subway.

During the summer months, ferry service between Manhattan and Riis Landing could also attract visitors to Riis Park and other Rockaway beaches. On average, the summer weekend service on the Rockaway ferry attracted more riders per trip than the commuter service during 2008/9.

Queens West

In 2008, 1,911 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the Queens West ferry landing. In 2008, 50 percent of all households in this area had incomes greater than \$75,000. For most commuters to Lower Manhattan, ferry service would provide a modest time savings relative to transit - about 3 to 7 minutes on a trip that typically would take about 31 minutes by subway. For most residents of the area who work in Midtown, however, commuting by ferry would take 12 to 14 minutes longer than commuting by subway.

During the next several years, current and anticipated new development within the half-mile area could significantly increase the number of residents commuting to Manhattan - and thus the size of the potential market for ferry service. Depending on market conditions, about 1,000 new units could be completed by 2014.

Astoria

In 2009, 4,441 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Astoria ferry landing. In 2008, 26 percent of all households in this area had incomes greater than \$75,000. For residents of the area who work in Lower Manhattan, ferry service could provide significant time savings, with door-to-door commuting times typically 16 to 22 minutes faster than the time required to commute by subway. For most area residents who work in Midtown, commuting by ferry would be roughly equal in time to commuting by subway.

Figure 8: Queens landing sites



Citi Field

Very few commuters live within walking distance from the existing ferry landing near Citi Field. In 2008, 174 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the landing site. However, because of its proximity to the stadium's parking lots, the Citi Field landing may have some potential for park-and-sail service on non-game days. In 2008, 7,770 commuters Midtown South and Lower Manhattan lived within a four-minute drive from the landing site. The site also has some potential to divert some longer distance auto commuters (that is, those coming from eastern Queens or Long Island).

For residents of the surrounding area who work on the east side of Lower Manhattan, commuting times by ferry and by auto would be roughly equal. For commuters to Lower Manhattan, ferry service could provide a time advantage relative to transit, with door-to-door commuting times about 6 minutes faster than the time required to commute by subway. For those who work farther west in lower Manhattan, ferry and subway commuting time would be roughly equal. For most of those who work in Midtown, however, commuting by ferry would be significantly slower than either auto or transit, with a time disadvantage typically in the range of 13 to 16 minutes relative to subway, and 20 to 25 minutes relative to auto.

In addition to commuter park-and-sail traffic, the Citi Field landing could potentially serve off-peak and weekend traffic to the stadium and to the Tennis Center. Longer-term, the redevelopment of Willets Point could also increase the number of potential ferry riders in the area.

In addition to sites that could serve as points of origin for commuter ferry services, we also prepared site profiles for LaGuardia Airport and John F. Kennedy International Airport. Neither of the two airports would provide a suitable location for Manhattan-oriented commuter ferry service. Ferry service might, however, provide an alternative to ground transportation for air passengers traveling to and from the airports, and possibly for some employees as well.

John F Kennedy International Airport

In 2009, an average of approximately 100,000 air passengers each day travel to or from JFK International Airport (not including passengers who transfer at JFK from one flight to another). Based on passenger surveys, we estimate that of this total, about 37,000 were traveling to or from Manhattan, with about 27,000 traveling to or from the area between 14th and 96th Streets, and about 5,800 to or from the area below 14th Street.

Assuming that the airport would be served by a new ferry landing in Bergen Basin, and using the same method for analyzing time competitiveness that was used in our analysis of commuter sites, it appears that service to and from Midtown and Lower Manhattan by ferry would be significantly slower than service by any of the competing modes, including taxi or car service and the combination of either subway or LIRR and AirTrain. For those traveling by taxi or car, the trip to Midtown would typically take less than an hour; for those using the AirTrain and LIRR, just over an hour. The trip by ferry from Midtown, however, would take between an hour and 45 minutes to two hours after taking into account the time to reach the Midtown waterfront and to connect to a shuttle in Queens. The trip by ferry to Lower Manhattan would take about an hour and twenty minutes.

LaGuardia Airport

In 2009, an average of more than 60,000 air passengers each day traveled between LaGuardia Airport and origins or destinations in New York metropolitan area. Of this total, about 29,000 were traveling to or from Manhattan, with about 21,000 traveling to or from the area between 14th and 96th Streets, and about 4,000 to or from the area below 14th Street.

There is an existing ferry landing at the Marine Air Terminal at LaGuardia, which was in the past used for regularly-scheduled ferry service to the airport. For passengers traveling to or from east Midtown, the total trip time via ferry would be roughly comparable to the trip via a combination of bus and subway - about 50 to 55 minutes - but both these modes would take roughly twice as long as making the same trip by taxi. For passengers going to or from west Midtown, traveling by ferry would take about 10 minutes longer than traveling by bus and subway - but would also be much slower than traveling by taxi.

For passengers traveling to or from Lower Manhattan, ferry service would typically be 15 to 20 minutes faster than a trip by bus and subway - but about 15 minutes slower than traveling by taxi.

1.3.4 BRONX SITES

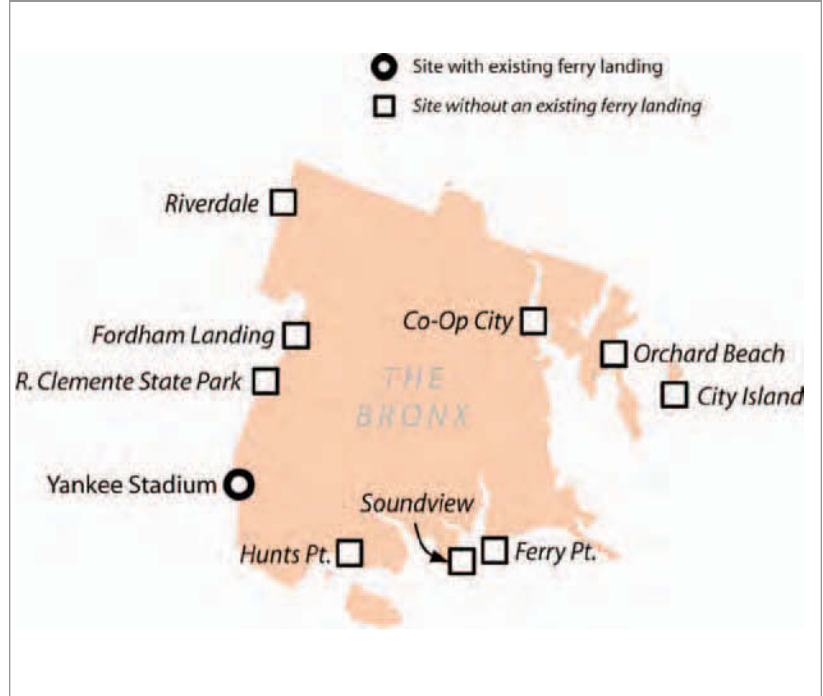
Figure 9 shows the ten potential and existing ferry landing sites in the Bronx.

Soundview

Ferry service from a proposed Soundview landing could offer commuters to Lower Manhattan substantial time savings relative to commuting by bus and subway - cutting 30 to 35 minutes from a trip that might take 85 to 90 minutes. Time savings for commuters to Midtown would be smaller, but still substantial - typically about 15 minutes. However, the number of commuters to Midtown, Midtown South and Lower Manhattan living within one-half mile from the proposed landing site is relatively small - 1,355 in 2008. In 2008, 33 percent of all households in this area had incomes greater than \$75,000.

Park-and-sail service could expand the potential market for ferry service from Soundview. In 2008, 4,064 commuters to Midtown, Midtown South and Lower Manhattan lived within a seven-minute drive from the proposed landing site.

Figure 9: Bronx ferry landing sites



Hunts Point

Ferry service from a proposed landing near Barretto Point Park could significantly reduce commuting times from Hunts Point to Lower Manhattan, providing those who live within a half-mile from the landing site with typical time savings of 22 to 26 minutes compared to commuting by subway. For those who work in Midtown, time savings would be more modest - typically in the range of 6 to 10 minutes. However, the number of commuters to Midtown, Midtown South and Lower Manhattan living within one-half mile from the proposed landing site is relatively small - 344 in 2008. In 2008, 7 percent of all households in this area had incomes greater than \$75,000. Use of the proposed landing for park-and-sail services could increase the size of potential market; in 2008, 3,221 commuters to Midtown, Midtown South and Lower Manhattan lived within a five-minute drive from the proposed landing site.

Ferry Point Park

A proposed Ferry Point Park landing would function exclusively as a park-and-sail site. In 2009, 626 commuters to Midtown, Midtown South and Lower Manhattan lived within a four minute drive from the site of the proposed ferry landing. In 2009, 38 percent of all households in this area had incomes greater than \$75,000. Ferry service from this site would also have some potential to attract auto commuters from a wider area who now commute via I-95 and the Bruckner Expressway.

When compared with commuting by bus and subway, ferry service from a proposed landing at Ferry Point Park could significantly reduce commuting times from the surrounding area to Lower Manhattan, providing typical time savings of 30 to 35 minutes. For those who work in Midtown, time savings would also be substantial - typically in the range of 22 to 28 minutes. Ferry service to Lower Manhattan would be roughly equivalent in time to commuting by auto.

Co-op City

In 2009, 3,832 commuters to Midtown, Midtown South and Lower Manhattan lived within a one-half mile radius from the site of a proposed Co-op City ferry landing. In 2009, 29 percent of all households in this area had incomes greater than \$75,000. For residents of the area who work in Lower Manhattan, commuting by ferry would be roughly equivalent in time to commuting by express bus. For most area residents who work in Midtown, commuting by ferry would take 16 to 21 minutes longer than commuting by express bus.

City Island

When compared with commuting by bus and subway, ferry service from the existing landing on City Island (now used for ferry service to Hart Island) could significantly reduce commuting time to Lower Manhattan, providing those who live within a half-mile from the landing site with typical time savings of 14 to 19 minutes. For those who work in Midtown, time savings would be more modest - typically in the range of 2 to 3 minutes. However, the number of commuters to Midtown, Midtown South and Lower Manhattan living within one-half mile from the landing site is relatively small - 412 in 2009. In 2009, 49 percent of all households in this area had incomes greater than \$75,000.

City Island is not only a residential community but a destination as well, with visitors attracted by opportunities for boating, fishing and by local restaurants. Ferry service to City Island might generate additional off-peak and week-end traffic.

Orchard Beach

A proposed Orchard Beach ferry landing would function exclusively as a park-and-sail site. In 2009, 8,046 commuters to Midtown, Midtown South and Lower Manhattan lived within a ten-minute drive from the site of the proposed ferry landing. In 2009, 36 percent of all households in this area had incomes greater than \$75,000. Ferry service from this site would also have some potential to attract auto commuters from a wider area who now commute to Manhattan via I-95 and the FDR.

For residents of the ten-minute¹² driving area who work in Lower Manhattan, ferry service from Orchard Beach could provide time savings of 11 to 14 minutes, as compared to commuting by subway. For those who work in Midtown, ferry service would provide only marginal time savings relative to commuting by subway. Commuting by ferry would, however, be slower than commuting by auto -- by about 7 to 10 minutes for those who work in Lower Manhattan, and by 20 to 25 minutes for those who work in Midtown. The cost of commuting by ferry would, however, be significantly lower than the cost of commuting by auto.

During the summer, Orchard Beach is also a popular destination, attracting an average of 19,000 visitors per day. Ferry service to Orchard Beach would thus have some potential to generate off-peak and weekend traffic during the summer.

Yankee Stadium

In 2008, 6,917 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of the existing Yankee Stadium ferry landing. In 2008, 12 percent of all households in this area had incomes greater than \$75,000. Another 2,121 commuters to Midtown, Midtown South and Lower Manhattan lived outside this half-mile radius, but within a four-minute drive from the landing site.

Yankee Stadium is one of relatively few sites studied where parking is already available near the landing. The site thus has the potential to draw "park and sail" commuters from the surrounding area, and to intercept auto commuters who now travel to Manhattan via the Major Deegan Expressway. Commuter parking would not be available on game and event days, however.

For most residents of the half-mile area who work in Lower Manhattan, ferry service from Yankee Stadium would be comparable to or slightly slower than commuting by subway. For those who work in Midtown, ferry service would be 15 to 23 minutes slower than commuting by subway. Commuting by ferry would also be slower than commuting by auto - by about 10 to 15 minutes for those who work in Lower Manhattan, and by 24 to 29 minutes for those who work in Midtown. The cost of commuting by ferry would, however, be significantly lower than the cost of commuting by auto.

During the baseball season, New York Waterway provides game-day ferry service to Yankee Stadium; and Yankee games and other events at the Stadium will continue to generate ferry traffic. (In 2010, New York Water Taxi also launched a new game-day service to Yankee Stadium, sponsored by Delta Airlines. The service provides a free trip from Pier 11 to the Stadium; there is, however, no post-game return trip service.). The ferry landing is accessible only via an at-grade pedestrian crossing of the Oak Point rail link.

¹²Because of Orchard Beach's relative remoteness, a 10-minute drive time was used to define the site's driving market area.

Clemente State Park

In 2009, 2,712 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Clemente State Park ferry landing. In 2009, 13 percent of all households in this area had incomes greater than \$75,000. For residents of the area who work in Lower Manhattan, ferry service could provide some time savings, with door-to-door commuting times typically 7 to 11 minutes faster than the time required to commute by subway. For most area residents who work in Midtown, however, commuting by ferry would be roughly 15 to 17 minutes slower than commuting by subway.

Fordham Landing

In 2009, 1,691 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Fordham Landing ferry landing. In 2009, 14 percent of all households in this area had incomes greater than \$75,000. Another 840 commuters to Midtown, Midtown South and Lower Manhattan lived outside the half-mile area, but within a four-minute drive from the landing site.

For residents of the area who work in Lower Manhattan, ferry service could provide some time savings, with door-to-door commuting times typically 7 to 11 minutes faster than the time required to commute by subway. For most area residents who work in Midtown, however, commuting by ferry would be roughly 15 to 17 minutes slower than commuting by subway.

Riverdale

In 2008, 2,899 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Riverdale ferry landing. In 2008, 52 percent of all households in this area had incomes greater than \$75,000. Another 959 commuters to Midtown, Midtown South and Lower Manhattan lived outside the half-mile area, but within the area served by Metro North's Rail Link bus service.

For residents of the half-mile area who work in Lower Manhattan, ferry service could provide some time savings, with door-to-door commuting times typically 10 to 14 minutes faster than the time required to commute by Metro North and subway. For most area residents who work in Midtown, however, commuting by ferry would typically be 17 to 18 minutes slower than commuting by Metro North.

1.3.5 STATEN ISLAND SITES

The map in Figure 10 shows the four existing and proposed ferry landings in Staten Island we examined as part of this study.

Tottenville

In 2009, 367 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Tottenville ferry landing. In 2009, 48 percent of all households in this area had incomes greater than \$75,000. Park-and-sail capacity could potentially increase the market for ferry service from Tottenville to Manhattan; in addition to those who lived within the half-mile area, 961 commuters to Midtown, Midtown South and Lower Manhattan lived within a five-minute drive from the proposed landing site. However, there is currently no parking available near the site of the proposed landing; and there appears to be little space in which parking might be developed.

For residents of the half-mile area who work in Lower Manhattan, ferry service could potentially provide a modest time saving, with door-to-door commuting times typically 2 to 5 minutes faster than the time required to commute by express bus. For most area residents who work in Midtown, however, commuting by ferry would typically be 2 to 6 minutes slower than commuting by express bus.

Figure 10: Map of Staten Island landing sites



Camp St. Edward

In 2008, 265 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Camp St. Edward ferry landing (an existing recreational pier off the foot of Sharon Avenue). Another 1,144 lived outside the half-mile area, but within a five-minute drive from the proposed landing site. In 2009, 57 percent of all households in the half-mile area had incomes greater than \$75,000.

There is currently a lot with 32 parking spaces at the existing pier. If ferry service from Camp St. Edward were expected to handle a significant number of park-and-sail commuters, additional parking would be needed.

For residents of the half-mile area who work within a few blocks from Pier 11, ferry service to Lower Manhattan could potentially provide a modest time saving, with door-to-door commuting times typically about 8 minutes faster than the time required to commute by express bus. For those who work further west in Lower Manhattan, commuting by ferry might be slightly slower than commuting by express bus. For most area residents who work in Midtown, commuting by ferry would typically be 6 to 7 minutes faster than commuting by express bus.

In the past, a ferry service from South Amboy, New Jersey has passed by Camp St. Edward on its way to Pier 11.

Stapleton

In 2009, 585 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of a proposed Stapleton ferry landing. In 2009, 33 percent of all households in the half-mile area had incomes greater than \$75,000. Another 5,627 commuters to Midtown, Midtown South and Lower Manhattan lived within a five-minute drive from the proposed landing site, suggesting that there may be some potential for park-and-sail service from the site.

For residents of the half-mile area who work in Lower Manhattan, ferry service from Stapleton could potentially provide a significant time savings, with door-to-door commuting times typically about 15 to 22 minutes faster than the time required to commute by express bus. For most area residents who work in Midtown, commuting by ferry would typically be 19 to 23 minutes faster than commuting by express bus.

The number of commuters living within walking distance from the proposed site could increase somewhat in the future, as a result of the planned redevelopment of the Stapleton waterfront.

Snug Harbor

In 2009, 385 commuters to Midtown, Midtown South and Lower Manhattan lived within one-half mile from the site of the ferry landing at Snug Harbor. In 2009, 31 percent of all households in the half-mile area had incomes greater than \$75,000. Another 5,422 commuters to Midtown, Midtown South and Lower Manhattan lived within a five-minute drive from the proposed landing site. This suggests that there may be a potential market for park-and-sail service from Snug Harbor. There is currently no parking at the landing site.

For residents of the area who work in Lower Manhattan, ferry service from Snug Harbor could potentially provide a significant time savings, with door-to-door commuting times typically about 18 to 26 minutes faster than the time required to travel by bus to St. George and Staten Island ferry to Whitehall. For most area residents who work in Midtown, commuting by ferry would typically be 19 to 24 minutes faster than traveling to Midtown by a combination of bus, Staten Island ferry and subway.

Direct ferry service from Manhattan to Snug Harbor might also enhance the attractiveness of Snug Harbor Cultural Center and Staten Island Botanical Garden as a destination; the Center currently draws about 250,000 visitors annually. Conversely, the Center might also be a potential generator of off-peak and weekend ferry traffic.

1.4 SITE PROFILE PRIORITIZATION CRITERIA

In order to prioritize ferry landing sites for commuter ferry service, it was necessary to identify the criteria and weighting used to evaluate each site. This section describes that process.

1.4.1 CHARACTERISTICS OF THE REGION'S PRIVATE FERRY COMMUTERS

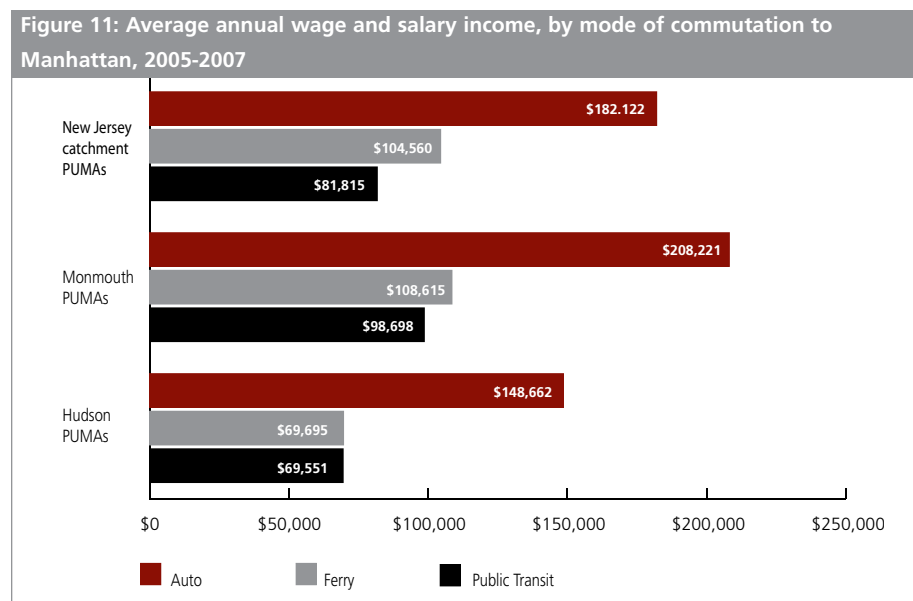
Using data from the U.S. Census Bureau's American Community Survey 2005-2007, a profile of the users of private ferry services from New Jersey to Manhattan was developed.¹³

12 PUMAs (Public Use Microdata Areas - standard geographies used by the U.S. Census Bureau) were defined, located in five New Jersey counties - Hudson, Monmouth, Bergen, Union, and Morris - as the ferry catchment area for Manhattan commuters.¹⁴ Together these 12 PUMAs account for more than 93 percent of all New Jersey residents who indicated that their primary mode of transportation was a ferry in the 2005-2007 American Community Survey. The universe of the analysis was further refined by only considering commuters to Manhattan.

Based on the Census Bureau's 3-year estimate, about 6.6 percent of all commuters to Manhattan living in the catchment area defined a ferry as their primary mode of transportation.

There is wide variability in the share of ferry commuters to Manhattan by the county of the PUMAs of analysis. For example, 16 percent of the commuters to Manhattan from the Monmouth County PUMAs of analysis used a ferry; 7 percent of the commuters to Manhattan from the Hudson County PUMAs of analysis used a ferry; and 3 percent of the commuters from the Bergen County PUMAs used a ferry.

On average, ferry commuters to Manhattan from the ferry catchment area have high wage and salary incomes. The average annual earnings for all ferry commuters in the New Jersey ferry catchment area were \$182,100 during the 3-year survey period. By comparison, the average wage and salary income for all public transit commuters (using subway, bus, railroad, etc.) in the area was \$81,800 and the average wage and salary income for all auto commuters in the area was \$104,600.



Source: U.S. Census American Community Survey 2005-2007

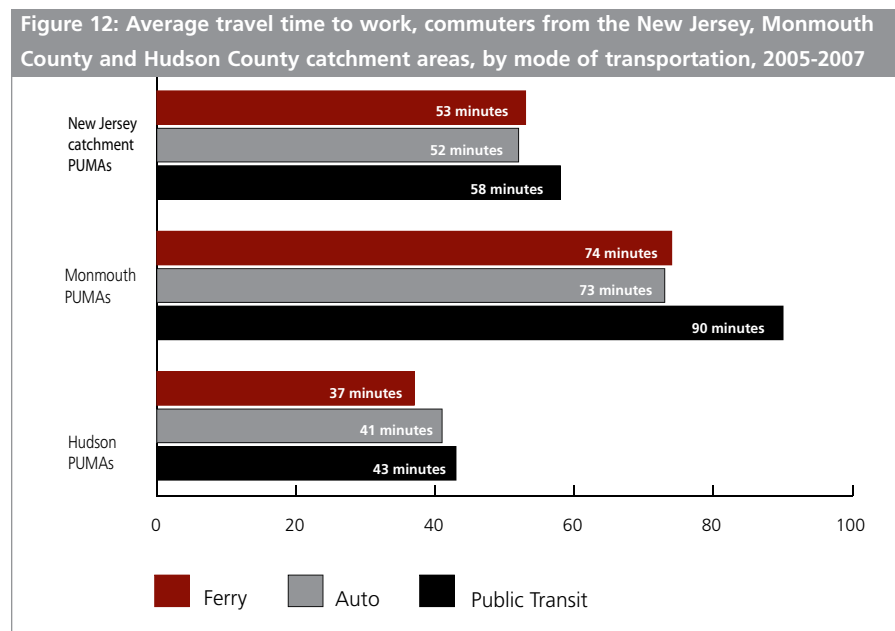
¹³New Jersey riders were profiled because - aside from the free Staten Island ferry - ridership on ferries within the five boroughs of New York is too small to draw broad conclusions.

¹⁴The PUMAs used in this analysis were 601, 602, 701 and 702 in Hudson County; 1103, 1104, and 1105 in Monmouth County; 301, 303, and 305 in Bergen County; 901 in Union County; and 1504 in Morris County.

On average, New Jersey ferry commuters to Manhattan have travel times of about the same duration as commuters using other modes of transportation to commute to Manhattan from the ferry catchment area. The average ferry commute among ferry commuters in the New Jersey catchment area was 53 minutes between 2005 and 2007. By comparison, the average public transit commute (by bus, subway, or railroad) was 58 minutes, and the average car commute (whether as a single driver or as a passenger in a car pool) was 52 minutes.

Commuters to Manhattan from some New Jersey counties saw much greater differences in commute times via ferry than other means. For example, the average ferry commute from Monmouth County to Manhattan was 74 minutes, compared with the average commute via public transit of 90 minutes and the average car commute of 73 minutes.

The average ferry commute to Manhattan from Hudson County was 37 minutes. By comparison, the average car commute was 41 minutes and the average public transit commute was 43 minutes.



Source: U.S. Census American Community Survey 2005-2007

Based on this analysis, two factors are highly correlated with greater ferry ridership: income and time savings. Average incomes among ferry riders from Monmouth County to Manhattan are more than double the incomes of transit users, and nearly double the average incomes of auto commuters. And ferry riders from Monmouth County saved, on average, 16 minutes over transit users. (Monmouth County ferry users' trips were about the same length as auto commuters'.)

Table 1 shows the average one-way fare (after monthly discounting) of a trip from starting points in New Jersey to destinations in Manhattan via New Jersey Transit and nearby ferry services. Prices are as of the spring of 2010.

Table 1: Discounted one-way fare from Monmouth and Hudson County, ferry and transit (as of spring 2010)		
Starting point	Mode	One-way fare (after discounts)
Hazlet Station, Monmouth County	NJ Transit	\$10.00
Highlands, Monmouth County	Seastreak Ferry	\$15.63
Hoboken, Hudson County	NJ Transit	\$3.48
Hoboken, Hudson County	NY Waterway Ferry	\$5.35

1.4.2 SITE PRIORITIZATION PROCESS

Based on the data collected on the region's private ferry commuters, a set of demand criteria on which to evaluate each site was developed.

The criteria reflect the ferry commuter profile developed above, focusing on ability to pay and time savings, but also take into account policy objectives such as the potential for traffic congestion relief and economic development.

The demand criteria we identified are shown in Table 2

Table 2: Ferry site prioritization criteria	
Criterion	Data used
Size of Lower and Midtown Manhattan commuter market ¹⁵	Journey-to-work data for the entire walk-on market to workplaces from the Battery to Canal Street and from 23rd Street to 59th Street. (For Manhattan sites, we used 1/3 of a mile from the ferry landing as the walk-on market, for all other sites 1/2 mile.) Journey-to-work data for 20 percent of the park-and-sail market to workplaces between the Battery to Canal Street and from 23rd Street to 59th Street.
Estimate of time savings - ferry vs. transit ¹⁶	Comparison of ferry vs. transit time to Lower and Midtown Manhattan
Estimate of time savings - ferry vs. auto ¹⁶	Comparison of ferry vs. drive time to Lower and Midtown Manhattan
Estimate of cost savings vs. transit	Comparison of ferry vs. transit cost to Lower vs. Midtown Manhattan
Estimate of cost savings vs. auto	Comparison of ferry vs. auto cost to Lower vs. Midtown Manhattan
Potential for growth in the commuter market as a result of new waterfront development ¹⁷	Number of new residential units that could be developed as-of-right (or are under development) in walk-on market
% of local market with household income greater than \$75,000 ¹⁸	Demographic data for the walk-on market
Congestion relief ¹⁸	The total number of auto commuters to Manhattan from the market area

Each commuter ferry site was ranked on the basis of the criteria outlined in Table 2 and applied weights to each one.

The highest weight was assigned to the size of the Manhattan commuter market, reflecting the site's ability to draw enough passengers to a ferry service. Beyond the size of the commuter market, time and cost savings were assigned a relatively high weight. As an economic development driver (and determinant of growth in the Manhattan commuter market), new development was assigned a relatively high weight.

Based on the household income data from New Jersey above - and based on the average household income of express bus commuters in northeastern Bronx and southern Staten Island - the share of households with incomes greater than \$75,000 in our weighting were incorporated.

¹⁵Sources: U.S. Census Bureau Transportation Planning Package and DemographicsNow

¹⁶Sources: Google Maps for transit and auto timing, and Appleseed estimate of ferry timing based on distance

¹⁷Sources: NYC Department of City Planning, NYCEDC, news reports

¹⁸Source: DemographicsNow

The weights were assigned as shown in Table 3

Table 3: Weights assigned to each criterion	
Criterion	Weight
Number of Manhattan commuters	20%
Time savings vs. transit	20%
Time savings - ferry vs. auto	15%
Cost savings vs. transit	10%
Cost savings vs. auto	10%
New Development	10%
Percent of households with household income greater than \$75,000	10%
Congestion relief	5%

In order to determine market demand, each commuter ferry site was evaluated on the basis of the weighted criteria outlined in Table 3 and ranked based on the outcome. The results of prioritization based on demand factors is shown in Table 4.

Table 4: Site prioritization based on demand factors

Borough	Landing	Demand Score
Manhattan	W. 69th Street	30.85
Manhattan	E. 23rd Street	27.40
Manhattan	E. 90th Street	27.35
Manhattan	Roosevelt Island	27.00
Brooklyn	Atlantic Avenue	26.75
Manhattan	E. 34th Street	24.80
Manhattan	E. 71st Street	24.40
Brooklyn	Greenpoint	24.30
Manhattan	E. 62nd Street	24.15
Bronx	Riverdale	23.63
Brooklyn	Fulton Ferry	23.45
Staten Island	Snug Harbor	23.15
Manhattan	Pier 11	23.00
Staten Island	Stapleton	22.55
Brooklyn	South Williamsburg	22.45
Brooklyn	North Williamsburg	22.40
Queens	Queens West	22.20
Brooklyn	Bay Ridge (69th Street Pier)	22.18
Bronx	Soundview	22.13
Staten Island	Tottenville	21.90
Bronx	Fordham Landing	21.80
Manhattan	World Financial Center	21.20
Queens	Astoria	21.05
Staten Island	Camp St Edward	20.93
Bronx	Ferry Point Park	19.53
Bronx	Clemente State Park	19.45
Manhattan	W. 125th Street	18.90
Manhattan	Pier 79 (W. 38th Street)	18.90
Bronx	Orchard Beach	18.73
Brooklyn	Coney Island	18.65
Bronx	City Island	18.48
Manhattan	Dyckman Street	17.88
Queens	Citi Field	17.48
Bronx	Hunts Point	17.40
Bronx	Yankee Stadium	17.40
Brooklyn	Red Hook	17.38
Bronx	Co Op City	17.23
Queens	Rockaway	16.63
Brooklyn	Sheepshead Bay	16.53
Brooklyn	Brooklyn Army Terminal	16.28
Brooklyn	Floyd Bennett Field	15.43

The success of a ferry service is based not only on demand for the service but also on the cost of providing the service. The primary factor in determining the relative cost of serving two different sites is the amount of time it takes to travel from one site to another or “running time.” Effectively, the longer the running time the higher the operating cost.

Another key component of successful ferry service is providing adequate service frequency. Known as a “headway,” this frequency is a product of running time and directly impacts ridership, as more frequent service is more convenient service.¹⁹ Routes that require longer running time have greater headways. Headways can be decreased by increasing the number of vessels serving a given route, but each additional vessel increases operating expenses. Ultimately, a site’s running time, the number of boats needed to maintain frequent headways and operating cost are linked.

In order to account for this, sites were assigned to groups based on the number of vessels required to maintain adequate service frequency (approximately 20-25 minute headways during rush hour) to the Central Business District. Sites closer to the Manhattan central business district could maintain these frequencies with two to three vessels (Site Group 1); moderate distance sites would require four vessels (Site Group 2), and; farther sites would require five or more vessels (Site Group 3). The three site groups - within which sites are ranked by their demand score - are shown in Table 5 on the following page.²⁰

¹⁹Headway is a term that refers to the amount of time between transit pickups. For example, a ferry service that picks up passengers at 8:00, 8:20, 8:40, and 9:00 can be said to have 20-minute headways between 8am and 9am.

²⁰This table contains only sites with the potential to generate demand for commuter ferry service. It does not include NYHarborWay sites without a residential component, and does not include the Kennedy and La Guardia airport sites.

Table 5: Site prioritization results

SITE GROUP I: 2 or 3 vessels	SITE GROUP II: 4 vessels	SITE GROUP III: 5 or more vessels
1. W. 69th Street	1. Snug Harbor	1. Riverdale
2. E. 23rd Street	2. Stapleton	2. Tottenville
3. E. 90th Street	3. Soundview	3. Fordham Landing
4. Roosevelt Island	4. Clemente State Park	4. Camp St Edward
5. Atlantic Avenue	5. Dyckman Street	5. Ferry Point Park
6. E. 34th Street	6. Hunts Point	6. Orchard Beach
7. E. 71st Street	7. Yankee Stadium	7. Coney Island
8. Greenpoint		8. City Island
9. E. 62nd Street		9. Citi Field
10. Fulton Ferry		10. Co Op City
11. Pier 11		11. Rockaway
12. South Williamsburg		12. Sheepshead Bay
13. North Williamsburg		13. Floyd Bennett Field
14. Queens West		
15. Bay Ridge (69th Street Pier)		
16. World Financial Center		
17. Astoria		
18. W. 125th Street		
19. Pier 79 (W. 38th Street)		
20. Red Hook		
21. Brooklyn Army Terminal		

1.5 CONCLUSION

In order to determine market demand, 41 commuter sites were evaluated using weighted criteria based on demographic and travel time data and on information gleaned from regional private ferry commuters. The criteria included number of commuters to the Central Business District, time and cost savings versus auto and transit, new and pipeline development, household income and congestion relief.

The sites were ranked by market demand and assigned to three service groups based on the number of vessels required to maintain 20-25 minute rush hour service frequency to the central business district (site group one: 2-3 vessels, site group two: 4 vessels, and site group three: 5 or more vessels).

In the next step of the analysis, market demand, running time and cost is used to evaluate and identify promising service corridors. These corridors are assessed in more detail in the next section, Part 2.

PART TWO:

SITE AND CORRIDOR FEASIBILITY ANALYSIS

This part of the report, explains how the corridors were defined for further analysis and describes the methodology used to develop preliminary estimates of ridership along a corridor. The results of the analysis are then presented.

In Part Four potential models for integrating recreational ferry service with commuter service will be discussed; along with the analysis of how the integration of NYHarborWay sites into commuter corridors could affect the annual operating subsidy needed to support ferry service on those corridors.

2.1 DEFINING CORRIDORS FOR FURTHER ANALYSIS

Three criteria were used to identify sites to include in corridors:

- Sites that scored well in the site prioritization process described in Part One.
- How well sites fit into a logical network - that is, how easily a site can be combined with other sites that score well in site prioritization to create a corridor that permits some aggregation of ridership, while at the same time providing relatively quick, efficient travel to the Manhattan central business districts.
- Whether a site can be added to a corridor and still maintain service frequencies. In order to maintain rush hour departures of less than 30 minutes apart, we need to add boats to the corridors as we add sites. This helps to preserve ridership, but increases the cost of providing the service. We therefore define corridors by the number of boats that can maintain those service levels:
 - Service Level 1 corridors are those that can maintain peak-period headways within 30 minutes with two or three boats;
 - Service Level 2 corridors are those that can maintain peak-period headways within 30 minutes with four boats;
 - Service Level 3 corridors are those that can maintain peak-period headways within 30 minutes with five boats;

The map in Figure 13 on the following page shows the size of the commuter market from each site to the Lower Manhattan central business district (defined here as the area below Canal Street). Larger circles indicate larger Lower Manhattan commuter markets. The map also shows the relative time competitiveness of ferry service from each site to Lower Manhattan compared with the best transit option.

Green circles indicate sites from which a ferry trip is 20 percent faster (or 15 minutes faster) than a transit trip. Yellow circles indicate sites from which a ferry trip to Lower Manhattan is between 5 percent slower and 20 percent faster than transit. Red circles indicate sites from which a ferry trip to Lower Manhattan is more than 5 percent slower than transit. Ferry trips are allowed to be 5 percent slower than transit trips and still be considered competitive as some commuters might still prefer a slightly slower ferry trip in exchange for the comfort of riding a ferry.

As the map on the following page shows, a trip from virtually every East River and Hudson River site is faster than transit to Lower Manhattan. Ferry trips to Lower Manhattan from Camp St. Edward and Tottenville are somewhat faster than transit; and ferry trips from northeast Bronx sites, including Orchard beach, City Island and Ferry Point Park are also time competitive.

Fulton Ferry, Brooklyn Army Terminal and Sheepshead Bay are the only sites from which a ferry trip to Lower Manhattan would be more than 5 percent slower than a transit trip.

As Figure 14 on the following page shows, the same analysis can be performed for commuters to Midtown Manhattan.

Figure 13: Map showing the relative market size and time competitiveness to Lower Manhattan

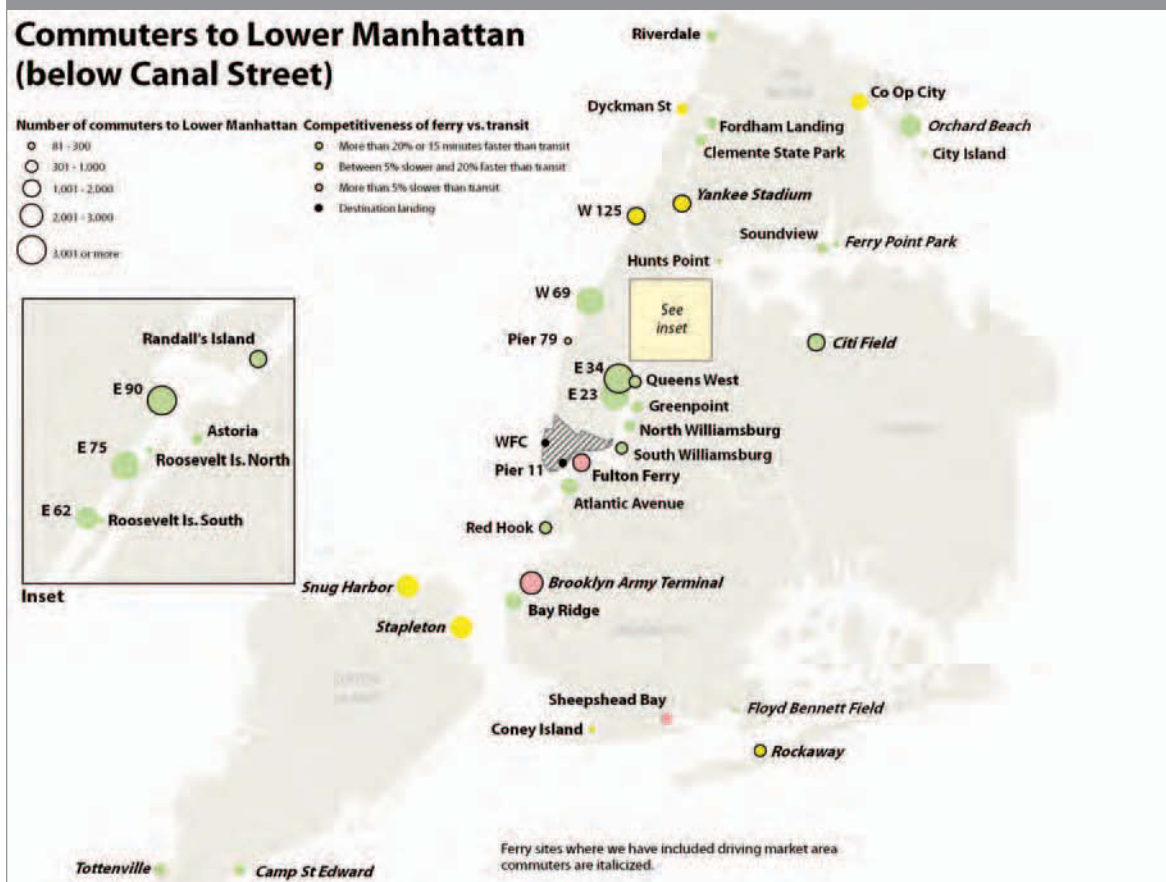
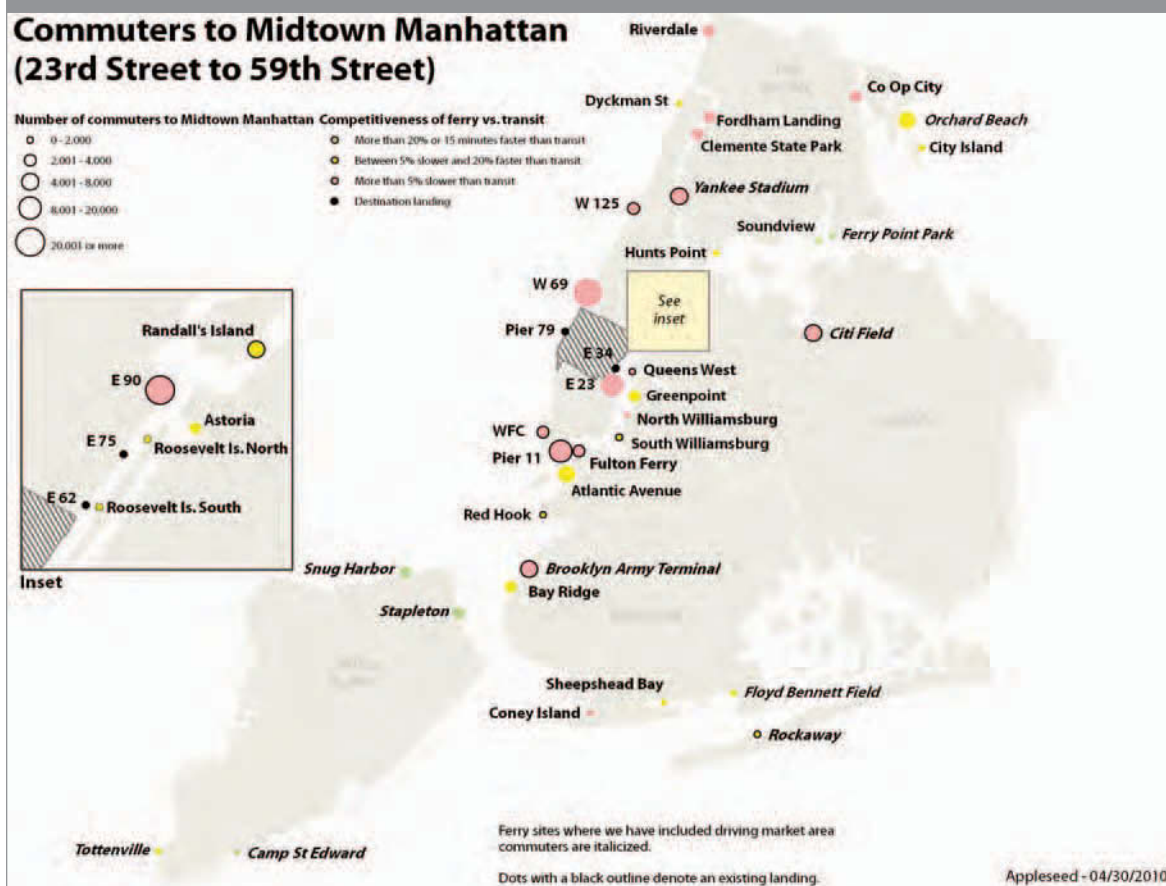


Figure 14: Map showing the relative market size and time competitiveness to Midtown Manhattan



In general, ferry trips to Midtown are less time competitive with transit than trips to Lower Manhattan. The reason is that the business districts in Lower Manhattan are located a fairly short walking distance from the Pier 11 and World Financial Center ferry landings. In Midtown, most ferry commuters would need to walk or ride a bus several blocks inland to get to an employment center.

Using the site prioritization results discussed in Part One, and logical corridors suggested by geography we identified four Service Level 1 Commuter Corridors for further analysis, as shown in Table 6 below. These corridors are composed of the sites that scored well in the demand criteria shown in Table 4, and can be included in a ferry service that maintains 25-minute headways with two or three-boats.

Table 6: Service level 1 corridors for feasibility analysis	
Corridor	Sites
East River - Brooklyn/Queens	East 34th Street
	Queens West
	Greenpoint
	North Williamsburg
	South Williamsburg
	Fulton Ferry
	Pier 11
East River - Manhattan	East 90th Street
	North Roosevelt Island
	East 71st Street (as an Upper East Side stop)
	East 34th Street
	East 23rd Street
	Pier 11
South Brooklyn	Bay Ridge
	Brooklyn Army Terminal
	Atlantic Avenue
	Pier 11
Hudson River	West 69th Street
	Pier 79 (West 38th Street)
	World Financial Center

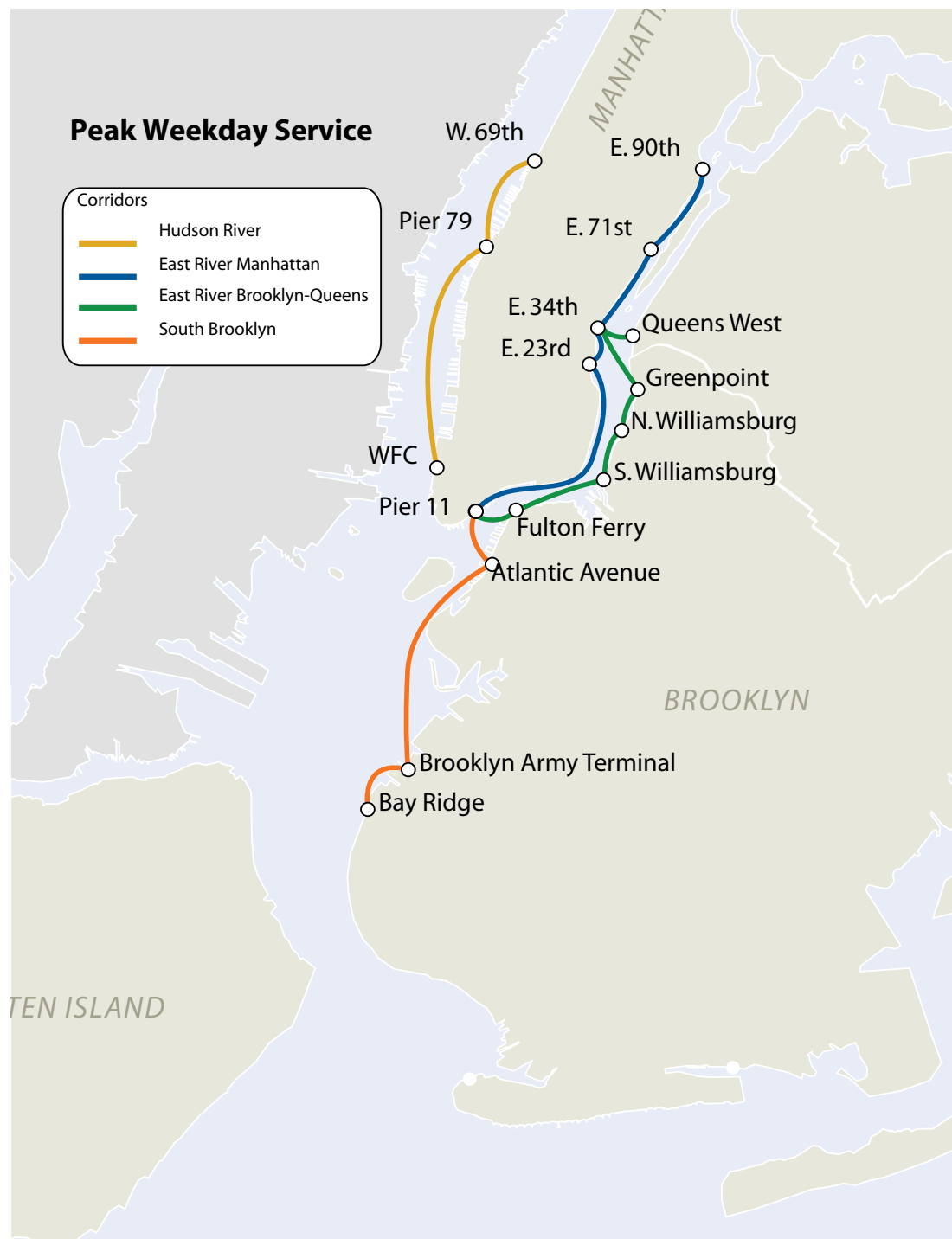
2.2 CORRIDOR ANALYSIS METHODOLOGY

This section explains the methodology used to develop preliminary subsidy estimates for the four Service Level 1 corridors in our analysis:

- East River Brooklyn-Queens;
- East River Manhattan;
- Hudson River; and
- South Brooklyn.

The Service Level 1 corridors used in the analysis are shown in the map in Figure 15.

Figure 15: Service Level 1 commuter corridors



The following assumptions about the operations of the four corridors were made:

- Each corridor would have two or three boats during the morning and afternoon peak periods and two boats during the mid-day and evening off-peak periods.²¹
- Peak service would operate six hours per weekday, 7:00am to 10:00am and 4:00pm to 7:00pm.
- Off-peak weekday service would operate eight hours per weekday, 10:00am to 4:00pm and 7:00pm to 9:00pm.
- Weekend service would operate ten hours per weekend day, 10:00am to 8:00pm
- Riders would pay an average one-way fare of \$5.00. This is an assumed blended average of single-trip fares comparable to an express bus fare (\$5.50) with weekly or monthly discounts.

Based on the operating characteristics above we assumed peak and off-peak/weekend headways as shown in Table 7.

Table 7: Peak and off-peak/weekend headways (minutes)		
Corridor	Peak Headways	Off-peak/weekend headways
East River - Brooklyn/Queens	0:22	0:34
East River - Manhattan	0:25	0:35
South Brooklyn	0:25	0:35
Hudson River	0:25	0:50

The process of analyzing corridor ridership involved three steps, described below:

1. Identify existing, comparable ferry services in the region and compute the effective “capture rates”²² from the origin sites along with some baseline data that can help compare those routes with the corridors we've identified.
2. Use data on time competitiveness, cost competitiveness and household income to adjust the baseline capture rates for each site in the corridors.
3. Apply the calculated capture rates to the market for each of the sites in the corridor to obtain a preliminary ridership estimate.

²¹The Hudson River corridor requires two rush hour boats to maintain 25-minute headways. The other corridors require three boats.

²²Capture rate refers to the percent of commuters from a home market to a work market who would take a ferry vs. all other modes of transportation.

2.2.1 BASELINE DATA FROM COMPARISON SITES

Developing preliminary estimates of potential ridership, revenues and operating results - and thus potential subsidy requirements for each corridor requires that we make some assumptions about the share of commuter traffic to Midtown and Lower Manhattan that ferry service might be able to capture. To generate these capture rate assumptions for each of the corridors being studied, capture rates were analyzed for several areas served by existing commuter ferry services. Three sites in New Jersey were selected to develop baseline capture rates: Edgewater, Hoboken-14th Street, and Warren Street in Jersey City. The three sites - and the ferry routes from them to sites in Manhattan - are shown in Figure 16.

For each of the sites, the average weekday rides²³ to one of two sites in Manhattan were obtained: Pier 79 and World Financial Center. Using data about the size of the market and the journey-to-work of local residents within 1/2 mile of the three sites, their effective capture rates to Lower and Midtown Manhattan were calculated. The average number of daily rides from each site and the effective capture rates are shown in Table 8 below.

Figure 16: Map of New Jersey sites used for baseline analysis



Table 8: Number of ferry trips, market size and effective capture rates, by market area, 2009

Landing	Ferry Trips		Commuter Market		Capture rates	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Hoboken North	1,703	548	5,098	2,169	16.7%	12.6%
Edgewater	470		2,801		8.4%	
Warren Street		313		2,243		7.0%
Total/Average	2,173	861	7,899	4,412	13.8%	9.8%

As the table shows, the weighted average capture rate from the origin sites to the Midtown market was 13.8 percent in 2009, and the weighted average capture rate to the Lower Manhattan market was 9.8 percent.

²³In the analysis, a ferry ride (or simply "ride") refers to a passenger's one-way ferry trip. Therefore, a person who commutes by ferry is generally assumed to generate two rides per weekday - a ride to work and a ride home. The word "trip" and the word "ride" are used interchangeably.

The team estimated the length of a transit and ferry trip between an origin point near the origin sites to two destination points in Lower Manhattan and two destination points in Midtown Manhattan. Lower Manhattan commutes include walking time to the destinations while Midtown Manhattan commutes assume that passengers use NY Waterway's connecting bus service.

The time competitiveness of a ferry trip vs. a transit trip is shown in Table 9 below. As the table shows, a ferry trip to Midtown is, on average, about 31 percent faster than a transit trip, and a ferry trip to Lower Manhattan is about 26 percent faster than a transit trip.

Table 9: Approximate time competitiveness of a ferry trip vs. a transit trip, by market area								
	Transit Time		Ferry Time		Time Savings		Time Savings %	
Landing	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Hoboken North	:43	:37	:23	:30	:19	:07	46%	20%
Edgewater	1:07		:52		:14		22%	
Warren Street		:44		:30		:13		31%
Total/Average	1:50	1:22	1:15	1:00	:34	:21	31%	26%

The fare of a commute from the origin sites to the destination sites were also compared. The costs paid by commuters were based on the weekly or monthly fare for the corresponding ferry or transit mode. The one-way trip costs used in the analysis are shown in Table 10 below. As the table shows, the cost of a trip to Midtown by ferry is about 132 percent of the cost of transit, and a trip to Lower Manhattan by ferry costs about 211 percent more than a trip by transit.

Table 10: Cost of a one-way ferry trip vs. a one-way transit trip								
	Transit Time		Ferry Time		Time Savings		Time Savings %	
Landing	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Hoboken North	\$ 4.38	\$ 3.94	\$ 475	\$ 6.53	\$.37	\$ 2.59	108%	166%
Edgewater	\$ 4.38		\$ 6.80		\$ 2.42		155%	
Warren Street		\$ 1.75		\$ 5.50		\$ 3.75		314%
Total/Average	\$ 8.76	\$ 5.69	\$ 11.55	\$ 12.03	\$ 2.79	\$ 6.34	132%	211%

Table 11: Percent of households in the market area with household income greater than \$75,000, 2009	
Landing	% of HH
Hoboken North	56%
Edgewater	55%
Warren St	46%
Average	52%

Data was obtained on the median household incomes of residents who live within 1/2-mile of the origin ferry landings and calculated the percent of households whose median household income was at least \$75,000 in 2009. Those percentages are shown in Table 11 on the left.

As shown in the table, a little more than half of all households in the three market areas had a household income greater than \$75,000 in 2009.

2.2.2 PRELIMINARY RIDERSHIP ESTIMATION

The baseline capture rates derived for the New Jersey services were used as a starting point in a three-step process to estimate capture rates for the sites in each corridor. The three steps are described below using the South Brooklyn corridor as an example. (The same analysis was applied - with minor exceptions explained below - to all of the corridors.)

It is worth noting that this analysis is designed to develop a set of assumptions that can be used to generate preliminary ridership estimates for reasonable, but not necessarily optimal service configurations and corridors.

If the City were to pursue the development of new ferry services in these corridors, it would be necessary to refine the ridership analysis and to conduct a more detailed optimization of the corridor definitions, service configurations, and fares on each corridor.

2.2.2.1 ADJUST CAPTURE RATES BASED ON HOUSEHOLD INCOME

First, the capture rate was adjusted based on the percent of households with an annual income greater than \$75,000 in 2009. For example, as Table 12 shows, the share of households with an income greater than \$75,000 in 2009 in the Atlantic Avenue market area was 56 percent - 107 percent of the New Jersey market area average. Therefore, the baseline capture rates were multiplied by 107 percent.

Table 12: Capture rates, adjusted by percent of households with income greater than \$75,000					
Site	Site percent of HH with income > \$75,000	NJ average percent of HH with income > \$75,000	Site % / NJ %	Adj. Midtown capture rate	Adj. Downtown capture rate
Atlantic Ave (Pier 6)	56%	52%	107%	14.7%	10.4%
Brooklyn Army Terminal	26%	52%	50%	6.8%	4.8%
Bay Ridge	39%	52%	75%	10.3%	7.3%

2.2.2.2 ADJUST CAPTURE RATES BASED ON TIME COMPETITIVENESS

The time competitiveness of ferries vs. transit was compared from the market areas in the South Brooklyn corridor with the time competitiveness derived for the New Jersey services.

As Table 13 shows, commuters from the Atlantic Avenue market area could reduce their commute time to downtown locations by an average of about 35 percent by taking a ferry compared with a similar trip using transit. On the other hand, a typical ferry trip to Midtown from the Atlantic Avenue market area would take 19 percent longer via ferry than transit.

It is worth noting here that the time savings for ferry service to Midtown Manhattan from the New Jersey sites is, on average, greater than the time savings from New York City sites. The reason is that New York Waterway provides a free bus connection at the Pier 79 ferry terminal. This makes the landside part of the trip slightly faster and also somewhat less expensive. (Our analysis assumes that commuters would pay a MTA bus fare for connecting bus service from one of the two Midtown ferry terminals.)

To estimate the effect of changes in time competitiveness of ferry service on capture rates, an elasticity of 0.2 was used, which is consistent with data collected from transit agencies on customer responses to changes in bus and train time savings.²⁴ In other words, for each percent of time saved (above the New Jersey averages of 31 percent to Midtown and 26 percent to Downtown), a 0.2 percent increase in the capture rate would be applied.

²⁴Transportation Research Board Transit Cooperative Research Program Report 95, Traveler Response to Transportation System Changes, Chapter 9.

Table 13: Time competitiveness of ferry vs. transit, South Brooklyn corridor market areas (in minutes)

	Transit Time		Ferry Time		Time Savings		Time Savings %		Time Savings Adjustment	
Site	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	40	23	48	15	-8	8	-19%	35%	-10.1%	+1.7%
Brooklyn Army Terminal	41	30	66	37	-25	-7	-61%	-235	-18.4%	-9.9%
Bay Ridge	54	37	72	43	-18	-6	-34%	-15%	-13.0%	-8.2%

2.2.2.3 ADJUST CAPTURE RATES BASED ON COST COMPETITIVENESS

Finally, the cost competitiveness of transit vs. ferry service from each of the market areas was compared and the capture rate was adjusted according to its deviation from the New Jersey baseline.

To estimate the effect of changes in the cost competitiveness of ferry service on capture rates, an elasticity of -0.4 was used, which is also consistent with data collected by transit agencies on responses to price changes.²⁵ In other words, for each percent of additional cost competitiveness (compared with the New Jersey averages of a ferry trip being 132 percent of a transit trip to Midtown and 211 percent of a transit trip to Lower Manhattan), a 0.4 percent increase in the capture rate would be applied.

Table 14 shows the cost competitiveness of the ferry service vs. transit for the three market areas in the proposed corridor. At a \$5.00 average one-way fare and including the cost of a connecting bus in Midtown, the cost of ferry service is 354 percent the cost of a transit trip. At the same fare and assuming no additional cost in Lower Manhattan, the cost of a ferry trip is 254 percent the cost of a transit trip to Lower Manhattan.

Applying a -0.4 elasticity to the cost competitiveness for each site compared with the New Jersey averages, a capture rate adjustment of -67 percent to Midtown and -8% to Downtown was the outcome.

Table 14: Cost competitiveness of ferry vs. transit, South Brooklyn corridor market areas

	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %		Cost Savings Adjustment	
Site	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	\$1.97	\$1.97	\$6.97	\$5.00	\$5.00	\$3.03	354%	254%	-67%	-8%
Brooklyn Army Terminal	\$1.97	\$1.97	\$6.97	\$5.00	\$5.00	\$3.03	354%	254%	-67%	-8%
Bay Ridge	\$1.97	\$1.97	\$6.97	\$5.00	\$5.00	\$3.03	354%	254%	-67%	-8%

²⁵Transportation Research Board Transit Cooperative Research Program Report 95, Traveler Response to Transportation System Changes, Chapter 12.

2.2.3 APPLYING CAPTURE RATES TO THE COMMUTER MARKET

By adjusting the baseline capture rates according to the process described above, capture rates were obtained and shown in Table 15.

Table 15: Capture rate calculation, South Brooklyn corridor

	Baseline		HH Income		Time Savings		Cost Savings		Calculated	
Site	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	13.8%	9.8%	14.7%	10.4%	-10.1%	+1.7%	-67%	-8%	4.4%	9.8%
Brooklyn Army Terminal	13.8%	9.8%	6.8%	4.8%	-18.4%	-9.9%	-67%	-8%	1.8%	4.0%
Bay Ridge	13.8%	9.8%	10.3%	7.3%	-13.0%	-8.2%	-67%	-8%	2.9%	6.1%

Using the journey-to-work data collected for each market area, the number of commuters to Lower and Midtown Manhattan in 2009 can be estimated. And using the capture rates calculated above, we can estimate the level of commuter ridership. Table 16 shows the number of commuters to Lower and Midtown Manhattan within $\frac{1}{2}$ mile of the existing or proposed ferry landing and, based on the capture rates calculated above, an estimate of the number of ferry commuters.

Table 16: Commuters to Lower and Midtown Manhattan by South Brooklyn market area in 2009, and estimated ferry ridership during peak periods based on calculated capture rates²⁶

Site	Commuters		Ferry Riders	
	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	4,277	1,627	187	159
Brooklyn Army Terminal	2,469	1,402	45	56
Bay Ridge	3,108	1,782	91	109
Total	9,853	4,811	324	325

In addition to peak ridership, each site could generate ridership on weekdays during off-peak periods and during weekends. Using existing services in the harbor that operate during peak and off-peak periods as a basis, it was estimated that off-peak weekday ridership is approximately 40 percent of peak weekday ridership, and that weekend ridership is approximately 45 percent of peak weekday ridership.

It is worth noting that in the case of peak, off-peak and weekend ferry service, the numbers we obtained from New Jersey services were based on an annual average. Generally ferry ridership is higher in the summer than during the winter so the numbers shown in Table 16 would be somewhat lower than summer peak ridership and somewhat higher than winter ridership.

The heated, enclosed waiting areas in New Jersey compared with the unenclosed waiting areas at sites in New York could lead to some additional reduction in winter ridership. To account for this difference, it was assumed that winter ridership at New York commuter ferry sites during the coldest three months would be reduced to about 30 percent of the annual average ridership.

²⁶In this table, ferry riders refer to round-trips. On average, each ferry rider would make two trips per day as part of their commute.

CALCULATING CAPTURE RATES FOR THE MANHATTAN SITES

For Manhattan origin sites on the East River and Hudson River, several adjustments to the approach described in this section were made.

As discussed in Part One, only the primary market area (1/3-mile radius from the ferry landing site) was used to determine the potential commuter market. In many cases, the secondary market area overlaps with subway stations in Manhattan, making a ferry trip less likely.

A different commuter service was used as the baseline for the Manhattan capture rates. While the New Jersey corridors are somewhat analogous to commutes from other boroughs given other transit options, they did not seem like a good basis for estimating ridership on an intra-Manhattan ferry service. Instead, the capture rates were based on a ferry service that New York Water Taxi provided in 2004 that served East 90th Street, East 34th Street and Pier 11 on the East River. The service offered during morning and afternoon rush hours with 30-minute headways at a one-way fare of \$6.00. After adjusting for the change in headways and the ratio between discounted transit prices and the discounted ferry fare in 2004, the baseline Lower Manhattan capture rate was calculated to be 4.2 percent, and the Midtown Manhattan capture rate to be 1.1 percent.

Because the 2004 service also did not include heated shelters, no adjustment was made to winter ridership for the Manhattan sites.

Table 17 summarizes the estimated annual ridership for each of the four Service Level 1 commuter corridors based on this analysis. Because these ridership projections are preliminary, a range plus-or-minus 15 percent was used. The table shows the conservative end of the range.

Table 17: Estimated annual ridership (minus 15 percent), by Service Level 1 corridor			
Service Level 1 Corridor	Peak Headway	Off-peak headway	Annual ridership (one-way)
East River - Brooklyn-Queens	22	34	467,000
East River - Manhattan	25	35	472,000
Hudson River	25	50	199,000
South Brooklyn	25	35	426,000

2.3 RESULTS OF CORRIDOR FEASIBILITY ANALYSES

Using the peak, off-peak and weekend ridership estimates derived above for each corridor, the total annual revenues were estimated. With a \$5.00 average one-way fare, we estimate that the South Brooklyn service would generate a total of between \$2.1 million and \$2.7 million in farebox revenue on the basis of the estimated ridership.²⁷

Using an average cost of \$500.00 per boat, per hour to run each service - and assuming three peak boats and two off-peak and weekend boats on each corridor - the annual operating cost for each corridor is estimated at approximately \$6.68 million.

²⁷As above, all ridership and revenue figures are given in a range of plus-or-minus 15 percent.

Table 18: Estimated annual subsidy and subsidy per one-way trip (minus 15 percent ridership), by corridor

Service Level 1 Corridor	Annual subsidy	Average subsidy per ride
East River - Brooklyn-Queens	\$4.3M	\$9.30
East River - Manhattan	\$4.3M	\$9.15
Hudson River	\$2.8M	\$14.29
South Brooklyn	\$4.7M	\$11.07

Based on this analysis, it is further estimated that a South Brooklyn service would require a \$4.0 million to \$4.7 million subsidy annually.

The project team performed this analysis for each of the ferry corridors identified at the beginning of this section. Subsidies required for each corridor are shown in Table 18.

Additional ridership analyses and summaries are included in Appendix C.

2.4 ANALYZING THE IMPACT OF ADDING SITES TO THE FOUR SERVICE LEVEL 1 CORRIDORS

The impact on ridership when one or more additional sites were added to each Service Level 1 corridor defined in 3.1 above was analyzed, as well as a new corridor between Stapleton and Camp St. Edward on Staten Island and Pier 11.²⁸ Table 19 shows the Service Level 1 commuter corridors with additional service to Service Level 2 and Service Level 3 sites.

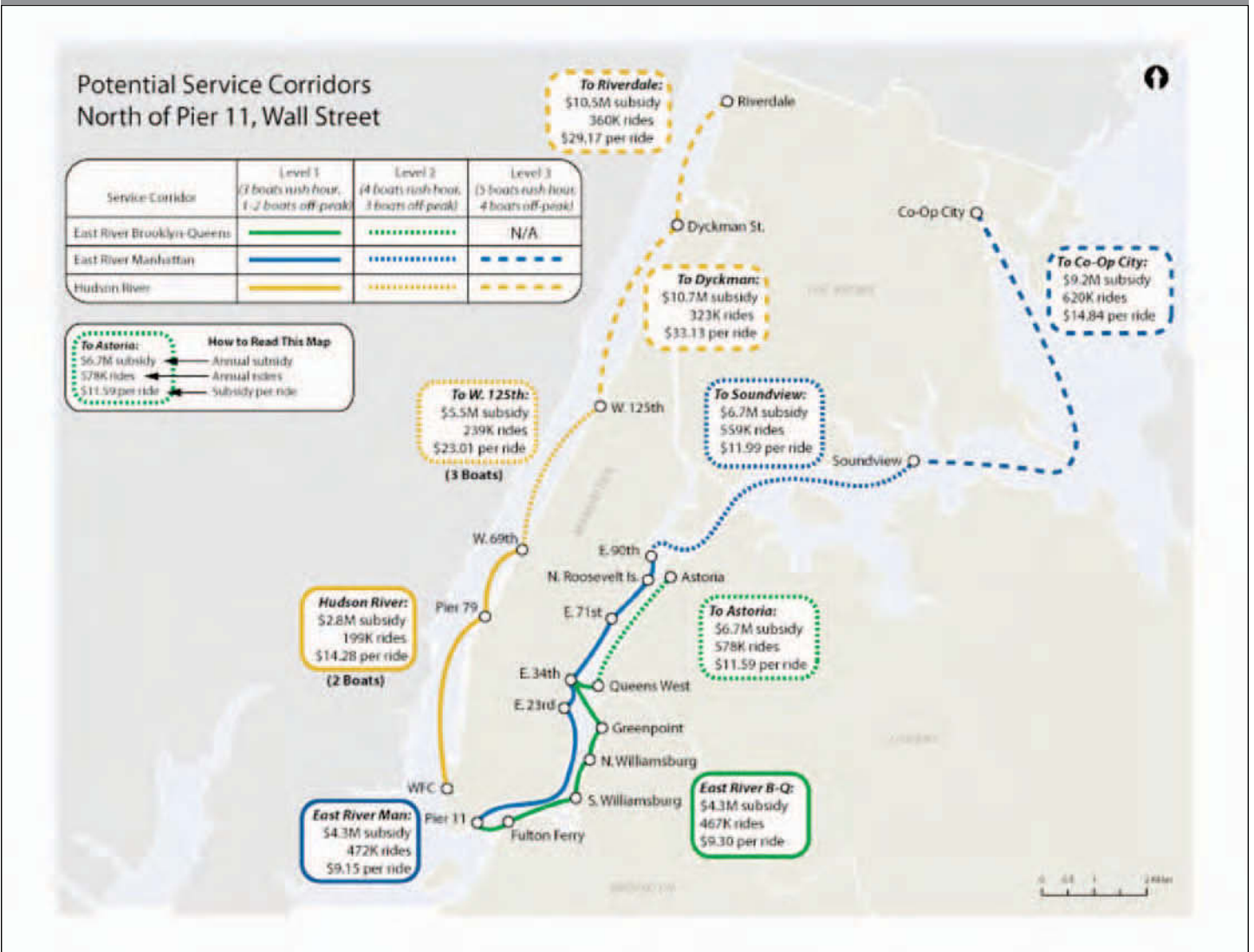
Table 19: Base corridors and additional sites

Service Level 1 Commuter Corridor	Additional Service Level 2 and Service Level 3 sites
East River - Brooklyn/Queens	Astoria
East River - Manhattan	Soundview, Co-Op City
Hudson River	125th Street, Dyckman Street and Riverdale
South Brooklyn	Coney Island, Sheepshead Bay, and Rockaway
Staten Island (Stapleton)	Camp St. Edward

²⁸The same methodology was used for a dedicated service from Camp St Edward and Stapleton, requiring three peak points to serve Stapleton and six peak boats when Camp St. Edward is added to the corridor.

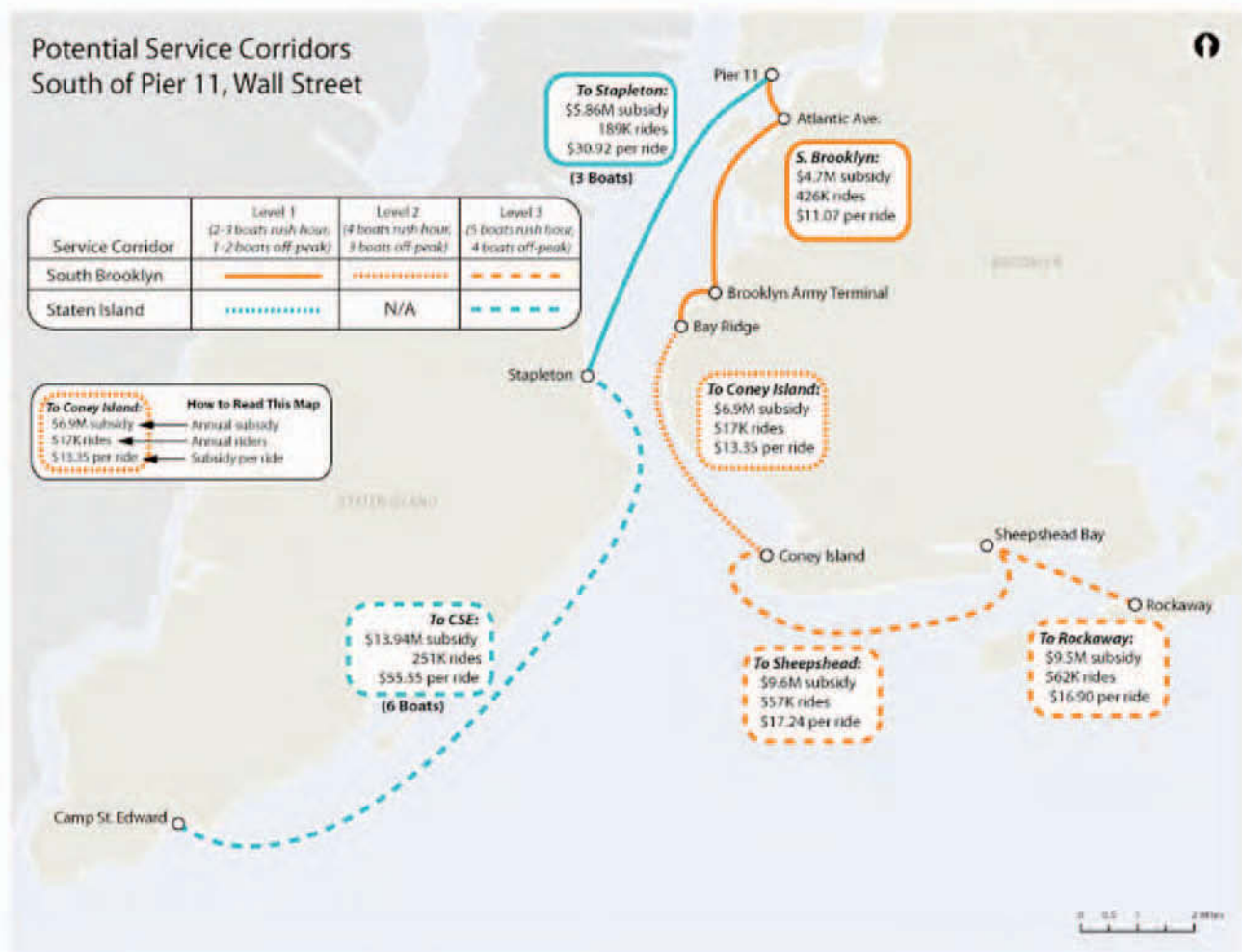
A map showing the Service Level 1 commuter Corridors with additional service to Service Level 2 and Service Level 3 sites is shown in Figure 17.

Figure 17: Map of northern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Average Subsidy Approach



A map showing the southern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites is shown in Figure 18.

Figure 18: Map of southern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Average Subsidy Approach



As shown in Figure 17 and Figure 18, based on the analysis:

- The annual subsidy on the Service Level 1 East River Brooklyn-Queens service is about \$4.3 million, or about \$9.30 per ride. With Astoria, the average subsidy per ride is \$11.59.
- The annual subsidy on the Service Level 1 East River Manhattan service is about \$4.3 million, or about \$9.15 per rider. With Soundview, the average subsidy per ride is \$11.99; and with Co-Op City, the average subsidy per ride is \$14.84.
- The annual subsidy on the Service Level 1 Hudson River corridor is about \$2.8 million (about \$14.28 per rider). With West 125th Street, the average subsidy per ride is \$23.01; with Dyckman Street, the average subsidy per ride is \$33.13; and with Riverdale, the average subsidy per ride is \$29.17.
- The annual subsidy on the Service Level 1 South Brooklyn corridor is about \$4.7 million, or about \$11.07 per ride. With Coney Island, the average subsidy per ride is \$13.35; with Sheepshead Bay, the average subsidy per ride is \$17.24; and with Rockaway the average subsidy per ride is \$16.90.
- The annual subsidy on the Service Level 1 Staten Island corridor to Stapleton is about \$5.9 million, or about \$30.92 per ride. With Camp St. Edward included, the subsidy increases to about \$13.9 million or about \$55.55 a ride.

The subsidy numbers above show the average subsidy per corridor and the average subsidy per rider along that corridor. The incremental subsidy as each additional site is added and the incremental subsidy per rider from these added sites can also be examined. For example:

- The Service Level 1 East River Manhattan service could carry 472,000 riders at an annual subsidy of about \$4.3 million, or about \$9.15 per rider.
- A Service Level 1 East River Manhattan service that also includes Soundview in the Bronx could carry an additional 87,000 riders with an additional subsidy of \$2.4 million and an incremental cost per additional rider of \$27.59.
- A Service Level 1 East River Manhattan service that extends to Co-Op City (and includes Soundview) could carry an additional 148,000 riders for an additional subsidy of \$4.9 million and a subsidy of \$33.11 for each additional rider.

The first method averages the cost of additional vessels and crew and the increased running time across the entire corridor. The incremental method discussed above attributes the cost of an additional vessel to the site for which that vessel is required to maintain reasonable peak period headways across the entire corridor. For example, when the service noted above is extended to Soundview, a fourth boat is required to maintain 20-25 minute peak headways. The cost of that boat is assigned to the Soundview stop since the fourth boat would not be needed to maintain those headways on the sites south from E. 90th St. Figures 30 and 31 below show the cost of providing this incremental service to each of the corridors so that the difference between the incremental and the average approach can be compared for each.

Detailed tables for each corridor also are included in Appendix C.

Figure 19: Map of northern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Incremental Subsidy Approach

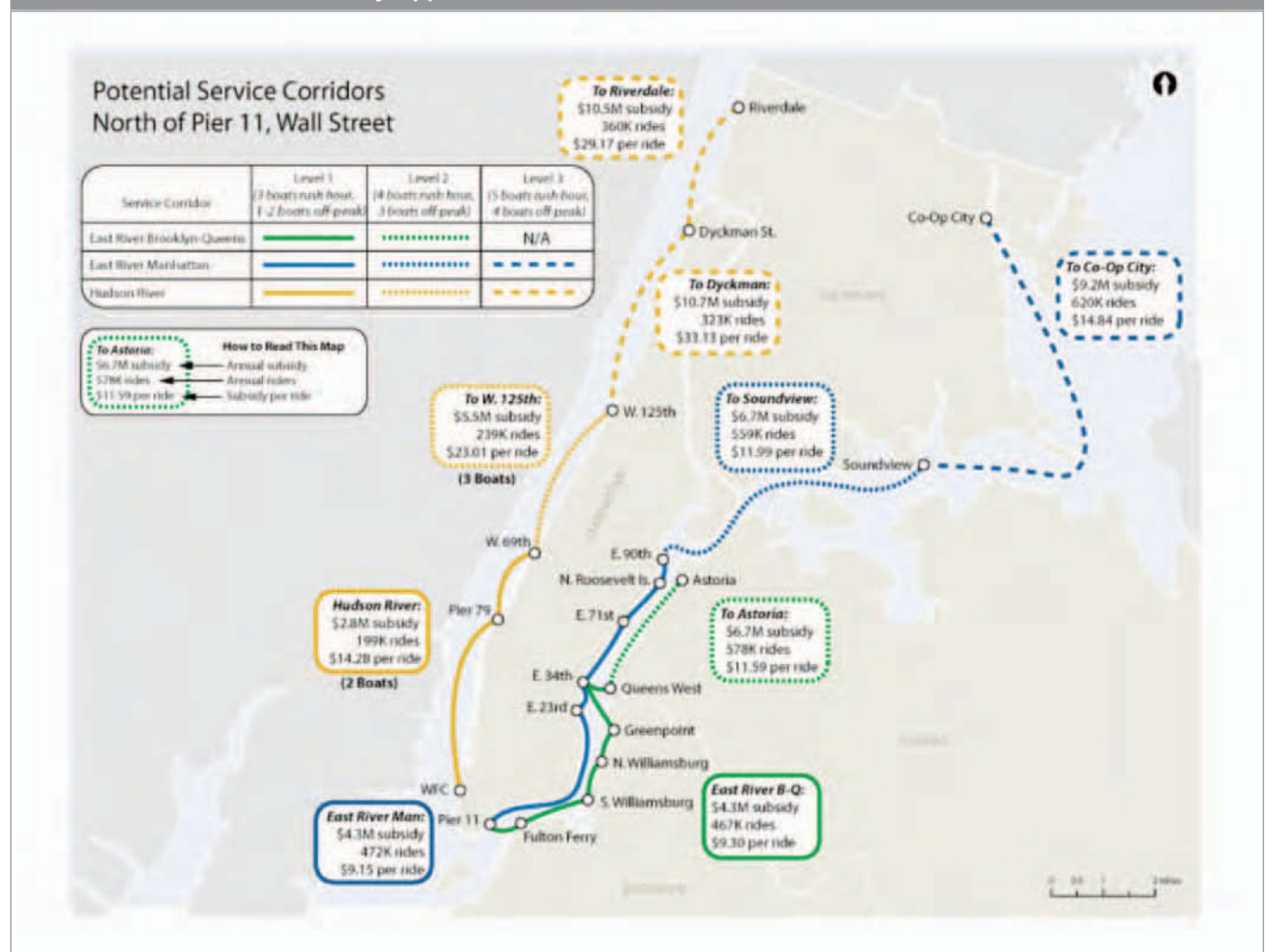
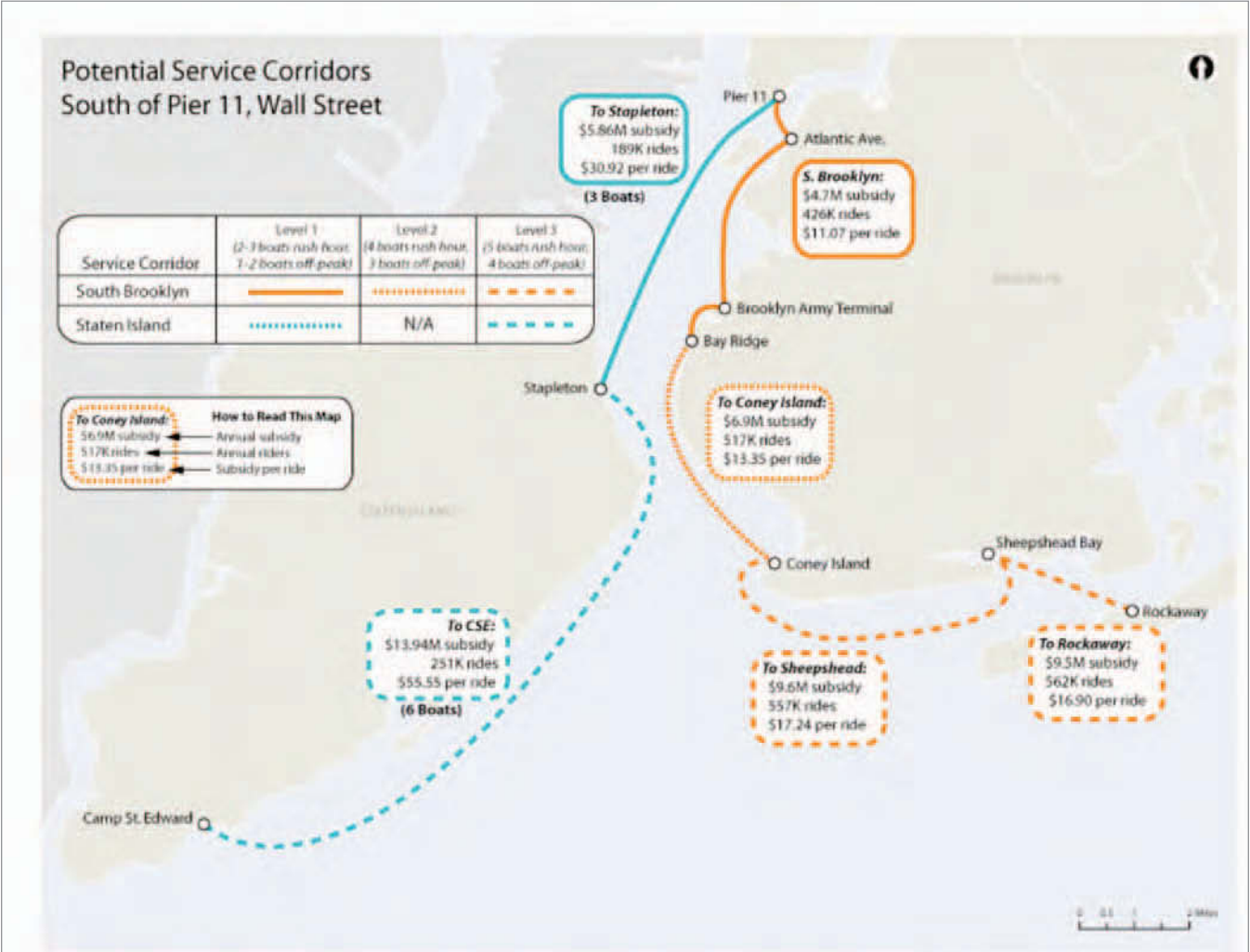


Figure 20: Map of southern Service Level 1 Commuter Corridors with additional Service Level 2 and Service Level 3 sites-Incremental Subsidy Approach



PART THREE:

OVERVIEW OF NYHARBORWAY SITES

The NYHarborWay is an initiative of the NYC & Company, New York City's official marketing, tourism, and partnership organization. The mission of NYC & Co. is to maximize travel and tourism opportunities throughout the five boroughs, build economic prosperity and spread the dynamic image of New York City around the world. The NYHarborWay is intended to establish nine harbor destinations as must-see sites for residents and visitors alike. To that end the NYHarborWay was interested in determining whether any synergies exist between commuter service and recreational service and whether those two markets could complement one another.

This part of the report briefly describes the nine NYHarborWay parks and destinations, current ferry services offered at each, and plans for future ferry service. We also discuss the recreational potential of several commuter sites.

Table 20: List of NYHarborWay destination parks and ferry landings		
Destination	Landing	Existing?
Governors Island	Soissons Dock	Yes
Governors Island	Pier 101	Yes
Governors Island	Pier 102	Yes
Governors Island	Yankee Pier	Yes
Ellis Island	-	Yes
Liberty Island	-	Yes
The Battery	Slips 1-6	Yes
The Battery	Battery Maritime Building	Yes
The Battery	Pier A	Under construction
East River Esplanade	Pier 15	Under construction
South Street Seaport	Pier 17	Yes
Liberty State Park	Liberty Landing Marina	Yes
Liberty State Park	Statue of Liberty dock	Yes
Brooklyn Bridge Park	Fulton Ferry Landing	Yes
Brooklyn Bridge Park	Atlantic Avenue (pier 6)	Yes
Hudson River Park	Christopher Street (Pier 45)	Yes
Hudson River Park	Pier 84	Yes
Hudson River Park	Chelsea Piers (Pier 66)	Yes

The nine NYHarborWay destinations include 18 different existing or proposed ferry landings. We differentiate between NYHarborWay destinations vs. landings because multiple landings may serve a single destination market. For example, there are three ferry landings on the north side of Governors Island, but the destination they serve is identical.

The list of NYHarborWay destinations and landings is shown in Table 20.

3.1 GOVERNORS ISLAND

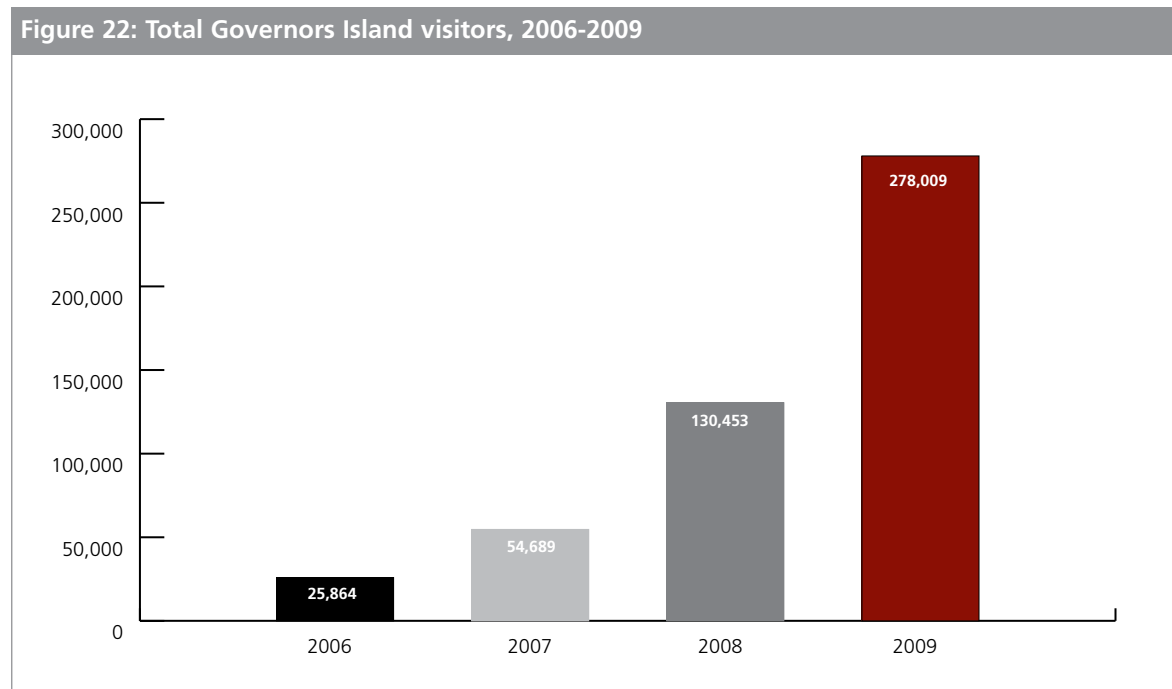
Governors Island is accessible only by ferry and accessible to the public only during the summer months.

A map of Governors Island and the ferry landing sites is shown in Figure 21.

Figure 21: Map of Governors Island and existing and planned ferry landings



As shown in Figure 21, between 2006 and 2009, attendance at Governors Island has grown dramatically as the Island has become better known, as programming has increased, and as ferries have offered additional days and hours of service.



3.1.1 REGULAR PUBLIC SERVICE DURING 2009

During the summer of 2009, two free ferries operated on Fridays, Saturdays, and Sundays between the Battery Maritime Building in Lower Manhattan and Governors Island. One was operated by the National Park Service; the other was operated by a private ferry operator, New York Waterway. Both services were operated under contract with the Governors Island Preservation and Education Corporation (GIPEC). The two ferries alternated trips, resulting in 30-minute headways.

GIPEC contracted with Bike and Roll, a bike rental company, to provide free bike rentals to visitors on Fridays. As shown in Error! Reference source not found., the Friday service brought an average of more than 2,250 people to the Island each Friday. (The free bikes proved so popular, they “sold out” during the peak period almost every Friday - from late morning to late afternoon.)

For most of the summer, New York Waterway operated a ferry between Fulton Ferry in Brooklyn and Governors Island on Saturdays and Sundays (also under contract with GIPEC). The ferry carried 29,861 people from Fulton Ferry landing to Governors Island during the summer.

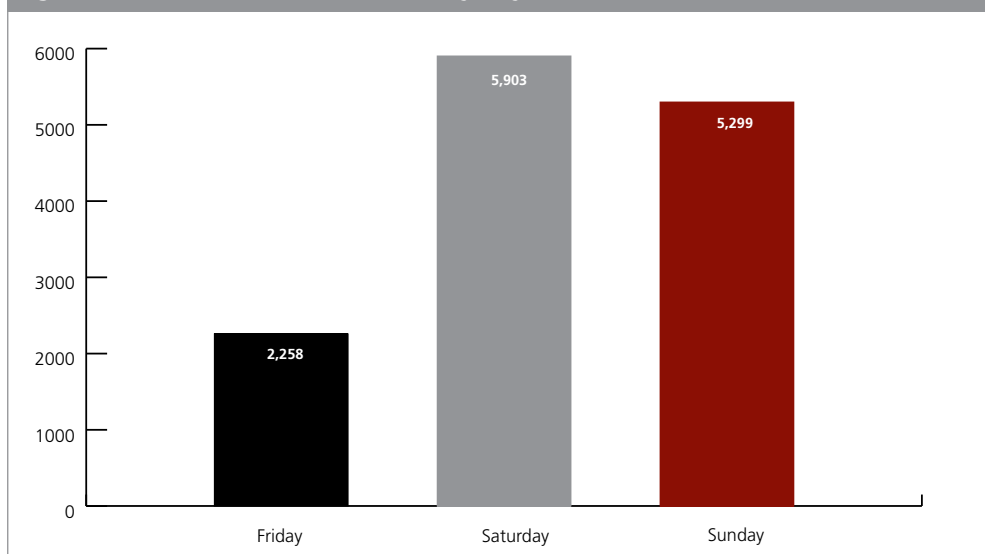
In addition to public ferry service, GIPEC sponsors daily ferry service for staff, maintenance workers and equipment year round. These trips are not available to the public.

3.1.2 SPECIAL SERVICES DURING 2009

In addition to the regular public service, the National Park Service operated a ferry on weekdays for Governors Island workers and special Ranger-guided tours. During the summer of 2009, New York Water Taxi provided special services on weekend evenings to serve its Water Taxi Beach events. In total, the Water Taxi Beach ferries brought 18,610 people to the Island in 2009.

Taking into account regular Friday, Saturday and Sunday services and Water Taxi Beach service, Governors Island attendance averaged about 2,258 visitors on Fridays, 5,903 visitors on Saturdays and 5,299 visitors on Sundays. The distribution by day of the week is shown in Figure 22.

Figure 23: Governors Island visitors by day of the week, 2009



3.1.3 SERVICES AND ATTENDANCE IN 2010

Free public ferry service to Governors Island began on June 5 and was scheduled to run until October 10 on Fridays, Saturdays and Sundays. A Manhattan service operated all three days from the Battery Maritime Building; a Brooklyn service operated on Saturdays and Sundays via Atlantic Avenue (Pier 6).

The New York Harbor School opened on Governors Island in September of 2010, bringing approximately 430 students and 60 teachers, staff and administrators to Governors Island each weekday during the school year. The Harbor School students and employees use the same ferry used by Governors Island staff and administrators.

NYC & Company, in partnership with NYC Economic Development Corporation, launched a pilot service that operated on Fridays from June 11 to until Labor Day weekend. The service ran from 10:00 to 4:00 in a loop from Fulton Ferry in Brooklyn to South Street Seaport to Governors Island to Atlantic Avenue. The fare was \$2.00 each-way, \$3.00 round-trip, and \$6.00 each-way for a family of four.

3.1.4 FUTURE FERRY SERVICES

The National Park Service is considering a pilot ferry service that would integrate a stop at Governors Island into the Ellis and Liberty Island ferry trips. That pilot service could begin as early as the summer of 2011.²⁹

3.2 BROOKLYN BRIDGE PARK

Once complete, Brooklyn Bridge Park will be an 85-acre park reaching from Atlantic Avenue to north of the Manhattan Bridge. Two sections - Pier 1 on the north side of the park, and Pier 6 on the south side of the park - opened in the spring of 2010. The north end of the park is served by Fulton Ferry landing, an existing ferry landing. The southern end of the park is served by a new landing at Pier 6 near Atlantic Avenue, which opened on June 4, 2010.

3.2.1 REGULAR FERRY SERVICE DURING 2009

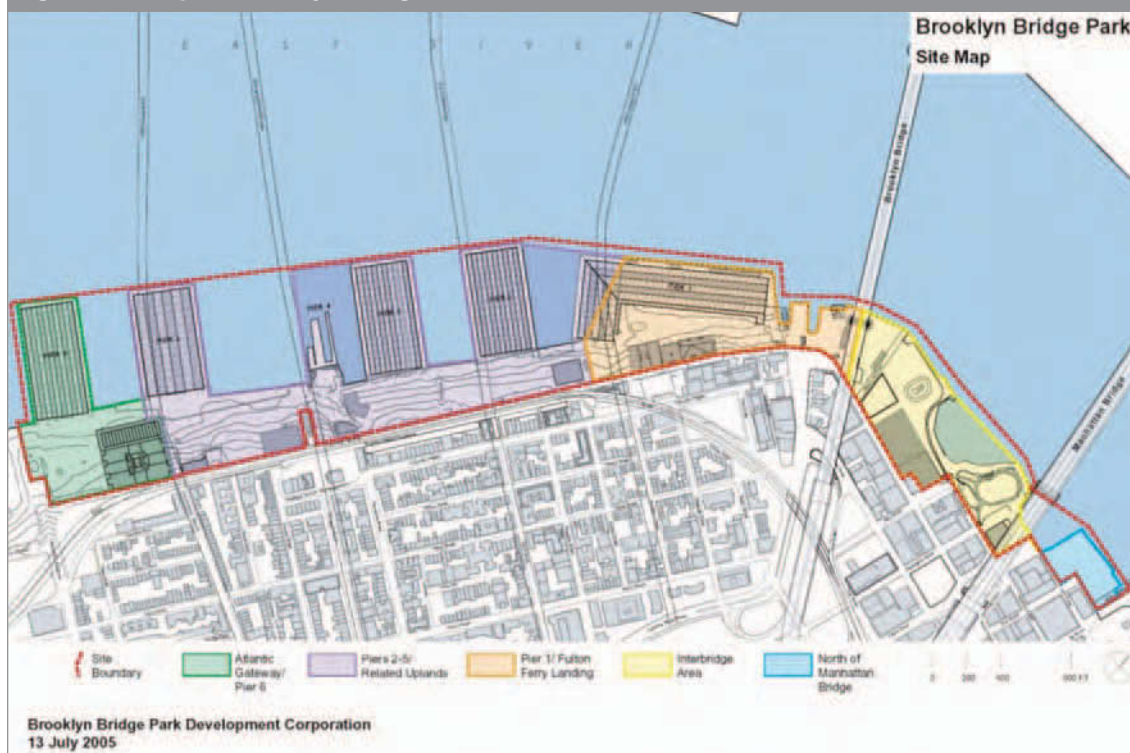
New York Water Taxi operated ferry service to Fulton Ferry landing, providing access to the Park's north end as part of its commuter and Hop-On/Hop-Off services during 2009.³⁰

New York Water Taxi's commuter service to Fulton Ferry landing averaged about 60 passengers per weekday in the summer. The weekend Hop-On/Hop-Off service averaged about 300 trips from Fulton Ferry during the summer.

²⁹National Park Service Hornblower report

³⁰A Hop-On/Hop-Off service is one in which passengers may purchase an all-day or all-weekend pass on a ferry service, and then ride the ferry an unlimited number of times. New York Water Taxi is the ferry operator in the region best known for its Hop-On/Hop-Off service.

Figure 24: Map of Brooklyn Bridge Park



3.2.2 SPECIAL FERRY SERVICES DURING 2009

For most of the summer of 2009, New York Waterway operated a free ferry between Fulton Ferry and Governors Island on Saturdays and Sundays. The service averaged about 995 visitors per day it operated.

3.2.3 SERVICES AND ATTENDANCE IN 2010 AND BEYOND

The Pier 6 ferry landing opened in June 2010 and has been incorporated into two regularly-scheduled ferry services during the summer of 2010 - a free Governors Island ferry service that operates between 11:00am and 7:00pm on Saturdays and Sundays, and a \$2.00 recreational loop that also serves Fulton Ferry, South Street Seaport and Governors Island.

As the Transportation Access Plan for the Park notes, under the New York City Planning commission's waterfront zoning rules, only boats with a maximum of 99 passengers are permitted to use the ferry landings serving the Park. If Brooklyn Bridge Park develops as a major recreational destination - and as a commuter origin - it could require larger vessels to accommodate peak crowds:

“This is especially true if a Governors Island program is adopted that requires moving large numbers of people to and from programs and events, as the Park has the potential to become a major gateway to the island. The Pier 6/Atlantic Avenue ferry landing has the potential to develop into a full service terminal that would support more than water taxi service.”³¹

3.3 THE BATTERY

The Battery is the access point for the City's largest commuter and recreational ferry services, including:

- The Staten Island Ferry from Whitehall Terminal;
- The Governors Island ferry (described in detail earlier) and slip 5 (a commuter ferry slip) from the Battery Maritime Building;

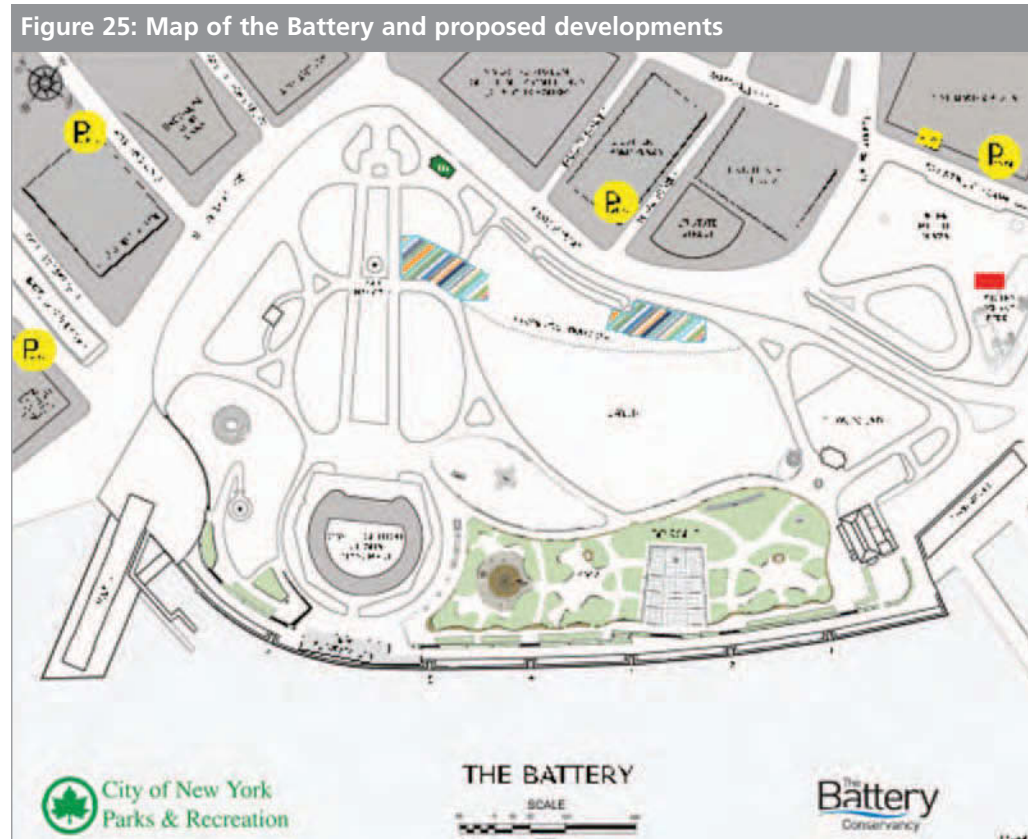
³¹Brooklyn Bridge Park Transportation Access Plan.

- The Statue of Liberty and Ellis Island ferries from slip 6 of the Battery (described in detail later); and
- Five additional slips (1 through 5) from which occasional ferry services are provided.

The Battery is also home to Pier A. Pier A was used in the months after September 11 to increase ferry capacity while the World Financial Center landing was inaccessible. The Battery Park City Authority is working with the New York City Economic Development Corporation to renovate the pier. (The renovation is expected to be complete in March 2011.)

The Authority released a Request for Qualifications in December of 2009 to identify potential tenants to lease and operate the pier.

A map of the Battery and proposed developments is shown below.



3.3.1 REGULAR PUBLIC SERVICE DURING 2009

As discussed below, a private ferry operator, Statue Cruises, operated a ferry service from the Battery to Liberty and Ellis Islands under a franchise agreement with the National Park Service. The National Park Service and New York Waterway offered regular ferry service to Governors Island during the summer of 2009. New York Water Taxi used the Battery as a stop on its Hop-On/Hop-Off service, and offered a Water Taxi Beach service to Governors Island from Slip 5 of the Battery Maritime Building on some evenings during the summer to serve special events.

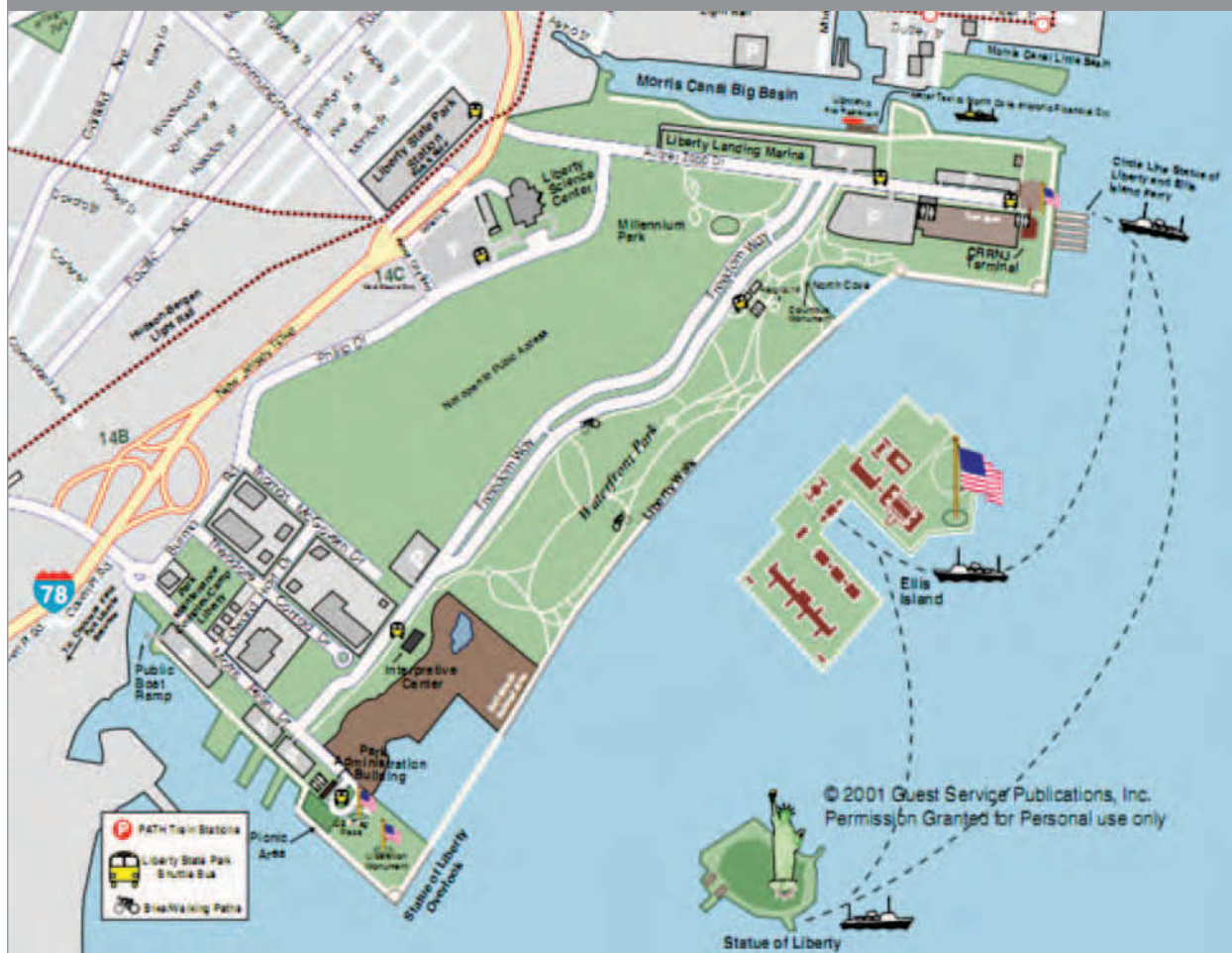
3.3.2 PROPOSED OR PLANNED SERVICES AND ATTENDANCE IN 2010 AND BEYOND

The ferry services operating from the Battery in 2010 were similar to those offered in 2009.

3.4 LIBERTY STATE PARK, NEW JERSEY

Liberty State Park is a 1,212-acre park located in Jersey City. A map of the park and its ferry services is shown in Figure 26.

Figure 26: Map of Liberty State Park



3.4.1 REGULAR FERRY SERVICE DURING 2009

The Liberty Water Taxi is operated by Statue Cruises, carrying commuters from Jersey City to World Financial Center, and carrying recreational users between World Financial Center and Liberty State Park. The service operates Monday through Friday between 6:00am and 8:45pm, charging passengers \$7.00 each way. Peak headways are 30 minutes; off-peak headways are one hour.

In order to skip the long lines for the ferries to Liberty and Ellis Islands at the Battery, Statue Cruises ticketholders may get discounted Liberty Water Taxi tickets (\$5.00 rather than the standard \$7.00 fare) to Liberty State Park.

In 2009, the ferry carried an average of 313 passengers per day in both directions. As on the Liberty and Ellis Island ferries, summer ridership was much higher than winter ridership. Average daily ridership in August 2009 (the peak month) was 539 trips, while average daily ridership in February was 163 trips.

3.4.2 SPECIAL SERVICES DURING 2009

For the past several years, Liberty State Park has hosted major outdoor events during the summer, including the All Points West Music & Arts Festival. Private ferry operators have provided event-based services during these events.

3.5 EAST RIVER WATERFRONT ESPLANADE AND SOUTH STREET SEAPORT

The East River Waterfront Esplanade is a two-mile-long open space along the waterfront. It runs from the Battery Maritime Building to Pier 35 which is north of Rutgers Slip. A future phase will redevelop Pier 42, located immediately south of East River Park, for public access. The Esplanade includes several major ferry origins and destinations, including the South Street Seaport, the Battery Maritime Building (the ferry departure hub for Governors Island), and Pier 11.

In addition to the existing piers and public spaces, the East River Esplanade area will include several new public piers, including:

- Pier 15, located south of the South Street Seaport, will be a two level structure with educational programming, dining, open space, and excursion boat access. The pier is under construction and is projected to be completed by the end of 2011.
- Pier 35, located north of the Manhattan Bridge, is being redeveloped as public open space
- Basketball City, currently being developed on a portion of Pier 36, will open in 2011, and will include a public outdoor gathering space at the water's edge. (Most of Pier 36, however, will continue to be occupied by the municipal users, including NYPD, Sanitation and OEM.)
- The project master plan includes a public beach at Pier 42 as part of Phase II (which also includes the redevelopment of the Battery Maritime Building's plaza), but Phase II has not yet been funded.

As of the spring of 2010, there are no ferry services planned for these piers.



3.5.1 FERRY SERVICE AT EAST RIVER ESPLANADE

Ferry services from East River Esplanade include:

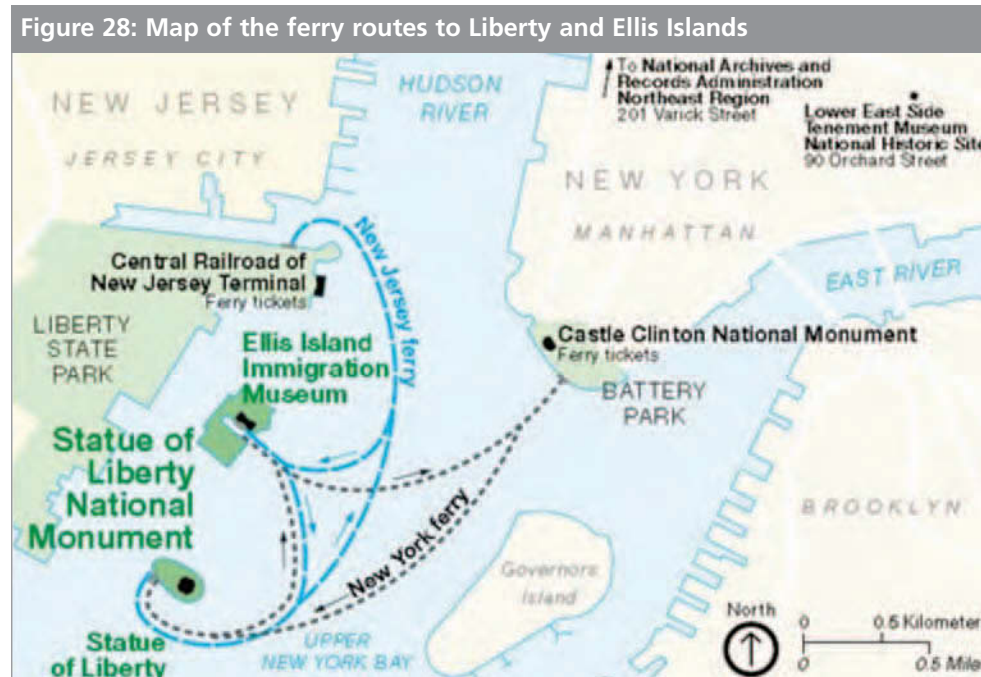
- Various commuter ferries serving Pier 11. In 2009, ferries serving Pier 11, included:
- Hoboken, NJ;
- Port Liberte, NJ;
- Liberty Harbor, NJ;
- Paulus Hook, NJ;
- Weehawken, NJ;
- Belford, NJ;
- Highlands and Atlantic Highlands, NJ;
- Rockaway (Queens);
- Brooklyn Army Terminal; and

- The East River, including Queens West, East 34th Street, Fulton Ferry (Brooklyn), and Schaefer Landing (Brooklyn).
- Pier 11 also serves as the stopping point for the IKEA ferry to Red Hook, Brooklyn.
- New York Water Taxi's Hop-On/Hop-Off service stops at Pier 17 at South Street Seaport.

3.6. LIBERTY AND ELLIS ISLAND

Liberty and Ellis Island are the largest recreational ferry destinations in the Harbor, with a combined attendance of 5.125 million during calendar year 2009. (Because visitors may elect to visit either or both islands, this totaled 3.83 million individuals.) Statue Cruises operates ferries to the two islands from the Battery in Lower Manhattan and from Liberty State Park in New Jersey.

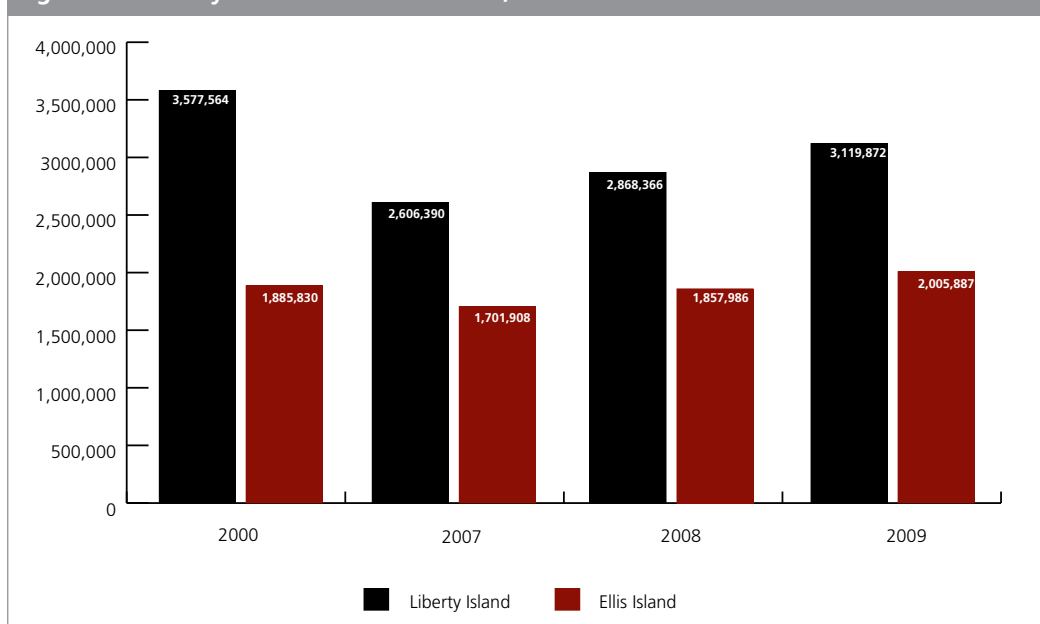
A map of the ferry services to Liberty and Ellis Islands is shown in Figure 28.



As shown in Figure 29, the number of visitors to Liberty Island grew by 19.7 percent to about 3.1 million between 2007 and 2009; the number of visitors to Ellis Island grew by nearly 18 percent to 2.0 million during the same period. The number of annual visits has bounced back significantly since the temporary closure after September 11, 2001. (Ellis Island attendance in 2009 surpassed the 2000 level.) However, the total visitation to Ellis and Liberty Island of 5.125 million during calendar year 2009 was still below the 2000 peak of 5.463 million.

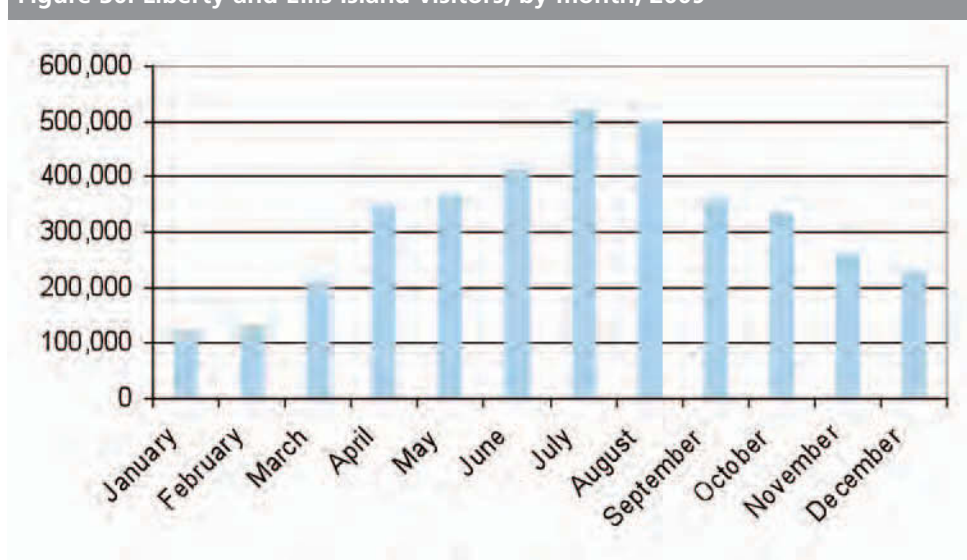
In 2009, about 61 percent of visitors to the two islands (about 3.1 million people) took a ferry from the Battery in Manhattan. The remainder took a ferry from Liberty State Park in New Jersey.

Figure 29: Liberty and Ellis Island visitors, 2000 and 2007-09



As shown in Figure 30, April through October are the most popular months to visit Liberty and Ellis Islands. Even in the coldest months, more than 100,000 people visit the islands per month.

Figure 30: Liberty and Ellis Island visitors, by month, 2009



3.6.1 FERRY SERVICE IN 2009

During the summer, the first ferries to Liberty and Ellis Island leave the Battery and Liberty State Park at 8:30am; and the last ferries leave Ellis Island for the Battery at 6:30 pm. Ferries depart every 20 to 25 minutes from the Battery and every 40 minutes from Liberty State Park in the summer.

The round-trip fare for adults is \$12.00, for children is \$5.00 and for seniors is \$10.00.

Statue Cruises offers a ferry service between World Financial Center and Liberty State Park for a \$5.00 one-way fare for Liberty and Ellis Island ticket holders so they can access the shorter lines for ferries. (The usual adult fare is \$7.00 each way.)

3.6.2 PLANNED FERRY SERVICES

The National Park Service is exploring the possibility of integrating a Governors Island stopover into some of its Statue of Liberty and Ellis Island ferry trips. This service could begin on a trial basis as early as the summer of 2011.³²

3.7 HUDSON RIVER PARK

Hudson River Park is a waterfront park that extends from Chambers Street in Lower Manhattan to 59th Street in Midtown.

For the purpose of this analysis, we focused on three Hudson River Park sites:

- Christopher Street (Pier 45);
- Chelsea Piers (Pier 66); and
- Pier 84.

Christopher Street provides access to the Christopher Street pier - a recreational pier - and to the West Village neighborhood. The Chelsea Piers landing provides direct access to its recreational and entertainment facilities, visited by about 4 million people each year, and to the Chelsea neighborhood and art galleries. Pier 84 - at 44th Street - provides access to the Intrepid Sea and Air Museum, as well as Circle Line boat tours. The Intrepid draws about 1 million visitors per year.

3.7.1 FERRY SERVICE IN 2009

New York Water Taxi offered summer Hop-On/Hop-Off ferry service to Christopher Street, Chelsea Piers and Pier 84 during 2009, averaging about 256 passengers on weekend days from Pier 84, 222 passengers from Christopher Street (Pier 45), and 125 passengers from Chelsea Piers.

3.7.2 FUTURE FERRY SERVICES

Except for New York Water Taxi's seasonal Hop-On/Hop-Off services described above, there are no additional intra-City ferry services planned. Ferry operators have proposed seasonal services that could bring neighborhood residents to the beaches at Fire Island and Sandy Hook.

3.8 COMMUTER SITES WITH RECREATIONAL POTENTIAL

In addition to the NYHarborWay sites described above, a number of commuter ferry landings could serve a substantial number of recreational users

In this section, the recreational potential of four commuter sites is briefly assessed:

- Yankee Stadium;
- Citi Field;
- Coney Island; and
- Rockaway / Riis Landing.
- Yankee Stadium hosts 81 regular season New York Yankees baseball games each year as well as several other large concert events. New York Waterway offers a ferry service to and from Yankees games (from origins in New Jersey and Manhattan). During the 2010 baseball season, New York Water Taxi is offering a free service to Yankees sponsored by Delta Airlines. (New York Water Taxi's service does not offer return trips.)
- The private ferry operator, Seastreak, offers a ferry service to and from some home games at Citi Field from points in Highlands, New Jersey with Manhattan stops.
- In July 2009, the City Council adopted a proposed rezoning plan for Coney Island that would pave the way for a 27-acre "amusement and entertainment district." As shown in the illustrative development map in Figure 30, amusements and hotels would be concentrated along Surf Avenue near the Stillwell Avenue subway station. Luna Park - Coney Island's first new amusements in years - opened for Memorial Day weekend 2010.

³²National Park Service, Hornblower report

A comprehensive study of ferry service options for visitors to Coney Island will begin this year and will examine a ferry landing at Steeplechase Pier, a landing at West 8th Street and a landing at a Coney Island creek location that would need to be integrated with a bus or dedicated shuttle service.

Figure 31: Illustrative Coney Island development map



- The **Rockaway** ferry landing serves the beach at Jacob Riis Park - a popular destination during the summer months. In the summer of 2009, New York Water Taxi's weekend beach service to Rockaway attracted more passengers per day than its weekday commuter service.

PART FOUR:

INTEGRATING COMMUTER AND RECREATIONAL FERRY SERVICE

Ferry services now provided to recreational destinations in the New York area (or being considered) vary considerably in terms of the business model under which these services are provided, their relationship to existing or planned commuter services, and other characteristics.

This part of the report describes business models that can be applied to operate ferry services to recreational destinations, and discusses how these business models can interact with commuter ferry service. The corridor analyses described above are modified to integrate recreational sites that comprise part of the NYHarborWay.

4.1 BUSINESS MODELS

There are essentially four models for operation of ferry services to recreational destinations in New York harbor.

- The franchise model - in which a private operator has a franchise to provide service to specified destinations on a specified schedule, with no public operating subsidy; operating costs and profit margins are covered by fares, along with any ancillary revenues. The principal example in New York harbor is Statue Cruises' service to Liberty and Ellis Islands.
- The entrepreneurial model - in which a private operator independently provides a service that is typically sold not simply as transportation but as an experience, sometimes in conjunction with a destination. As in the franchise model, there is no public subsidy. New York Water Taxi's Hop-On, Hop-Off and Water Taxi Beach services are the leading examples.
- The free public service model - in which a public agency contracts with an operator to provide ferry transportation as a public service, at no charge to riders; the full cost of the service is borne by the agency. Ferry service to Governor's Island is the prime example.
- The hybrid model - in which a public agency contracts with an operator to provide specified services, with costs and profit being covered through a mix of fares, ancillary revenues and public subsidy. The Rockaway service and the planned East River ferry service between Brooklyn, Queens and Manhattan (discussed in Part Three) are examples of the hybrid model.

4.2 RELATIONSHIP TO COMMUTER SERVICES

As noted above, services to recreational destinations also can be characterized in terms of their relationship (if any) to commuter ferry services.

- Integrated service - in which a landing that is regularly used for peak and off-peak commuter service also provides access to one of the NYHarborWay sites. In this case there is effectively no distinction between commuter and recreational service - the same landing and the same ferry operation are serving both markets simultaneously. For example, Statue Cruises' Liberty Water Taxi integrates scheduled commuter service from Jersey City to the World Financial Center with service to Liberty State Park.

Similarly, all of the commuter services that stop at Pier 11 can be seen as providing access to South Street Seaport and the East River Esplanade. And the proposed commuter service from Fulton Ferry and Atlantic Avenue to Midtown and Lower Manhattan would at the same time provide easy access to Brooklyn Bridge Park.

- Modified routes - in which the commuter routes served during peak periods are modified during off-peak and/or weekend hours in order to serve recreational destinations. On spring, summer and fall weekends, for example, the route of a Southwest Brooklyn service that runs from Bay Ridge to Pier 11 might be changed - by dropping the Brooklyn Army Terminal and instead of proceeding directly from Pier 6 to Pier 11, adding a stop at Governor's Island.
- Supplemental service - in which vessels used for commuter service during weekday peak periods are used during non-peak hours or on weekends to provide service to recreational destinations. A peak-period commuter vessel could,

for example, be deployed full-time on spring, summer and fall weekends providing service from Pier 6 or the Battery to Governor's Island - or from Brooklyn Bridge Park to the East River Esplanade - or some combination of these.

- Stand-alone service - in which a ferry operator provides service on a route that includes only recreational sites, with vessels and facilities that are used only for this purpose, and not to provide commuter service. Examples include Statue Cruises' Liberty and Ellis Island services, and the core BMB-to-Governors Island service.

4.3 OTHER RECREATIONAL SERVICE CHARACTERISTICS

As noted above, ferry service to recreational destinations can vary in other respects as well. Perhaps the most significant of these is the temporal dimension. Variations can include:

- Full-year, full-day, every-day service - such as Statue Cruises' Liberty and Ellis Island services;
- Seasonal and part-time services - such as GIPEC's Governors Island services and NYWT's Water Taxi Beach service; or
- Event-based services - such as Statue Cruises' expanded service from Manhattan to Liberty State Park during the All Points West Festival, or New York Waterway's service to Yankee Stadium.

Table 21 below combines the business models, relationships to commuter service and the temporal dimension into a matrix showing where various existing, proposed and potential new NYHarborWay services fit into the overall framework described above.

Table 21: Existing, proposed and potential NYHarborWay recreational services, by business model and relationship to commuter service				
	Integrated Service	Route modification	Supplemental service	Stand-alone
Franchise	Statue Cruises - Liberty Water Taxi NY Waterway/BillyBey/ SeaStreak - access to East River Esplanade and Seaport via Pier 11			Statue Cruises - Liberty and Ellis
Entrepreneurial			NYWT - Water Taxi Beach NYWT - Hop-On/Hop-Off	
Hybrid	East River Service - Brooklyn Bridge Park	<i>South Brooklyn - delete BAT, add Governors Island during off-peak and weekends</i> Hudson River Park - add Chelsea Piers, Christopher Street off-peak and on weekends	NYC & Co 2010 pilot: Brooklyn Bridge Park - Gov Island - Seaport South Brooklyn - Atlantic Ave to Governors Island <i>Battery-Governors Island - Liberty and Ellis Islands</i>	
Free public service			NY Waterway - Governors Island supplemental	Governors Island - basic service

- * Existing services are shown in plain type
- * Proposed or potential services are shown in **bold type**
- * Seasonal and/or part-time services are *italicized*

4.4 OPTIONS FOR JOINT COMMUTER-RECREATIONAL FERRY SERVICE

The review of existing ferry operations serving recreational sites in New York harbor and the analysis of proposed new commuter services suggests that there is no single business model or service configuration that will maximize the value of ferry service to NYHarborWay sites - for users, for operators or for the City. The differences among sites in terms of transportation access, stages of development, the scale and characteristics of their markets, and their periods of operation - all suggest that different approaches to the provision of ferry service are called for.

Using the framework presented in Table 21, several potential options are identified for developing new ferry service to NYHarborWay sites. They include:

- Modification of the proposed East River Service Level 1 corridor serving Brooklyn and Queens to provide off-peak and weekend service to Atlantic Avenue and Governors Island during the spring, summer and fall;
- Modification of the proposed East River Service Level 1 corridor serving Manhattan to provide similar off-peak and weekend service to Atlantic Avenue and Fulton Ferry and to Governor's Island during the spring, summer and fall;
- Modification of the proposed South Brooklyn Service Level 1 corridor on summer/fall weekends, deleting the weekday stop at Brooklyn Army Terminal and adding Red Hook and Governors Island.
- Modification of the proposed Hudson River Service Level 1 off-peak and weekend service, adding stops at Chelsea Piers and Christopher Street all year, and a stop at Governors Island during the summer.

This recreational service concept would most likely be implemented in only one of these corridors.

The number of visitors to NYHarborWay destinations including Brooklyn Bridge Park, Governors Island, Red Hook, Chelsea Piers and Christopher Street is poised to grow over the next several years. Part Two includes more detail about this growth, but it is briefly summarized below:

- From 2009 to full build-out, the number of visitors to Brooklyn Bridge Park is expected to grow from 2 million to 8 million per year. For the analysis, daily count data collected by the Brooklyn Bridge Park Conservancy during the New York City Waterfalls in 2008 was used. During that event, an average of about 3,800 people visited Pier 1 on weekend days, and 1,700 people visited Pier 1 during weekdays. For the purposes of the team's analysis, it was assumed that the number of visitors to Brooklyn Bridge Park will be approximately triple that - about 11,500 people on summer weekend days and 5,000 on summer weekdays. (Winter visitation was also projected at about 40 percent of summer visitation.)
- In 2009, ferry service from Brooklyn to Governors Island averaged more than 1,000 visitors per weekend day; on 6 days out of 36, the number exceeded 2,000. The total number of visitors to Governors Island could grow from 275,000 to 400,000 over the next several years.
- In Hudson River Park, annual attendance at Chelsea Piers is approximately 4 million; and visitors made an average of about 256 trips on New York Water Taxi's Hop-On/Hop-Off service each weekend day to/from Christopher Street in 2008.

Below a preliminary assessment of the incremental cost and revenue potential for each of these options is provided. It is worth noting that many of the options presented below could affect existing ferry services operating in the Harbor, including New York Water Taxi's Hop-On/Hop-Off service. The study does not take these impacts into account, but they should be considered during any future planning for integrated commuter-recreational ferry services. For each of the scenarios below, a one-way recreational fare of \$2.50 is assumed.

4.4.1 EAST RIVER BROOKLYN-QUEENS SERVICE LEVEL 1 CORRIDOR WITH INTEGRATED RECREATIONAL SERVICE

Three possible ways were examined of integrating the East River Brooklyn-Queens Service Level 1 Corridor with a service to four NYHarborWay destinations - Brooklyn Bridge Park, Governors Island, the Battery and East River Esplanade.

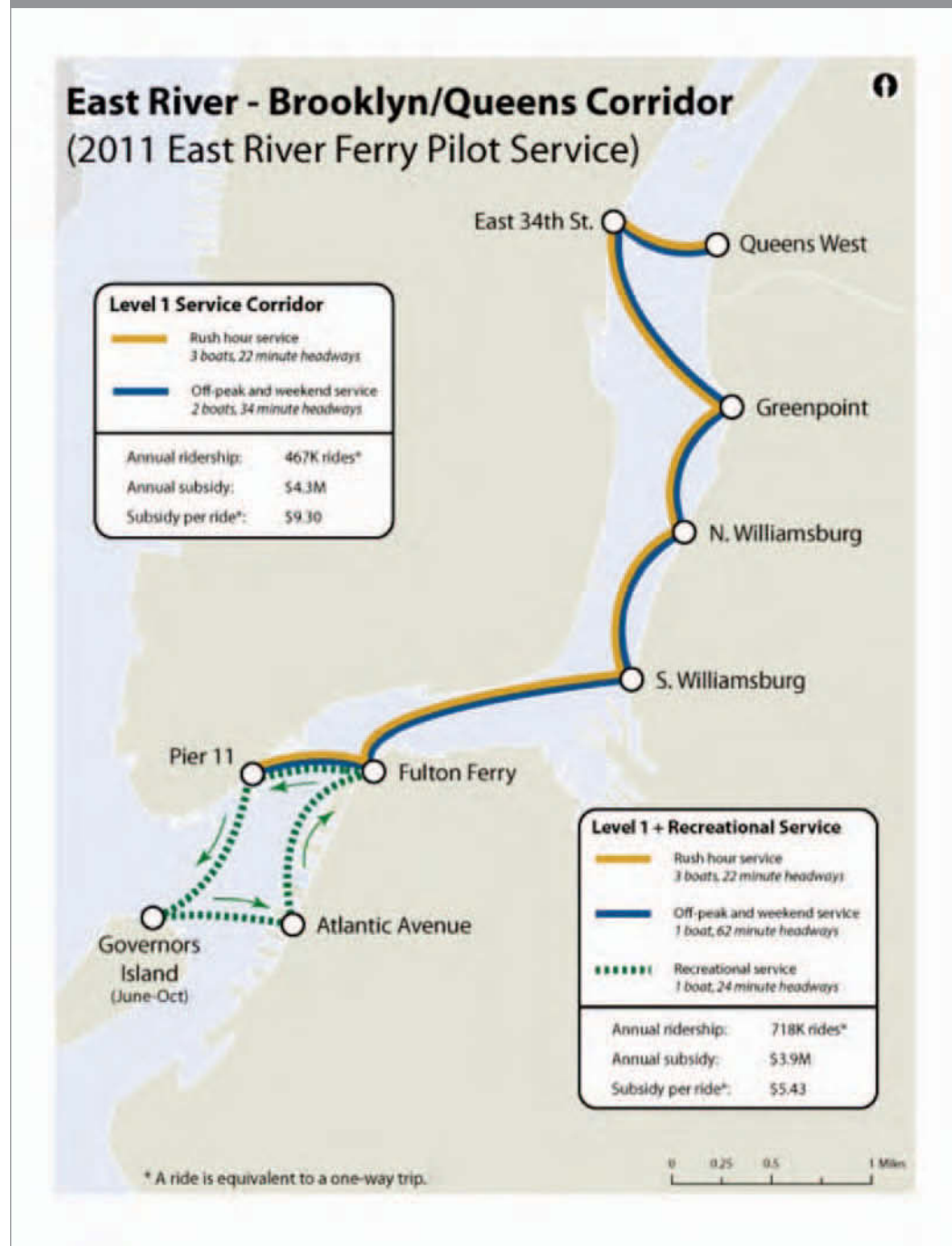
All three scenarios use the same 3-boat commuter service defined earlier. They differ in how the three boats are used during off-peak periods.

- In the **2-boat base + Governors Island-Brooklyn Bridge Park Loop (GI-BBP)** scenario, two boats continue to serve the Service Level 1 corridor East River sites with headways of 34 minutes, and one boat does a simple loop between Fulton Ferry, Atlantic Avenue, Governors Island and Pier 11. The Governors Island stop is assumed to be seasonal and only on Fridays, Saturdays and Sundays. The base off-peak headways remain 34 minutes, while the headways on the Brooklyn Bridge Park - Governors Island - East River Esplanade route would be about 24 minutes.
- In the **1-boat base + GI-BBP Loop** scenario, only one boat serves the Service Level 1 corridor East River sites with headways of 62 minutes, and one boat does the loop between Fulton Ferry, Atlantic Avenue, Governors Island and Pier 11 described above. The base off-peak headways increase to 62 minutes, while the headways on the Brooklyn Bridge Park - Governors Island - East River Esplanade route would be about 24 minutes.
- In the **2-boat integrated route** scenario, the stops at Atlantic Avenue and Governors Island are fully integrated into the Service Level 1 service. This has the effect of increasing headways at the base sites from 34 minutes to 48 minutes, and to the NYHarborWay sites from 24 minutes to 48 minutes.

For the purposes of this analysis, we assumed that about 20 percent of the Brooklyn Bridge Park visitors would come from Manhattan and 5 percent would take the ferry.

Figure 32 shows the approximate annual cost, revenue and subsidy for the Service Level 1 corridor service and the most cost-effective recreational scenario. This route is proposed to form the basis of the East River Ferry Pilot Service that is scheduled to start in 2011.

Figure 32: Map of the Service Level 1 corridor East River Brooklyn/Queens service with an integrated recreational loop



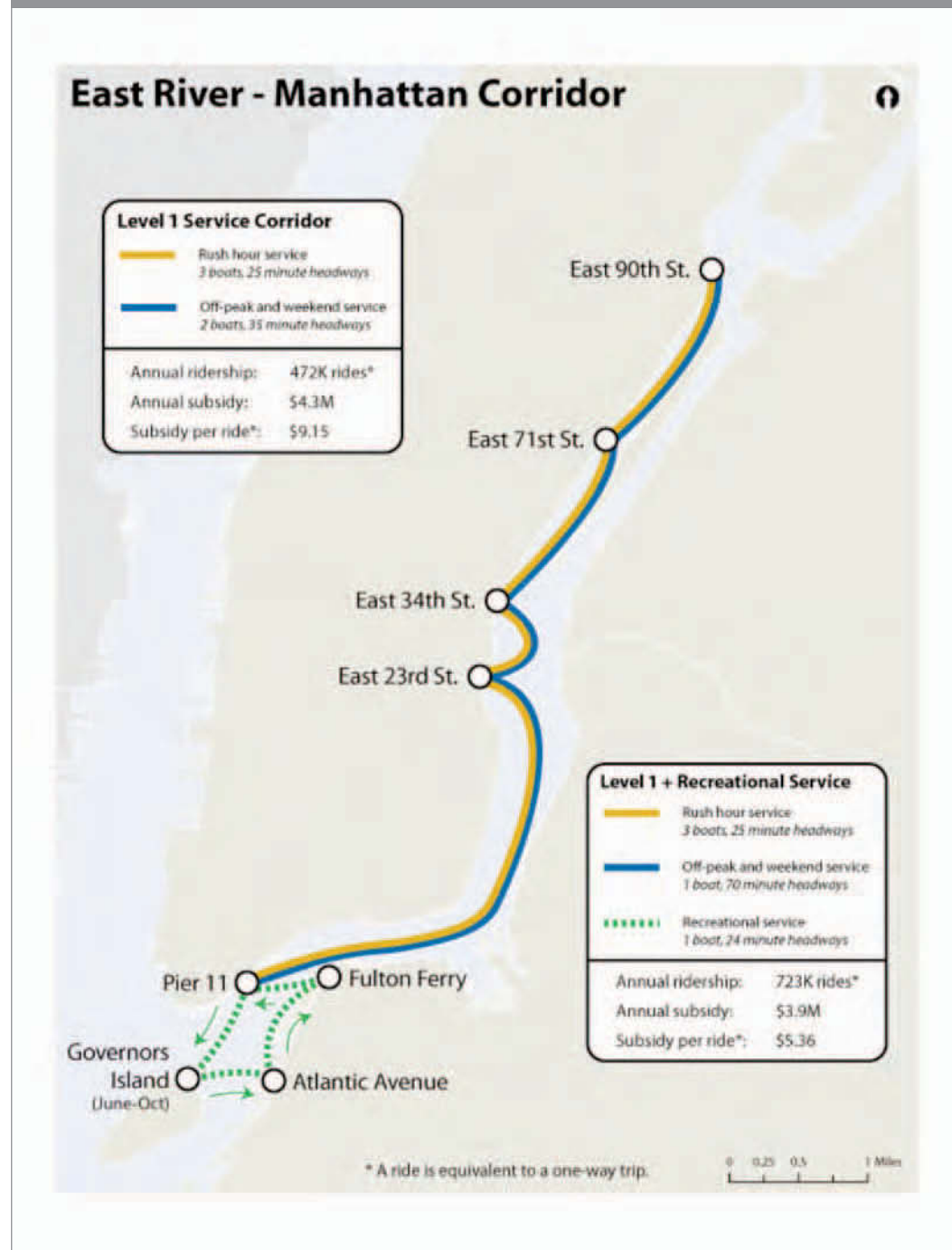
4.4.2 EAST RIVER-MANHATTAN SERVICE LEVEL 1 CORRIDOR WITH INTEGRATED RECREATIONAL SERVICE

Like the scenario above, scenario was examined that would integrate a recreational loop connecting Lower Manhattan, Brooklyn Bridge Park and Governors Island.

As in the above scenarios, the recreational fare was assumed to be \$2.50 for a one-way trip rather than \$5.00. During the off-peak, one boat would run the off-peak commuter service stops and one boat would be devoted to the recreational service loop.

Figure 33 shows the results of this analysis.

Figure 33: Map of the Service Level 1 East River Manhattan corridor with integrated recreational stops



4.4.3 SOUTH BROOKLYN SERVICE LEVEL 1 COMMUTER CORRIDOR WITH INTEGRATED RECREATIONAL SERVICE

Two possible ways were examined of integrating the South Brooklyn commuter service with a service to four NYHarborWay destinations - Brooklyn Bridge Park, Governors Island, the Battery and East River Esplanade.

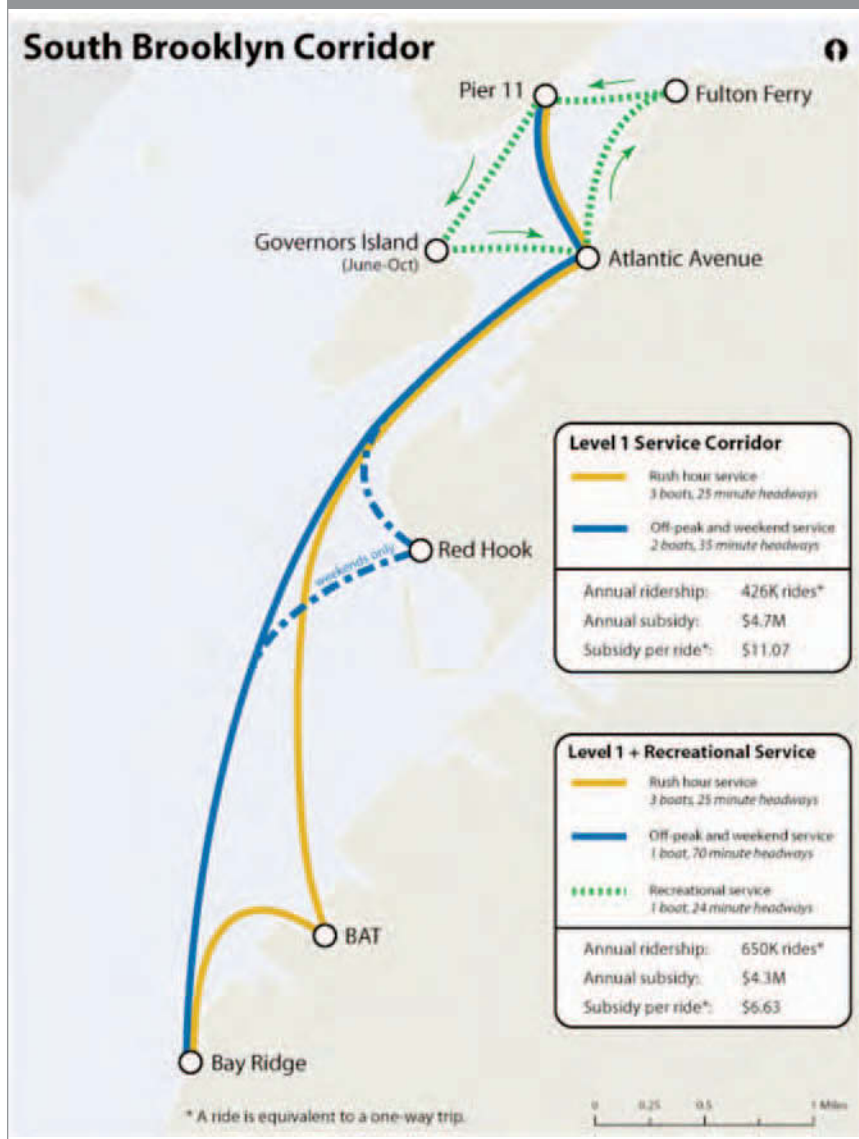
In both scenarios, the Brooklyn Army Terminal stop was dropped during the off-peak weekday period and summertime stops were added at Fulton Ferry and Governors Island. The same was done during summer weekends, and a Red Hook stop added as well. The fare for a one-way trip on the recreational loop or between recreational sites is assumed to be \$2.50.

- In the 1-boat base + Governors Island-Brooklyn Bridge Park Loop scenario, only one boat serves the Service Level 1 South Brooklyn sites (excluding Brooklyn Army Terminal at all times, but including Red Hook on weekends), and one boat does a loop between Fulton Ferry, Atlantic Avenue, Governors Island and Pier 11 described above. The base off-peak headways increase to 70 minutes, while the headways on the Brooklyn Bridge Park - Governors Island - East River Esplanade loop route would be about 24 minutes.
- In the 2-boat integrated route scenario, the weekend stops at Atlantic Avenue, Governors Island and Red Hook are fully integrated into the Service Level 1 service. This has the effect of increasing off-peak headways at the base sites from 35 minutes to 50 minutes, and to the NYHarborWay sites from 24 minutes to 50 minutes.

For the purposes of this analysis, the same assumptions about visits to Governors Island and Brooklyn Bridge Park as above were made. It is assumed that Red Hook could generate about 60 visitors (120 trips) each summer weekend day.

Figure 34 shows the headways, cost, revenues and annual subsidy required for the most promising of the scenarios.

Figure 34: Map of the South Brooklyn Service Level 1 service integrated with a single-boat recreational loop



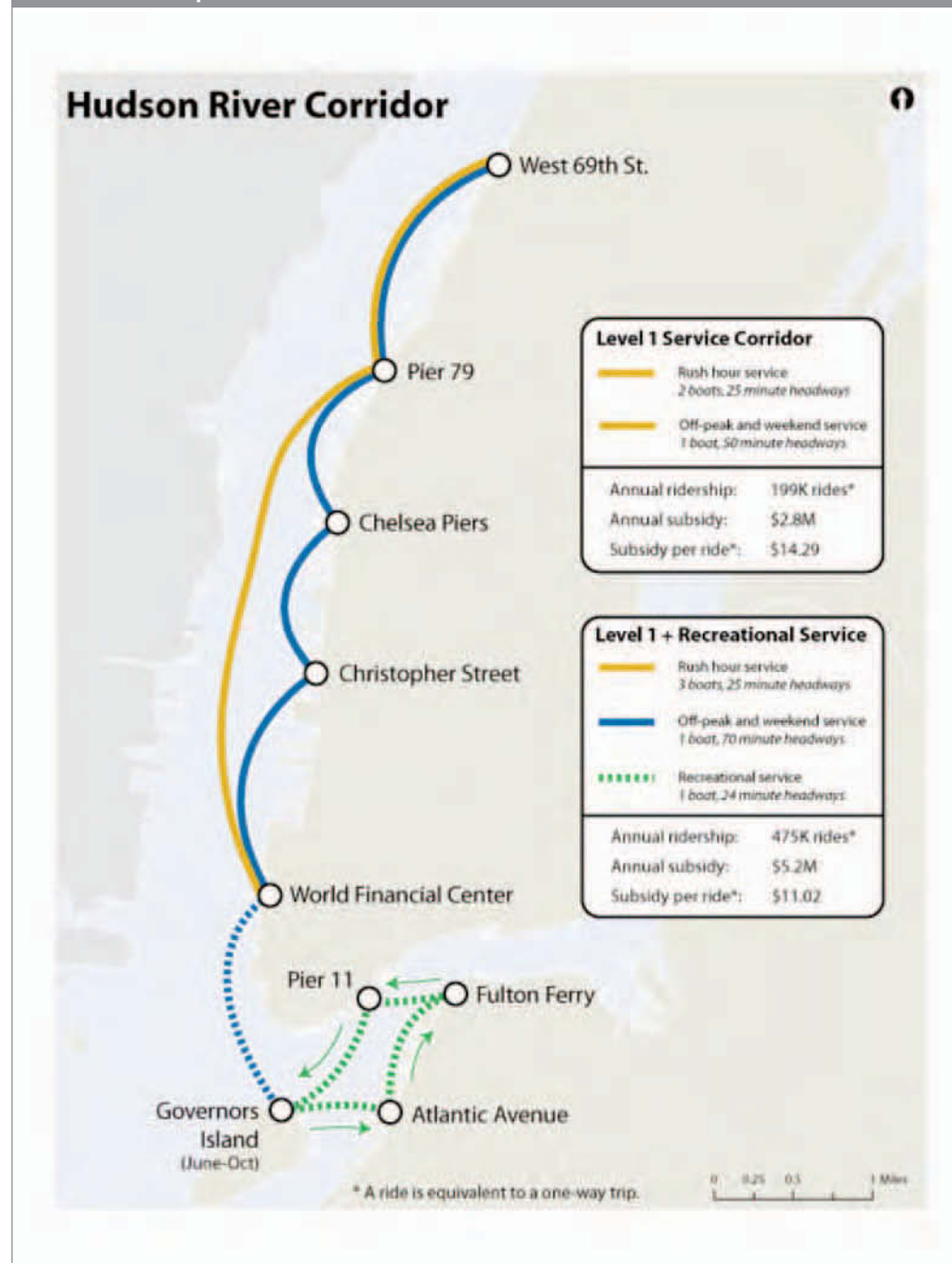
4.4.4 HUDSON RIVER SERVICE LEVEL 1 CORRIDOR WITH INTEGRATED RECREATIONAL SERVICE

A scenario was examined that would integrate two stops at Hudson River Park sites - Chelsea Piers and Christopher Street - with a seasonal stop at Governors Island.

Based on ridership on New York Water Taxi's Hop-On/Hop-Off service, it was assumed that Chelsea Piers could generate 160 weekend trips per day and 100 off-peak weekday trips in the summer. Christopher Street could generate 113 weekend trips per day, and 38 weekday trips per day in the summer. Winter ridership was assumed to be 40 percent of summer ridership. As in the above scenarios, it was assumed that the recreational fare would be \$2.50 for a one-way trip rather than \$5.00. Peak headways with two boats would be twenty-five minutes, while off peak headways on the commuter service would be 50 minutes and on the recreational service 70 minutes.

Figure 35 shows the results of this analysis for the most cost effective scenario.

Figure 35: Map of the Hudson River Service Level 1 Corridor with integrated recreational stops



4.4.5 BATTERY-GOVERNORS ISLAND-LIBERTY ISLAND-ELLIS ISLAND LOOP

In addition to the modifications of commuter service analyzed above, there are additional ways in which a vessel that is typically used to provide peak commuter service could be repurposed during off-peak and weekend hours to provide service to NYHarborWay destinations.

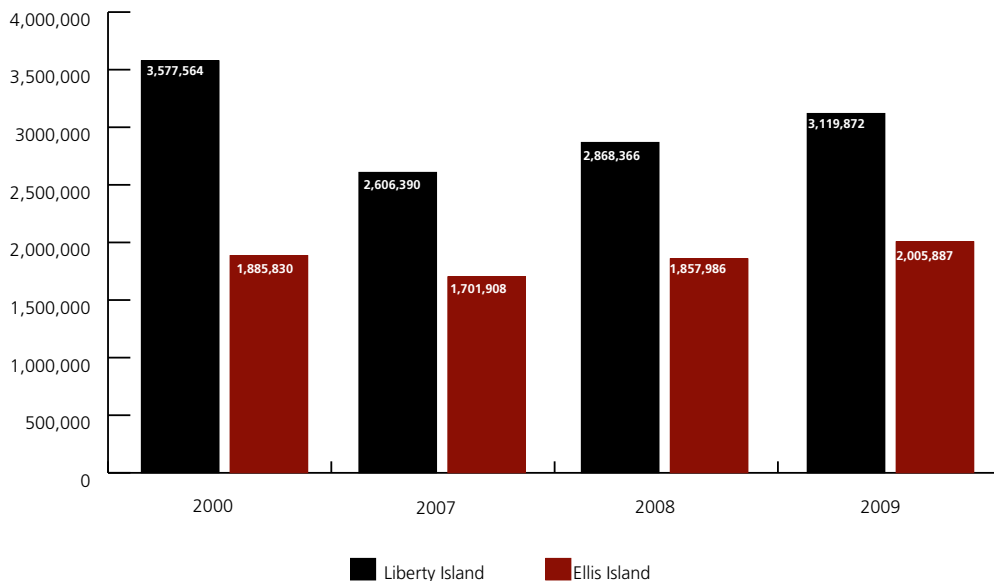
For example, one option would deploy a vessel that on weekdays is used for commuter service on a route that connects the Battery, Governors Island, Liberty Island and Ellis Island. This service could operate 10 hours per day (plus mobilization time) on 18 weekends per year - for a daily cost of \$5,500 and a total cost of \$198,000 for the season.

The goal would be to attract visitors to Liberty and Ellis Islands who might also be interested in visiting Governors Island. In 2009, about 3.8 million people visited Liberty, Ellis or both islands. Based on monthly visitor data from Liberty and Ellis, we estimate that on an average weekend day during the 18-week Governors Island season, about 21,400 people took the ferry to either or both of the Islands.

If it is assumed that 2 percent of summer weekend Liberty Island/Ellis island visitors would choose to visit Governors Island as well, it can be estimated that this service would attract an average of 428 riders per day. Assuming a fare equivalent to that now charged by Statue Cruises (a \$12.00 round-trip adult fare), the service would generate about \$184,000 in revenues, and require a subsidy of \$14,000. To reach the break-even level (about 460 riders per day at \$12.00); the service would have to attract about 2.2 percent of all 2009 summer weekend visitors to Liberty and Ellis.

Given steady growth in the number of visitors to the two Islands in recent years (as shown in Figure 36), it is possible that in 2011, the capture rate needed to break even on this service could be less than 2 percent.

Figure 36: Attendance at Liberty and Ellis Island, 2000 and 2007-09



The National Park Service is studying such a route and could launch a pilot as early as 2011.

4.5 INTEGRATING OTHER RECREATIONAL SITES

There are other opportunities to provide or expand ferry service to recreational destinations other than NYHarborWay sites. The National Park Service has studied the viability of expanding or providing service to Sandy Hook, New Jersey; Fort Wadsworth, Staten Island; Riis Park and Jamaica Bay, Queens.

The analysis suggests that some City sites have limited potential for commuter service, but ferry service could enhance the value of the site as a recreational destination (as in the case of Coney Island), could improve access to the site (as in the case of Randall's Island), or could simply provide an alternative means of transportation (as in the case of Yankee Stadium and Citi Field).

PART FIVE:

OVERVIEW OF OTHER REGIONS

The analysis considered ferry services in other regions in the U.S. and outside the U.S. with a focus on governance, financing and fare integration systems. The detailed analysis is included in Appendix A, but we discuss several broad conclusions below.

SERVICE MODELS, FINANCING AND GOVERNANCE STRUCTURES IN OTHER REGIONS

Often lost in the ridership numbers for more traditional transit services such as subways and buses, is the fact that the New York region has the most robust ferry network in the nation. The bulk of the ridership is carried on the Staten Island Ferry with over 21 million people a year, but almost 10 million more ride a network of ferry services, mostly focused on connections between midtown and lower Manhattan and New Jersey. Unlike the Staten Island ferry, these services are somewhat unique in that the direct costs of their operation are not subsidized by the public sector. This model is not replicated in the United States or in most places in the developed world where passenger only ferries operate. The private sector model is seen much more often in ferry services that combine auto and cargo transport with passenger transport. In reviewing these other sources, we looked at governance, financing and fare integration.

The analysis considered seven different ferry systems: Washington State Ferries (WSF); Water Emergency Transportation Authority (WETA) in the San Francisco Bay Area; Massachusetts Bay Transportation Authority (MBTA); Alaska's Marine Highway System; the Sydney Ferries system in Australia; the Istanbul Seabuses and Fast Ferries, Inc. ("IDO") system in Turkey; and the Oslo ferry system in Norway. Some of the general conclusions were as follows:

Funding

- There is no single ferry system identified that compares to the New York-New Jersey ferry system. All of the systems studied rely on various sources of public funding in addition to the fare revenue that they generate.

Governance

- The systems are generally overseen by government entities, even if their operation is contracted to private providers. Examples range from the Washington State system, which features a government workforce, to Boston in which the transit agency, MBTA, oversees privately contracted services. In San Francisco, a stand-alone authority, the Water Emergency Transportation Authority oversees the funding and coordination of services. Similarly in King County Washington, a separate ferry district provides passenger only ferry services using contracted service providers.

Common Traits

- In reviewing ferry services from around the nation and the globe, several general conclusions can be drawn. Particularly in the United States, ferry services tend to be seen as a premium transit service alternative that offers a higher level of comfort to passengers. In New York, ferry service is more akin to the express bus network as opposed to the local bus or subway network. As a result premium fares are charged for the service. Ferry service also tends to supplement existing transit services with faster service to the central business districts. For those that live at or near the water, ferry service can provide in some cases significant travel time advantages. And although, not traditional mass transit as such, ferry service will generally require public support and subsidy as do other forms of transit.

FARE INTEGRATION

The analysis considered seven different ferry systems' fare collection and integration methods: Washington State Ferries (WSF); Water Emergency Transportation Authority (WETA) in the San Francisco Bay Area; Massachusetts Bay Transportation Authority (MBTA); Alaska's Marine Highway System; the Sydney Ferries system in Australia; the Istanbul Seabuses and Fast Ferries, Inc. ("IDO") system in Turkey; and the Oslo ferry system in Norway.

On the basis of the analysis, we conclude that fare integration with privately operated ferries is achievable here in New York City. Our transit system is less complex than the seven transit agencies within the Puget Sound region or the 22 agencies in the San Francisco Bay that propose to use a single card for a diverse set of fare options.

When looking to propose fare integration with privately operated ferries, NYCEDC could look to King County Ferry District, WETA and MBTA as examples of integrating fare collection methods and less than full fare transfers. Furthermore, the MTA has demonstrated its own ability to integrate fares with non-MTA operators like the Roosevelt Island Tramway, PATH and AirTrain.

Achieving the integration of privately operated ferry service into the larger regional transit network will be unique to New York, requiring significant political buy-in by elected leaders, substantial coordination among multiple local, regional, and state transportation agencies, and considerable financial investment in infrastructure upgrades at ferry terminals to implement a fare integration system. In order for ferry service to capture the greatest market possible, however, expanding the reach of the system through fare integration with other transit operators is highly desirable.

An upcoming opportunity to explore this potential would be in the implementation of the next generation “smart card” system being developed by the MTA in conjunction with other regional operators.

PART SIX:

GOVERNANCE AND FUNDING

This chapter examines issues associated with governing and funding services in the New York Harbor, using the upcoming East River service as a funding case study. The chapter also reviews the notion of the public interest and develops criteria under which it might be appropriate to subsidize the operating cost of ferry service

The chapter is organized as follows:

- Agencies Involved
- Existing Governance Structure
- Possible Governance Approaches
- Existing and Potential Funding Sources
- Public Interest Criteria
- Service Evaluation Standards
- Services Operated Outside a Governance Structure

A plethora of agencies oversee various aspects of ferry service in the New York Harbor. And many of these fund capital projects or provide operating assistance. The status quo could best be described as a multi-agency bi-state approach, with fragmented oversight and governance. Most, but not all, of the service is privately operated and funded. A host of agencies have some role in overseeing service and facility development, granting licenses for service, approving needed environmental permits and funding service. The discussion below in the first three sections will review agency roles and the existing governance structure and then propose six possible approaches for governing future ferry service.

6.1 AGENCIES INVOLVED

Table 22 provides a summary of the roles played by each of the agencies involved in providing ferry service in New York.

Table 22: Agency roles and responsibilities

Agency	Role					
	Oversight	Permit Approval	Licensing	Capital Funding	Operations Funding	Planning
New York State Department of Transportation (NYSDOT)	Federal Funding Programs		Operator Licensing	State Omnibus & Transit Purpose Program Multi-Modal Program		
New York State Department of Environmental Conservation (DEC)		Ferry Facility Permits				
New Jersey Department of Transportation (NJDOT)	Federal Funding Programs					
New Jersey Transit (NJT)				Ferry system infrastructure		
Port Authority of New York and New Jersey (PANYNJ)				Ferry system infrastructure		Regional Ferry Study
Metropolitan Transportation Authority (MTA)					Cross-Hudson ferry service	
New York City Department of Transportation (NYCDOT)			Landing Licenses	Ferry system infrastructure and vessels	Staten Island Ferry	
New York City Office of Emergency Management (OEM)						Emergency Evacuation Plan
New York City Economic Development Corporation (NYCEDC)					East River Pilot Program	Citywide Ferry Study
New York Metropolitan Transportation Council (NYMTC)	Allocation of Federal Funding					
Maritime Administration (MARAD)				Federal Ship Financing Program Title XI		
Federal Transit Administration (FTA)				Section 5307 and 5309		
Federal Highway Administration (FHWA)				Ferry Boat Discretionary		
Coast Guard	Harbor Safety and Navigation Programs					
Army Corps of Engineers		In-water Permits				

6.1.1 STATE OF NEW YORK

The State of New York governs and funds public transportation services, including ferries, in a variety of ways, although its oversight role is limited. Ferry operators must be licensed by the State Department of Transportation (NYSDOT) to carry passengers, and the Department of Environmental Conservation (NYSDEC) must approve in-water permits for building and maintaining dock and float facilities.

6.1.1.1 DEPARTMENT OF TRANSPORTATION (NYSDOT)

The State Department of Transportation oversees and passes-through federal funding, including several federal formula and discretionary program funding streams. Most notable for ferries are Sections 5307 and 5309, administered by the Federal Transit Administration, and the Ferry Boat Discretionary program, administered by the Federal Highway Administration.

NYSDOT also manages four State funding programs, including:

STATEWIDE MASS TRANSPORTATION OPERATING ASSISTANCE PROGRAM

The Statewide Mass Transportation Operating Assistance Program distributes \$3.0 billion annually to approximately 130 transit operators across the State. The downstate portion of the program is known as the Mass Transit Operating Assistance Fund, and is funded through a variety of tax sources including a portion of the Petroleum Business Tax, the MTA Corporate Tax Surcharge, a 1/4 percent sales tax in the MTA region and a Long Lines tax. The MTA is the biggest recipient of this funding. The current formula for STOA funding is .405 per passenger and .69 per vehicle mile. Private providers are eligible for assistance as long as they are sponsored by a city, a county or a RTA. However, a 1993 amendment to the State Transportation Law prohibited commuter ferry services from receiving this operating assistance. The Staten Island Ferry was not affected by this amendment. But to put commuter ferry service on the same footing as other regional transit services would require the repeal of this amendment.

STATE OMNIBUS AND TRANSIT PURPOSE PROGRAM

This program is set up for non-MTA recipients and provides a state share for the required 20 percent local match for federal capital funding programs. It is available for Section 5307 and 5309 funding and for CMAQ (Congestion Management and Air Quality) and STP (Surface Transportation Program) programs as well. Local transit sponsors are required to provide the remaining 10% share. This program is available to agencies that are funding capital infrastructure for ferry service such as terminals, docks and landings.

MULTI-MODAL PROGRAM

The Multi-Modal Program provides funds for capital improvements to rail freight & passenger facilities, port facilities, aviation facilities, local roads and bridges, and fixed ferry facilities. The funds for fixed ferry facilities can be used for projects with a service life of at least ten years. Both municipal and privately operated ferry lines are eligible for assistance.

6.1.1.2 DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The New York State Department of Environmental Conservation plays an important, though indirect role, in the provision of ferry service. It oversees the environmental permitting of ferry facilities, including docks and floating piers in the harbor. As ferry services are dependent on the construction of suitable landing sites, these permit approvals are critical to the implementation and success of any service. In New Jersey, the Department of Environmental Protection plays a similar role.

6.1.2 STATE OF NEW JERSEY

6.1.2.1 DEPARTMENT OF TRANSPORTATION

New Jersey is one of three states that is a designated recipient of federal Ferry Boat Discretionary (FBD) funding under the provisions of the surface transportation act. Operators and agencies in other states must compete for this funding. New Jersey has used the funding to develop landside access and terminal facilities to support private ferry operations. The Office of Maritime Resources is the oversight office in the DOT.

6.1.2.2 NEW JERSEY TRANSIT

New Jersey Transit is a statewide public transportation system that partners with the Port Authority and other agencies in

developing ferry infrastructure on west side of the Hudson River, including a new facility at Weehawken and restoration of ferry landing slips at the Hoboken Terminal.

6.1.3 PORT AUTHORITY OF NEW YORK AND NEW JERSEY

The Port Authority was created in 1921 as an interstate compact between New York and New Jersey. The boundaries of the Port District are approximately 25 miles from the Statue of Liberty. The mission of the Port is to invest in trade and transportation projects that support the economy of the region. For ferry transportation, this has included significant investment in the World Financial Center/Battery Park City ferry terminal and the Hoboken, NJ terminal. The PA has also contributed capital funding toward the Pier 6, East 34th St. and W. 125th St. piers in New York City. The Port Authority is also in the process of conducting an interagency study of regional private passenger ferry service in the New York metropolitan area.

All of the Port Authority's revenue is derived from its transportation infrastructure and its development projects. It is not a general purpose government and has no power to tax. It is however, the only existing agency with the authority to develop transportation projects that span both sides of the Hudson River.

6.1.4 METROPOLITAN TRANSPORTATION AUTHORITY

Most of the region's transit services on the New York side of the Hudson have been consolidated under the umbrella of the Metropolitan Transportation Authority, a public benefit corporation. Since 1968, MTA has operated New York City Transit, the Long Island and Metro North Railroads and Long Island bus lines. It is also the successor to the Triborough Bridge and Tunnel Authority and operates a number of toll bridges in the region.

Table 23: MTA funding sources, 2010	
Source	Amount (\$ millions)
Metropolitan Mass Transportation Operating Assistance	1362.5
Petroleum Business Tax	639.3
Mortgage Recording Tax	268.5
Urban Tax	265.7
Payroll Mobility Tax	1669.0
License Fees	26.7
Vehicle Registration Fees	181.6
Taxi Fee	85.0
Auto Rental Fee	35.0
TOTAL	\$ 4533.3

The MTA budget for 2010 is \$11.8 billion. Of its revenue, approximately \$4.5 billion comes from dedicated taxes and \$940 million from state and local subsidies. Table 23 lists the funding from dedicated taxes and fees, including relatively new sources authorized by the State Legislature.

MTA has limited its role in ferry transportation to funding services that connect to the Metro North Railroad at two locations along the Hudson River: Haverstraw to Ossining and Newburgh to Beacon. These ferry services are operated by private operators under contract to Metro North. A variety of funding sources keep these services in operation, including federal formula funding and internal MTA resources. MTA offers a Uni-ticket that provides for travel on both the ferry and the train. Integrated fares are not an option currently provided within New York between MTA and private ferry operators.

6.1.5 CITY OF NEW YORK

Two mayoral agencies play a role in the provision of ferry service. DOT and OEM are both overseen by commissioners appointed by the Mayor. The New York City Economic Development Corporation, a non-profit entity operating under contract to the City also has important duties with respect to ferries.

6.1.5.1 DEPARTMENT OF TRANSPORTATION

The City of New York DOT operates the busiest single line ferry service in the United States, the Staten Island Ferry. Connecting the St. George terminal in Staten Island to the Whitehall terminal in Manhattan, the Staten Island Ferry carries over 20 million passengers a year and about 65,000 on an average weekday.

The free service is funded from regular city tax revenue. Federal funding is used to support some of the system's capital needs and in rare cases, such as the recent stimulus package, operating assistance as well.

DOT also has an Office of Private Ferries that oversees the system of private ferry lines serving the City. The office is responsible for licensing operators. In conjunction with EDC, DOT provides oversight of the public infrastructure used by the private operators such as docks and floats. The office also applies for federal funding for projects from sources such as the Ferry Boat Discretionary program. The office is funded from general tax revenues.

6.1.5.2 OFFICE OF EMERGENCY MANAGEMENT

The City's Office of Emergency Management is responsible for preparing plans that are implemented in the case of emergency. With ferries, the focus has been on evacuation planning. The agency has not provided funding to the industry for either capital projects or operating assistance. OEM also works to coordinate federal funding requests for grants from the Department of Homeland Security and its constituent entities such as the Federal Emergency Management Agency.

6.1.5.3 NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION

NYCEDC plays a role in the development of ferry capital projects and service by acting as the capital construction agency for a number of new and expanded ferry landings in the City. In order to implement the East River ferry service pilot program new ferry landings are being constructed. EDC is using funding from a federal earmark to put the gangways and barges in place in North Williamsburg for the start up of service in spring 2011. A private developer is building the required infrastructure at India St. in Greenpoint. EDC has also secured funding from the City for a service subsidy for the East River service for three years. This funding is coming from general city tax revenues and has been transferred from OMB (the Office of Management and Budget) to the EDC budget. Landing and license fees collected by the City are used by EDC to perform needed maintenance and upgrades on dock infrastructure.

6.1.6 NEW YORK METROPOLITAN TRANSPORTATION COUNCIL

The New York Metropolitan Transportation Council (or NYMTC) is the federally designated Metropolitan Planning Organization (MPO) for the New York State portion of the Tri-State metropolitan area. As the MPO, NYMTC plays an important role in the dispersal of federal funds flowing into the region. Members of NYMTC allocate federal transit funding among the eligible grant recipients. All projects receiving federal funding also must be reflected in the Transportation Improvement Program (TIP) adopted by the Council. Finally, NYMTC prepares and adopts a long range transportation plan for the region that highlights key transportation initiatives and projects. Across the Hudson, the North Jersey Transportation Planning Authority plays a similar role.

6.1.7 UNITED STATES DEPARTMENT OF TRANSPORTATION

Three of DOT's constituent agencies play important roles in the funding of ferry infrastructure, vessels and service.

6.1.7.1 MARAD (MARINE ADMINISTRATION)

The Maritime Administration of the DOT oversees waterborne transportation activities, focusing mostly on the transportation of goods by water. The agency also provides guarantees for private funding through its Federal Ship Financing Program Title XI, which enables private operators to more easily finance the purchase of vessels.

In the New York harbor, Billybey has taken advantage of this mechanism to finance the purchase of its fleet. Financing is obtained from the private sector and the government guarantees the obligation. 87.5 percent funding guarantees are available for ferries engaged solely in point-to-point transportation, not less than 75 gross tons, and capable of sustained speed of not less than 8 knots.

6.1.7.2 FTA (FEDERAL TRANSIT ADMINISTRATION)

The FTA is the main federal financing and oversight arm for public transit operators. Two key FTA programs are available to provide funding assistance for ferries. Section 5307 formula funding is available for capital projects. 5307 funds are distributed on a formula basis that takes into account route miles and ridership of transit services. These funds flow into the region and are allocated by the New York Metropolitan Transportation Council according to a distribution formula. The City of New York is a designated recipient of this funding. However, New York City only receives about one percent of the regional allocation,

the bulk of which goes to the MTA. Under a program called “capital cost of contracting” these funds can also be used to purchase transportation services from private operators. In this way, up to 40 percent of funding for a ferry service could take advantage of Section 5307 funding. (The MTA has used this method to help fund their cross-Hudson ferries.) If services using city tax revenue such as the East River Ferry Service pilot become permanent, the City should work to claim its share of funds that these services generate for the region.

Section 5309 or fixed guideway modernization funding is also distributed according to a formula. Under the government's definition, ferries are considered a fixed guideway mode. In the NYMTC region, however, all Section 5309 funding goes to the MTA.

An additional type of funding has been authorized in Section 5309 called Small Starts funding. Traditionally, large capital intensive transit projects (such as the Second Ave. Subway) compete for funding from a category called “New Starts.” The emergence of bus rapid transit projects around the nation led to legislation that authorized funding for smaller projects, with less rigorous planning and analysis required. At the same time, a program called “very small starts” was created. Ferries are eligible for funding from this program. The FTA guidance on small starts from 2007 lists the criteria under which projects are eligible.³³

6.1.7.3 FHWA (FEDERAL HIGHWAY ADMINISTRATION)

The Federal Highway Administration oversees the Ferry Boat Discretionary program, which provides funding for capital infrastructure and vessels. The FBD provides funding allocations to three states by statute—Washington, Alaska and New Jersey. In New York, applications for the program are solicited by the State DOT which then forwards selected ones to Washington DC for funding. New York State has imposed a cap of \$2 million per application.

6.1.8 UNITED STATES DEPARTMENT OF HOMELAND SECURITY

6.1.8.1 US COAST GUARD

The US Coast Guard is the chief regulatory agency for vessels in the New York Harbor. In charge of inspection and certification for the ferry fleet, the Coast Guard regulates traffic in the harbor and is responsible for maritime safety and security efforts. The Coast Guard is also a key responder in emergencies that occur on the water and maintains the navigation aids in the harbor. However, it is not a provider of funding for ferry services or vessels.

6.1.8.2 UNITED STATES DEPARTMENT OF DEFENSE

6.1.8.3 ARMY CORPS OF ENGINEERS

The Army Corps of Engineers does not have a direct role in the oversight of the ferry services, but it does issue permits for in-water structures. Any pier or bulkhead construction or repair within the navigable waters of the New York Harbor will likely require an Army Corps permit.

6.2 EXISTING GOVERNANCE STRUCTURE

As can be seen from the above discussion, the governance and operational structure for ferry service in New York harbor is quite fragmented. Many agencies control pieces of the overall puzzle, but no one agency is responsible for governance and for funding. In part this governance structure has evolved from the history of ferry service in the region. With the important

³³Very Small Starts projects are simple, low-risk projects that, based on their characteristics and the context in which they are proposed to operate, qualify for a highly simplified project evaluation and rating process. Small Starts projects that qualify as Very Small Starts are bus, rail, or ferry projects that possess the general elements described above, but which include other attributes which distinguish them from Small Starts. Very Small Starts must include the following features:

- Substantial transit stations,
- Traffic signal priority/pre-emption, to the extent, if any, that there are traffic signals on the corridor,
- Low-floor vehicles or level boarding,
- Branding of the proposed service,
- 10 minute peak/15 minute off peak headways or better while operating at least 14 hours per weekday (not required for commuter rail or ferries),
- Are in corridors with existing riders who will benefit from the proposed project that exceed 3,000 per average weekday, and
- Have a total capital cost less than \$50 million (including all project elements) and less than \$3 million per mile, exclusive of rolling stock.

exception of the Staten Island Ferry, for many years no other publicly or privately operated services plied the waters of New York Harbor. Since, the reinstitution of ferry service in December, 1986 by NY Waterways, public agencies have had to develop oversight and funding programs. But the programs and oversight have developed without an overall governance structure and in response to specific proposals and services.

The situation is complicated by the state boundary that runs down the middle of the Hudson River. Ferry companies operating between the two states must deal with regulatory agencies on both sides of the river. The Port Authority is the only state level body authorized to execute projects in both states.

The key question remains: How to institute, fund and regulate services, vessels and facilities given the existing fragmented governance structure? The potential services examined in this study will only operate in New York State waters. So the question of whether a bi-state agency is an appropriate governing or regulatory body is quite appropriate, given the fact that these new routes will likely be operating entirely within the City of New York. The next section examines a number of possible approaches that could be taken to the governance and oversight of ferry services in New York harbor. For each of the possible structures, a detailed assessment of the legal issues and requirements would need to be conducted. (It should be noted that these models are outlined for discussion purposes only, and do not represent a policy position of NYCEDC or NYHarborWay or of the agencies discussed.)

6.3 POSSIBLE GOVERNANCE APPROACHES

6.3.1 CENTRALIZED CONTROL SPANNING BOTH NEW YORK AND NEW JERSEY (WITH OR WITHOUT PUBLIC OPERATION)

The Port Authority of New York and New Jersey is the only public entity whose authority spans both states. There would be no statutory barriers to the PA becoming the governing entity for ferry service within the Port District and it would clearly be within its purview to take on this role. The PA would be able to develop and fund ferry service, albeit only if questions regarding sources of funding were to be resolved. If centralized control of ferry operations and capital development was to occur with the Port Authority as the lead agency, several questions would need to be addressed, including:

- Would the PA acquire the capital assets of the existing ferry operators, including vessels and maintenance facilities?
- Would the PA acquire any of the waterfront infrastructure from existing governments and operators?
- Would the PA turn the operation into a public one or would the operations continue to be contracted for through the private companies?
- Would private operators continue in the Port District?

Once these questions were answered, the issue would be one of funding levels.

- What would be the appropriate level of subsidy for these operations?
- Would there be any difference for routes operating between the states as opposed to routes operating solely within NJ and NY?

The Port Authority is not a general purpose government and does not have the power to tax. The capital and operating costs of the ferry system would need to be funded through the revenue generating operations of the PA, including the airports and real estate development and the PA bridges and tunnels. PATH (Port Authority Trans-Hudson) runs a large operating deficit that is funded from these sources. The PA would need to establish operating standards for ridership and cost recovery. The PA would also need to negotiate fare and service integration agreements with transit providers on each side of the river.

Given the PA's role as an entity created by an interstate compact, and not as a general purpose government, there would also be potential issues associated with the exercise of regulatory oversight authority without the actual ownership or control of the assets. If the PA were to own vessels, it could more easily exercise control over routes and standards for service. If the PA were contracting for service, all coordination and control would be exercised through contract provisions, making service changes and service coordination more difficult given the various operators.

The PA Board is appointed by the governors of New York and New Jersey and is not directly elected. No City of New York or NJ municipal official sits on the board.

The PA has provided some service subsidy in past, for example, participating in the funding of the service from Yonkers to the World Financial Center. And the PA has extensively funded many capital projects such as the World Financial Center terminal. However, the Port Authority is facing significant financial shortfalls due to the faltering economy. The likelihood of the agency being willing to take on this obligation is slim, without the pledge or promise of additional tax revenue or funding from the two states.

STRENGTHS

- Bi-state agency

WEAKNESSES

- Not a general purpose government
- Need to find funding for service and capital subsidies

6.3.2 TRANSIT AGENCY OVERSIGHT

A second approach to governance would be to have the transit agencies integrate the provision of ferry service into their mission. Ferry services are a form of transit, even if privately provided. One could argue that the percentage of regional ferry riders carried by ferries justifies oversight and investment by transit agencies. Ferry service would be divided based on the residential location of the bulk of the riders. This would have NJ Transit responsible for the services that run from New Jersey and the MTA responsible for those services that run within New York City. The MTA is governed by a 17-member Board nominated by the Governor. Four of its members are recommended by the Mayor of New York City.

Several options would be available:

- a. Transit agencies could acquire the assets of the operators and make them in essence wholly owned subsidiaries. This model is similar to the New York City franchised private bus operators. Private operators in Queens were absorbed into the MTA and are operating as MTA Bus. This option would require funding for acquiring the assets of the private entities. Unlike the bus example above, an entirely new line of business would be added to the transit agency portfolio, requiring new personnel with expertise in operating waterborne transportation.
- b. Transit agencies could use funds to contract for the provision of ferry service in their service areas. Private operators would remain in business, and respond and compete for requests for proposals.
- c. Transit agencies could be given the authority to regulate routes and service levels and would bring the private operators under the umbrella of regional fare integration agreements, but little or no subsidy would be provided.

A key question is whether the agencies would have exclusive authority over the provision of ferry service or whether private operators would continue to have access to the markets. Private operators would argue that the transit agencies would be unfair competitors in that they could offer public subsidies for the services they sponsor. The transit agencies would argue that the private operators would “skim the cream” by providing high quality services in profitable corridors while leaving only the highly subsidized routes to the public agency.

While it would seem to be within the purview of the agencies to negotiate for and pay for assets of operators and even to run services, it seems unlikely that the agencies have the existing statutory authority to require compliance with a particular service plan route or standard. Any sale of assets may require specific legislative authority. Some type of statutory revisions would seem necessary to implement any of the three approaches discussed above.

STRENGTHS

- Easier route integration with other transit services
- Easier fare integration
- Easier schedule integration

WEAKNESSES

- Operator and public agency opposition
- New competition for scarce public subsidy resources

6.3.3 FERRY DISTRICT OR AUTHORITY FUNDING

Under this model, a ferry district or authority would be created with the explicit authority to fund, build and operate ferry services. This would require action of the state legislature. This model likely would be restricted to individual states. The legislation would need to address the authority of the district to provide services outside its boundaries, for example to New Jersey.

Any district would need to have reliable funding sources. One of the key legal questions is to what extent the entity is granted powers similar to a municipality (with a broad grant of authority and taxing ability) and to what extent the entity is structured along the lines of an authority (with a narrow purpose and a limited set of taxing and funding options.)

The ferry district would face the same choices in terms of operating models. Would private operators continue to operate in the service district, and what level of ownership of assets would the district settle upon?

Another key policy determination would be whether the boundary would be broadly or narrowly drawn for taxing and funding purposes. The advantage of a broad district would be that significant funding could be obtained at very low tax rates from a large district. The disadvantage is that most of the residents of the ferry district would not avail themselves of the ferry services funded by their taxes. The advantage of a more narrowly drawn district is that the link to the service being funded by the taxes is much clearer cut. A district that is focused on waterfront areas with poor access to other transportation options and with residents and workers that would use the ferry would perhaps be more feasible. Of course the tax rate for such a district would need to be significantly higher than for a broader based district.

STRENGTHS

- Mission focused on ferry service
- Would have taxing authority

WEAKNESSES

- Would need to develop voluntary agreements for transit route, schedule and fare integration
- May need relatively high tax rate if boundaries of district are narrowly drawn

6.3.4 LOCAL FERRY DISTRICT (SIMILAR TO BUSINESS IMPROVEMENT DISTRICT)

Under this concept a ferry district could be created to provide for the funding and oversight of ferry service in neighborhoods served by the ferry. This mechanism would be available only in New York City so it would not be a regional solution to governance and funding. But together with farebox revenue, it could assist in providing a sustainable funding source for ferry service. Local communities would help determine whether they wanted to invest in ferry service. However, as more service corridors come on line, the separate districts would need to work together to ensure coordination of services and schedules and to use resources most efficiently. A more detailed discussion of this concept is included in later sections, beginning with 6.5.5.

STRENGTHS

- Provides local control
- Neighborhoods that benefit from the service fund the service
- Well established formation process
- Well established assessment mechanism that provides steady, reliable funding

WEAKNESSES

- Difficult to coordinate multiple districts
- Requires significant up-front work and community buy-in
- Formation process requires a showing of support from many residents and businesses

6.3.5 NYC DOT OVERSIGHT

The NYC DOT Staten Island Ferry is an example of a publicly funded and run service. Employees are employees of the City of New York and the service is funded from general city tax revenue. DOT also provides assistance and limited oversight to the private operators in the harbor. The question is whether the role of the DOT should be expanded with respect to the private operators. The operating model would not necessarily turn to one featuring publicly acquired and operated services. Instead the DOT, through its licensing and landing fee agreements could exercise much greater control over routes and schedules of the private operators.

The key City asset is the access to landing sites. Almost all the piers in Manhattan are under public ownership or control, including major destinations such as Pier 11 on Wall Street and Pier 79 in west Midtown. The Department could expand its regulatory authority with respect to required service levels or performance standards since private operators must seek access to city docks and floats. The City could expand its authority and funding and contract for provision of additional ferry service.

STRENGTHS

- City has the expertise in place to operate ferry services

WEAKNESSES

- Would still face integration challenges with other transit providers
- Unclear level of control over bi-state operators and operations
- Would need additional resources to pay for the cost of any new contracted services

6.3.6 STATUS QUO

Another option would be to continue the current approach in which private operators assume the risk in providing ferry service, but also reap the rewards from that service. Limited oversight would be provided by the City DOT regarding operating license agreements and landing fees. The public sector would continue to play a role in the provision of land side capital assets to support the waterborne transportation.

While this approach has led to robust service levels from many destinations in New Jersey, it has limited the reach of services to only those locations in which the ferries can be self sustaining. One could also take the relatively flat ridership numbers over the past several years as evidence that the most lucrative markets have already been tapped.

By not changing the approach, however, the options for expanding ferry service to new destinations or for making it more affordable are limited, including service to new waterfront residential neighborhoods. This approach contains an implicit assumption that ferry services are somehow different than other transit services, in that they are expected to generate 100% of their operating revenue from the farebox.

STRENGTHS

- Proven model with no public operating subsidy

WEAKNESSES

- Very limited opportunity for expansion, particularly in New York City

6.4 EXISTING AND POTENTIAL FUNDING SOURCES

The previous sections examined the role of public agencies in the oversight of ferry service, including how ferries are currently governed and possible alternative approaches to governance and oversight. The next several sections look at the existing funding structure in New York and include proposals for funding future New York City ferry service. The East River Ferry Service Pilot Program is used as an example. The section seeks to answer the question of how the service might be funded after the depletion of direct public subsidy funds from the City Council at the end of the scheduled three year pilot program.

6.4.1 THE CURRENT STATE OF FERRY FUNDING IN NEW YORK

New York City has one of the nation's largest publicly owned and operated ferry services, the Staten Island Ferry. In almost all other cases, the services in the harbor are privately owned and operated. That does not mean however, that the funding for these services has been exclusively private.

In general operators procure and own their vessels, and in general the operators have assumed the risk and the reward from providing service. Services that are financially viable from an operating perspective are continued and improved; services that don't pay their way tend to be dropped.

The public sector has played an important role, however, in providing the landside infrastructure that ferry services must have. In part, this is a legacy of the public ownership of the docks and waterfront infrastructure, particularly in New York, but also along parts of the New Jersey waterfront.

6.4.2 FUNDING SOURCES RELIED UPON

Most of the capital improvements in the harbor have been developed by the NJ Transit, the Port Authority of New York and New Jersey and the New York City Department of Transportation using a variety of funding sources, including agency revenue. When looking to outside agencies for funding, much of the temporary and permanent infrastructure was funded by the federal government in response to emergency transportation demands after September 11th.

Other federal funds were used such as federal ferry boat discretionary programs. And recently the American Reinvestment and Recovery Act provided some capital funding, including assistance for the Staten Island Ferry.

For operating assistance, the City's general tax revenues are used to support the Staten Island Ferry. It does not have a dedicated funding source. A limited number of other passenger only ferry services have secured government support for operating funds. The MTA has used a combination of Section 5307 federal formula funding and local transit funds to support two cross-Hudson ferry services, one from Haverstraw to Ossining and one from Newburgh to Beacon. These services provide residents living west of the Hudson easy access to MTA commuter railroad trains into Grand Central. Recently, the Port Authority helped fund capital improvements for landings and piers for a service from Haverstraw to Yonkers to Lower Manhattan. The Haverstraw/Yonkers segment was eliminated due to poor ridership and the Yonkers/Lower Manhattan service faced a similar fate and was terminated at the end of 2009. This ferry service also featured funding from local sources such as the City of Yonkers, but the largest contribution came from the Lower Manhattan Development Corporation. Funds were obtained from a special one-time appropriation of Community Development Block Grant dollars and were transferred to the Port Authority through interlocal agreement. Finally, New York City, through the City Council, provided funding for a pilot program for service from the Rockaway peninsula at Riis Landing to Lower Manhattan with a stop at the Brooklyn Army Terminal. This service was terminated at the end of June, 2010.

6.5 POTENTIAL SOURCES FOR ASSISTANCE WITH OPERATING COSTS

Transit funding in the New York metropolitan region is a very complicated pastiche of sources funding multiple agencies. Earlier, this chapter provided a brief overview of all the governing actors in the region with respect to the facilities and services. Key agencies such as the City of New York, the Port Authority of New York and New Jersey and New Jersey Transit play major roles in providing the infrastructure used by our ferry operators. But with the limited exceptions noted above, operating assistance has not been part of the equation.

Broad based general tax sources are the first place to look for funding government services. They are also perhaps the funding sources most pressured and constrained by overwhelming demand and extremely heightened levels of public scrutiny. A host of basic government services must be funded from these general tax revenues. Because of their extremely broad reach, the revenue potential from these sources is huge. Because of their extremely broad reach, so is the level of scrutiny. Among the key sources here are property taxes, income taxes and sales taxes.

6.5.1 PROPERTY TAX

The New York City Department of Finance administers the property tax assessment and collection system in the City. Four classes of property are assessed (these are general categories only; there are a number of exceptions):

Class One-one, two and three family

Class Two — rental property and cooperatives and condominiums

Class Three — utility property

Class Four — commercial property

The assessment of taxable value to full market varies by class of property, ranging from Class One property values at less than four percent of full market value to Class Four properties at 37 percent of full market value.

Property tax rates are set by the Mayor and Council as part of the annual budgeting process. Unlike sales or income taxes, the rate is not set in statute. There are several caps and regulations in effect with respect to property taxes. For example, Nassau and New York City feature caps on assessed value that have led to the tax rate disparities noted above. A constitutional amendment in 1953 required that the City/County combined property tax rate in New York City cannot exceed 2.5 percent.

All these factors mitigate against using the property tax as a funding source for ferry service. It has many advantages. It is a relatively stable funding source, it is a very broad based tax, it is difficult to evade, and administrative costs of collection are low.

But it remains the most unpopular tax. It must be paid in lump sum amounts and as a general tax there is no direct connection between the tax paid and the government services received.

The revenue potential is enormous. In King County, Washington a countywide property tax was levied to fund the King County Ferry District. Ferry districts were authorized by the legislature to provide for waterborne transportation services. The tax was assessed at a rate of 5.5 cents per \$1000 of assessed valuation which yielded \$18.6 million for the district in 2008. (It should be noted that property in Washington is assessed at full market value.) The owner of a \$400,000 home would have paid \$22 in taxes for the district. For 2010, the Ferry District Board slashed the tax rate to one third of one cent per \$1000 valuation, dropping the taxes collected to an estimated \$1.8 million. The owner of the same \$400,000 home will now pay only \$1.32 to the District. A citywide property tax increase of one tenth of one percent would yield \$16,000,000 per year for ferry service in New York City. (The current budget assumes about \$16 billion in property tax revenue for 2010.)

6.5.2 SALES TAX

The sales tax is another broad based tax source. It is not quite as stable as the property tax in that it is a tax tied to consumption, and tends to fluctuate according to economic conditions. However, it is difficult to evade, is a very broad based tax with few exemptions, and administrative costs for its collection remain very low.

Sales taxes have traditionally been a major funding source for transit systems across the country. Often sales taxes have been approved by voters as the major source for funding capital expansion programs, but they also are relied upon heavily for operating funds.

The current sales tax rate in New York City is 8 7/8th percent. Of that amount, 4 percent is collected by New York State and 4 1/2 percent goes to the City of New York. Another 3/8th percent is imposed on behalf of the Metropolitan Commuter Transportation District. In other words, the MTA is a direct recipient of sales tax in the region, establishing a precedent for funding transit directly with a broad based tax source.

In New York City, the 4 1/2 percent sales tax is estimated to generate about \$4.8 billion dollars in this fiscal year. Increasing the tax by one-eighth of a percent to an even nine percent would generate about \$125,000,000 per year.

The sales tax in New York City is assessed at the highest rate in the state and New York sales taxes are among the highest in the nation. Table 24 shows the sales tax rates of other selected jurisdictions.

Table 24: Sales tax rates in selected jurisdictions	
Jurisdiction	Sales Tax Rates
New York City	8 7/8
Nassau and Suffolk Counties	8 5/8
Most other New York State Counties	8
New Jersey	7
Connecticut	6
Los Angeles County (most cities)	9 3/4
King County, Washington	9 1/2 (1.8 dedicated to transit agencies)

An objection to the sales tax is its regressive nature. Low income households pay a much greater proportion of their total income in sales taxes than do higher income households. On the other hand, since the tax is paid in small increments each time a purchase is made, the overall impact is not felt to the extent that a once or twice yearly lump sum payment for income or property taxes is.

6.5.3 INCOME TAX

Another broad based tax and long time funding source for federal, state and local government is the income tax. In New York, both the state and the city assess an income tax. The maximum state rate is 6.85 percent; the maximum New York City rate is 3.648 percent. The City anticipates collecting about \$6.8 billion in personal income taxes this fiscal according to the January 2010 financial plan released by the Office of Management and Budget. Increasing the tax rate by just two-tenths of one percent would raise about \$3.6 million in funds.

The income tax is subject to economic fluctuations. Tax collections in the City of New York are down significantly over the past two years. The total amount collected is projected to increase in fiscal year 2011.

While there are other cities across the United States that levy an income tax, the practice is the exception versus the rule. And while New York City's rates vary according to income, its highest rate is the second highest tax rate in the nation, just behind Philadelphia's.

6.5.4 OTHER MAJOR CITY TAX SOURCES

While the three sources noted above are the three largest sources of tax revenue for the City of New York, there are a number of other potential sources that provide significant amounts of money for the City's general fund. Table 25 lists the major sources of city tax revenue and the projected amount they are expected to generate in 2010 (per OMB).

Table 25: City of New York tax sources	
Tax Source	2010 Amount (in millions)
Real Property	16,035
Personal Income	6,817
General Corporation	2,288
Banking Corporation	694
Unincorporated Business	1,618
Sales and Use	4,881
Commercial Rent	578
Real Property Transfer	589
Mortgage Recording	381
Utility	394
Cigarette	96
Hotel	350
All Other	467
Tax Audit Revenue	890
Tax Program	0
State Tax Relief Program	910
TOTAL TAXES	36,988

The City's extensive tax system is far ranging and complex. Most of the taxes listed in the table are broad based and apply to many or all individuals and corporations. There are some taxes, such as the cigarette tax or the hotel tax that are focused on specific areas of consumption. And for many of the taxes listed only a small increase in the rate at which the tax is assessed would yield a significant level of funds.

6.5.4.1 INSTITUTIONAL BARRIERS ASSOCIATED WITH EACH OF THESE FUNDING SOURCES

In a high tax state and city like New York, perhaps the biggest institutional barrier is the high rate of taxation itself. Any attempt to raise the income tax, the property tax or the sales tax would be met immediately with cries of increasing an already high tax burden.

And because these are general and not dedicated tax sources, it is difficult to link the increase in the tax rate to the service being provided. While elected officials could certainly make the case to the public that a particular tax is being raised to fund a particular service like ferry routes, the actions of one legislative body are not binding on that of another. The next City Council may choose to reallocate that funding to other uses, while still keeping in place the tax that was supposed to go toward providing the ferry service. That could be a source of great frustration for the public.

Over the past thirty years or so there has been erosion in public support for broad based tax sources and in the trust in elected officials to fairly and effectively make the allocation decisions for those resources. Interest groups have also become more visible in their claims against the tax revenue for particular programs and projects.

The move to a more performance based approach to budgeting and to allocating tax resources has been embraced by the City of New York. In order to be funded by the general fund, the Office of Management and Budget is looking to performance metrics to ensure that tax dollars are being spent wisely. As such, the East River ferry service is being implemented as a pilot program with very specific budget and ridership goals. The City has committed to three years of pilot program funding, which should be enough to determine the continued viability of the service and the ongoing subsidy requirements. But at some point during the pilot program, the city's elected officials will need to make a budget commitment that either sustains or increases the funding for the fourth year or that reduces or eliminates it.

6.5.4.2 DOES THERE NEED TO BE A NEXUS BETWEEN THE IMPOSITION OF THE TAX AND THE SERVICE BEING FUNDED BY IT?

Given the scale at which taxes are collected in New York City, a relatively small change in the tax rate being imposed can lead to a large increase in absolute dollars raised. Given the scale at which the passenger ferry services will likely be operated, the dollar value of the need would likely be much less than the increased taxes raised by increasing rates. Hence any increase in the general tax sources listed in Table 25 above would need to have ferry services linked to some other services or goods to be provided to the citizens of the City. A general tax increase for transportation improvements, for example, could feature ferry service as one of the reasons for it being imposed, but could also fund other things such as transportation for school children or a particular set of desired transportation capital improvements.

6.5.5 BUSINESS IMPROVEMENT DISTRICTS (BIDS)

A BID is a non-profit, public private partnership in which commercial landlords, business owners and in some cases residents elect to make a collective contribution to the maintenance, development and promotion of their district. Over 64 BIDs exist within New York City, more than that of any other city in the nation, and an additional 11 BIDs are in the planning stages. In FY'08, these 64 BIDs spent a total of \$98 million in improvements and services.³⁴

The vast majority of all New York City BID revenue, more than 74%, is directly raised through assessments on commercial property. The rest of the funding is generated from grants, contributions, special contracts and fundraising.

Approximately half of all BID operating expenses are devoted to sanitation (26%) and security (24%). An additional 15% is spent on marketing, with the remaining expenditures being devoted to administrative costs, streetscape, beautification, social services and other services.

³⁴The Department of Small Business Services provides staff resources for the creation of BIDs and also has a wealth of factual information available about the City's BIDs.

6.5.5.1 FEASIBILITY OF FINANCING FERRY SERVICE VIA BIDS

The only case where BID expenditures are currently used to fund some form of transportation services is in Lower Manhattan, where the Downtown Alliance (DA) funds the costs of shuttle service between the South Street Seaport and Battery Park City. Per DA's FY 2010 budget of \$15.9 million, approximately \$1.3 million (~8%) will be spent on direct expenses related to transportation. These funds are made available based on the premise that free, reliable transportation service carrying people within the district promotes retail traffic and sales, providing a boost to local businesses and overall economic development. In 2009, an estimated 544,000 passengers used the shuttle service.

While no BID expenditures have ever been devoted to the funding of ferry service, there exists no explicit rule or prohibition barring such funding. Today, residents provide some level of contribution to 13 BIDs - most prominent among these the 14th St/Union Square Partnership and Bryant Park. Establishing a BID that assesses residents would require significant community support

6.5.5.2 CREATING A BID

The process of creating a BID is done entirely on the City level, and thus requires no State or Federal approvals or legislation. It is created in three steps:

1. Generate sufficient support within the envisioned district among various stakeholders, which include not just commercial landlords, business owners and potentially residents, but also local elected officials.
2. Present a plan to SBS that evaluates the BID's potential impact and overall support. SBS then either approves or disapproves of the BID's creation. If SBS approves the plan, it goes thereafter for approval to the Department of City Planning (DCP) and the City Planning Commission which conducts public hearings and makes further recommendations or program changes, if any.
3. With the approval of SBS, the City Planning Commission and presumably the local councilperson(s), the plan is put to a vote before the City Council, requiring a simple majority for passage.

Shown in the text box are the detailed steps that must be taken as part of the City process:

PHASE I: PLANNING

1) Contact the Department of Small Business Services (SBS)

Once SBS is contacted, a member of its staff will be assigned to guide the group through the BID formation process. BID formation is not possible without partnering with SBS throughout the entire process.

2) Draft a "Statement of Need"

Summarize the case for a new BID in a brief Statement of Need. The following questions need to be considered in developing the Statement:

- What kind of commercial district is being considered? How would you describe the major user groups (shoppers, residents, day time office workers, tourists) and the businesses that are there?
- What are the quality of life concerns that the BID could address immediately? For example, what is the need for better maintenance of streets, sidewalks, street furniture and public places throughout the district?
- What are the long term development goals for the district? How could a BID support these goals?

The Statement of Need should be submitted to SBS, as well as to those individuals whose participation the group would like to have throughout the BID planning and outreach process.

3) Form a steering committee

Assemble a steering committee of individuals that have a stake in the proposed BID. Representatives from each of the following groups should be recruited to join the committee:

- Commercial/industrial property owners
- Commercial tenants (tenants may be retail, office or industrial businesses)
- Local elected officials
- Residents
- Community organizations (these may include: merchants associations, local development corporations, universities, hospitals and other not-for-profits)

The steering committee should:

- Be comprised of a majority of property owners
- Represent the varied interests of the area
- Be able to reach a consensus on important issues
- Include individuals who are respected by other property and business owners not presently represented on the committee

4) Hold an initial steering committee meeting

Hold an initial steering committee meeting with all of the members. An SBS project manager should attend the first meeting. The following tasks should be accomplished:

- Selection of the steering committee chairperson
- Agreement on a vision for the district
- Determination of tentative boundaries
- Identification of resource needs and funding sources
- Creation of a project plan

5) Develop a database of property owners and commercial tenants

Once the tentative boundaries have been established, a database that contains information on the properties, property owners and commercial tenants within those boundaries must be developed.

SBS will supply the initial database. Use the information in the database to contact property owners and commercial tenants about the BID, soliciting their feedback and support.

6) Conduct needs assessment survey

The following will need to be accomplished to conduct a needs assessment survey:

- Preparation of a needs assessment survey
- Distribution of the survey to all property owners and potential contributors
- Collection of the survey and recording of its results

7) Draft the district plan

The district plan is the most important deliverable in the planning process. The district plan is the “business plan” for the BID. It describes the programs and services to be delivered by the BID, the operating budget for the BID and the formula used to calculate the special assessment. Once complete, the district plan should answer all reasonable questions about the intentions of the new BID. The following must be accomplished in drafting the plan:

- Determination of specific services / improvements
- Determination of first-year budget
- Determination of assessment formula
- Submission of final draft to SBS
- Performance of a mock billing run with SBS

PHASE II: OUTREACH

The purpose of the outreach phase is to raise awareness of and to secure support for the proposed district. The steering committee must demonstrate sufficient support in two categories:

- Property Owner: The number of property owners that support/oppose the BID must be tracked and presented as a percent of the total number of property owners in the district.
- Assessed Value: The total AV of the district is the sum of the AV of each of the properties within the district. The AVs of all supportive properties should be added together and presented as a percent of the total assessed value of the district.

The following actions must be taken as part of the outreach phase:

- 1) Sending out of first informational mailing.
- 2) Holding of first public meeting
- 3) Holding of second public meeting
- 4) Documentation of support gathering results

PHASE III: LEGISLATIVE AUTHORIZATION

- 1) SBS will submit the district plan to the City Planning Commission. The City Planning Commission will initiate a review process with the Community Boards and the Boro Boards which will hold hearings and make recommendations back to the Planning Commission.
- 2) The City Planning Commission then holds a hearing on the proposal and upon approval, forwards the plan to the Mayor and City Council.
- 3) The City Council introduces a resolution and local law for the BID and the Finance Committee is charged with reviewing the proposal, holding a hearing and recommending an action to the full City Council
- 4) Property owners that object to the formation of the BID can file objections with the City Clerk.
- 5) The City Council votes on BID formation and forwards the action to the Mayor who holds a public hearing and signs the legislation.

6.5.6 SPECIAL TAX ASSESSMENT DISTRICTS (STADS)

A STAD is a New York State-recognized geographic area established to provide certain services or improvements, such as water, sewer, drainage or refuse collection, to meet specific needs of property owners within the district. Like BIDs, they are financed by charges against benefited properties within the district. The three STADs that currently exist in NYC - Nassau Street, Fulton Street and 165th Street - were created in late '70's through acts of the State legislature. A subsequent act of the State Legislature turned these STADs in effect into Business Improvement Districts.

STADs should not be confused with “special districts”, which are similar to STADs but are meant to address the service needs of towns and rural communities. STADs do not require an explicit “business improvement” purpose. Unlike BIDs, which are created at the local level, STADs must be created through State legislation. Legislative history and action indicates that BIDs are the preferred method of creating special districts in New York City.

6.5.7 DEVELOPER PARTICIPATION PROGRAM

A private, non-governmental program may be created whereby the owners of residential buildings - professional landlords in the case of rental buildings and residents/associations in the case of condominium buildings - directly participate in the funding of ferry service. Such a program would seek to target those owners whose properties sit within up to one third or one half a mile of one of the landing sites in Brooklyn and Queens.

A potential participation program might be structured such that different levels of assessments are levied based on each property's distance from the landing (e.g. properties closer to the landings pay more than those further away) and its current stage of development (e.g. occupied buildings pay more than those in the marketing/sales phase).

For properties currently in development, a key component of the program could entail signing up developers before any actual condominium sales take place, so that the developers may stipulate the assignment of any assessments upfront to potential condominium buyers. Additionally, an option to end any participation program with majority approval after a specified timeframe might be included.

On the other hand, a ferry district would ensure that all property owners within a district contribute to the support of ferry service and not just the owners of select properties.

6.5.8 HOW LIKELY WOULD INSTITUTIONAL ACTORS BE TO ADVOCATE FOR OR IMPLEMENT EACH OF THESE FUNDING SOURCES?

The biggest barrier to the use of broad based general tax sources discussed above for the provision of ferry service is the fact that these sources are used to fund a huge number of government programs. Legislators and the Executive would have to reach agreement that ferry service would rank above some other competing need for the funding, be it from sales tax, property tax, income tax or some other source. Gaining political consensus around such an expenditure, particularly in an economic recession would prove difficult.

Many advocacy groups have adopted a different approach to gaining access to public funding. They seek to create a dedicated stream of income that is available only for a specific purpose. Often this is accomplished through legislative authorization that a certain portion of a certain tax source may be tapped for a certain purpose, but the actual use of that source is dependent on either a public vote or on the action of another subsidiary government body. Thus the legislature could authorize that a certain amount of sales tax could go toward the provision of ferry services, but that a city or county government would have to impose the tax or alternatively send the tax proposal to a vote of the people. As noted in the section on ferry funding, both the San Francisco and Seattle areas have relied on mechanisms such as this to provide funding for some of their ferry services.

In such an instance the decision to fund a particular service is thrown into the election arena. The opposition to such measures comes from opponents from tax hikes, of course, but also from other entities that may see a threat to their prospects for funding from that particular tax source. Often the opposition of these groups is expressed at the legislative body when the proposed authorizing legislation is being considered.

Local programs such as business improvements districts or developer participation programs do not face as significant a legislative hurdle as creating a new tax or carving out of portion of an existing tax. They do however, require extensive work to build consensus on the value of the investment being funded.

6.6 EXPANDING FERRY SERVICE BEYOND THE EAST RIVER PILOT PROJECT - PUBLIC INTEREST CRITERIA

In order to determine whether a ferry service is in the public interest, one of the first questions that should be asked is what the vision for ferry service in the region is. Over time, a robust network of private ferry services has developed in the harbor, supported by significant public investments in terminals and docking facilities. People take ferries, and the public sector has provided public investment for several reasons, including: convenience; time savings compared to other public transit options or to driving alone; or an overcrowded and inconvenient existing transit services. People make rational decisions about whether it is in their best interest to take advantage of this form of transportation.

This vision has never been very clearly articulated, however, and as public sector officials confront issues of subsidy for both added capital investments and support of service, they need a set of criteria against which that possible investment can be evaluated.

The Regional Plan Association convened a working forum on ferries in November 2006 to define the public interest in the provision of ferry service. The RPA laid out the following factors to be considered in assessing whether an operating subsidy should be in the public interest.

- the operating cost reductions of existing ground modes
- the reduction in fare revenues on ground transit modes from diversion to ferries

- relief of overcrowding on ground transit modes
- relief of highway congestion
- the increase in fare revenues on existing transit system when ferries act as feeders
- the amount of peak period capacity added in a corridor
- the potential for waterfront development and ferry service to act synergistically
- the environmental impact of the ferry, both positive and negative
- the extent to which the ferry service is an integral part of the transportation network
- the ability of the passenger market to pay higher fares
- the amount of travel time saved by ferry riders
- offering redundancy to the existing transit service (such as emergency evacuation)

For the purposes of this study, the following criteria are recommended for assessing whether a public subsidy should be considered:

1. Is the market underserved by other public transit options? Are the alternative transit services beyond what is considered a reasonable walking distance? Do the alternative transit services require more than one transfer to reach a final destination?
2. Are the transit alternatives overcrowded and will the ferry service created new capacity in those overcrowded corridors? Will that additional capacity avoid the need for expensive capital investments in the ground transit mode?
3. Will the riders of the ferry service save time by using the water as opposed to other modes?
4. Does the route provide a needed emergency evacuation capability?
5. Will the ferry service attract patrons who would otherwise have driven to their destination? Does the service promise other environmental benefits in terms of reduced emissions?
6. Can the service be integrated into the existing transit network, both from a service and fare perspective?

The answer to all or most of these questions might be yes, but the decision on whether to subsidize a service must assess it against other competing investments and not in isolation. Providing express bus service or upgrading current transit options such as local bus service or subway service must also be considered. So after reviewing the threshold questions above the next question should be:

6.6.1 IS THE FERRY SERVICE A COST EFFECTIVE INVESTMENT GIVEN COMPETING INVESTMENTS IN GROUND TRANSPORTATION SERVICES?

In order to determine cost effectiveness, one must be able to calculate the expected level of subsidy that would go toward the ferry service. Given the limited number of services operating and the ridership levels compared to those carried on other transit modes, the science of calculating ferry ridership is not as precise as that associated with bus and rail transit, where there are commonly accepted elasticities with respect to fares and service levels. These standards often serve as proxies when ferry services are being evaluated. Over time, as more services are established travel behavior can be better modeled, but for now we have to use the tools currently at our disposal.

Another important distinction to make is whether the services link two destinations only, or are operating as part of a larger route, serving several destinations. A market that might not have the ridership to support a point-to-point service could be combined with other similar markets and an effective service could be developed (as the corridors were developed for this study). So service design is a critical component in this discussion.

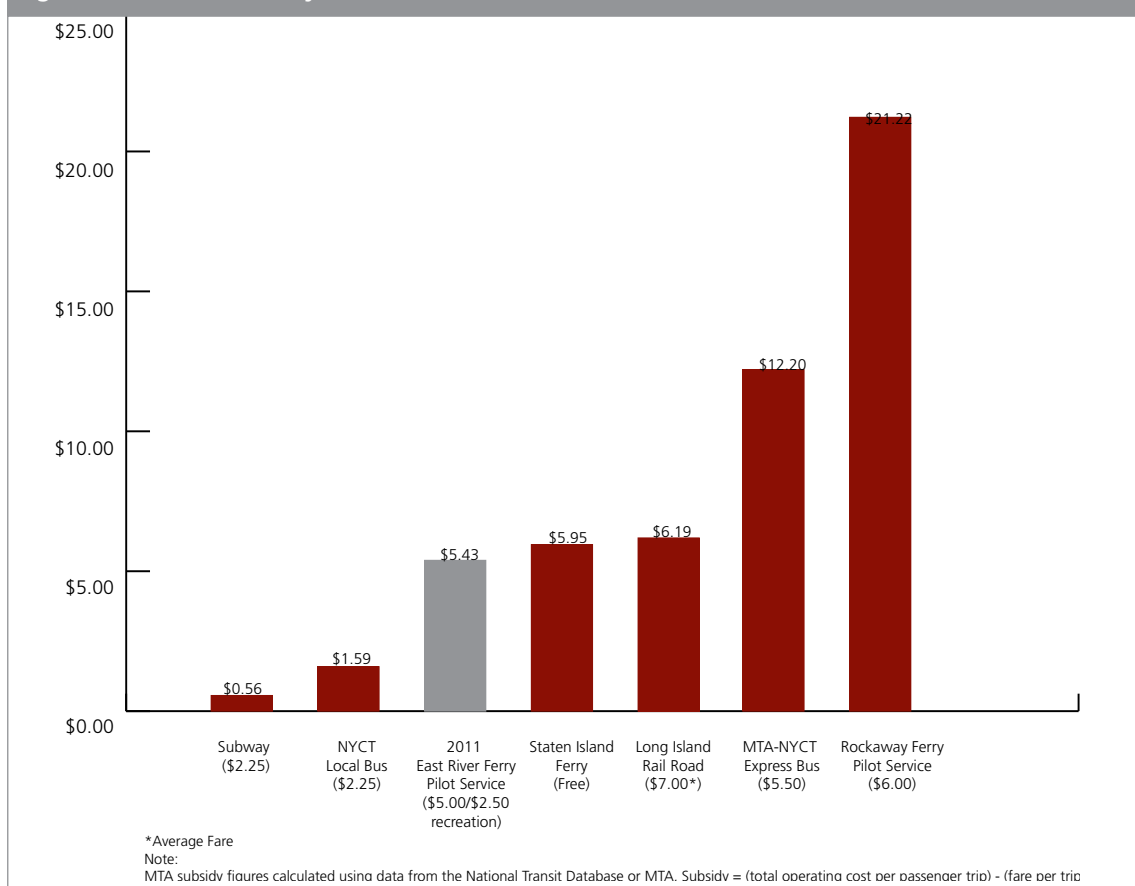
To evaluate cost effectiveness, the issue of subsidy levels must be compared and contrasted. The answer to the question of what is an appropriate level of subsidy may vary from decision maker to decision maker. So before services are considered there should be some understanding of what constitutes the range of acceptable subsidy levels. Other transit services serve as good proxies here as well, but not all transit services. For example, mass transit services such as the subway are not as good a proxy as say bus services-given the capacity of boats and buses and the likely frequencies of service. And local bus services may not be as good a proxy as express bus services, which stop only at a limited number of points, and which also provide a greater level of passenger comfort than local buses.

A service that is projected to operate at a subsidy of ten dollars per rider is probably a better candidate for public funding than a service that operates at a subsidy of twenty five dollars per rider, all other objectives being the same. But, just as subsidies of transit routes vary, there will be variation in the cost recovery ratios for ferry services as well. One route is always going to be the best performing in terms of limiting the public subsidy, another will be on the other end of the spectrum and be the worst performing route, and still another will fall below the line and be deemed not worthy of funding.

In New York, the MTA express bus service is considered an integral part of the public transportation system, particularly in those areas that are far removed from the Central Business Districts of Lower and Midtown Manhattan and where other transit options are non-existent or slow. In many of these neighborhoods express buses provide a transit option similar to those provided in suburban communities by the commuter rail system.

MTA express bus services average a public subsidy of about \$12.20 per rider. Figure 36 below lays out the cost recovery rates for various types of public transit services in the region. It should be noted that these are operating costs only and do not include or assess the cost of capital that can be a large part of the provision of transit service

Figure 37: Transit subsidy levels



6.7 SERVICE EVALUATION STANDARDS

The RPA report also addresses the issue of how to develop start up services under the criteria discussed above. If policy makers determine that a service is in the public interest and should be subsidized, for how long should a commitment be made to that service? Markets need time to mature. In general, an industry standard is that 18-24 months should be provided for start-up services to mature and build a market.

Before starting a new service, conducting market research can be very helpful in directing how and when and to whom the service should be advertised and marketed. People try transit services for a variety of reasons, and knowing which marketing messages will have the most impact is critical in wisely spending a marketing and advertising budget.

Start-up services are created with expectations as to the level of ridership and budgets are based and projected on the likely public subsidy. For each start-up service a supporting set of performance criteria should be developed against which the service should be evaluated. These criteria should include the cost per rider and the subsidy per rider. They should also look at trends in ridership—is the service continuing to build its market or not?

The RPA report also notes the need to market the service and to provide a budget for such. It is unrealistic to expect a service to develop a robust ridership simply by word of mouth. A specific marketing and outreach plan should be developed for each service.

One interesting concept that could be employed is to get the community engaged in the success of a service. Incremental ridership targets should be established for the first, second and third six month periods. At the end of the first period, if the service is not meeting its ridership goals, the community would be put on notice that the service will be eliminated as of X date unless ridership increases. Residents then begin to play an important role in recruiting their friends and neighbors to take advantage of the service. These personal stories can assist in building a market that would lead to the service being continued by meeting later ridership targets.

To summarize the proposal for evaluation and monitoring of start-up services:

1. Establish performance standards and benchmarks for success in terms of:
 - ridership, including growth in ridership over time
 - total cost per rider
 - subsidy per rider (operating revenue to operating expense)
2. Establish a timeline for meeting the service standards
3. Develop periodic performance reports for the new service and share them with the community and with elected officials
4. Establish a marketing budget for promoting the service prior to start up and during the pilot program
5. Survey riders (and non-riders) regarding the service and determine barriers and impediments to increasing ridership levels
6. Assess impacts, if any, on adjacent ground based transit services.
7. Engage with the community in trying to increase ridership for services that are not meeting the benchmarked targets.

6.8 SERVICES OPERATING OUTSIDE A GOVERNANCE STRUCTURE

The previous sections of this report assess the conditions under which a service should be eligible for a public subsidy for operating expenses. Were the city to begin on-going support of services from some type of taxpayer funding source (beyond the limited number of pilot programs already funded), you would find three different models of service provision in the harbor.

The Staten Island Ferry would represent the publicly owned, operated and funded model. Services that receive no public operating subsidy would be at the other end of the spectrum, featuring private ownership and private funding. These services would turn a profit. And somewhere in the middle would be the services that are privately provided, but that obtain a public subsidy for a portion of their operating expenses.

In addition to determining the level of oversight and the governance model for service, a number of other questions will need to be addressed.

- If a service can operate profitably at peak periods, but would require a subsidy during the off peak, should it be eligible for public subsidy?
- If the public sector determines that off peak service is in the public interest, should subsidy dollars go only to that off peak service?
- What if the market conditions change and the peak service requires a subsidy as well? o Under what conditions would the public sector step in?

Another key consideration is how does the public sector ensure that subsidized services are operating efficiently and that operators are wisely spending public sector dollars? Once a service is subsidized the incentive to find those efficiencies is lessened. Strong public sector involvement in setting performance standards and benchmarks will be required and active discussion and direction to the operators.

The operators who are making money operating privately would also seek some type of assurance from the public sector that they will not face unfair competition from a publicly subsidized service. Any proposed publicly subsidized service should be reviewed with the operators in the harbor. The public sector may even want to go a step further and categorize certain service corridors as being off limits to public services. The public sector would however, need to retain flexibility to adjust the map if the private operators were to exit a market. And there may be valid reasons for public service in a market if the service levels provided by the private sector were not robust enough to meet the market potential or to serve publicly owned and supported destinations and assets.

6.9 CONCLUSIONS AND RECOMMENDATIONS

The ferry services in New York harbor have developed over time in a unique way when compared to operations in the rest of the country. The model of private operations, expected to pay their own way, except for the provision of publicly funded landside capital facilities, has not been replicated elsewhere in the United States. The private sector operators have captured a number of profitable markets in the region, but like all transportation providers face increasing cost pressures and must compete against publicly funded transit options.

Will that market model continue to expand or is it time to look at a new way of developing, operating and funding ferry services in the region? Ridership levels on existing services have been somewhat stagnant over the last few years. In large measure this is due to the recession, but it could signal that most of the profitable markets in the Harbor have been tapped.

The guidance in this chapter should prove useful in determining whether to fund new services using public subsidy. The report provides an overview of the market potential for over forty landing locations throughout New York City. It appears that a number of those locations feature a significant number of commuters for whom ferry service might be an attractive option, saving significant travel time over existing transit options.

It also appears that a number of these destinations have the potential to be linked together in transit-like service patterns that will aggregate riders and make the services more competitive. But none of these routes that have been developed would seem to be self sustaining. For each of these routes, criteria should be applied for determining whether funding or subsidizing the routes would be in the public interest.

The East River pilot program offers an unparalleled opportunity to test many of these assumptions. Over the course of the service, ridership projections will be tested, growth in ridership assessed and the opportunity for bringing new funding sources to the table will be explored.

The success of the service would lay the groundwork for additional subsidized pilot programs and services in the City. But perhaps most importantly, the East River pilot will give policy makers time to assess the proper home for the development and funding of these services and the best governance structure. Ideally additional services should be created and publicly subsidized only under a governance structure that provides a rational process for their development and a stable and reliable range of funding sources.

PART SEVEN:

CONCLUSIONS AND NEXT STEPS

Several broad conclusions can be drawn from the analyses presented in this report

- 1) While the total number of New Yorkers likely to use ferries as their primary means of traveling to work is relatively small when compared to the number who travel by subway and bus, commuting by ferry could nevertheless represent an attractive option for thousands of New Yorkers.
- 2) Based on the analyses presented in Parts Two and Four, the most promising corridors for provision of commuter ferry service appear to be:
 - A corridor connecting sites on the Queens and Brooklyn East River waterfront with East 34th Street and Pier 11 in Manhattan;
 - A South Brooklyn corridor, connecting Bay Ridge, the Brooklyn Army Terminal, and Pier 6/Atlantic Avenue with Pier 11 and East 34th street;
 - An north-south East River corridor that connects East 90th Street with East 71st Street, East 34th Street, east 23rd Street and Pier 11; and
 - A north-south Hudson River corridor that connects West 69th Street, Pier 79 and the World Financial Center.³⁵
- 3) While the subsidy per rider required to support a robust commuter service with a \$5.00 average fare on most of the corridors analyzed in Parts Two and Four would be greater than the current average subsidy per subway rider, it would be comparable to - and in most cases lower than - the current average subsidy per rider for express bus service.
- 4) There are other sites within the five boroughs for which ferry service could represent an attractive option - in terms of convenience, comfort and time savings relative to mass transit - but with a \$5.00 average fare, significantly higher subsidies would be needed to sustain ferry service to and from these neighborhoods.
- 5) The assessment of opportunities for integrating commuter and recreational services presented in Part Four suggests that these two types of service are in several respects complementary, and that in some corridors, combining commuter and recreational services may reduce the need for operating subsidies below the level needed to support a stand-alone commuter service.
- 6) While ferry service would not be financially self-sustaining at a \$5.00 average fare in any of the corridors analyzed in Part Two and Four, the analysis of options for financing the East River Pilot Project presented in Part Six suggests that consideration should be given to exploring dedicated local funding through the creation of a ferry district.
- 7) Before undertaking any further expansion of ferry service (beyond the East River ferry pilot service that will start in 2011) the City should work with New York State, New Jersey, the MTA, the Port Authority, New Jersey Transit and other agencies as appropriate to develop a more coherent regional framework for development, financing and governance of ferry services. In particular, opportunities for integrating fares with those of other regional transit providers should be investigated.
- 8) A more detailed analysis of the capital costs and challenges associated with building new ferry landings at locations lacking them will need to be conducted.

NEXT STEPS

The analyses in this report point toward several steps that NYCEDC, NYHarborWay, NYCDOT and their partner agencies and organizations have taken or will be taking during the next three years to advance the discussion of whether to expand publicly subsidized commuter and recreational services in New York City.

1) Implement the NYHarborWay pilot project (summer 2010)

In June 2010, NYHarborWay, in collaboration with New York Water Taxi, launched a pilot project aimed at testing the feasibility of a ferry service linking several of the recreational sites in New York that are described in Part Three of this report. The new service operated on a half-hourly schedule between 10:00 AM and 4:00 PM on Fridays, linking four sites - Fulton

³⁵The report does not forecast the effects on ridership levels of a complete system build out of these four corridors. As more destinations are added to a transit network, there should be more passengers attracted given the added connections made and destinations served.

Ferry/DUMBO/Brooklyn Bridge Park, South Street Seaport, Governor's Island and Pier 6/Atlantic Avenue/Brooklyn Bridge Park. On Saturdays and Sundays, half-hourly service was provided between 11:35 AM and 5:25 PM, linking three sites - Fulton Ferry/DUMBO/ Brooklyn Bridge Park, South Street Seaport and Pier 6/Atlantic Avenue/Brooklyn Bridge Park. On weekends, the fare for this service was \$6 for a single ride, \$10 for a round trip, and \$15 for a one-way family ticket (two adults and two children over age three, with no charge for children under three). On Fridays, the fare was discounted - \$2 for a single ride, \$3 for a round trip, and \$6 for a one-way family ticket, with no charge for children under three.

The pilot project, which ran through Labor Day, served several purposes:

- It helped to promote recreational use of several key sites in New York harbor;
- It encouraged the use of - and raised the visibility of - ferry service as convenient and enjoyable way to access these sites;
- It helped to establish the NYHarborWay brand, and idea of linking the sites as a shared recreational resource;
- It allowed NYHarborWay and its partners to test the impact of discounted fares; and
- It provided a platform that can be used for conducting research among both local recreational users and visitors to New York City.

2) Survey ferry passengers (summer 2010)

As an extension of the City-wide ferry study, NYCEDC and its consultants during the summer of 2010 conducted surveys of actual and potential users of recreational ferry services in New York harbor (see Appendix H). Three groups were surveyed:

Passengers using the NYHarborWay summer 2010 pilot service were surveyed as they disembarked at the four sites cited above. Surveys were conducted both on Fridays and on weekends. Topics included:

- History of visiting NYC harbor parks including Governor's Island
- Activities planned in connection with the ferry ride
- Party composition (who riding with)
- Satisfaction with various attributes of the boat, service and destinations
- Value received from price of tickets
- Willingness to recommend to someone else
- Satisfaction with schedule (twice hourly between 10am and 4pm)
- Demographics and home geography (zip code)

Visitors to waterfront parks (including Brooklyn Bridge Park, South Street Seaport and Governors Island) were also surveyed, to learn:

- How they spent their time there (activity analysis)
- How much time they spent visiting
- Who they were visiting with
- Whether they took a ferry ride or tour boat in NY harbor for recreational purposes in the past five years
- If they rode a tour bus or participated in another sightseeing activity such as visited Statue of Liberty in the five past years (including, for tourists, this current trip)
- Their awareness and history of visiting waterfront parks on New York harbor including Governor's Island
- How a daytime recreational ferry service connecting the various parks - on a hop-on-hop-off basis - would appeal to them
 - Reasons why and why not
 - How much they would be willing to pay
- If from out-of-town, would include in plans for a future visit to NYC
- Demographics and home geography (zip code)
- Participation in biking both as daily transportation and leisure

Ferry commuters were also surveyed at Pier 11, to assess their potential interest in recreational ferry services.

3) Integrate recreational service into the East River Pilot Project (fall 2010)

Based on the analysis presented in Part Four of this report, the results of the NYHarborWay pilot project and the survey research described above, NYCEDC and NYCDOT began discussions with operators and with the managers of major recreational sites (the Brooklyn Bridge Park Corporation and the Trust for Governor's Island) on how best to integrate recreational service with the more commuter-oriented service now scheduled to begin in the spring of 2011. As noted in Part Four, expanded recreational ferry service to Brooklyn Bridge Park and Governor's Island (and perhaps other locations) could enhance the value of these sites as both recreational resources and tourist attractions, and could potentially reduce the level of subsidy the City needs to provide to operators of the East River pilot service.

Part Four presented several options for how commuter and recreational services might be linked; there may be others as well. The goal of these discussions was to reach agreement on services to recreational destinations that will be provided as part of the Pilot Project.

4) Launch the East River Ferry Service Pilot Program (spring 2011)

The City's East River Pilot Project, as noted above, is scheduled to begin in the spring of 2011. As currently envisioned the new East River service will connect Queens West, Greenpoint, North Williamsburg and South Williamsburg and Fulton Ferry with the East 34th Street and Pier 11 landings in Manhattan. A recreational component may link Fulton Ferry, Pier 11, Governor's Island and Pier 6 in Brooklyn Bridge Park.

During weekday morning and evening peak hours (approximately three hours in the morning and three hours in the afternoon/evening), the East River pilot would be a three-boat service - enough to allow passengers to be picked up or dropped off roughly every 20-25 minutes at each of the seven sites served. As modelled for this study, during weekday off-peak hours (approximately 10 AM to 4:00 PM and 7:00 PM to 9:00 PM), service would be provided every hour to the commuter sites and every half hour or so to the recreational sites; and on weekends, a similar schedule to the weekday off peak one would be run between about 9:00 AM and 8:00 PM. The fare for the East River service would be similar to that charged for express buses. (The exact schedule, fare structure and span of service will be determined through negotiations with the service providers.)

New York City has committed to supporting the East River Pilot Project and OMB has allocated approximately \$8.9 million for the service. The project will provide New York City with a valuable opportunity to test the feasibility of privately-operated commuter ferry service, and to further explore issues such as:

- The ability of ferry service to compete with other modes of commuter transportation;
- How new ferry services can most effectively be marketed to both commuters and recreational users;
- The possibility of developers, businesses and property owners in waterfront neighborhoods choosing to contribute toward the cost of ferry service; and
- The extent to which integration of commuter and recreational services can improve operating results beyond the level that service to either of these market segments might be able to achieve on its own.
- The pilot is also designed to test:
 - Ridership demand
 - The effectiveness of marketing techniques
 - Ticketing infrastructure
 - Customer satisfaction
 - Fare levels, and
 - Intermodal connectivity with bikes and buses.

5) Issues and opportunities for further exploration (2011-2013)

During the East River Pilot Project, the City can as needed continue to explore some of the issues and opportunities cited in this study, including:

- Exploring possible sources of start-up funding or on-going subsidy other than City tax revenues;
- Working with regional transportation agencies (including, PA, MTA, NJTC) to develop an appropriate structure for overseeing and supporting the continued development and operation of private ferry services;
- Developing mechanisms for integration of ferry fares with other transit fares;
- Working with the New York City Department of City Planning to resolve issues relating to the definitions of “water taxi” and ferry service under the City's current zoning rules, and their implications for future development of ferry service; and
- Exploring the feasibility of additional privately-operated ferry services beyond the East River Pilot Project, taking into account such factors as:
 - Market potential and anticipated subsidy requirements;
 - Potential for integrating ferry sites within the five boroughs into regional ferry routes;
 - Capital requirements; and
 - Siting, environmental and waterfront access issues.

APPENDIX A:

EXPERIENCE IN OTHER REGIONS

This appendix includes two sections: nationwide and worldwide models of ferry service and nationwide models of fare collection and fare integration.

NATIONWIDE AND WORLDWIDE MODELS OF FERRY SERVICE

The New York City Economic Development Corporation (NYCEDC) joins the Port Authority of New York & New Jersey (PANYNJ) and its regional transportation planning partners in developing a regionwide passenger ferry study. Through market analysis and examination of potential ferry services, the study ultimately seeks to initiate regional policies for the expansion and financial viability of continued ferry service in the New York-New Jersey Harbor. NYCEDC's contribution to this study is through completing several tasks related to case study research on ferry rider profiles, policy initiatives, use of ferries for emergency response service, and surveys of other ferry systems in the United States and abroad.

This memorandum addresses the last objective. NYCEDC researched four notable ferry systems in the United States: Washington State Ferries (WSF); Water Emergency Transportation Authority (WETA) in the San Francisco Bay Area; Massachusetts Bay Transportation Authority (MBTA); and Alaska's Marine Highway System. NYCEDC also researched well-known ferry systems in three other countries: the Sydney Ferries system in Australia, the Istanbul Seabuses and Fast Ferries, Inc. ("IDO") system in Turkey, and the Oslo ferry system in Norway. Similar to the system in the New York-New Jersey Harbor, these are three long-established systems comprised of large fleets that provide local and metropolitan-scale services to populations of more than one million people.

This review looks at each system's governance structure, scale and type of service provided, diversity of fleet vessels, and capital and operations funding mechanisms, while also providing comparative analysis to existing ferry service in the New York-New Jersey Harbor. This research will help inform the Steering Committee on best practices and assist in emulating successful planning, policy initiatives, and ultimately implementation of an expanded and efficient ferry system in the New York metropolitan area.

GOVERNANCE STRUCTURES OF FERRY SERVICE

The capital investment and operational oversight of the U.S. ferry systems falls under one of two governing bodies. In Washington and Alaska, the State Departments of Transportation oversee the two largest ferry systems in the United States, Washington State Ferries and Alaska's Marine Highway System. For both of these agencies, the waterways used by ferries are "blue highways," in which the routes are designated as part of the national (in the case of Alaska) or state (in the case of Washington) highway systems. Both agencies provide international travel to British Columbia. The Alaska Department of Transportation and Public Facilities (ADOT&PF) also provides interstate ferry service to Washington State. Likewise, both WSF and ADOT&PF provide and administer all of the capital investment and operations assistance needed to implement passenger service.

Conversely, the two smaller ferry services surveyed, WETA and MBTA, are managed by regional transportation planning agencies. Ferry service within these systems remains intraregional between jurisdictions in neighboring counties. Furthermore, these agencies contract out operations to private ferry operators, who purchase, maintain and manage the day-to-day of passenger ferry service.

WETA is a particularly unique because its purpose is strictly to promote and expand public water-transit. For all of the other agencies providing passenger service, ferries are one transportation mode of many that require substantial capital and operational resources to administer. WETA, however, was legislatively established in 2007 in order to plan and implement an expanded ferry system that could successfully respond to an emergency if the San Francisco Bay were impaired, leaving potentially 300,000 residents, employees, and commuters stranded.

WETA also succeeds and continues the mission of its early predecessor, the Bay Area's Water Transit Authority (WTA). Begun in 1999, the WTA strove to acquire all municipal ferry services under one comprehensive regulatory agency, thereby creating economies of scale, improving operational efficiencies, and increasing user-friendliness by consolidating fares, schedules, maps, and informational resources into one system.

Comparing the governing structures of the four U.S. systems provides interesting insight into how a regional ferry system in the New York-New Jersey area might work. Currently there is no one regulatory body overseeing the collective ferry system. State agencies (PANYNJ), local entities (NYCDOT, NYCEDC), private operators, and other public and private developers have invested and have provided oversight and management of New York's existing ferry system. This is not exceptional. All of the ferry systems surveyed at one time were run privately and unsubsidized with no public involvement. Gradually, as seen with Washington and Alaska, some public agencies fully bought out private operators and ran the service in-house. Others, like MBTA, oversaw and regulated the planning and implementation of ferry service, but reduced operating expenses by contracting out operations with private ferry operators. The fractured nature of the existing San Francisco Bay ferry system most closely resembles New York-New Jersey ferry service, while also exemplifying how one region could transition to providing greater efficiency and efficacy under one consolidate regulatory agency.

In the case of the international ferry systems that were surveyed, the planning, capital investments, and operational oversight of each system are carried out by public sector entities. In Oslo, the entity is Ruter AS ("Ruter"), a company created by the counties of Oslo and Akershus to plan, coordinate, manage, and market transit services on their behalf, including ferry, bus, tram, and metro. In Istanbul, the entity is IDO which was founded in 1987 by the Istanbul Metropolitan Municipality to provide waterborne commuter services in Istanbul and the Sea of Marmara region. In Sydney, the entity is Sydney Ferries, a corporation and State of New South Wales government agency with jurisdiction in the Sydney Harbor and its related waterways.

Of the three entities, only Ruter farms out all services and routes to private operators. IDO and Sydney Ferries operate their entire fleets directly.

SERVICE PROFILES

The four U.S. ferry systems surveyed differ significantly from one another with regard to number of years in operation, the scale and geographical breadth of service, diversity of ferry vessels, and the relationships between public transportation agencies and private operators. Please see Table 26 for a summary of each U.S. service profile.

All of the U.S. ferry systems have existed for more than a decade, with Washington State Ferries being, by far, the oldest system. The State DOT purchased nearly 60 years ago the only remaining ferry line of what was once a vast Puget Sound ferry network during the late 19th and early 20th centuries. Alaska's Marine Highway System and MBTA followed a few decades afterward in the early 1970s. And while WETA in its current organizational structure is only a little over two years old, its precursor, the Water Transit Authority, was established 10 years ago.

	Washington State Ferries	Alaska Marine Highway System	Mass. Bay Transportation Authority	San Francisco Bay Area - Water Emergency Transportation Authority
# of Routes	10	23	5	7
# of Vessels	28	11	12	14
# of Private Operators	0	0	2	1
Annual Average Ridership	24 million	400,000	1.5 million	4.8 million
Type of Service	Commuter, Recreation, Vehicles, Freight	Commuter, Recreation, Vehicles, Freight	Commuter, Minimal Recreational	Commuter, Recreational

While not the oldest or largest ferry system in the United States, the Alaska Marine Highway System covers the greatest geographical distance and has the most ferry routes of the four systems surveyed (Figure 38). The Marine Highway System covers over 3,500 miles with 23 routes providing intraregional service within southeast Alaska, interstate travel to Washington, as well as international stops within British Columbia.

Figure 38: Alaska's Marine Highway System



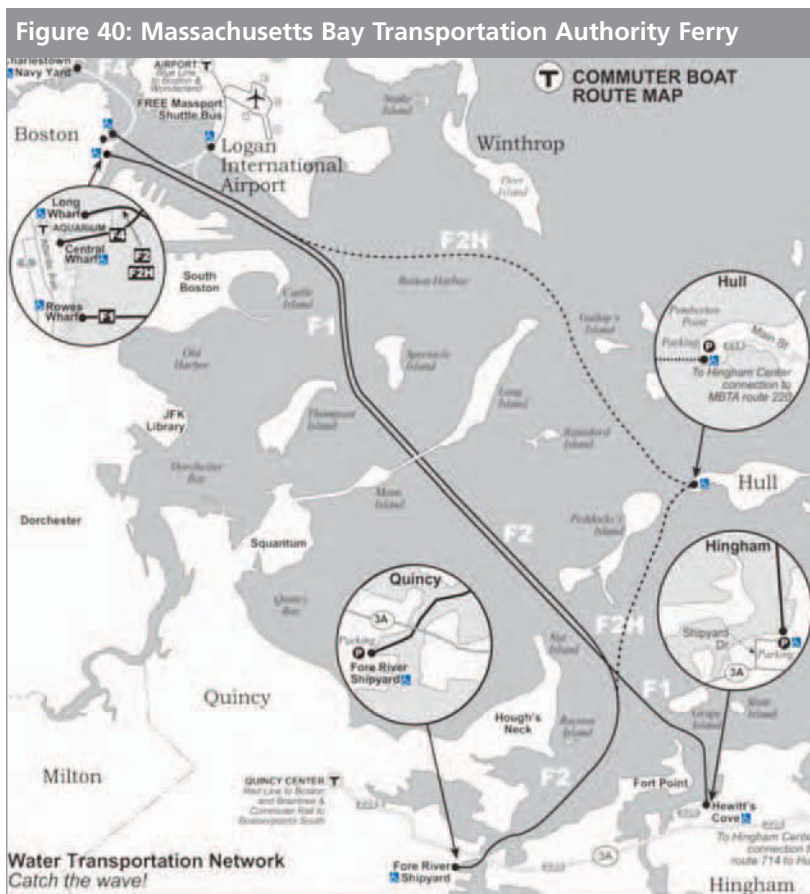
To compare, Washington State Ferries covers 200 miles of waterways with 10 routes, making 20 stops in eight northwest counties of the state and British Columbia. Both systems are marine highway systems that carry passengers, vehicles and freight (Figure 39). Additionally, both systems provide reliable access to remote destinations where there are insufficient or nonexistent road networks.

While the Marine Highway System covers more distance and has a greater number of routes, Washington State Ferries carries on average 60 times (24 million) more people annually than the Marine Highway System (400,000 people). Furthermore, 50 percent of riders on Washington State Ferries use water-transit to commute. The Marine Highway System primarily caters to tourism and recreational use, demonstrating a high seasonal variance between summer and winter months.

The intraregional systems overseen currently by MBTA and in the very near future by WETA are smaller in scale with regard to number of service routes and passengers as noted in Table 26 above. Two interesting differences in these ferry systems from Washington State Ferries and the Marine Highway System is that they only provide passenger service. Second, both systems contract out operations with private ferry companies. MBTA contracts with two operators, one providing service in the inner Boston Harbor while the other provides service to the outer destinations of the harbor (Figure 40).

Figure 39: Washington State Ferries





In the San Francisco Bay Area and prior to WETA, the City of Alameda, in partnership with the Oakland Port, and the City of Vallejo (on the San Pablo Bay north of San Francisco) contracted with the same private ferry company to provide passenger ferry service for commuters working in downtown San Francisco. The private operator, the Blue & Gold Fleet, also runs three separate commuter and recreational ferry routes in addition to its contracts with these municipalities. The Blue & Gold Fleet is the largest ferry provider in the San Francisco Bay Area, serving over 6,500 passengers daily (~50% of all passenger service) and operates the only unsubsidized route in the Bay Area from San Francisco to the Tiburon. The 1967 Tiburon ferry was the first route to commence with the City of San Francisco's permission after the construction of the Golden Gate and Oakland bridges dismantled the established ferry system. The City's blessing was conditioned that it would provide no subsidies, and has not to this day.

The Golden Gate Bridge, Highway and Transit District, which owns and operates the Golden Gate Bridge, is another public agency that runs one ferry route between San Francisco and

destinations in Marin County. While the private ferry service under the Blue & Gold Fleet and the public ferry service administer by Golden Gate will continue independently, Alameda and Vallejo will transferred their municipal contracts over to WETA. While expansion of service on these existing routes is expected, the majority of planning effort and financial resource within the next decade will be devoted to implementing up to 31 new routes given anticipated population growth and increased demand for alternative transportation modes.

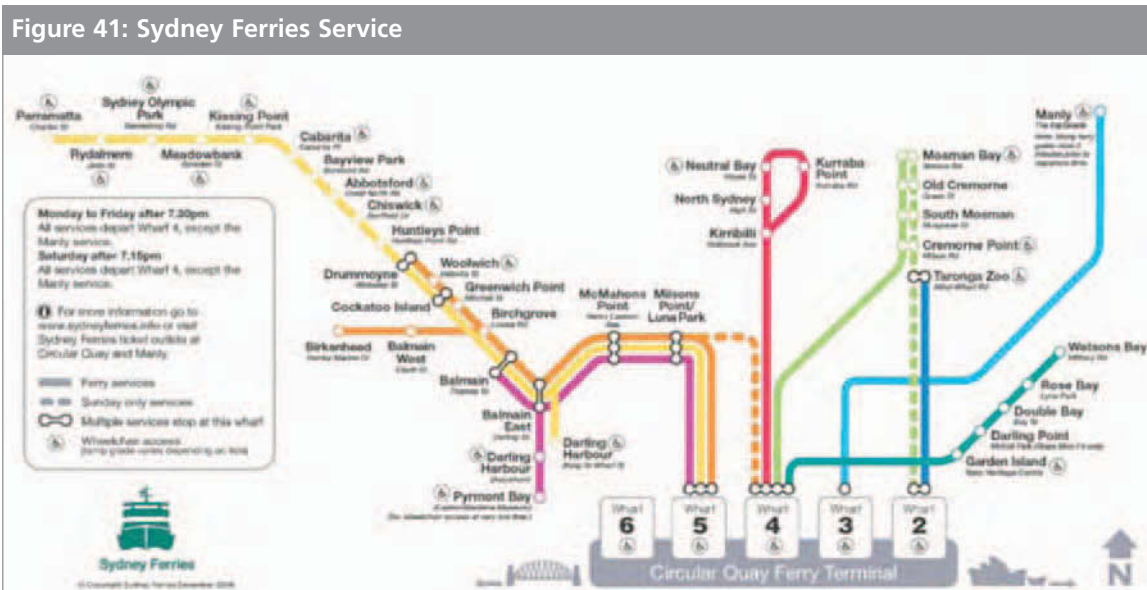
In addition to differentiating these two systems from the larger state ferry providers, these two factors - passenger-only service and contracts for services with private operators - are akin to New York's ferry system. Prior to 9/11, NYCDOT allowed vehicles aboard the Staten Island Ferry, which today is considered too high of a security risk and would further contribute to traffic congestion in Lower Manhattan. Aside from the Staten Island Ferry, private ferry companies operate all of the other ferry routes in the New York-New Jersey Harbor. In the mid-1980s, the City established a policy to not subsidize private ferry operators. While today the policy still stands, several agencies, including the PANYNC, NYCEDC, and the Lower Manhattan Development Corporation have executed contracts for services with private operators similar to MBTA and the Bay Area under the guise of pilot projects. While some cities, like San Francisco, had similar policies to not subsidize early ferry service, the case studies demonstrate that establishing a resilient and viable ferry system requires some level of public assistance.

SERVICE PROFILES - INTERNATIONAL SYSTEMS

The three international ferry systems that were surveyed have been operating for substantial periods of time. The roots of the Sydney system can be traced to the late 18th Century and the establishment of commercial ferry operations across the Sydney Harbor dates back to 1861. Even though Ruter is a relatively new creation, established by the municipalities of Oslo and Akershus in 2008 (its predecessor, Greater Oslo Lokaltrafikk AS, dates back to 1974), ferry transportation has been a key component of Oslo's public mobility system for decades given Norway's extensive coastline, numerous sparsely-populated islands, and fjords, which have traditionally made road transportation difficult and expensive. The same can be said about Istanbul's system; IDO began its operations in 1987 (interestingly, with 10 vessels purchased in Norway), but waterborne commuter and commercial ferry services across the Bosphorus Strait, which separates Istanbul's European and Asian sides, and the Sea of Marmara have been operating for countless decades (Table 27).

Table 27: Summary of Ferry Service				
	Istanbul	Oslo	Sydney	
# of Routes	33	4	8	
# of Vessels	90	NA	28	
# of Private Operators	0	3	0	
Annual Average Ridership	Over 100 million PAX, over 5 million vehicles	Approx. 3 million PAX	Over 14 million	
Type of Service	Commuter, recreational, vehicles, freight	Commuter, recreational, vehicles, freight	Commuter, recreational	

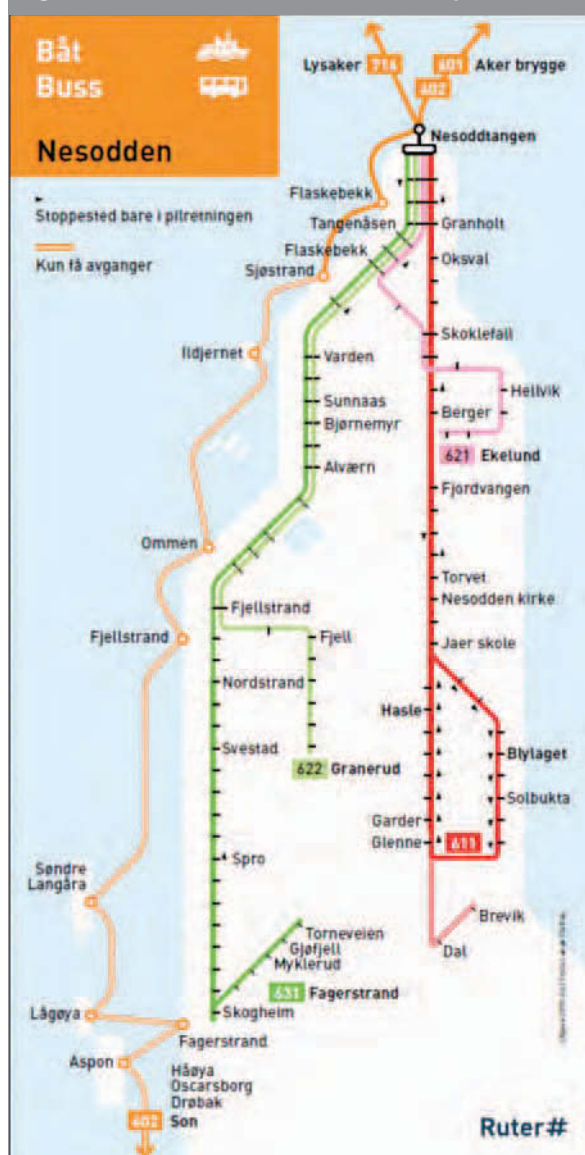
Sydney Ferries serves a total population of over 4.2 million people, covering 40 destinations on eight separate routes, 20 hours per day, seven days per week. Circular Quay Ferry Terminal, in the Sydney CBD, is the main hub of the network, with 516 services each week day traveling to different destinations (Figure 41). Sydney Ferries also runs charters and special event cruises. The bulk of the network's customer base is comprised of commuters, at 47% of total ridership. At 30 June 2009, Sydney Ferries employed 668 people in customer service, ferry operations, maintenance, ticketing, management, and administration.



Historically, waterborne transportation has been a central component of Istanbul's mobility system, given the city's location along the Sea of Marmara and its layout, at the nexus of Europe and Asia. With limited bridge and tunnel crossings and an over-extended road transportation network, ferry transportation has thrived and IDO has become since its foundation in 1987 the largest ferry operator in the world. IDO provides service in Istanbul, a city of over 12 million people, and offers a vast array of local and regional, year-round and seasonal services in more than 80 terminals that cover the broader metropolitan area. The system serves carries passengers, vehicles, and freight, also providing access to remote destinations along the shores of the Sea of Marmara.

The Oslo ferry system covers the Greater Oslo region, a metropolitan area with over 1.1 million people that includes Norway's most populated counties: Oslo and Akershus. The system includes one main route, between Nessoddtangen and Aker Brygge (Figure 42), three smaller routes, as well as summer routes to several islands in the region. Ruter does not operate any of the system's routes directly; they have all been tendered to three private operators: Skibs Bygdøfærgerne AS, Oslo-Fergene AS, and Tide Sjø AS. It is important to note that the Oslo ferry system is fully integrated into the metropolitan area's public transport system (including fare integration), which moved over 252 million passengers in 2009 and includes subway, commuter and local bus, tram, and commuter train services.

Figure 42: Nessoden Line Service Map



On a parallel front, the smaller intraregional ferry systems, MBTA and WETA, also have similar ferry vessels. Both agencies employ high-speed (above 25 knots or 29 mph) catamarans that can service on 150-400 passengers, depending on the vessels size (Figure 43). MBTA and WETA differ with regard to the type of fuel used. WETA uses a mixture of bio-diesel and low sulfur diesel, resulting in vessels that are more than 85 percent cleaner than the Environmental Protection Agency's (EPA) emission standards for Tier II Marine Engines. In addition to greener fuel, WETA incorporates solar technology and selective catalytic reduction techniques, a process that results in up to a 90 percent reduction in nitrogen oxide emissions (NOx). MBTA's private ferry operators continue to use diesel on similar high-speed catamarans.

FERRY VESSELS

As seen in Table 28, ferry fleets differ greatly between ferry systems in different U.S. regions. They can also differ within a system based on additional factors, such as the type of waterway used (e.g. ocean, harbor); the journey's length; the vessel's age; different operators; the number of passengers; and the kind of cargo carried (e.g. passenger, vehicles, freight).

Overall the ferries employed in Washington State and Alaska were similar. Both were mainline ferries providing multiple decks for vehicle parking, passengers, and crew quarters. Given the distance some Alaskan ferries travel, up to 18 hour voyages, staterooms and cabins are provided. Washington State Ferries provides quiet rooms for passengers on their larger vessels. Both ferry systems use diesel fuel and on average travel at speeds of 17-18 knots/hour (~20-21 mph).

The key differences between these two systems is that Washington State Ferries' largest vessel can carry substantially more passengers and vehicles than Alaska, and the its double-ended, open vehicle decks and bridges provide efficient off-loading that does not require the ferry to turn around when disembarking (Figure 44).

Figure 43: WETA Ferry



Table 28: Vessel Fleet Summary

	Washington State Ferries	Alaska Marine Highway System	Mass. Bay Transportation Authority	San Francisco Bay Area - Water Emergency Transportation Authority
# of Vessels	28	11	12	14
Type of Vessel	Mainline Ferry with Double-ended, open vehicle decks	Mainline Ferry Vessels	High-speed Catamaran	High-speed Catamaran and Monohulls
Max Carrying Capacity	2,500 passengers; 202 vehicles	600 passengers 134 vehicles	150-400 passengers	150-400 passengers (catamaran) 750 passengers (monohull)
Type of Fuel	Diesel-electric engines	Diesel	Diesel	Bio-diesel / low sulfur diesel mix (catamaran)
Avg. Speed (knots)	18 knots	17 knots	28 knots	25 knots (catamaran) 20.5 knots (monohull)

Figure 44: Washington State Ferry

FERRY VESSELS - INTERNATIONAL SYSTEMS

Sydney Ferries' Fleet consists of 28 vessels in six classes:

- Freshwater Class: There are four vessels in this class, the largest in the fleet (total capacity of 1,100 PAX, service speed of 12.5 knots)
- First Fleet Class: There are nine catamarans in this class, operating inner-harbor routes primarily (total capacity of approximately 400 PAX, service speed of 12 knots)
- Lady Class: Two vessels, the Lady Northcott (811 PAX capacity) and the Lady Herron (552) operate in this class (service speed of approx. 11 knots), on limited route and special event services.
- RiverCat Class: There are seven specially-designed, low-wash catamaran vessels in this class (total capacity of 230 PAX, service speed of 22 knots).
- SuperCat Class: These four catamaran vessels provide service to Sydney's Eastern Suburbs (total capacity of 250 PAX, service speed of 24 knots).
- HarbourCat Class: There are two vessels in this class, the smallest of the Sydney Ferries fleet (total capacity of 150 PAX, service speed of 22 knots). They also provide back-up services on inner harbor routes, as needed.

IDO's fleet includes:

- Fast Ferry Class: There are ten vessels in this class, which accommodates both passengers and vehicles (passenger capacities vary from 490 to 1,200, vehicles from 94 to 225; service speeds from 22 to 37 knots)
- Sea Bus Class: There are 25 passenger-only vessels in this class (passenger capacities vary from 350 to 450 and service speeds from 25 to 35 knots).
- Conventional Class: There are 38 passenger ferries in this class (capacities between 600 and 2,100 PAX)
- Conventional Passenger/Vehicle Class: This class includes 17 vessels in this class, with capacities between 66 and 112 vehicles.

Tide Sjø AS, Ruter's newest operator, began to operate in Oslo in July 2009 with three new natural gas-powered boats and two new quick boats.

FINANCES

Capital Investment

Table 29 lists for each U.S. public ferry agency the mix of capital and operating funds utilized. What is shown is that all of the ferry agencies use the same three discretionary federal funding sources under the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy of Users (SAFETEA-LU) to initiate and expand capital projects. A brief description of these sources is below. Each fund source is congressionally earmarked with remaining funds going to a competitive call-for-projects process through either the Federal Highway Administration (FHWA) or the Federal Transit Agency (FTA). Each federal program requires a 20 percent local match.

- The Ferry Boat Discretionary Program (FBD) is a special funding category designated through the Federal Highway Administration (FHWA) for procuring boats and constructing ferry terminals.
- Federal Transit Administration (FTA) Section 5307: Urban Area Formula Program funds are available for both capital investment as well as planning, engineering or technical studies in areas with populations greater than 200,000. One percent of the obligated funds must go towards transit enhancement activities, such as historic preservation, landscaping, public art, pedestrian and bicycle access, or improved access for persons with disabilities.
- FTA New Starts Program (Section 5309) provides funding for construction of new and expanding fixed guideway systems. Eligible project applicants should have major capital investment planning and project development processes established.

Beyond these federal sources, a few agencies have additional state and local fiscal resources. The Metropolitan Transportation Commission (MTC), the San Francisco Bay Area's Metropolitan Planning Organization, pooled committed and discretionary federal, state and local funds into a comprehensive funding strategy called the Regional Transit Expansion Program (Resolution 3434). Resolution 3434 is a regionally coordinated effort between MTC, public transit operators, including WETA, and funding partners to select high-priority transit projects and facilitate an expedited project delivery. In addition to the federal funds listed above, Resolution 3434 also draws from federal earmarks, bridge tolls and 1/2 sales tax initiatives to fund ferry capital projects.

Regional Measure 2 (RM2) is a voter-passed \$1.00 increase in tolls on state-owned bridges in the San Francisco Bay region. The extra dollar goes toward funding congestion mitigation transportation projects. Both capital investment and operating assistance can use RM2 funds.

The AKDOT distinctively uses Surface Transportation Funds for capital projects for the Alaska Marine Highway, but this is due to the classification of their waterways as part of either the state or national highway system.

Table 29: Capital and Operating Fund Sources by Ferry Agency

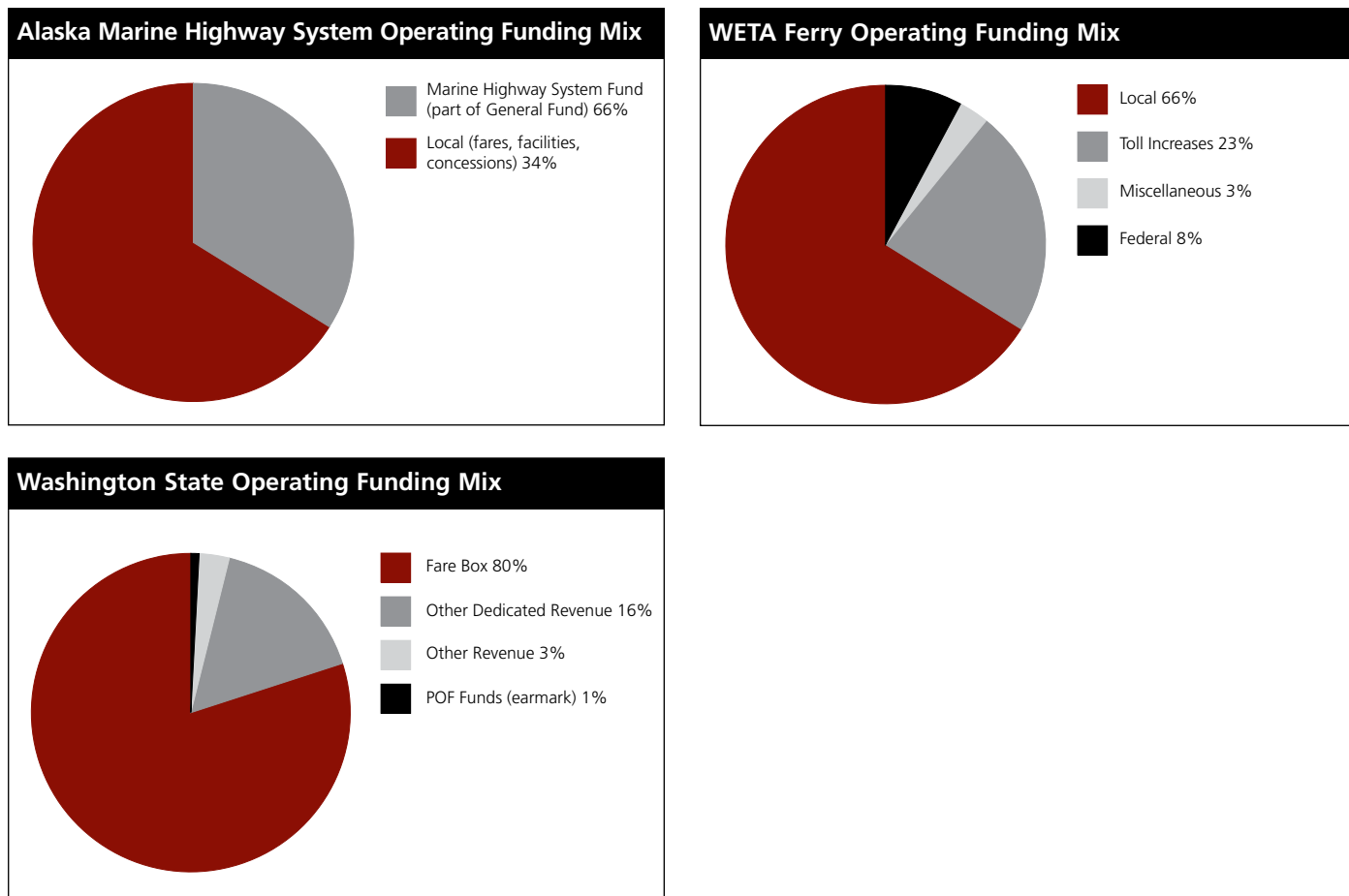
	Washington State Ferries (WSDOT)	Alaska Marine Highway System (AKDOT & PF)	San Francisco Bay Area - WETA	Massachusetts Bay Transportation Authority MBTA
Funding Source Capital	FBD funds (FHWA) CMAQ for ferry procurement and engine retrofits	FBD funds (FHWA) FTA Sections 5309 National Highway System and Anchorage Highway System funds Surface Transportation Funds (STP) SAFETEA-LU High Priority funds (Section 1702) Additional federal earmarks specifically allocated to AK	FBD funds (FHWA) FTA Sections 5309 & 5307 (80/20) Resolution 3434 Regional Transit Expansion Program Proposition 1B Regional Measure 2 Toll Bridge	FBD funds (FHWA) FTA Sections 5309 & 5307 (80/20) ARRA APA funds for engine replacement program
Funding Source - Operating	Gas Tax Fare box revenues (passenger and car) Vehicle licenses fees Other permits	General Fund (2/3 budget) Fare box revenues Facility rentals Concession Fees Stateroom sales (overnight) Passenger service sales Reserves	Resolution 3434 Regional Transit Expansion Program Regional Measure 2 Toll Bridge 1/2 cent county sales tax from San Francisco, Alameda/Oakland, Vallejo, Contra Costa (voter initiatives)	Revenue bonds 1.25% of sales tax (legislature) Gas tax Fare box revenue Parking revenue

The State of Alaska also designated a Marine Highway System Fund from its overall General Fund for both capital and operations projects.

EPA grants and Congestion Mitigation Air Quality (CMAQ) funds were additional supplementary funds for smaller capital projects, including ferryboat procurement and engine retrofits.

OPERATING ASSISTANCE

Each agency cobble together operations funding from a mix of gas tax, fare box revenue, parking, license and permit fees, or other amenities revenue (i.e. concessions). Both WETA and MBTA have sales tax measures to supplement operations, with WETA also using toll bridge funding (RM2). AKDOT is the only agency to subsidize ferry operations with portions of its State General Fund.



In addition to Table 29, which lists specific revenue streams for operating costs, the charts in this memorandum graphically demonstrate different fund mixes from three of the ferry systems surveyed. Clearly, local monies, signified by yellow in the charts, for all three agencies significantly contribute to paying for operations. However, the percent of funds differs dramatically (80% for WSF compared to 34% for Alaska) as does the submix of monies that is combined together under the broader “Local” category. For Washington State Ferries, the 80 percent of local funds is entirely anticipated fare box recovery. Washington State Ferries is looking to raise fares annually by four percent in order to close a 20 percent gap left by removing the State's Motor Vehicle Excise Tax. For comparison, WETA's local fund designation in the chart above includes fare box and local sales tax from four Bay Area counties.

Alaska differs in its funding breakdown because two-thirds of its budget comes from the General Fund's designated Marine Highway System Fund. The remained is funded, in addition to the fare box, revenue from facility rental, overnight accommodations, and concessions.

The diversity of fund sources for both capital investment and operating assistance speaks to the difficulty and ongoing challenge of finding revenue streams that are 1) Large enough to support, maintain and hopefully expand the ferry system; and 2) Reliable over the long term; and 3) Politically feasible. Finding financial resources that fulfill these three factors in the New York-New Jersey area will be a sizable challenge and may require analysis of new and innovative ideas beyond those presented in this case study.

FINANCES (CAPITAL AND OPERATIONS) - INTERNATIONAL SYSTEMS

Both Sydney Ferries and IDO undertake direct capital investments in their respective systems, developing and/or upgrading terminals, purchasing and maintaining vessels, and otherwise investing to improve their systems' operations.

In 2009, Sydney Ferries had a before tax operating deficit of AU \$14.5 million, \$4.2 million higher than originally budgeted. During the year, the entity invested over AU \$29.1 million in capital projects and generated over AU \$130.5 million in total revenue, AU \$48.6 million of which was farebox revenue. The entity's revenue included AU \$81 million in government funding, other income of AU \$1.4 million (rent and advertising income). Farebox revenue was AU \$0.7 million lower than budgeted and \$0.2 million lower than 2007-08. Per the entity's 2009 annual report this was due to the cessation of certain services in 2008 and the impact of a new discounted family fare product.

Ruter's contracts with private ferry operators include incentive deals that focus on increasing service quality. Bonus/malus agreements make up 2.5%-5% of the contract sum, where the allocation of bonus or malus is dependent on whether results on some quality items are included above or below the agreed 0-level. Quality items included in the operation agreements relate to:

- The customer's satisfaction with the trip
- Regularity and punctuality
- Ultra-premium unit

For 2009, Ruter paid approximately NOK \$ 37 million in bonuses to private operators throughout the entire system (not only ferries), a NOK \$ 14 million increase in relation to the previous year. The increase comes partly by quality improvements on the operators' delivery, partly by the new incentive contracts on the tram and metro for the whole year and increasing use of incentive deals in Akershus.

CONCLUSION: LOOKING AHEAD TO A VIABLE REGIONAL FERRY SERVICE

There is no one ferry system showcased in this memorandum that is exactly reproducible within the context of a New York-New Jersey ferry system. A viable system here would provide interstate travel like Washington State Ferries or the Alaska Marine Highway System, but on a scale similar to the San Francisco Bay Area or Boston Harbor. Questions remain if future ferry service will continue to operate primarily through unsubsidized private entities, under negotiated contracts for services, or possibility the creation of one governing and oversight agency. Continuing to keep abreast of green-sector technologies, including low sulfur fuel and solar energy, will assist in creating a ferry system that is good economically and environmentally. Lastly, a solid financial foundation for supporting ferry service and ferry infrastructure is paramount to encouraging residents, commuters and visitors alike to shift to using ferries as a viable and reliable to alternative to conventional driving or overcrowded train service.

NATIONWIDE MODELS OF FARE COLLECTION AND FARE INTEGRATION

This memorandum builds off of previous discussions from case study research on ferry systems in four different regions within the United State -Washington State, Alaska, San Francisco Bay and Massachusetts Bay - to provide further detail on each system's fare collection and fare integration methods. While there are overall similarities between the types of fares collected (e.g. single ride, multi-ride, discounted) and the methods for collecting fares (e.g. paper tickets, electronic passes), there is a lot of variety between each system with regard to fare integration. For the purposes of this paper, fare integration includes:

- Using one method of payment, such as a Metrocard, to trip-link or transfer between two different modes; or
- Consolidating fares when trip-linking or transferring between two different modes through either free transfers or fare credits; or
- A combination of payment method and consolidated fares.

This information will assist NYCEDC efforts in analyzing and developing recommendations for how citywide ferry service, beginning in Spring 2011 with the East River, can be best integrated into the City's existing network of local transit, commuter rail, and express bus service. To facilitate the development of those recommendations, an analysis of the City's existing fare collection and integration system is also provided.

TYPE OF FARES COLLECTED

Every ferry system surveyed collects fares at the most basic level of a pay-per-ride basis and provides discounted tickets to seniors, youth, and persons with disabilities. Beyond this, however, the types of fares and incentives provided to ferry riders differs substantially from one system to another (Table 30).

Massachusetts Bay Transportation Authority (MBTA) offers the most fare options of the six systems surveyed. MBTA contracts out the operations of its two ferry services, Inner Harbor and Cross Harbor, to private operators. Fare options differ slightly depending on the route. In addition to a one-way adult fare, MBTA offers multi-ride passes and unlimited monthly passes for both services. For Inner Harbor service, ferry riders can also choose a day or weekly unlimited pass. This is a convenient option for recreational users and tourists because the Inner Harbor Ferry travels between Charleston Navy Yard and Long Wharf. Charleston Navy Yard is a National Historic Park and a stop along Boston's Freedom Trail. Long Wharf is a National Historic Place that provides additional public attractions including an aquarium, shops, restaurants, and scenic views of Boston Harbor. Both destinations showcase and educate visitors about Boston's naval and shipbuilding history.

	NYC MTA	WSF	King County (WA)	Alaska	WETA (SF)	Golden Gate (SF)	MBTA
Pay-Per-Ride	X	X	X	X	X	X	X
Frequency Discount	X		X			X	
Multi-Ride	X	X			X		X
Monthly Unlimited	X		X		X		X
Weekly Unlimited	X						X
Day Pass	X				X		X
Group Pass	X				X		
Senior Discount	X	X	X	X	X	X	X
Youth Discount	X	X	X	X	X	X	X
Disability Discount	X	X	X	X	X	X	X
Short Distance Discount					X		
5 and Under Free	X		X		X	X	X
Surcharges							
Seasonal		X		X			
Bicycle		X		X			
Airport	X						X
Vehicle		X		X			
Cabin				X			

Within the San Francisco Bay Area there are several, separately operated ferry routes. The cities of Alameda and Vallejo fund privately operated commuter ferry service to San Francisco. In the near future, these contracts will be transferred under one agency, the recently formed Water Emergency Transit Authority (WETA). The Alameda and Vallejo ferry routes provide many of the same fare options as MBTA for commuters, except for weekly unlimited passes. Furthermore, both the Alameda and Vallejo services market unique fare options to cater to specific types of riders. Vallejo offers unlimited day passes and group passes for 15 or more riders who use the ferry for leisure trips to the North Bay or San Francisco. Alameda, on the other hand, provides commuters a discounted fare for making "short-hop" trip between Alameda and Oakland, instead of

crossing the bay to San Francisco. The Port of Oakland provides financial assistance with the City of Alameda to fund the privately operated service.

In addition to WETA, the operators of the Golden Gate Bridge also provide interregional ferry and bus service in the San Francisco Bay Area. Unlike WETA, however, Golden Gate provides limited fare options. Instead of riders receiving travel discounts through multi-ride ticket books or unlimited passes, Golden Gate offers only a pay-per-ride ticket through an electronic debit card. This system closely resembles MTA's Regular Metrocards in New York City in which a transit rider adds a dollar amount to a fare card. The more value that is added, the greater the discount, which is subsequently applied to the total value tracked on the electronic fare card. Ferry riders on Golden Gate see a savings of 37 to 46 percent depending on the dollar amount added to their fare card.

King County Ferry District, a passenger-only ferry system in the Seattle area that is operationally separate from the State supported and operated Washington State Ferries also provides a frequency discount off of a single-ride ticket. Like Golden Gate, the fare options to riders are limited, but King County does provide monthly unlimited passes.

Washington State Ferries (WSF) and the Alaska Marine Highway System provide the least amount of fare options for riders. To recall, both of these large ferry systems are operated by their State governments rather than privately contracted operators and provide long distance, interregional and interstate travel on multi-hundred passenger ferry boats. While WSF does have a multi-day pass for frequent ferry riders, neither ferry system provides conveniences like unlimited day or monthly passes. Furthermore, these two systems provide the most additional expenses to the regular ticket price, including vehicle, bicycle and summer seasonal surcharges.

FARE INTEGRATION: COLLECTION METHODS

Increasingly ferry systems are transitioning away from accepting cash and paper tickets at ferry terminals to electronic fare collection methods where the rider either swipes or "taps" their transit card (Figure 45). The electronic card, in turn, keeps track of a deducted fare amount (i.e. an "e-purse"), or an unlimited or frequent user pass. These cards also keep track of free transfers or fare credits if applicable.

Except for Alaska and WETA, each of the ferry systems surveyed provide an electronic fare option for riders (Table 31). The Alameda and Vallejo ferry services that will eventually transition to WETA allow passengers to pay the fare either directly on the boat or through paper tickets and multi-ride ticket books. Transfers are documented by a sticker or a paper slip provided by the operator. These routes will eventually transition to the use a regional transit "Smart Card."

Figure 45: Smart Card System



A "Smart Card" is a more sophisticated electronic fare collection method that tracks a rider's fare choices, discounts, and transfers for multiple transit agencies within a region.

Stored-value, multi-ride, unlimited ride, transfers, and fare credits from several different transit modes can all be tracked and accounted for with one card. A Smart Card typically has additional features like online purchase and automatic renewal through a credit or debit card link. The Puget Sound region, San Francisco Bay Area, and Massachusetts Bay Area all have established Smart Card systems, ferry services have yet to be integrated into all of them.

At this time, Washington State Ferries and King County's Water Taxi are the only fully integrated ferry systems into the region's Smart Card system, also known as "One Regional Card for All" or "ORCA." Launched in 2009, the ORCA card is a regional collaboration between seven transit agencies that enables one card to hold the following fare structures:

Table 31: Fare Collection

	NYC MTA	WSF	King County (WA)	Alaska	WETA (SF)	Golden Gate (SF)	MBTA
Cash	X		X		X		
Paper Ticket				X	X	X	X
Ticket Book/Punch Card					X		
Employee Voucher		X	X		X	X	
Electronic Card	X	X	X				X
"Smart Card"		X	X		X*	X	X*
Automatic Reload	X	X	X			X	
Onboard Ferry			X		X		
Online	X	X	X	X	X	X	X
Terminal/Kiosk	X	X	X	X	X	X	X
Retail Locations		X			X		

* Ferry systems to be integrated in near future

- A regional pass (i.e. the PugetPass) that allows unlimited travel regardless of transit agency. Washington State Ferries not included;
- An agency specific pass that covers travel on one transit provider. Washington State Ferries' monthly pass is an example;
- E-purse that stores value and can be used like cash to pay fare on a pay-per-ride basis.
- E-voucher that enables a passenger's place of employment to add value to their ORCA card. The passenger can then apply the voucher funds to a monthly pass or to their e-purse.

MBTA is currently in the planning stages of integrating its ferry and commuter rail service on its regional "Charlie Card" system by 2011. The Charlie Card provides many similar features to the ORCA card for subway and bus riders, but the significant difference is that the Charlie Card is solely for MBTA service. Because MBTA is the sole transit provider within the region, there is was no multiple agency coordination involved in establishing the Charlie Card system.

Within the San Francisco Bay Area, a Smart Card system called "Translink" is currently used by five local and regional transit agencies, including Golden Gate Ferry. While Translink allows for e-purse and agency-specific transit passes to be loaded onto a rider's card, it does not have a multi-agency unlimited pass like the PugetPass in Washington. Specifically for Golden Gate Ferries, stored value through an e-purse is the only means to purchase ferry tickets. Gradually over time, 22 more transit agencies will use Translink, including the Alameda and Vallejo ferry services under WETA.

FARE INTEGRATION: TRANSFER METHODS

The previous section discussed methods for coordinating and integrating the collection of fares within and across transit systems that have ferry service. This section will focus specifically on fare integration through transfers. Transfers can occur within a given transit agency, such as MBTA, or between several transit agencies, as seen in the Puget Sound Region. They can be free if a trip is accomplished within a provided time window; can be purchased and credited toward a subsequent trip; or can be achieved through paying the fare difference between two trips. In general, each transit agency surveyed has its own transfer mechanisms that are complicated by interregional relationships, transit modes involved, and travel distance. This section will focus on four ferry systems (Table 32).

King County Ferry provides riders transfers to the county transit system only when they use their ORCA card's e-purse. The transfer is valid for 1.5 hours when traveling from ferry-to-transit or vice versa. If there is a difference in fare between the

ferry and the bus, that value is deducted from the rider's e-purse. Fare discounts are not available if traveling between the ferry and a non-County transit agency.

In the San Francisco Bay Area, the Alameda Ferry system provides a two hour free transfer between ferry and the County's transit system. Free two-hour transfers are also provided between the ferry and San Francisco's municipal transit system with the purchase of multi-ticket books. Because the Alameda Ferry has not yet been incorporated into the Translink system, transfers must be validated by the transit operator prior to its use. When transferring between a ferry and an express bus, the rider must pay the difference in fares.

The Vallejo Ferry only provides discounted transfer with San Francisco's municipal transit service to monthly ferry pass holders who purchase a \$55 transfer sticker.

Golden Gate Ferry provides limited fare integration with San Francisco's municipal transit service with a \$.50 fare credit. This credit only applies when a passenger uses a Translink card.

Table 32: Fare Transfers				
	King County (WA)	WETA (SF)	Golden Gate (SF)	MBTA
Fee Transfers				
Ferry-Bus	X	X		X
Ferry-Express Bus				X
Ferry-Train (subway)		X		X
Ferry-Commuter Rail				X
Transfer Credits/Discounts				
Ferry-Bus	X		X	
Ferry-Express Bus	X	X	X	
Ferry-Train		X	X	
Ferry-Rail				

Within MBTA, transferring between ferries and other modes is dependent upon the type of fare purchased and the distance traveled by the passenger. The region is divided into nine zones, with Zone 1A and 1 being Boston's Central Business District and subsequent zones being greater distance from the city's center. Transfers from ferry to another transit mode and vice versa are provided for monthly pass holders. The Inner Harbor Ferry is located in Zone 1 and an unlimited monthly pass for Inner Harbor service only covers transfers to bus, subway, and commuter rail in Zone 1. Cross Harbor Ferry Service covers travel between Zones 1-4 and as such, purchase of an unlimited monthly commuter boat pass for Cross Harbor Service allows for free transfers to other modes, including commuter rail and

express bus in Zones 1-4. Likewise, transit users who live in zones of even greater distance (Zones 5-8) have free transfers to any transit service, including ferries, in lower zones.

FARE INTEGRATION FOR FERRY SYSTEM IN NYC

Fare integration can simplify travel by integrating the fare collection and payment systems of different transit modes and operators. It can also increase passenger convenience and operational efficiency for transportation providers. Ferries could benefit from the advantages offered by fare integration through increased ridership. In order to evaluate the viability of fare integration between a privately operated ferry system and New York City's transit network, it is important to understand how the existing system works.

THE METROPOLITAN TRANSPORTATION AUTHORITY

The Metropolitan Transportation Authority (MTA) is a state operated public benefit corporation responsible for providing public transportation services for New York City and its seven surrounding counties. More than 14 million people distributed throughout the 5,000 square mile that comprise the New York metropolitan area are served by the Authority's buses, subways and commuter trains, making it the largest public transportation provider in North America. MTA New York City Transit (NYCT), a subsidiary of the MTA, is the agency responsible for operating New York City's subway, bus and bus rapid transit systems.

THE METROCARD

The primary form of payment for New York City's public transportation system is the MetroCard. Introduced in the early 1990s, and intended to increase efficiency, reduce operating costs and eliminate the need to carry tokens, the MetroCard is a thin wallet-sized plastic card containing a magnetic strip that is used to store and update fare values. This new form of fare

media has also enabled the MTA to automate its fare collection, provide multiride bonuses that reduce the passenger fare per trip, and integrate other modes of transit.

In general, one two-hour free transfer is provided when traveling between two local buses and between a local bus and a subway. A pay-per-ride MetroCard keeps track of the fare deducted and the transfer. Up to four people can use one pay-per-ride MetroCard at any given time. Unlimited MetroCards may not be reused at the same subway station or bus stop within 18 minutes of the first use in order to prevent multiple people using one unlimited pass. Free transfers are not provided to subway riders once they exit the subway station.

When traveling from local service to an express bus, the local fare of \$2.25 is deducted from the \$5 express bus fare automatically when using a pay-per-ride MetroCard. Express buses have a separate seven-day unlimited pass for frequent riders. One free transfer is provided to riders transferring between express buses.

In addition to local bus, subway, and express bus service, MTA also operates the regional Metro-North and Long Island Railroad commuter rail service. While fares for local and regional service remain separate, MTA offers riders the option to use one card for both trips. One side of the card is either a standard pay-per-ride or unlimited MetroCard pass while the other side is a weekly or monthly commuter railroad pass for either Metro-North or the LIRR.

EXAMPLES OF PAST INTEGRATION IN NEW YORK CITY

In addition to MTA operated service, there are several other transit operators providing service in New York City:

- Staten Island Railroad (the MTA contracts with Staten Island Rapid Transit Operating Authority to operate);
- The Roosevelt Island Tram (an aerial tramway that connects Roosevelt Island and Manhattan. The tram is owned by Roosevelt Island Operating Corporation and operated by Interfac).
- The Port Authority Trans-Hudson (PATH) system (a subway linking New York and New Jersey which is operated by the Port Authority of New York and New Jersey);
- JFK AirTrain (an elevated people mover rail system that connects John F. Kennedy International Airport to the New York City's subway and commuter trains. The Port Authority contracts with Bombardier Transportation to operate the service);
- Westchester County Bee-Line Bus service (although not technically in New York City, it is a good model of fare integration);
- Staten Island Ferry: Owned and operated by NYCDOT;
- Private ferries: Service owned and operated by five separate private ferry companies

Except for the free Staten Island Ferry and the privately operated ferries, all of the other transit providers above have been integrated to some degree into the MTA MetroCard system. The Staten Island Railroad (SIRR) and Roosevelt Island Tramway are fully integrated. The \$2.25 fare for a single ride on both of these systems is the same as a MTA local bus or subway ride. As such, passengers can use either a pay-per-ride with free 2-hour transfer to other MTA service or an unlimited pass on these services.

PATH and the JFK AirTrain, conversely, can only accept pay-per-ride MetroCard. Unlike the SIR and the Tramway, PATH's \$1.25 fare and AirTrain's \$5.00 fare differ from MTA's single-ride fare and transfers are not provided to MTA's local service. In addition to MetroCard, PATH accepts its own fare card that provides either pay-per-ride or unlimited pass options and has Smart Card features like online purchase and automatic reloading.

CHALLENGES TO FARE INTEGRATION

There are several challenges to fare integration between a privately operated ferry system and New York City's transit network.

Logistics

Revenue sharing is perhaps the largest obstacle to fare integration. Both the MTA and the private ferry operators would need to determine how fare revenue is shared between the two operations. Both groups would also need to establish how transfers fit into the equation and how revenue produced from transfers is allocated. Establishing a partnership with private operators and government transportation agencies also presents its own unique set of institutional challenges.

Expense

The magnetic strip technology that is used to store and update fare value is a unique proprietary format developed by the contractor Cubic. Consequently, the MetroCard can only function properly using Cubic's card readers and writers. Because the equipment required to accept the MetroCard is only available from a single source it can become expensive to outfit an entire system.

Technology

The magnetic strip technology used by the MetroCard is fast becoming obsolete as the use of contactless fare media, commonly referred to as smartcards, continue to become more widespread. Smartcards are more flexible than standard magnetic strip cards, can reduce congestion at turnstiles and can even be incorporated into a debit card (a feature known as an electronic purse). Contactless fare media has been in use since 2007 when the PA began accepting SmartLink cards at PATH train turnstiles. This card will eventually replace the magnetic QuickCards accepted at PATH turnstiles.

The New York City subway and bus network will eventually use this same type of contactless fare media technology. Contactless media has undergone testing since 2006 when the MTA began testing smart cards at several subway stops throughout the city. The MTA plans on eventually phasing out the MetroCard in favor of a contactless system. Ultimately, the Port Authority and MTA are working towards a universal contactless fare media system. Given this, it may not be plausible at this time to expense the resources needed to introduce MetroCard based fare integration into private ferry service until the new contactless fare media is more widely available.

CONCLUSION

What emerges from researching these six different ferry systems' fare collection and integration methods is that extending fare integration with privately operated ferries is achievable here in New York City. Its transit system is not nearly as complex as seven transit agencies within the Puget Sound region or eventually the 22 agencies in the San Francisco Bay using one card for a diverse set of fare options. When looking to propose fare integration with privately operated ferries, NYCEDC could look to King County Ferry District, WETA and MBTA as examples of integrating fare collection methods and subsidized transfers. Furthermore, MTA has demonstrated its own abilities to integrate fares with non-MTA operators like the Roosevelt Island Tramway, PATH and AirTrain. Achieving the integration of privately operated ferry service into the larger regional transit network will be unique to New York, requiring significant political buy-in by elected leaders, substantial coordination among multiple local, regional, and state transportation agencies, and considerable financial investment in infrastructure upgrades at ferry terminals to implement a fare integration system. But in order for ferry service to capture the greatest market possible, expanding the reach of the system through fare integration with other transit operators is highly desirable.

APPENDIX B:

SITE PROFILES

Site profile summaries have been included in Part One of the report. More detailed information on each of the 43 sites analyzed can be found at www.nycedc.com/ferrystudy.

APPENDIX C:

ADDITIONAL RIDERSHIP ANALYSIS

This appendix includes tables that were developed for the corridor ridership analyses.

Table 33: East River - Brooklyn and Queens base capture rate calculation

Time Competitiveness										
	Transit Time		Ferry Time		Time Savings		Time Savings %			
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown		
Fulton Ferry	32	16	46	19	-14	-4	-44%	-23%		
South Williamsburg	42	31	38	27	4	4	8%	14%		
North Williamsburg	27	30	33	32	-6	-2	-22%	-7%		
Greenpoint	30	45	28	37	2	8	5%	18%		
Queens West	16	31	28	44	-13	-13	-81%	-42%		
Astoria	38	54	39	55	15	-1	28%	-3%		
Cost Competitiveness										
	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %			
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown		
Fulton Ferry	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
South Williamsburg	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
North Williamsburg	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
Greenpoint	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
Queens West	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
Astoria	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%		
Household Income > \$75,000										
Fulton Ferry	57%									
South Williamsburg	45%									
North Williamsburg	45%									
Greenpoint	45%									
Queens West	45%									
Astoria	26%									
Capture Rates										
Baseline		Adjusted For HH Income		Time Savings		Cost Savings Multiplier		Calculated		
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Fulton Ferry	13.8%	9.8%	15.0%	10.6%	-15%	-10%	-67%	+0%	4.2%	2.0%
South Williamsburg	13.8%	9.8%	11.8%	8.4%	-5%	-2%	-67%	+0%	3.7%	6.0%
North Williamsburg	13.8%	9.8%	11.8%	8.4%	-11%	-7%	-67%	+0%	3.5%	2.0%
Greenpoint	13.8%	9.8%	11.8%	8.4%	-5%	-2%	-67%	+0%	3.7%	6.7%
Queens West	13.8%	9.8%	11.8%	8.4%	-22%	-14%	-67%	+0%	3.0%	-5.2%
Astoria	13.8%	9.8%	6.8%	4.8%	+1%	-7%	-67%	+0%	2.3%	2.0%
Commuter Market										
Commuters				Ferry Riders						
	Midtown	Downtown	Midtown	Downtown						
Fulton Ferry	2,424	1,429	102	29						
South Williamsburg	3,500	1,167	130	70						
North Williamsburg	2,894	965	101	19						
Greenpoint	3,402	1,134	126	76						
Queens West	1,883	628	57	13						
Astoria	3644	797	83	16						
Total	14,103	5,323	516	207						

Table 34: East River - Brooklyn and Queens ridership analysis results

	Cost	Annual trips	Annual revenue	Annual subsidy	Subsidy per trip
3-boat peak, 2-boat off-peak and weekend					
Peak service (3 boats)	\$3,000,000	279,681 to 378,392	\$1.4M to \$1.9M	-\$1.1M to -\$1.6M	\$(3.96) to \$(4.23)
Off-peak service (2 boats)	\$2,250,000	125,857 to 170,277	\$0.6M to \$0.9M	-\$1.4M to -\$1.6M	\$(11.11) to \$(9.52)
Weekend service (2 boats)	\$1,430,000	61,530 to 83,246	\$0.3M to \$0.4M	-\$1.0M to -\$1.1M	\$(16.48) to \$(13.48)
Total	\$6,680,000	467,068 to 631,915	\$2.3M to \$3.2M	-\$3.5M to -\$4.3M	\$(5.57) to \$(9.30)
3-boat peak, 1-boat off-peak and weekend + 1-boat loop					
Peak service (3 boats)	\$3,000,000	279,681 to 378,392	\$1.4M to \$1.9M	-\$1.1M to -\$1.6M	\$(3.96) to \$(4.23)
Off-peak service (1 boat + 1-boat loop)	\$2,250,000	123,208 to 166,693	\$0.4M to \$0.6M	-\$1.6M to -\$1.8M	\$(13.33) to \$(10.80)
Weekend service (1 boat + 1-boat loop)	\$1,430,000	315,811 to 427,274	\$0.9M to \$1.3M	-\$0.2M to -\$0.5M	\$(.56) to \$(1.18)
Total	\$6,680,000	718,701 to 972,360	\$2.8M to \$3.8M	-\$2.9M to -\$3.9M	\$(5.43) to \$(3.01)

Table 35: East River - Manhattan capture rate calculation
Time Competitiveness

	Transit Time		Ferry Time		Time Savings		Time Savings %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Pier 11	26	n/a	43	n/a	-17	n/a	-64%	n/a
East 23rd Street	28	35	29	25	-1	10	-4%	29%
East 34th Street	n/a	35	n/a	33	n/a	2	n/a	6%
Upper East Side	22	44	34	41	-12	3	-55%	7%
East 90th Street	33	45	42	49	-9	-4	-27%	-8%
Soundview	72	87	61	68	11	19	15%	22%
Co-Op City	69	87	91	98	-22	-11	-32%	12%

Cost Competitiveness

	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Pier 11	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
East 23rd Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
East 34th Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Upper East Side	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
East 90th Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Soundview	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Co-Op City	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%

Household Income > \$75,000

Pier 11	59%	
East 23rd Street	48%	
East 34th Street	53%	
Upper East Side	50%	
East 90th Street	54%	
Soundview	33%	
Co-Op City	29%	

Capture Rates

	Baseline		Adjusted For HH Income		Time Savings		Cost Savings Multiplier		Calculated	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Pier 11	13.8%	9.8%	15.5%	11.0%	-19.1%	n/a	-67%	-8.0%	4.1%	n/a
East 23rd Street	13.8%	9.8%	12.6%	8.9%	-7.0%	+7.0%	-67%	-8.0%	3.9%	8.3%
East 34th Street	13.8%	9.8%	13.9%	9.9%	n/a	-4.0%	-67%	-8.0%	n/a	8.7%
Upper East Side	13.8%	9.8%	13.1%	9.3%	-17.2%	-3.7%	-67%	-8.0%	3.6%	8.3%
East 90h Street	13.8%	9.8%	14.2%	10.1%	-11.7%	-6.9%	-67%	-8.0%	4.1%	8.6%
Soundview	13.8%	9.8%	8.7%	6.2%	-3.2%	-8.8%	-67%	-8.0%	2.8%	5.6%
Co-Op City	13.8%	9.8%	7.6%	5.4%	-12.6%	-7.7%	-67%	-8.0%	2.2%	4.6%

Commuter Market

	Commuters		Ferry Riders	
	Midtown	Downtown	Midtown	Downtown
Pier 11	3,829	-	159	-
East 23rd Street	4,952	1,805	192	150
East 34th Street	-	756	-	66
Upper East Side	8,794	1,966	316	162
East 90h Street	11,421	3,120	472	269
Soundview	1,204	652	33	37
Co-Op City	2,793	1,039	61	48
Total	28,996	7,647	1,139	647

Table 36: East River - Manhattan ridership analysis results

	Cost	Annual trips	Annual revenue	Annual subsidy	Subsidy per trip
3-boat peak, 2-boat off-peak and weekend					
Peak service (3 boats)	\$3,000,000	285,871 to 386,767	\$1.4M to \$1.9M	-\$1.1M to -\$1.6M	\$(8.52) to \$(9.28)
Off-peak service (2 boats)	\$2,250,000	125,069 to 169,211	\$0.6M to \$0.9M	-\$1.4M to -\$1.6M	\$(22.96) to \$(20.62)
Weekend service (2 boats)	\$1,430,000	61,145 to 78,786	\$0.3M to \$0.4M	-\$1.0M to -\$1.1M	\$(16.94) to \$(14.27)
Total	\$6,680,000	472,085 to 634,764	\$2.4M to \$3.2M	-\$3.5M to -\$4.3M	\$(9.15) to \$(5.52)
3-boat peak, 1-boat off-peak and weekend + 1-boat loop					
Peak service (3 boats)	\$3,000,000	285,871 to 386,767	\$1.4M to \$1.9M	-\$1.1M to -\$1.6M	\$(8.71) to \$(9.48)
Off-peak service (1 boat + 1-boat loop)	\$2,250,000	122,420 to 165,627	\$0.4M to \$0.6M	-\$1.6M to -\$1.8M	\$(5.22) to \$(4.27)
Weekend service (1 boat + 1-boat loop)	\$1,430,000	315,426 to 422,814	\$0.9M to \$1.2M	-\$0.2M to -\$0.5M	\$(0.63) to \$(1.19)
Total	\$6,680,000	723,718 to 975,208	\$2.8M to \$3.8M	-\$2.9M to -\$3.9M	\$(5.36) to \$(2.99)

Table 37: East River - Hudson River capture rate calculation

Time Competitiveness - w/W 125th Street and Dyckman and Riverdale

	Transit Time		Ferry Time		Time Savings		Time Savings %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Pier 79	n/a	38	n/a	32	n/a	6	n/a	17%
West 69th Street	23	39	25	40	-2	-1	-8%	-1
West 125th Street	30	38	38	52	-8	-14	-26%	-38%
Dyckman Street	40	52	53	67	-13	-15	-32%	-29%
Riverdale	47	73	64	79	-17	-6	-36%	-8%

Cost Competitiveness

	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
WFC	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Pier 79	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
West 69th Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
West 125th Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Dyckman Street	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Riverdale	\$ 4.81	\$ 4.81	\$ 7.23	\$ 5.00	\$ 2.42	\$.19	150%	104%

Household Income > \$75,000

WFC	68%									
Pier 79	40%									
West 69th Street	59%									
West 125th Street	19%									
Dyckman Street	38%									
Riverdale	52%									

Capture Rates

	Baseline		Adjusted For HH Income		Time Savings		Cost Savings Multiplier		Calculated	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Pier 79	13.8%	9.8%	10.5%	7.5%	n/a	-1.8%	-67.0%	-8.0%	n/a	6.7%
West 69th Street	13.8%	9.8%	15.5%	11.0%	-7.9%	-5.5%	-67.0%	-8.0%	4.7%	9.6%
West 125th Street	13.8%	9.8%	5.0%	3.5%	-11.4%	-12.8%	-67.0%	-8.0%	1.5%	2.8%
Dyckman Street	13.8%	9.8%	10.0%	7.1%	-12.6%	-11.1%	-67.0%	-8.0%	2.9%	5.8%
Riverdale	13.8%	9.8%	13.7%	9.7%	-13.5%	-6.7%	-3.2%	+47.0%	11.4%	13.3%

Commuter Market

	Commuters		Ferry Riders	
	Midtown	Downtown	Midtown	Downtown
Pier 79	-	80	-	5
West 69th Street	10,172	2,636	479	252
West 125th Street	3,909	1,311	57	37
Dyckman Street	2,597	734	75	43
Riverdale	1,012	721	116	96
Total	10,172	2,7162	479	257

Table 38: East River - Hudson River ridership analysis results

	Cost	Annual trips	Annual revenue	Annual subsidy	Subsidy per trip
2-boat peak, 2-boat off-peak and weekend					
Peak service (2 boats)	\$2,000,000	103,370 to 139,853	\$0.5M to \$0.7M	-\$1.3M to -\$1.5M	\$(12.58) to \$(10.61)
Off-peak service (2 boats)	\$1,125,000	50,238 to 67,968	\$0.3M to \$0.3M	-\$0.8M to -\$0.9M	\$(15.63) to \$(12.86)
Weekend service (2 boats)	\$715,000	45,483 to 61,535	\$0.2M to \$0.3M	-\$0.4M to -\$0.5M	\$(8.96) to \$(7.92)
Total	\$3,840,000	199,090 to 269,357	\$1.0M to \$1.3M	-\$2.5M to -\$2.8M	\$(14.29) to \$(9.26)
3-boat peak, 1-boat off-peak and weekend + 1-boat loop					
Peak service (3 boats)	\$3,000,000	103,370 to 139,853	\$0.5M to \$0.7M	-\$2.3M to -\$2.5M	\$(12.58) to \$(10.61)
Off-peak service (1 boat + 1-boat loop)	\$2,250,000	41,528 to 56,185	\$0.1M to \$0.1M	-\$2.1M to -\$2.1M	\$(50.77) to \$(38.18)
Weekend service (1 boat + 1-boat loop)	\$1,430,000	330,120 to 446,632	\$0.8M to \$1.1M	-\$0.3M to -\$0.6M	\$(0.95) to \$(1.35)
Total	\$6,680,000	475,017 to 642,670	\$1.4M to \$2.0M	-\$4.7M to -\$5.2M	\$(7.35) to \$(11.02)

Table 39: South Brooklyn capture rate calculation
Time Competitiveness

	Transit Time		Ferry Time		Time Savings		Time Savings %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	40	23	48	15	-8	8	-20%	33%
Brooklyn Army Terminal	41	30	66	34	-25	-4	-62%	-12%
Bay Ridge	54	37	72	43	-18	-6	-34%	-16%
Coney Island	64	55	92	63	-28	-8	-44%	-15%
Sheepshead Bay	72	63	103	74	-31	-11	-43%	-17%
Rockaway	87	72	115	86	-28	-14	-33%	-19%

Cost Competitiveness

	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Brooklyn Army Terminal	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00		\$ 3.03	354%	254%
Bay Ridge	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Coney Island	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%
Sheepshead Bay	\$ 1.97	\$ 1.97	\$ 6.97	\$ 5.00	\$ 5.00	\$ 3.03	354%	254%

Household Income > \$75,000

Atlantic Ave (Pier 6)	56%	
Brooklyn Army Terminal	26%	
Bay Ridge	39%	
Coney Island	9%	
Sheepshead Bay	39%	
Rockaway	42%	

Capture Rates

	Baseline		HH Income		Time Savings		Cost Savings Multiplier		Calculated	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	13.8%	9.8%	14.7%	10.4%	-10.3%	+1.5%	-67.0%	-8.0%	4.4%	9.7%
Brooklyn Army Terminal	13.8%	9.8%	6.8%	4.8%	-18.6%	-7.6%	-67.0%	-8.0%	1.8%	4.1%
Bay Ridge	13.8%	9.8%	10.3%	7.3%	-13.1%	-8.5%	-67.0%	-8.0%	2.9%	6.1%
Coney Island	13.8%	9.8%	2.4%	1.7%	-15%	-8.1%	-67.0%	-8.0%	0.7%	1.4%
Sheepshead Bay	13.8%	9.8%	10.3%	7.3%	-14.8%	-8.7%	-67.0%	-8.0%	2.9%	6.1%
Rockaway	13.8%	9.8%	11.0%	7.8%	-12.8%	-9.1%	-67.0%	-8.0%	3.2%	6.5%

Commuter Market

	Commuters		Ferry Riders	
	Midtown	Downtown	Midtown	Downtown
Atlantic Ave (Pier 6)	4,277	1,627	186	159
Brooklyn Army Terminal	2,469	1,402	45	58
Bay Ridge	3,108	1,782	91	109
Coney Island	5,833	3,032	39	43
Sheepshead Bay	922	617	27	38
Rockaway	275	496	9	32
Total	9,854	4,811	322	

Table 40: South Brooklyn ridership analysis results

	Cost	Annual trips	Annual revenue	Annual subsidy	Subsidy per trip
3-boat peak, 2-boat off-peak and weekend					
Peak service (3 boats)	\$3,000,000	254,876 to 344,832	\$1.2M to \$1.6M	-\$1.4M to -\$1.8M	\$(5.51) to \$(5.28)
Off-peak service (2 boats)	\$2,250,000	114,694 to 155,174	\$0.5M to \$0.7M	-\$1.5M to -\$1.7M	\$(13.36) to \$(11.08)
Weekend service (2 boats)	\$1,430,000	56,073 to 75,863	\$0.3M to \$0.4M	-\$1.1M to -\$1.2M	\$(19.25) to \$(15.43)
Total	\$6,680,000	425,642 to 575,869	\$2.0M to \$2.7M	-\$4.0M to -\$4.7M	\$(6.97) to \$(11.07)
3-boat peak, 1-boat off-peak and weekend + 1-boat loop					
Peak service (3 boats)	\$3,000,000	254,876 to 344,832	\$1.2M to \$1.6M	-\$1.4M to -\$1.8M	\$(5.51) to \$(5.28)
Off-peak service (1 boat + 1-boat loop)	\$2,250,000	109,398 to 148,010	\$0.4M to \$0.5M	-\$1.7M to -\$1.8M	\$(15.61) to \$(12.50)
Weekend service (1 boat + 1-boat loop)	\$1,430,000	285,391 to 386,117	\$0.8M to \$1.1M	-\$0.4M to -\$0.6M	\$(1.26) to \$(1.66)
Total	\$6,680,000	649,665 to 878,958	\$2.4M to \$3.2M	-\$3.5M to -\$4.3M	\$(6.63) to \$(3.95)

Table 41: Staten Island capture rate calculation

Time Competitiveness										
	Transit Time		Ferry Time		Time Savings		Time Savings %			
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown		
Stapleton	79	50	54	32	25	18	32%	36%		
Camp St. Edward	108	74	102	80	6	-6	6%	-8%		
Cost Competitiveness										
	Transit Cost		Ferry Cost		Cost Difference		Cost Difference %			
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown		
Stapleton	\$ 1.97	\$ 1.97	\$ 6.97	\$ 6.97	\$ 5.00	\$ 5.00	354%	354%		
Camp St. Edward	\$ 1.97	\$ 1.97	\$ 6.97	\$ 6.97	\$ 5.00	\$ 5.00	354%	354%		
Household Income > \$75,000										
Stapleton	33%									
Camp St. Edward	57%									
Capture Rates										
Baseline			HH Income		Time Savings		Cost Savings Multiplier		Calculated	
	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown	Midtown	Downtown
Stapleton	13.8%	9.8%	8.7%	6.2%	+1%	+2.0%	-67.0%	-8.0%	2.9%	5.8%
Camp St Edward	13.8%	9.8%	15.0%	10.6%	-5.1%	-6.8%	-67.0%	-8.0%	4.7%	9.1%
Commuter Market										
Commuters				Ferry Riders						
	Midtown	Downtown	Midtown	Downtown						
Stapleton	3,634	2,598	104	150						
Camp St Edward	652	758	31	69						
Total	4,286	3,356	135	219						

APPENDIX D:

LOWER MANHATTAN COMMUTER/NYHARBORWAY TERMINAL

Part Four of this report includes an examination of how to best to link recreational sites throughout New York Harbor by ferry. These sites, as well as the service that links them, are known as the NYHarborWay, a “linked destination comprised of nine unique waterfront sites connected by bike and ferry.”

An important, yet often overlooked component of a ferry service is the terminal. A centralized ferry terminal can serve as the gateway to the NYHarborWay, welcoming passengers in a comfortable and safe environment, while providing the pragmatic and necessary functions demanded from a ferry terminal, such as ticketing and information. Establishing a central point from which tourists and visitors and residents could access ferry services could improve the service, and increase ridership.

For tourists, visitors and residents alike, the ferry terminal should be part of the experience, not the beginning. Terminals should be viewed (and treated) as gateways to a destination rather than just used to corral passengers until the next ferry arrives. In addition, having its own accommodations will help distinguish the NYHarborWay service, separating it from commuter service and further developing the brand.

The following is an assessment of potential locations that could serve as a terminal for the NYHarborWay ferry service. The assessment will consider factors such as waterfront infrastructure needed to accommodate the NYHarborWay service, availability of space, and potential capital costs associated with upgrading the facility.

8.1 IDENTIFICATION OF CANDIDATE LOCATIONS

Eight locations were identified in Lower Manhattan as potential candidates for a NYHarborWay Terminal. The locations range from existing facilities to those that are not yet built and from large structures to locations where a kiosk could be placed.

Given its close proximity and centralized orientation to most NYHarborWay sites, Lower Manhattan was determined to be the logical location for a NYHarborWay Terminal. Currently, Lower Manhattan serves as the defacto area for recreational ferry service. Several prominent recreational and sightseeing tours are currently operated out of Lower Manhattan, including ferries to the Statue of Liberty and Governors Island. All of the candidate locations are situated along the waterfront between the Battery and Fulton Street. This area is already highly trafficked by tourists and visitors.

Geographically, Lower Manhattan's central location in the Harbor makes it the logical site for a centralized hub. Lower Manhattan is very walkable and well served by transit making it easily accessible. The southeastern tip of Manhattan is situated where the mouth of the East River meets the New York Harbor. The east and west waterfronts of Manhattan, Queens, Brooklyn, Governors Island, Ellis Island, Staten Island and the eastern shore of New Jersey are easily accessible by boat from these locations. Consequently, there is already a substantial amount of existing waterfront ferry infrastructure in place.

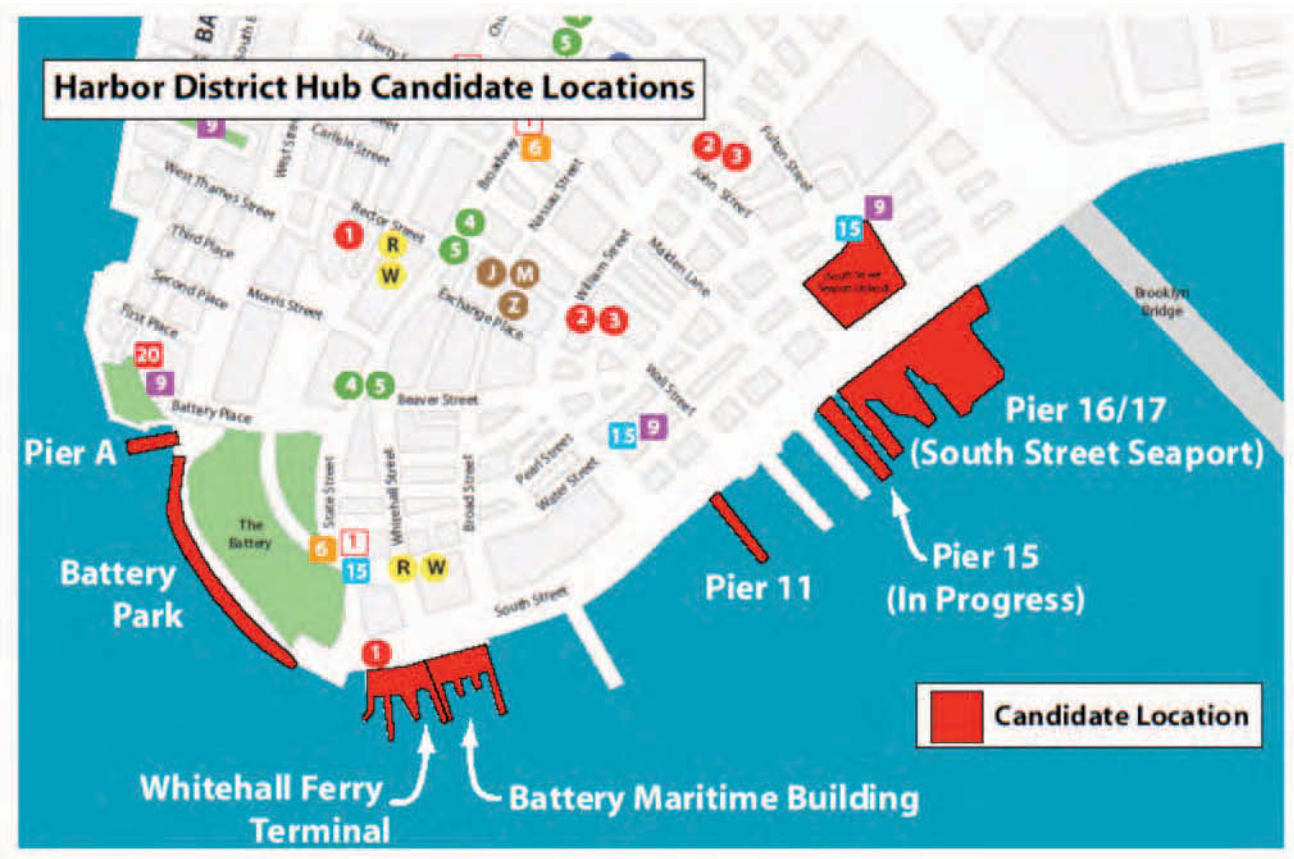
The candidate locations were identified based on the following criteria:

- Located between Battery Park City and the Brooklyn Bridge;
- Have (or will have) waterfront access and accommodations for waterborne vessels;
- Owned by the City of New York (publicly owned);
- Publicly accessible, and;
- Accessible by transit, bicycle and foot

The intent of the initial candidate location identification was to capture as many locations as possible.

Based on these criteria, eight candidate locations were identified in Lower Manhattan:

1. Pier A
2. Battery Park
3. Whitehall Ferry Terminal
4. Battery Maritime Building
5. Pier 11
6. Pier 15
7. Pier 16
8. Pier 17



8.2 ASSESSMENT

Although the potential terminal locations were all identified using the same criteria, and therefore share some similar characteristics, each is distinctly unique. The following is a profile of each potential location, an at-a-glance fact sheet, an assessment of the challenges associated with siting a NYHarborWay terminal at each location and potential solutions for consideration.

PIER A


Completed in 1886, Pier A is located at the southwest tip of Manhattan, immediately to the west of Battery Park and to the south of Battery Park City. The waterfront location of Pier A provides views of the Statue of Liberty and New York Harbor. Pier A is one of the last surviving nineteenth century piers and is listed on the National Register of Historic Places. Pier A has also been designated as a landmark by the New York City Landmarks Commission.

Pier A consists of a three-story, 38,725 square foot building, constructed atop a pier that extends westward into the Hudson River. The first and second floors of the building are approximately 15,000 square feet each, while the third floor contains 8,725 square feet. Adjacent to the Pier, is a 34,000 square foot plaza, and surrounding the Pier on the north, west and south sides is a 12,500 square foot outdoor promenade.

The Battery Park City Authority (BPCA) leases Pier A from the City of New York under a 49-year ground lease. The New York City Economic Development Corporation administers the ground lease on behalf of the City. The lease extends through October 6, 2057 and contains five additional 10-year renewal periods. Unoccupied since 1993, Pier A had fallen into a state of disrepair. In late 2008, BPCA began rehabilitating the Pier to ensure structural stability. The restoration work will preserve the core and exterior of the structure. It is anticipated that the rehabilitation work will be completed by March 31, 2011. Once rehabilitation is complete, Pier A will be available for tenant build-out by a tenant selected by BPCA through a competitive bidding process.

Pier A falls under the jurisdiction of several regulating entities - including the New York City Landmarks Preservation Commission, the New York State Historic Preservation Office, the New York State Department of Environmental Conservation and the New York City Office of Environmental Coordination. A Request for Qualifications for programming concepts was issued by BPCA on November 23, 2009.

PIER A AT-A-GLANCE

Built/Rehabbed:	1886/2008
Current use:	Unoccupied
Jurisdiction:	City of New York (owner) NYC Economic Development Corporation (lessor) Battery Park City Authority (lessee)
Structure Size:	Three-stories, 38,725 square feet -First floor: 15,000 square feet -Second floor: 15,000 square feet -Third floor: 8,725 square feet
Docking facilities:	- There is bowloading capability located along the southeastern face of the pier promenade. Bowloading vessels up to 149 passengers could dock with limited capital improvements
Nearby Transportation:	Subway:  Bus: M1, M6, M9, M15, M20
Parking	None
Notes:	-Request for Qualifications issued by Battery Park City Authority on November 23, 2009. -Structure has Landmark status and historical significance

Key Advantages

- ✓ Indoor space is potentially available through RFQ/RFP
- ✓ NYHarborWay meets the requirement for the “active public use” for Pier A as outlined in the RFQ.
- ✓ Existing docking facilities could accommodate most bowloading vessels operating in the Harbor with minimal capital investment.

Key Constraints

- ✗ The building currently has no interior and any terminal amenities would need to be constructed by the NYHarborWay, potentially resulting in significant capital costs.
- ✗ Interior build out not scheduled to be complete until after 2010.

CHALLENGES

There are some challenges associated with siting a NYHarborWay terminal at Pier A.

The first challenge is programming. The Request for Qualifications issued by the Battery Park City Authority in November 2009 indicates that the goal of the project is to program Pier A in a manner that draws local residents and visitors to the water's edge. Potential uses listed in the RFQ include food and beverage service, general retail, market space, water dependent uses, tourist services and office space. The RFQ also indicates that preference will be given to successful respondents that:

1. Are experienced, qualified and capable of successfully fitting out, operating and maintaining the space;
2. Provide innovative concepts for programming and provide an active public use that will activate Pier A and enhance the waterfront access in Lower Manhattan, and;
3. Determine financially feasible and economically viable project approaches that will generate revenue to contribute toward the costs of rehabilitation and on-going maintenance of the property.

While the NYHarborWay ferry service certainly meets and exceeds many of the sought after criteria, it does not, at least at the initial concept level, meet all of them. Completing and paying for the interior build out, recruiting the variety of uses to meet the mixed use vision of the BPCA, and creating a viable revenue stream great enough to rehabilitate and maintain the property are beyond the current capabilities of NYHarborWay, which is not a programming-orientated entity.

Also, the RFQ notes that respondents should anticipate having exclusive use of the interior building space and some portion of the outdoor space located on the promenade. This would suggest that only one respondent would ultimately be selected and awarded the lease for Pier A.

Furthermore, the RFQ states that the BPCA reserves the right to shortlist respondents for the subsequent RFP that would ultimately be released for the Pier A lease. While prospective bidders that did not respond to the RFQ are not precluded from responding to the RFQ, those that did respond to the RFP would have a favorable advantage when the respondents are eventually evaluated.

It should also be noted that in 1998, New York State Office of Parks, Recreation and Historic Preservation (OPRHP) awarded an Environmental Quality Bond Act (EQBA) grant to New York City to assist in the rehabilitation of Pier A. The grant, which was originally for the amount of \$4 million, includes the creation of a visitor center. About \$1 million dollars of grant funding currently remains. This money could potentially be used to construct a visitor center at Pier A that includes the NYHarborWay.

Another challenge to siting the NYHarborWay terminal at Pier A is timing. The exterior rehabilitation is not scheduled to be completed until March 2011. It is anticipated that a tenant will not be selected from the Request for Proposals until late 2010. The subsequent build-out of the interior space would, in all likelihood, take up to an additional year. Given these considerations, a permanent terminal at Pier A would probably not be up and running until late 2011. This timeline creates a considerable gap between the NYHarborWay pilot occurring this year and the permanent installation and could potentially delay the establishment of a service. This delay is an important consideration when trying to establish a ferry service, where growth and development often occurs slowly over a substantial time period.

POTENTIAL SOLUTIONS

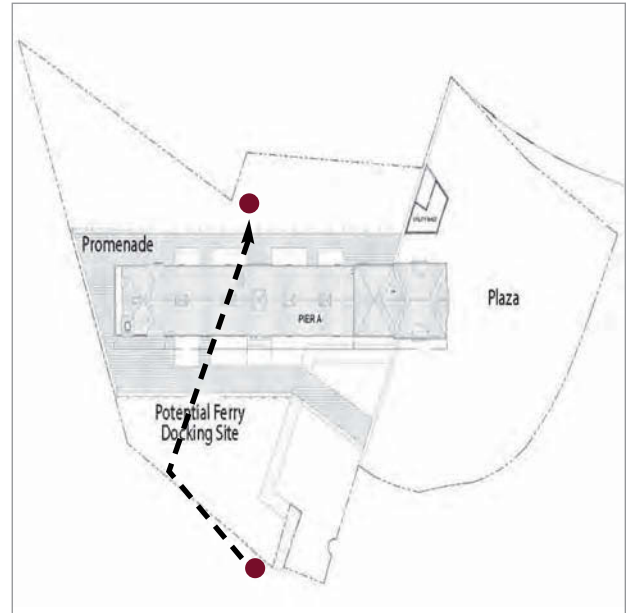
However, there are some potential solutions to the challenges outlined above. Given the seasonal nature of the NYHarborWay service, a temporary terminal at Pier A could be established during the rehabilitation of the structure and subsequent build out of the interior. This temporary terminal could be established by installing a (staffed) ticketing kiosk in the public plaza in front of the Pier A building. This area could also be used for queuing passengers until the next ferry arrives, at which point they could walk along the promenade to the gangway located halfway down the eastern side of the Pier. This arrangement would allow the NYHarborWay ferry to operate until construction was complete. It would also be inexpensive, as the existing infrastructure is adequate enough to enable most ferries operating in the NY Harbor to dock at the Pier.

Immediate:

- Install a temporary staffed ticket booth in the public plaza and operate a seasonal service out of eastern side pier.

Longer Term:

- Investigate applicability of the remaining \$1 million dollars from the EBQA grant
- Full build out and full time operations out of terminal inside Pier A



BATTERY PARK

Battery Park is located at the southern tip of Manhattan (southeast of Pier A and northwest of the Whitehall Ferry Terminal), overlooking the New York Harbor. With 25 acres of waterfront parkland, Battery Park is one of New York's oldest public spaces and is the largest public open space in downtown Manhattan.

The area is named after the various artillery batteries stationed at this strategic location in order to protect the Dutch and subsequent British settlements to the north.

Today, Battery Park performs a different role, serving as the gateway to Downtown, a hub of harbor access, and center of cultural tourism. Many cultural institutions are within walking distance of Battery Park; including the South Street Seaport, the New York Stock Exchange, the Smithsonian's Museum of the American Indian, the Museum of Jewish Heritage, the Staten Island Ferry, and Pier A.

Battery Park is also a key recreational and sightseeing ferry hub. Ferries for the Statue of Liberty and Ellis Island operate out the Battery, with Castle Clinton serving as the ticketing center for the nearly three million passengers who annually board ferries to see these sights. The National Park Service is currently considering relocating the Statue of Liberty and Ellis Island security screening center from the Battery.

Battery Park is owned and maintained by the City of New York through the Department of Parks & Recreation; the federal government owns and maintains Castle Clinton through the National Park Service. The Battery Conservancy, a non-profit educational corporation helps to rebuild and revitalize the Battery and Castle Clinton National Monument.

According to the Battery Conservancy, over four million people, including residents, office workers, school groups, and tourists from around the world visit the park annually.

BATTERY PARK AT-A-GLANCE


Built/Rehabbed: 1855 (Park)
1811 (Castle Clinton)

Current use: Terminal for Statue Cruises ferry trips to the Statue of Liberty and Ellis Island as well as New York Water Taxi's Guided Harbor and "Hop-on/Hop-off" tours.

Jurisdiction: City of New York (owner)
Department of Parks and Recreation (maintenance)
National Park Service (Castle Clinton)
Battery Conservancy (non-profit - revitalization/programming)

Structure Size: 25 acre public park

Docking facilities: -Six single-slip docking facilities available along the southern bulkhead of the park. Most side and bowloading vessels in use in the NY Harbor could dock at these slips with little capital investment.
-Slips 4 and 5 are used by Statue Cruises
-Slip 6 has a 20'x30' barge owned by NYWT

Nearby Transportation: Subway: 
Bus: M1, M6, M9, M15, M20

Parking None

Notes: Battery Conservancy spearheads revitalization efforts in partnership with the local, state and federal governments

Key Advantages

- ✓ Central location at tip of Manhattan
- ✓ High tourist traffic

Key Constraints

- ✗ Limited terminal accommodations
- ✗ Slips 1-3 are fairly close to the Whitehall Ferry Terminal could raise operational and security concerns

CHALLENGES

Battery Park offers several challenges for siting a NYHarborWay terminal. The first is terminal space. The only existing facilities located at Battery Park are the historic Castle Clinton and a tent established by Statue Cruises. Currently, Castle Clinton serves as the ticketing center for the Statue of Liberty and Ellis Island and the tent near the water provides a location for security screening. Operating the NYHarborWay service out of the same facilities may raise logical and security concerns from the National Park Service.

The second challenge identified is docking facilities. While there are six slips at Battery Park, only three are currently operating - Slip 6 is used by New York Water Taxi and Slips 4 and 5 are occupied by Statue Cruises. The third challenge to siting a NYHarborWay terminal at Battery Park is its proximity to the Whitehall Ferry Terminal, home to the Staten Island Ferry operation. The proximity of the Battery Park Slips to Whitehall terminal may raise operational and security concerns, which may present a challenge to activating Slips 1-3. These concerns may explain why only the farthest slips from the terminal, slips 4, 5 and 6, are currently active on a fairly regular basis.

POTENTIAL SOLUTIONS

Immediate:

- Investigate the feasibility of installing ticketing operations in Castle Clinton with the National Park Service and sharing existing docking facilities with New York Water Taxi.
- Investigate the feasibility of incorporating ticketing operations and sharing docking facilities with New York Water Taxi.

Longer Term:

- Investigate the feasibility of activating slips 1-3. May require upgrading existing or adding additional docking equipment and therefore may result in some minimal capital investment.

WHITEHALL FERRY TERMINAL

Opened on February 8, 2005, and located at the southernmost tip of Manhattan, the Whitehall Ferry Terminal is one of downtown's most iconic structures.

With a total area of 200,000 square feet, the terminal is the largest ferry terminal in the City. The new ferry terminal replaces the previous structure which was badly damaged by fire in September, 1991. In October of 1992, an international design competition, sponsored by the New York City Economic Development Corporation and the New York City Department of Transportation, was held to select an architectural firm to design the new terminal.

The result was a state-of-the-art structure that includes a 19,000-square-foot waiting room (6,500 square feet larger than the existing one), 6,000 square feet of concessions, 10,000 square feet of office space, and 10,000 square feet of ancillary support and ferry operation rooms.

The inter-modal terminal serves an important function; for over 100 years, the Staten Island Ferry has been the only non-vehicular mode of transportation between Manhattan and Staten Island, transporting over 65,000 commuters and tourists across New York Harbor daily (approximately 20 million commuters annually).

In addition to the new terminal, the renovation of the adjacent Peter Minuit Plaza is nearly completed. Slated for completion in 2010, the newly configured plaza will include the elimination of the existing traffic island, a new traffic pattern to more safely accommodate pedestrians, new public space, improved access from the terminal to the Whitehall Street Subways Station (N and R lines), a dedicated cab drop-off area along Whitehall Street and a new bus loop for the M1, M6 and M15 buses.

WHITEHALL FERRY TERMINAL AT-A-GLANCE




Built/Rehabbed: 2005 (rehabilitated)

Current use: Terminal for the Staten Island Ferry

Jurisdiction: City of New York (owner)
New York City Department of Transportation (manager)
New York City Economic Development Corporation (lessor)

Structure Size: 200,000 square feet
-19,000-square-foot waiting room
-6,000 square feet of concessions
-10,000 square feet of office space
-10,000 square feet of ancillary support and ferry operation rooms

Docking facilities: Three slips for large class vessels (slips 1, 2 and 3)

Nearby Transportation: Subway:   
Bus: M1, M6, M15

Parking None
Notes: -Service is provided 24 hours a day, 365 days a year
-Carries over 20 million passengers annually
-Transports approximately 65,000 passengers daily

Key Advantages

- ✓ Potential space in terminal for NYHarborWay terminal

Key Constraints

- ✗ Landing slips designed and reserved for large class commuter ferry vessels

BATTERY MARITIME BUILDING

Built in 1908 the Battery Maritime Building is New York City's last remnant of Beaux Arts-era ferry terminals in fashion during the early twentieth century.

The building's ornate exterior materials and elaborate architectural design elements paired with its significance in the City's history led to its designation as a New York City landmark, followed by a listing on the National Register of Historic Places in 1976.

That the Battery Maritime Building is frequently referred to as “the gateway to Governors Island” directly refers to its current use as the terminal for ferry operations to nearby Governors Island.

The Governors Island Preservation and Education Corporation (GIPEC) currently leases and Slips 6 and 7 for ferry operations to Governors Island. A portion of the ground floor is used as a waiting and security area for passengers heading to Governors Island. Slip 5 is owned and managed by the New York City Department of Transportation and is intended for use by private ferry operators.

The centerpiece of the Battery Maritime Building is its 30-foot-tall, 10,000 square foot waiting room. Located on the second floor, the waiting room served the public for several decades until ferry transport declined with the rise of other transportation modes.

In 1999, the City completed an exterior and structural conditions survey of the building and determined that more than \$30 million was needed to complete the restoration and stabilization of the roof and exterior façades. A \$60 million restoration commenced in fall 2001 and was completed in the spring of 2005. A few months later, NYCEDC and GIPEC released issued a Request for Expressions of Interest seeking programming ideas for the future redevelopment of Governors Island, which included soliciting ideas for new uses that would be relevant to the users of Governors Island for the Battery Maritime Building.

In 2007 NYCEDC selected a team to develop the historic Battery Maritime Building. The approximately \$110 million project will feature a specialty foods marketplace and education center, a boutique hotel, and roof top restaurant and bar. Under the terms of the agreement, the developer will lease the property for 49 years, with five 10-year renewals. The redevelopment will include a restoration of the Great Hall.

BATTERY MARITIME BUILDING AT-A-GLANCE


Built/Rehabbed: 1908 (built)
2005 (rehabilitated)
2007 (redevelopment agreement executed)

Current use: Partially used by the Governors Island Preservation and Education Corporation (Slips 6 and 7 are used to ferry visitors to and from Governors Island).

Jurisdiction: City of New York (owner)
New York City Economic Development Corporation (lessor)
Governors Island Preservation and Education Corporation (partial lessee)
Dermot Company and the Poulakakos family (partial lessee) to redevelop the interior.

Structure Size: Four-stories, 107,430 square feet
-First floor: 33,000 square feet
-Second Floor: 35,340 square feet
-Third Floor: 19,190 square feet
-Fourth Floor: 19,800 square feet

Docking facilities: Three slips
-Slip 5 - vacant (City of New York) - capable of accommodating most bow and side loading vessels
-Slips 6 and 7 - in use (GIPEC) - capable of accommodating 149 passenger bowloading vessels

Nearby Transportation: Subway: 
Bus: M1, M6, M15

Parking None

Notes: -Structure has Landmark status and historical significance

Key Advantages

- ✓ Available slip for NYHarborWay operation

Key Constraints

- ✗ Only available renovated space in use by GIPEC
- ✗ Rehabilitation of remaining space on hold due to developer financial constraints
- ✗ Building somewhat difficult to access by foot

CHALLENGES

Both the Whitehall Ferry Terminal and Battery Maritime Building present unique challenges to siting a NYHarborWay Terminal. The Whitehall Ferry Terminal has no available docking facilities, but has indoor space available. All three of the Whitehall Ferry Terminal's slips (Slips 1, 2 and 3) are in use by the Staten Island Ferry. There is retail space available in the newly designed Whitehall Ferry Terminal that could potentially serve as the NYHarborWay service terminal.

All of the available built out space inside the Battery Maritime Building, as well as Slips 6 and 7; currently serve as the Governors Island Preservation and Education Corporation's (GIPEC) terminal for service to Governors Island. The remaining space inside the Battery Maritime Building was leased to the Dermot Company in 2007 and is currently unfinished. However, while there is no indoor space available in the Battery Maritime Building, slip 7, the Whitehall Ferry Terminal and the Battery Maritime Building are connected by Slip 4.

Given these complementary opportunities as well as the close proximity to each other, it is logical to assess these facilities together. However, there are several considerations that may be taken into account. First, is wayfinding. Having ticketing and

information in one building and ferry operations in another creates inherent challenges in moving people from one location to the other and somewhat contradicts the notion of having a “centralized” facility. The additional passenger volume demand imposed on the Whitehall Ferry Terminal by siting the NYHarborWay terminal inside it may raise security and screening concerns. Also, housing a NYHarborWay terminal is not in line with the recommendations of the New York City Department of Transportation and New York City Economic Development Corporation's Retail Strategy for the St. George and Whitehall Ferry Terminals developed in 2006. Finally, locating the NYHarborWay inside the home of the Staten Island Ferry could make it difficult to develop its own distinct brand.

POTENTIAL SOLUTIONS

Immediate:

- Investigate the feasibility of operating NYHarborWay service out of Slip 5 at the Battery Maritime Building and incorporating ticketing and information facilities with GIPEC's Governors Island operations.
- Investigate the feasibility of operating NYHarborWay service out of Slips 6 and 7 at the Battery Maritime Building and incorporating ticketing and information facilities with GIPEC's Governors Island operations.

Longer Term:

- Investigate the feasibility of operating the NYHarborWay service out of Slip 5 at the Battery Maritime Building and developing a NYHarborWay terminal in the Whitehall Ferry Terminal.

PIER 11

With five slips and approximately 30,000 square feet of pier area, Pier 11 is the largest ferry terminal on the East River and one of the busiest in the City in terms of volume.

Located at foot of Gouverneur Lane and South Street (near Wall Street), Pier 11 is an important part of many commuters' daily rituals and buzzes with activity during peak weekday travel times.

There is a small indoor terminal on Pier 11 that includes ticketing, waiting and restroom facilities.

Pier 11 is currently undergoing a renovation of its mechanized ramp and barge systems to bring it into compliance with New York City Local Law 68, which requires all waterborne commuter service facilities within the City be accessible to the disabled.

Most private commuter ferry operators serve Pier 11, including New York Waterway, New York Water Taxi, Billy Bey and SeaStreak.

PIER 11 AT-A-GLANCE

Built/Rehabbed: 2010

Current use: Commuter ferry terminal for service to Wall Street in Lower Manhattan

Jurisdiction: City of New York (owner)
New York City Department of Transportation (manager)

Structure Size: -Approximately 30,000 square feet
-One indoor terminal building with ticket and restroom facilities (approximately 4,000 square feet)
-five 35'x'108 barges

Docking facilities: Five slips (A, B, C, D and E) When fully renovated:
-Slips A and C will each have dual bowloading capability
-Slips D and E will have single bowloading and side-loading capability
-Slip B will have side loading capability
Pier 11 can accommodate up to 400 passenger bow and side-loading vessels

Nearby Transportation: Subway:
Bus: M9, M15

Parking None

Notes: -Location served by New York Waterway, New York Water Taxi, Billy Bey, and SeaStreak

Key Advantages

- ✓ Ample capacity

Key Constraints

- ✗ Primarily used for commuter ferries
- ✗ Terminal lacks amenities

CHALLENGES

Since its inception, Pier 11 has been purposed as a commuter ferry facility. As such, there are no accommodations for a NYHarborWay terminal. The facility experiences very heavy commuter traffic in the morning and evening periods, which could potentially interfere with NYHarborWay service operations. In addition, the only indoor structure on Pier 11 is a small, one story, 4,000 square foot ticketing and restroom facility. The facility is currently occupied by ticketing agents for both New York Water Taxi and New York Water Way. In addition, the use of a large, busy commuter ferry terminal such as Pier 11 for the NYHarborWay Terminal could preclude the service from distinguishing itself from other private ferry services operating in the Harbor. Pier 11 is also located away from the concentrations of tourist destinations and subsequently experiences lower volumes of non-commuter foot-traffic.

POTENTIAL SOLUTIONS

Pier 11 is not a viable candidate.

PIER 15 (UNDER CONSTRUCTION)

Constructed within the footprint of the former historic pier, the new Pier 15 will be an iconic destination point along the East River Esplanade, and include a maritime education pavilion, a café, slips for excursion boats and historic ships, and ample open space and seating.

Taking its cue from the two story recreation piers of the late 19th century, the new Pier 15 will have a primary recreation area on the second level. At 80 feet wide, the two-level pier will extend 510 feet over the East River eastward from South Street, between Maiden Lane and John Street.



The lower level of the pier will include two sections of lookout seating, a 2,317 square foot maritime education pavilion space, a 1,758 square foot commercial café pavilion space, boat landings, a large planted area, and a collection of chaise lounge seating. The lookout areas will provide seating and unobstructed views along and across the river: The larger pavilion space near the esplanade will be leased to a tenant for maritime or environmental education programming, and the eastern pavilion will be leased to a café operator, with some space reserved for ticketing for excursion boats.

Excursion boats will be able to dock on the south and east edges of the pier, while it is anticipated that the north side of the pier will be reserved for historic ships. Plantings and understory trees that extend up through a cutout in the upper level will help to green the pier. At the end of the pier, beyond the extent of the upper level, a collection of chaise lounges will encourage sunbathing and passive recreation. The design does not include accommodations for ferries.

PIER 15 AT-A-GLANCE

Built/Rehabbed: 2012 (anticipated completion)

Current use: Active and passive recreational use. Historic and excursion boat docking.

Jurisdiction: City of New York (owner)
New York City Economic Development Corporation (manager)

Structure Size: Two-stories, approximately 62,160 square feet
-First level: approximately 40,800 square feet
-Second level: approximately 21,360 square feet

Docking facilities: -Excursion boat space (south and east faces)
-Historic vessel docking (north face)

Nearby Transportation: Subway: 2 3
Bus: M9, M15

Parking None

Notes: -Pier will include space for excursion vessels
-Pier will include a maritime educational space and commercial café space

Key Advantages

- ✓ Ample capacity
- ✓ Some space will be reserved for excursion vessel ticketing

Key Constraints

- ✗ Design will not include facilities for ferries
- ✗ Will not be completed until 2012

CHALLENGES

Challenges associated with locating the NYHarborWay Ferry terminal at Pier 15 include construction schedule and projected programming. Pier 15 is not scheduled to be completed until 2012, which is well after the anticipated commencement of the NYHarborWay ferry service. In addition, the planned programming for the two indoor structures that will be located on the Pier are a maritime/education facility and a café; neither of which are in line with the nature of the NYHarborWay service.

POTENTIAL SOLUTIONS

Pier 15 is not a viable candidate.

PIERS 16/17 (SOUTH STREET SEAPORT)

Initially conceived as a festival marketplace, in the vein of Boston's Faneuil Hall, the South Street Seaport was originally created to revive the Seaport Area, preserve its historic maritime character and to provide a financial endowment to the South Street Seaport Museum.

While initially popular, the South Street Seaport failed to become the revenue generator everyone expected over time. In 1988 the City fell into an economic slump, resulting in an increase in tenant turnover and vacancies. The Seaport Museum relinquished its control of the master lease and began focusing on traditional fundraising. Rouse began renting spaces to national retailers instead of the original specialty shops.

In 1995, the City voided the original lease, which then defaulted to separate leases with both the Seaport Museum and Rouse with the City as landlord. The Museum lease grants the Seaport Museum approximately 72,000 square feet of upland space and the operation of Piers 15 and 16. The permitted use of the space is limited to museum and ancillary uses, specifically a maritime museum. The Marketplace lease covers approximately 260,000 square feet of lease area, of which Pier 17 is roughly half. Use is limited to retail and ancillary uses.

In 2003, Rouse developed a comprehensive redevelopment plan for the Seaport, focusing on the piers. Proposed developments included a hotel, a performing arts theater, and upscale retail and restaurants. In November 2004 General Growth Properties purchased the entire Rouse portfolio, including the Seaport. General Growth Properties is looking to reposition the property. It envisions redeveloping the Seaport to create both a destination on the East Side and an anchor to Fulton Street with a retail mix that caters to a growing residential population in the area.

The City has traditionally supported the idea of cultural uses at the Seaport. Cultural uses are a desired complement to the heavily commercial nature of the area, and a key to attracting a range of visitor types, particularly native New Yorkers.

PIERS 16/17 (SOUTH STREET SEAPORT)

Built/Rehabbed: Varies

Current use: Historical, cultural, and retail
Historic and excursion boat service

Jurisdiction: City of New York (owner)
New York City Economic Development Corporation (lessor)
-Pier 17 leased by General Growth Properties (lessee)
-Pier 16 licensed by the Seaport Museum (lessee)
-Upland/Historic District leased in part by Seaport Associates, GGP and Seaport Museum (lessees)

Structure Size: Comprised of two piers and an upland area:
-Pier 16: Houses historical vessels
-Pier 17: includes the South Street Seaport Mall and Pavilion
-Upland area consists of retail shops and the Seaport Museum

Docking facilities: Pier 16 - can accommodate larger excursion vessels

-Excursion boat space (south and east faces)

-Historic vessel docking (south face)

Pier 17

-NYWT excursion vessels (20'x30' barge on south side) - can accommodate up to 149 passenger bowloading ferries

Nearby Transportation: Subway:



Bus: M9, M15

Parking None

Notes: N/A

Key Advantages

- ✓ Cultural and tourism hub with high volumes of foot traffic.

Key Constraints

Future development plans are unclear at this point

CHALLENGES

Considerations for locating the NYHarborWay terminal at the South Street Seaport include siting ticketing and docking facilities and proximity to similar competing services. The large complex is comprised of two piers and contains historical, cultural and retail uses and is a significant tourist destination in Lower Manhattan. Currently, the docking facilities on these piers are almost entirely occupied by various vessels and services. Several private operators currently provide tourist, recreational and sightseeing services that are very similar to the proposed NYHarborWay service. Siting the NYHarborWay Terminal in close proximity to these similar services will most likely result in direct competition and could potentially reduce revenue. Conversely, it could result in more foot traffic, and greater revenues.

In addition, most of the existing docking facilities on Piers 16 and 17 are currently occupied by historical vessels or tourist-oriented ferry service. South Street Seaport is home to New York Harbor Experience's Zephyr and Shark excursion vessels as well as hop on/hop off New York Water Taxi service. The South Street Seaport is also home to historical vessels including the Peking and the Ambrose. If the NYHarborWay needs to have its own docking facility, it may need to be on the northern face of Pier 17. This would remove it from the immediate proximity of the boardwalk and out of the direct view of the tourist traffic.

Another challenge to siting the NYHarborWay at the South Street Seaport is locating a ticketing and information center. Currently, there is no indoor facility available to serve as the NYHarborWay terminal. It is likely that a temporary kiosk or facility would need to be established in the boardwalk area until an indoor location, potentially inside the South Street Seaport Mall, could be located.

POTENTIAL SOLUTIONS

Immediate:

- Investigate the feasibility of installing a temporary ticketing/information kiosk at the seaport and obtaining a permit for a docking facility at Piers 16 or 17.
- Investigate the feasibility of incorporating ticketing operations and sharing docking facilities with New York Water Taxi.

Longer Term:

- Investigate the feasibility of leasing space inside the South Street Seaport Mall for a permanent facility.

KIOSKS

One way to convey information to commuters, visitors and tourists effectively is through the use of information centers, or information "kiosks." Information kiosks can range from a simple attended booth, like those commonly found at shopping malls and airports, to comprehensive interactive computerized centers.

Kiosks offer many advantages over traditional visitor centers that make them an attractive option when considering potential NYHarborWay terminals. Kiosks require a smaller footprint than full visitor centers and are therefore often easier to locate. Kiosks usually require less capital to construct and are less expensive to lease than traditional storefront visitor center spaces. Kiosks can range in price from \$20,000 for a small attended booth up to \$300,000 for a fully interactive computerized center. Kiosks can be constructed faster than full spaces and offer more flexibility; because they are smaller and require less capital investment, it is possible to strategically site kiosks in multiple locations in order to capture more foot traffic.

Kiosks can be vibrant, interactive centers that can showcase surrounding cultural, recreational, culinary, and tourist attractions and provide information in various languages. Kiosks are very customizable and can be tailored to meet virtually any specifications. Conversely, there are many vendors that provide prefabricated kiosk structures and offer many “off the shelf” features like interactive computer hardware and software. Kiosks can be designed for both indoor and outdoor applications. The ability to customize the look of a kiosk provides an opportunity to create a unique structure that can become a distinctive icon advertising the service and attracting patrons. A great example of this is the information kiosk located in New York’s Garment District, which is adorned with a giant needle threaded through an oversized button.

Regardless of the physical design, one of the primary functions of any NYHarborWay kiosk will be ticketing. Tickets could be provided through attended kiosks, automated ticket machines or a combination of both. Any NYHarborWay kiosk should also provide visitors with basic information including a map of NYHarborWay sites and ferry service routes.

In late 2008, the New York City Economic Development Corporation and Hunter Roberts Construction Group released a Request for Proposals inviting firms to submit a proposal to provide design-build services for a visitor information center and four aquarium information kiosks located in the St. George Ferry Terminal in Staten Island.

The following items illustrate some of the design considerations outlined in the RFP that could potentially be incorporated into the design features of a NYHarborWay kiosk.



PHYSICAL ENCLOSURE

- A countertop or desk with space for display of tourist literature and storage space for supplies, materials, and a computer under/behind the desk that can be secured.
- Overhanging signage and/or lighting that clearly express the purpose of the kiosk.
- Other necessary security measures that secure individual components and hardware, especially when unstaffed - extra security mechanisms should be considered.
- Necessary utility tie-ins, which includes electricity, telephone and internet access.
- Displays for interactive maps.
- A prescribed method for easy cleaning and maintenance.

MULTIMEDIA HARDWARE

- Visual displays, such as LCD televisions, graphics, and maps.
- A computer terminal with touch screens.
- Associated connections, equipment, and security measures.

MULTIMEDIA SOFTWARE

- Available to provide all information deemed necessary.
- A video-taped “tour” meant to play during unstaffed hours.
- Multi-lingual components.
- Ability to easily update graphics, information, interface, and technology in the future.

LOCAL EXAMPLES

Kiosks are commonly used in New York City as a way to provide its many visitors with information in high traffic areas. On the following page are some examples.

TERMINAL MODELS

Based on the geographical distribution of the NYHarborWay sites and candidate locations as well as discussions with NYHarborWay officers, three primary models for siting a terminal and branding the NYHarborWay have emerged to the forefront for consideration. It is not the intent of this examination to select one preferred model, but rather provide a description of potential configurations that may be considered when planning a NYHarborWay terminal.

SERVICE ROUTE DISTRIBUTION:

This model, informally referred to as “branding through boats,” does not required the creation of a physical ferry terminal or visitor center, but instead uses the ferries themselves to establish the brand identity. In this scenario, the similar characteristics of the various sites that are linked by ferry and the resulting service route help the service become a distinct network. The brand can be enhanced even further by painting the vessels a conspicuous color or wrapping the vessels with a distinct design that can be easily recognized from shore. This way the boats themselves become advertisements for the service and the more frequently they operate the more exposure they garner. A great example of this is New York Water Taxi's vessels, which are painted bright yellow and wrapped to be reminiscent of old Checker taxi cabs.

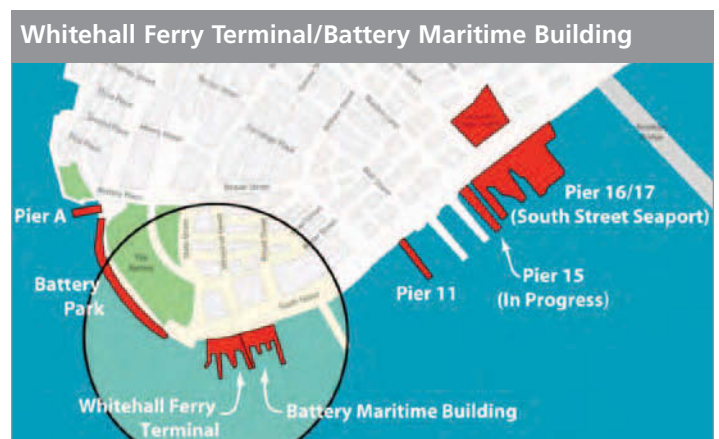


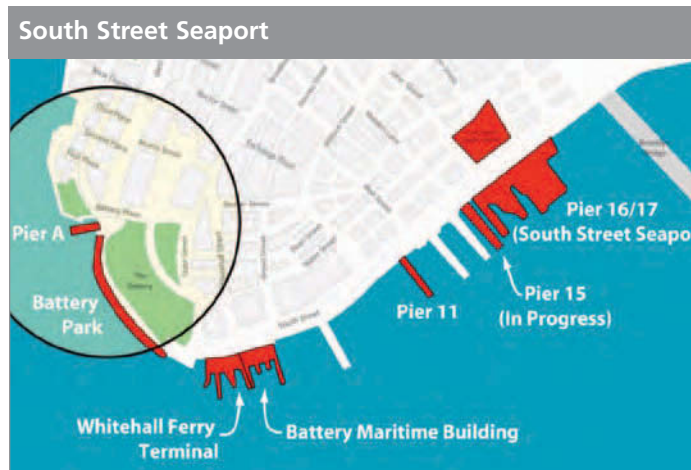
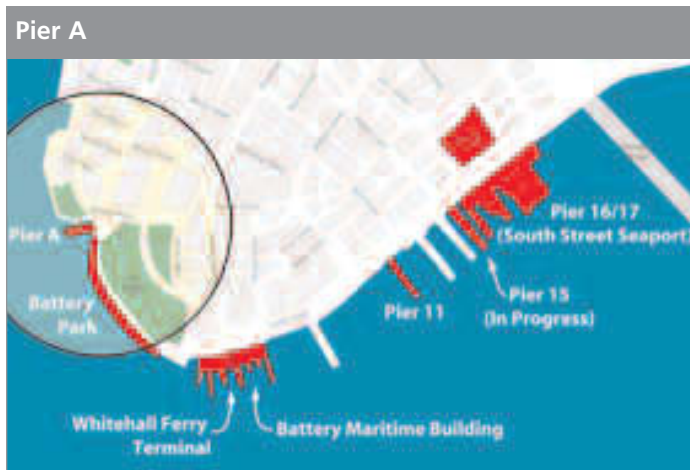
New York Water Taxi's ferries are painted a bright yellow and are designed to be reminiscent of old Checker taxi cabs, which helps make them become an easily recognizable feature in the new York Harbor.

CENTRALIZED MODEL

The centralized model consists of a single terminal location where all of the NYHarborWay ferry operations would take place. The centralized model can apply to either a kiosk or a full visitor center. The advantage of a centralized location is that all operations, such as ticketing, and other services take place at one location, making it easier to manage. It could also help establish the NYHarborWay by creating a location based-identity where passengers would associate the geographic location of the terminal with the ferry NYHarborWay service. Having only one terminal could also reduce construction and maintenance costs.

A significant disadvantage of the centralized model is that it limits the amount of foot traffic that can be captured. The following images show the 1/2 mile capture area around potential centralized candidate locations. Note that the centralized model can consist of multiple locations in the same vicinity, such as Piers 16 and 17 (South Street Seaport) and the Whitehall Ferry Terminal and the Battery Maritime Building.





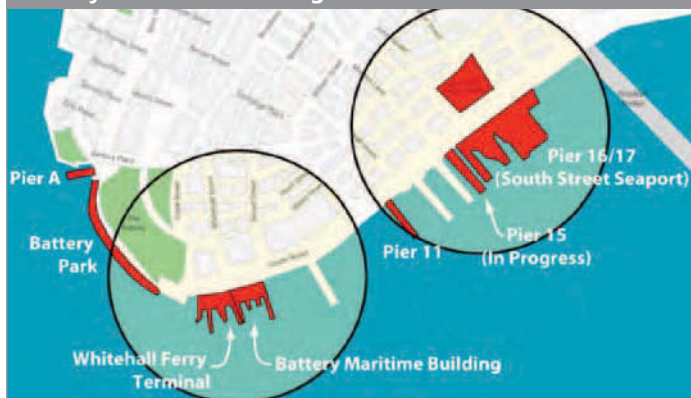
DISTRIBUTED MODEL

The distributed model consists of multiple terminal locations distributed throughout Lower Manhattan. The primary advantage of the distributed model is that it essentially doubles the foot-traffic capture area, which also subsequently increases brand exposure.

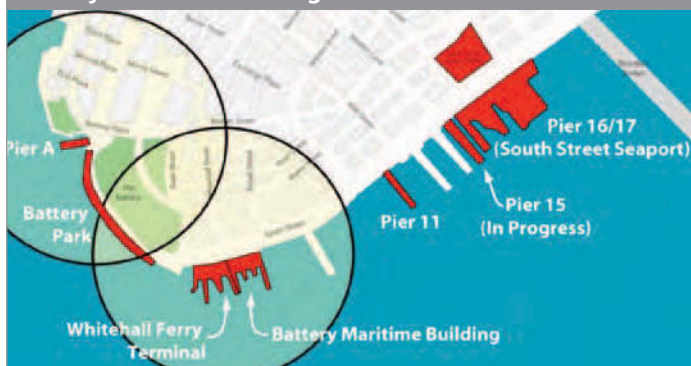
However, depending on what type of terminal is created, it could also double the construction and maintenance costs; although any increase in cost could potentially be offset by constructing two kiosks rather than one full visitor center. Having more than one terminal location can also present more operational and management challenges than one terminal.

The following maps provide an idea of the increased foot traffic capture areas created by having two locations rather than one.

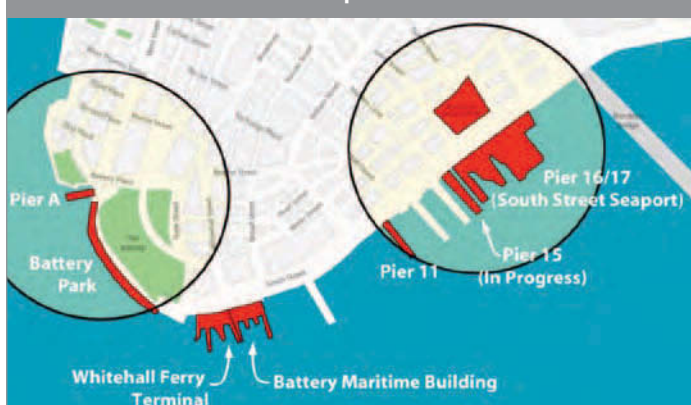
South Street Seaport and Whitehall Ferry Terminal/ Battery Maritime Building



Pier A and Whitehall Ferry Terminal/ Battery Maritime Building



Pier A and South Street Seaport



SUMMARY OF RECOMMENDED ACTIONS

The following is a menu of options for establishing a terminal for the NYHarborWay generated from the preceding assessment. It is assumed that “branding through boat” is applicable to all configurations.

Centralized Locations	Kiosk	Visitor Center
Pier A	✓	✓
Battery Park	✓	
White Hall Ferry Terminal	✓	
Battery Maritime Building		✓
Pier 11		
Pier 15		
Pier 16	✓	
Pier 17	✓	
White Hall Ferry Terminal/ Battery Maritime Building	✓	✓
Pier 16/Pier 17 South Street Seaport	✓	
Distributed Locations	Kiosk	Visitor Center
Pier A and Pier 16/Pier 17 South Street Seaport	✓	✓ (Pier A)
Battery Park Pier 16/Pier 17 South Street Seaport	✓	

APPENDIX E:

USING FERRIES FOR TRANSIT REDUNDANCY AND EMERGENCY PREPARATION

INTRODUCTION

Over the past few decades, several events have exemplified the importance and effectiveness of using ferryboats as a mode for transit redundancy in times of emergency (see Appendix 1). While every transportation mode has its vulnerabilities, ferries have proven useful, if not invaluable, when the New York metropolitan area experienced terrorist attacks, natural disasters, transit strikes, and other unexpected incidents. This memo provides a summary of existing emergency planning documents that incorporate ferries, while also analyzing the strengths and gaps in the existing ferry system for transit redundancy given the lessons learned from four recent events - September 11th, 2003 Blackout, 2005 Transit Strike, and Flight 1549 crash.

A REVIEW OF EMERGENCY PLANS

Emergency planning within the New York-New Jersey Harbor occurs at multiple levels within federal, state, regional (Port Authority of New York & New Jersey) and local Offices of Emergency Management (OEM). Generally, each OEM provides overarching coordination and communication between multiple invested agencies. Planning documents remain strategic, flexible, and intentionally broad in order to respond effectively to all types of emergencies. This also allows independent agencies, such as police and fire departments or transit agencies the ability to implement specific operational procedures and contingency plans. Two plans are particularly relevant to the use of ferries for emergency response - the NYCOEM 2005 Area Evacuation Plan and the NJOEM 2007 Trans-Hudson Plan.

2005 AREA EVACUATION PLAN

The New York City Office of Emergency Management's Area Evacuation Plan focuses on dividing New York City into 150 zones that can be targeted and isolated in the event residents, commuters, and visitors must leave Manhattan. This plan focuses entirely on utilizing and maximizing the efficiency of existing resources. In addition to identifying routes for vehicular, pedestrian and mass transit routes, the Area Evacuation Plan also includes a maritime operations component.

Maritime evacuation plans rely heavily on the service of private passenger ferry and excursion boat operators. The United States Coast Guard is the lead agency for notifying operators, coordinating passenger service, and making changes to evacuation service plans on an as needed basis. Operators, in-turn, implement tactical contingency plans for efficient passenger service and deploy additional personnel to assist with customer service at maritime facilities. NYPD has a Harbor Unit that monitors the evacuation process and provides crowd control at ferry terminals.

The Area Evacuation Plan identifies 70 locations in New York and New Jersey that have existing intermodal linkages between subway, commuter rail, bus and ferries, and several primary and alternative ferry routes for intra-city and trans-Hudson travel, as shown in Table 42.

Table 42: Maritime Vessel Routes	
Primary Intra-City Route	Alternate Intra-City Route
Whitehall TErminAl - Saint George	Battery Park - Port Authority Piers (Brooklyn)
Battery Park-Brooklyn Army Terminal	Pier 11 - Brooklyn Army Terminal
Pier 11/South Street-Hunters Point/Long Island City	Pier 11 - Sheepshead Bay
East 34th Street-Hunters Point/Long Island City	East 34th St/East 90th St - Randall's Island
East 34th Street-East 90yh Street	East 34th St/East 90th St - World's Fair Marina
Primary Trans-Hudson Route	Alternate Trans-Hudson Route
Pier 78 (W. 38th St) - Liberty State Park	Pier 83 (W. 42nd St) - Liberty State Park
World Financial Center - Liberty State Park	World Financial Center - Hoboken South
Pier 11/South Street - Liberty State Park	Battery Park - - Liberty State Park
Pier 83 (W. 42nd St) Lincoln Harbor	Pier 11/South Street - Monmouth
Pier 78 (W. 38th St.) - Hoboken South	

The 2004 AEP is limited in its abilities to plan and respond effectively to future emergencies because it focuses entirely on making-do with existing infrastructure and resources. More work needs to be done on having current and maintained inventories of terminals, ferry infrastructure including barges, and vessels in order to assess and make recommendations where additional investment is needed to strengthen transit redundancy. NYCOEM looks to finalize the update of its Maritime Operations component in the AEP in 2011 with the hope that some of these needs and limitations can be addressed in more detail.

TRANS-HUDSON EMERGENCY TRANSPORTATION PLAN

Following the 2003 Blackout, the 2007 Trans-Hudson Emergency Transportation Plan was developed by New Jersey OEM to improve interagency and interregional coordination and emergency preparation. Specifically the Blackout demonstrated the need for developing pre-determined thoroughfares for pedestrians and vehicles, easing overcrowding at ferry terminals, and identifying transportation hubs to maximize the use of available infrastructure.

The Trans-Hudson Plan provides specific scenarios for how ferries will be used when the PA Bus Terminal, Lincoln Tunnel, and Trans-Hudson Rail Service are inoperable. The Plan details locations for passenger loading and receiving, agency responsibilities for queuing and crowd control, boat size requirements, and anticipated passenger flows per hour in order to respond to surges in ferry demand.

Specifically, ferry vessels are to be used to transport passengers between Pier 79, World Financial Center and Pier 11 in Manhattan to a primary receiving area at Liberty State Park. If the circumstances warrant, alternative receiving areas could include the Meadowlands Sports Complex or the Hoboken, Lincoln Harbor and Port Imperial ferry terminals. Buses will provide intermodal connections at these receiving areas and transport passengers to rail stations, park and ride lots, or directly to their final destination. For New York residents commuting to Jersey, ferries will operate reverse service between the Paulus Hook terminal in Jersey City and Pier 79 terminal in Midtown Manhattan.

STRENGTHS OF EXISTING FERRY SERVICE IN EMERGENCY RESPONSE

FERRIES PROVIDE A CRITICAL LINK IN PLACE OF SENSITIVE INFRASTRUCTURE

In the event of emergency or disaster, the bridges and tunnels leading to Manhattan can be a significant choke point for commuters. Prior to September 11th, over 51,000 passengers rode the PATH train daily into Lower Manhattan. With the PATH at the World Trade Center destroyed and all the bridges and tunnels closed to vehicular traffic for several hours following the attacks, hundreds of thousands of people instinctively flocked to the waterfront and used ferries, knowing that it was the quickest way to evacuate Lower Manhattan. An ad hoc flotilla overseen by the Coast Guard and assisted by the Port Authority

and NYCDOT was there to successfully accommodate the demand. NY Waterways carried 160,000 people from Battery Park to New Jersey, while an additional 250,000 to 300,000 left by other water transportation, including Cost Guard vessels, privately operated excursion boats, and tug boats. On the East River ferries played a less important role given that pedestrians had more opportunities to cross the river by bridge.

Several months after the attacks, demand for ferry service remained high. Nearly a dozen new routes had formed to carry more than twice (65,000 people) the usual number of riders. This continued over the next two years until PATH service resumed in November 2003.

FERRY LANDINGS AND TERMINALS CAN RESPOND QUICKLY TO NEW AND SHIFTING DEMAND

Unlike building new roads, bridges, tunnels, and tracks for new subway or commuter rail service, ferry infrastructure can be constructed to respond to peaks in demand and be a more-cost effective method of transit redundancy. September 11th provides a good example of how the Port Authority responded quickly to the needs of PATH commuters who shifted to using ferryboats after the loss of World Trade Center terminal. In order to divert some of the ridership away from an overtaxed Pier 11, the Port Authority built a new dock at Pier A in Battery Park capable of accommodating six ferry boats. The ferry landing was completed in six weeks and cost approximately \$4 million. By comparison, the completion of a temporary PATH terminal and restoration of service cost \$323 million and over two years to complete.

EASE OF FERRY DEPLOYMENT TO “HOT-SPOTS”

Because ferries lack a fixed-route right-of way, operators can easily switch routes and docking locations to areas with the most need, contingent upon the existence of ferry landing infrastructure. The 2005 Transit Strike is a prime example. When nearly 40,000 transit workers ceased operating the Metropolitan Transportation Authority's subway cars and buses, 7.5 million transit-dependent people were left stranded. The City had a 2002 transit strike contingency plan in place and was prepared to respond. This included reserving all ferry landings for passenger ferry operators, reducing headways, coordinating the scheduling and queuing of service, and encouraging operators to expand their capacity to respond to the expected increases in demand.

Overall the increase in daily ferry ridership during the 2005 Transit Strike was minor, carrying approximately 50 percent (~9,000) more people from its average of 17,000 people daily. Ridership on the Staten Island Ferry actually decreased slightly during morning peak periods. However, the number of commuters at the Brooklyn Army Terminal exceeded the private operator's capacity on its route to Manhattan. The New York City Department of Transportation was able to assist meeting this surge in demand by sending one of its 1,200 passenger Staten Island ferry boats to ease crowding, making several trips that day between BAT and Pier 11.

The 2009 crash of US Airways Flight 1549 into the Hudson River is another example of ferry deployment to a “hot-spot.” When the airplane landed near the Pier 79 ferry terminal, NY Waterway's commuter fleet saw the accident and responded immediately to rescue all of the passengers. Survivors were taken either back to Pier 79 or to the Weekhawken ferry terminal in New Jersey.

GAPS IN EXISTING FERRY SERVICE IN EMERGENCY RESPONSE

NEED FOR IMPROVED INTERREGIONAL COORDINATION BETWEEN OEM, PUBLIC AGENCIES AND PRIVATE OPERATORS

Both OEM and the Trans-Hudson emergency plans rely heavily on private ferryboat operators to respond to an emergency. These plans detail chains of command, agency responsibilities, locations and routes for transporting passengers. However some private operators have expressed concerns that evacuation plans have been prepared without their input, that assumptions on vessel availability and the ability to respond quickly need to be vetted, and that information is not clearly communicated to them when an emergency occurs.

In addition to improved communication and coordination within ferry operations, additional improvements are needed with regard to upland issues. Of particular concern is the development of viable crowd control measures and storage of necessary emergency evacuation equipment at ferry landings. While the City's Police Department is responsible for developing and implementing crowd control measures, some operators state that protocol has not been shared. A lack of coordinated response to crowd control and queuing is a safety and liability concern, as exemplified during the 2003 Blackout when passengers rushed onto Pier 11's ferry slips. Furthermore, there is no equipment at ferry landings to assist with crowd

control and queuing, such as police barricades, bullhorns, emergency lighting, and communication equipment at key landing locations. Establishing and communicating crowd control measures and having the necessary equipment in place when an emergency occurs would result in faster vessel boarding, minimized passenger confusion, and a reduction in the possibility of personal injuries.

Public agencies, including NYCDOT and NYCEDC, are looking to improve coordination with NYCOEM. Future plans need to address gaps so that transit redundancy and ferry interoperability can be improved as described in more detail below. Additionally NYCOEM could facilitate coordination efforts between NYPD, NYCDOT and ferry operators to institute crowd control measures and make provisions for emergency equipment at key ferry landings.

CONSTRAINTS IN EXISTING FERRY LANDING INFRASTRUCTURE AND VESSELS TO RESPOND TO HOT-SPOTS

NYCDOT was able to respond to New York Water Taxi's need for additional capacity at BAT during the 2005 Transit Strikes because the landing infrastructure was capable of accommodating larger Staten Island ferryboats. This was not the case with the 2003 Blackout.

The Blackout left 50 million people in the Northeast, and parts of the Mid-West and Canada without electricity. Over 8 million people in the New York area were affected as all rail service came to a halt, street lights and traffic signals shut off and nearly all forms of electronic telecommunications ceased. With the subways and commuter rail inoperable and surface transportation, including buses, severely hampered due to blocked intersections and pedestrian congested streets and bridges, hundreds of thousands of people flocked to ferry landings. New York Waterway carried 170,000 people across the Hudson River to New Jersey. Given that the demand for ferry service during peak hours was around 30,000 people on an average weekday, the demand for service during the Blackout far exceeded the number of available ferryboats.

Staten Island Ferry was unable to provide additional capacity because of concerns that the Hudson River was too shallow and the piers on both the New York and New Jersey sides were inadequate to accommodate the large vessels. The inability by private and public ferry operators to respond to the increased demand was demonstrated by wait times exceeding 3 hours to board ferries and inadequate personnel to provide rider assistance and crowd control. NJ Transit requested that ferryboats remain in the harbor instead of docking at the Hoboken Terminal because it could not accommodate the additional volume.

Consistent standards for ferry landings, pier size, side- or bow-loading vessels, and water depth are necessary for improving transit redundancy and interoperability in response to emergencies. NYCDOT is currently performing an analysis of ferry infrastructure and will be purposing specific recommendations for ferry dock dimensions. NYCEDC is also coordinating with DOT and OEM to work with the New York State Department of Environmental Conservation on standardized barges that address safety, ADA requirements and environmental impacts.

In addition to standardization, inventories of existing vessels and ferry infrastructure need to be updated and maintained to effectively respond to increased demand. NYCEDC is working with NYCOEM to update their ferry vessel inventory and to create a new inventory of ferry barges.

A further constraint with the Harbor's ferry infrastructure beyond limits in existing interoperability includes berthing shortages at key locations. Adding additional slips at ferry landings, particularly along the East River, will increase dramatically the quickness of emergency response time and the volume of passengers evacuating Manhattan. For example, the current major departure point from Midtown Manhattan East is the East 35th Street Pier to Hunter's Point South in Long Island City. While East 35th has four ferry slips that can serve nearly 4,500 passengers every hour, Hunter's Point South only has one slip, resulting in a potential gap of assisting approximately 2,700 passengers per hour.

LACK OF INTERMODAL CONNECTIVITY TO FERRY LANDINGS

While the existing ferry system has demonstrated its value in times of emergency, ferries are dependent on strong intermodal linkages to move passengers from the waterfront to internal destinations. The 2005 Transit Strike demonstrated the importance of rail or bus service connectivity when ridership for the Staten Island Ferry decreased slightly because Midtown and more northern destinations were inaccessible. The lack of interconnectivity may have also contributed to the less than expected increase in ferry service on the East River. While another transit strike will most likely occur again in the future, the 2005 Transit Strike exemplifies that gaps remain and ferries have limits to providing transit redundancy.

Furthermore, more effort could be done to inform the public to use ferries in time of emergency and strengthen pedestrian accessibility to ferry landings. On September 11th, people automatically went to the waterfront. Many of them instinctively knew that ferries were the best travel mode, while others adapted to using ferry service after seeing bridges closed and clogged with pedestrian traffic. When the 2003 Blackout occurred, commuters knew to go to the ferry landings based on their experience during September 11th. Construction of ferry landings where the street ends at the waterfront, appropriate signage, maps identifying pedestrian thoroughfares in emergency “Go-bags” (i.e. kits containing basic emergency gear) and up-to-date web-based information would assist in improving public accessibility and information.

UNTAPPED OPPORTUNITIES TO FUND CAPITAL PROJECTS

Because ferries have unique strengths in bolstering transit redundancy within the region and responding effectively to unexpected emergencies, opportunities for capital funding by the Department of Homeland Security and the Federal Emergency Management Agency is a possibility and should be considered more thoroughly in the City's analysis of ferry funding models. In addition to pursuing these grants, New York City and the region as a whole could fund more ferry landings and improved infrastructure as a matter of public welfare, safety and homeland security. Coordination and assistance from OEM would be integral in facilitating funding with OMB and other city agencies.

CONCLUSION AND RECOMMENDATIONS

The update of NYCOEM's the Maritime Operations section of the Area Evacuation Plan began in 2010 coincides advantageously with the development of the Regionwide and Citywide ferry studies, providing opportunities to further strengthen the ferry system's existing assets while leveraging additional resources and political will to address many of the identified gaps, needs, and regulatory hurdles. Of most importance are improving coordination and communication among agencies and private operators, addressing future needs in service and infrastructure, establishing infrastructure standards, and improving connectivity between the waterfront and inland destinations.

APPENDIX 1

Selected Examples of Ferries and Transportation Redundancy		
Year	Incident	Notes
1988	Williamsburg Bridge emergency closure	<ul style="list-style-type: none"> DOT forces construct ferry landing in Williamsburg Ferry service from Williamsburg to Whitehall initiated within days of bridge shutdown
1992	December Nor'easter	<ul style="list-style-type: none"> Downtown PATH flooded, service closed for a week Additional service added on Hoboken to World Financial Center ferry service, ridership triples
1993	First World Trade Center bombing	<ul style="list-style-type: none"> Expanded ferry service World Trade Center evacuated Downtown PATH closed
1999	Transit Strike Contingency Plan	<ul style="list-style-type: none"> Public agencies and Bank Clearing House install temporary ferry docks at multiple locations 25 vessels chartered and brought to NYC from Long Island, Boston and elsewhere
2001	September 11 evacuation of Lower Manhattan	<ul style="list-style-type: none"> Lower Manhattan evacuated Marine evacuation featured numerous non-ferry vessels including excursion vessels Vessels docking at Pier 11 and other proper ferry landings were able to take advantage of the flexibility provided by multiple standard-sized barges In other locations, vessels forced to load passengers off of seawalls and other risky procedures in the absence of proper docks
2001	September 12 onward restoration of lifeline transportation service to Lower Manhattan	<ul style="list-style-type: none"> Downtown PATH and numerous tunnels remain closed An estimated 14 ferry slips were opened in Lower Manhattan between September 17 and early November, with additional slips constructed in New Jersey and Midtown Staten Island Ferry initiates free ferry service from standard-sized barge at Brooklyn Army Terminal to Whitehall on September 17 Massive expansion of private ferry network; ridership doubles until PATH service restored in 2003
2002	Transit Strike Contingency Plan	<ul style="list-style-type: none"> Public agencies install temporary ferry docks at multiple locations Excursion boats and out-of-town ferries chartered in anticipation of possible strike
2003	August 14 Blackout	<ul style="list-style-type: none"> Trains and traffic signals throughout region stop operating; Port Authority Bus Terminal shuts down Ferry service continues, carrying exceptionally heavy loads on the evening of the 14th New Jersey responds to blackout by forming Trans Hudson Emergency Transportation Task Force.
2004+	New Jersey Trans Hudson Emergency Transportation Plan	<ul style="list-style-type: none"> Prepared in response to 2003 blackout Includes provisions for dramatically expanded ferry service in case of similar incident New Jersey constructs contingency docking complex at Liberty State Park, to be available in case of transportation emergencies
2004	Republican National Convention	<ul style="list-style-type: none"> 1st generation of maritime area evacuation plan prepared in advance of RNC
2004+	NYC Area Evacuation Plan	
2005	Transit Strike	<ul style="list-style-type: none"> Expanded private ferry service from Long Island City to Midtown and Brooklyn Army Terminal to Lower Manhattan Staten Island Ferry deployed on one hour notice to handle overflow on Brooklyn Army Terminal route, taking advantage of standard-sized barge at Brooklyn site
2009	"Miracle on the Hudson"	<ul style="list-style-type: none"> US Airways Flight 1549 lands in Hudson River, near City's Pier 79 ferry terminal NY Waterway commuter fleet responds in force All passengers rescued; many survivors taken to Pier 79 ferry terminal in Manhattan and Weehawken ferry terminal in New Jersey

Selected Examples of Ferries and Transportation Redundancy, cont

Selected Examples from Other Jurisdictions

1989	Loma Prieta earthquake, October 17, San Francisco area	<ul style="list-style-type: none"> ▪ Bay Bridge and other key arteries closed; BART rail service suspended ▪ New ferry route initiated between Oakland and San Francisco on the day of the earthquake ▪ Additional services added in following days ▪ Vessels and docks imported from Seattle and Southern California
2005	July 7 London bus and subway bombings	<ul style="list-style-type: none"> ▪ Road and rail transportation in severely disrupted throughout London during a workday ▪ London River Services and Thames Clippers add vessels and service while waiving fares ▪ 20,000 passengers evacuated by water from the Canary Wharf financial district alone ▪ London port authority declares afterwards that “the River Thames played a vital role in the transport of passengers” following the bombings
2007/2008	State of California creates the San Francisco Bay Water Emergency Transportation Authority	<ul style="list-style-type: none"> ▪ WETA subsumes former Water Transit Authority and charged with coordinating ferry operations through the Bay Area ▪ WETA to focus on both ordinary commuter transportation and the development of contingency services and landings to be used in case of emergency
2009	Bay Bridge Closure, San Francisco area	<ul style="list-style-type: none"> ▪ Additional ferry service offered

APPENDIX F:

SUMMARY OF RIDERSHIP ANALYSIS ASSUMPTIONS

This appendix briefly presents assumptions used in ridership analyses.

OPERATING HOURS AND COSTS

- The service would operate for 14 hours on weekdays, including 6 peak hours and 8 off-peak hours per weekday.
- The service would operate for 11 hours on weekend days.
- In addition to the operating hours, we assume one hour per day per boat of mobilization time.
- Each boat would cost \$500.00 per hour to operate. This includes fuel, crew, insurance, and maintenance costs, but does not include depreciation.

HEADWAYS (WITH THREE PEAK AND TWO OFF-PEAK BOATS - TWO PEAK AND ONE OFF-PEAK IN THE CASE OF HUDSON RIVER)

- We assumed 3 minutes of dwell time at each landing
- East River Brooklyn & Queens corridor - 22 min. peak, 34 min. off-peak
- East River Manhattan corridor - 25 min. peak, 35 min. off-peak
- Hudson River corridor - 25 min. peak, 50 min. off-peak
- South Brooklyn corridor - 25 min. peak, 35 min. off-peak

(The off peak headways are shown for commuter service and do not include any of the recreational loop services, which would increase off peak headways in order to provide the recreational service.)

FARES AND RIDERSHIP

- Standard commuter, off-peak and weekend one-way fares would average \$5.00, taking into account single riders and weekly/monthly passes.
- Off-peak and weekend recreational one-way fares to Governors Island, Brooklyn Bridge Park, Chelsea Piers, Christopher Street and Red Hook would average \$2.50.
- Ridership estimates are based on annual averages. On average, summer ridership would be higher and winter ridership would be lower. Based on other services operating in the region, during the coldest three months of the year, commuter ridership would be about 70 percent of summer ridership.
- Assumed that off-peak ridership would be 40 percent of peak ridership.

RECREATIONAL SERVICES

- Assumed that Brooklyn Bridge Park would attract about 1.1 million people per year, and a ferry would capture 1 percent of them;
- Assumed that Governors Island service would operate Friday, Saturday and Sunday for 18 weeks during the summer. For the purposes of this analysis, we assume there would be no competing free Governors Island service. (While this assumption was made for the purposes of this report, any decision about future Governors Island services will be made by the Trust for Governors Island.)
- Assumed the recreational ferry services would capture 60 percent of the level of 2009 Governors Island weekend and Friday ridership.
- Assumed that off-peak and weekend service to Christopher Street and Chelsea Piers would attract the same number of riders as past Hop-On/Hop-Off services to those sites. (Decisions about running services that would overlap with markets currently served by private operators would need to be made in consultation with those operators.) Assumed that a weekend Red Hook service would capture about 120 trips per Saturday and Sunday at a \$2.50 fare.

APPENDIX G:

USE REGULATIONS FOR DOCKS SERVING COMMERCIAL PASSENGER VESSELS

	Water Taxis (capacity < 99 passengers per vessel)*	Ferries (capacity < 150 passengers per 1/2-hour)**	Ferries (unlimited capacity)	Excursion Vessels (varying capacity limits)***	Excursion & Ocean Vessels (unlimited Capacity)	Vessels Not Otherwise Listed
Residential Districts	Use Permitted as-of-right in WAP BK-1 Permitted by SP elsewhere. No Parking Required No Waterfront Access Required	Use Permitted by SP Parking Required except R10 Waterfront Access Required	Use Not Permitted	Use Not Permitted	Use Not Permitted	Use Not Permitted
C1 + C2 Commercial Districts	Use permitted No Parking Required No Waterfront Access Required	Use permitted Parking Required except C1-5 to C1-9 & C2-5 to C2-8 Waterfront Access Required	Use Not Permitted	Use permitted in C2 districts for capacity 200 Parking Required except C1-5 to C1-9 & C2-5 to C2-8 Waterfront Access Required	Use Not Permitted	Use Not Permitted
C3 Commercial Districts	Use permitted No Parking Required No Waterfront Access Required	Use permitted Parking Required Waterfront Access Required	Use Not Permitted	Use permitted for capacity 200 Parking Required Waterfront Access Required	Use Not Permitted	Use Not Permitted
C4-C6, C8 Commercial Districts	Use Permitted No Parking Required No Waterfront Access Required	Use permitted Parking Required except C4-4A, C4-5, C4-6, C5, C6, & C8-4 Waterfront Access Required	Use permitted Parking Required except C4-4A, C4-5, C4-6, C5, C6, & C8-4 Waterfront Access Required	Use permitted to capacity of 500 or 2,500 depending on district Parking Required except C4-4A, C4-5, C4-6, C5, C6, & C8-4 Waterfront Access Required	Use permitted by SP in C6 Parking Required No Waterfront Access Required	Use Not Permitted
C7 Commercial Districts	Use permitted No Parking Required No Waterfront Access Required	Use permitted Parking Required Waterfront Access Required	Use Not Permitted	Use permitted to capacity of 500 Parking Required Waterfront Access Required	Use Not Permitted	Use Not Permitted
Manufacturing Districts	Use permitted No Parking Required No Waterfront Access Required	Use permitted Parking Required except M1-4 to M1-6, M2-3, M2-4, & M3-2 Waterfront Access Required	Use permitted Parking Required except M1-4 to M1-6, M2-3, M2-4, & M3-2 Waterfront Access Required	Use permitted without capacity limit Parking Required except M1-4 to M1-6, M2-3, M2-4, & M3-2 Waterfront Access Required	Use permitted Parking Required except M1-4 to M1-6, M2-3, M2-4, & M3-2 No Waterfront Access Required	Use permitted Parking Required except M1-4 to M1-6, M2-3, M2-4, & M3-2 No Waterfront Access Required

* Capacity is measured as the passenger capacity of the largest vessel to use the dock.

** Capacity is measured as aggregate operational passenger load for all vessels on all docks on the zoning lot per half hour.

*** Capacity is measured as the sum of the capacities of the largest vessel to use each dock on the zoning lot.

Source: Department of City Planning

APPENDIX H:

NYHARBORWAY SURVEY RESULTS

Audience Research and Analysis (ARA) conducted a study of potential riders to a recreational ferry service. ARA also surveyed riders of the NYHarborWay pilot project that ran between June 4th and September 6th, 2010. The survey results were summarized in a report dated October 2010. The report summarizing the survey can be found at www.nycedc.com/ferrystudy.



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