**Duffy, Daniel**

**From:**
**Sent:** Friday, October 24, 2014 11:35 AM
**To:** Duffy, Daniel; American, Heavyn-Leigh
**Cc:** Torres Rojas, Genara; Van Duyne, Sheree
**Subject:** Freedom of Information Online Request Form

Information:

First Name: Brendan
Last Name: Pytka
Company: NA
Mailing Address 1:
Mailing Address 2:
City:
State
Zip Code
Email Address:
Phone:
Required copies of the records: Yes

List of specific record(s):
Good afternoon, I would like to request a copy, ideally digital, of the Study of Regional Private Passenger Ferry Services in the New York Metropolitan Area: Route and Service Analysis and Public Policy Goals submitted to the Port Authority by Halcrow, Inc. in 2010. Please feel free to reach out to me with any questions. Regards, Brendan Pytka

THE PORT AUTHORITY OF NY & NJ

FOI Administrator

November 5, 2014

Mr. Brendan Pytka

Re: Freedom of Information Reference No. 15429

Dear Mr. Pytka:

This is in response to your October 24, 2014 request, which has been processed under the Port Authority's Freedom of Information Code (the "Code"), for a copy of the Study of Regional Private Passenger Ferry Services in the New York Metropolitan Area: Route and Service Analysis and Public Policy Goals submitted to the Port Authority by Halwcrow, Inc. in 2010.

Material responsive to your request and available under the Code can be found on the Port Authority's website at http://www.panynj.gov/corporate-information/foi/15429-O.pdf. Paper copies of the available records are available upon request.

Please refer to the above FOI reference number in any future correspondence relating to your request.

Very truly yours,

Daniel D. Duffy
FOI Administrator

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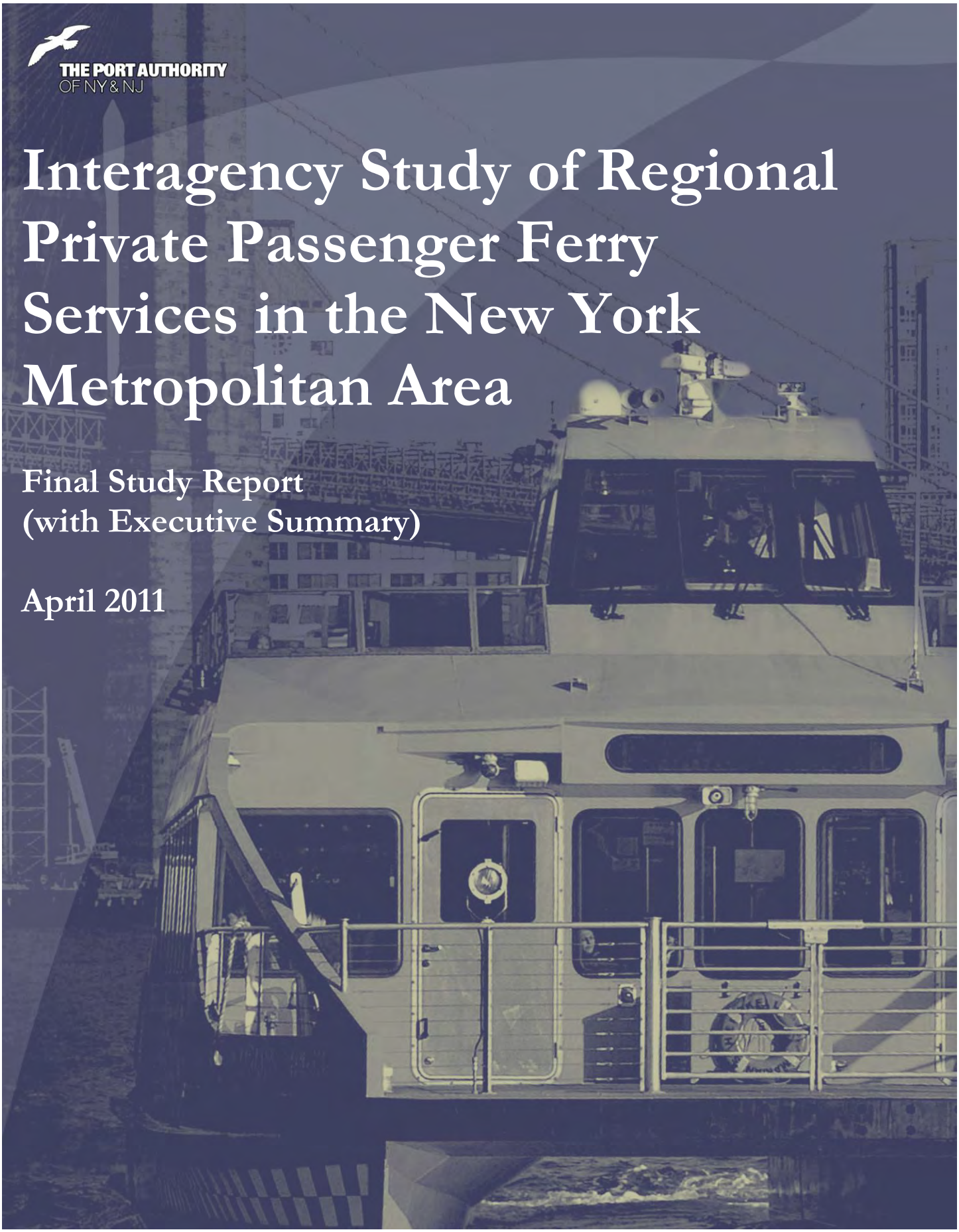

THE PORT AUTHORITY
OF NY & NJ

# Interagency Study of Regional Private Passenger Ferry Services in the New York Metropolitan Area

## Final Study Report
## (with Executive Summary)

April 2011

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# Section 1: *Executive Summary*

## Highlights of the Regional Passenger Ferry Study

The Regional Passenger Ferry Study is the first multi-agency, broadly scoped analysis of this mode in the 25 years since the re-emergence of privately operated passenger ferry services in the region. Working together as a Steering Committee for this effort, the public agencies most involved in supporting passenger ferry services in the bistate region reached a consensus on ferries' potential role and strategies for the future, and provide the following recommendations:

1. Passenger ferry services are a significant resource in the regional transportation network, providing a flexible and relatively economical means of augmenting regional transportation services for targeted markets.
2. The performance of private ferry services in the region has been mixed, with less than half of the services introduced over the past 25 years still in operation. The financial viability of even the most attractive services is uncertain.
3. In the near term, the region must focus on strengthening the existing core commuter ferry services and the most promising recreational routes. Current regional economic conditions and transportation funding shortfalls are not conducive to development of an expansive regional ferry network that does not require operational subsidies.
4. Density sufficient to generate adequate ridership is the key to viability of passenger ferry service in the region, though density alone does not guarantee financial viability. This is borne out both by historical performance and modeling of selected potential routes identified by the study team.
5. The region's private ferry fleets and crews are a critical resource for emergency evacuation and restoration of critical transit connections following natural disasters or terrorist attacks that disrupt transportation connections, as demonstrated by several major incidents in recent years. However, this capability is vulnerable absent standing arrangements to reimburse operators for emergency response, as well as general financial uncertainty for the private ferry industry sector in the harbor.
6. The Steering Committee agencies recognize lead roles for specific sub-regional markets consistent with their respective missions and expect to manage financial relationships in that framework. NY and NJ officials should develop a joint strategy to expand federal funding for passenger ferries in the region, looking to existing and new transportation programs and resources for security/emergency response.
7. Increased coordination among the region's concerned agencies is a critical strategy for stabilizing passenger ferry operations in the bistate metropolitan area. The Steering Committee agencies recommend creation of a standing, interagency working group to coordinate policies, manage transportation network linkages, and promote more effective and supportive government-operator relationships. More formal institutional arrangements may be needed if future economic growth renews momentum to develop a broader ferry network in the region.
8. To evaluate proposed new ferry services, the study team produced a "toolbox" that localities or other stakeholders could use for an initial feasibility evaluation. Proposals that appear to be possibly feasible then could be assessed for ridership potential and other factors, ideally in cooperation with a public transportation agency. A critical component of

this toolbox is measuring how a proposed new ferry service meets the regional passenger ferry service goals, as agreed to by the Steering Committee as part of this effort.

9. Integrating and harmonizing passenger ferry service within the existing transit and transportation network will help further stabilize the routes that already exist in the region. The Steering Committee agencies recommend further analysis on coordinating passenger ferry schedules with the regional transit network and related transit nodes. Additionally, fare payment harmonization between transit modes and operators should be further analyzed as a potential method to increase ridership, stabilize routes, and promote interagency coordination.

## Introduction and Background

In a 2006 report by Regional Plan Association (RPA), Ferries in the Region: Challenges and Opportunities, RPA described the history of ferries in the New York Region, focusing on the period following their reintroduction in 1986 and what followed up to 2006. The report discussed the issues facing ferry service at that time, pointing out that ferry service had appeared to reach its natural limits, with the most productive services having been tried and established and other services introduced but found wanting. The report indicated that of the 70 services put in place since 1986 only 24 were still operating in 2006.

The 2006 RPA report documented the rise and fall of ferry services. Just before the 9/11 terrorist attacks average weekday ridership had reached 35,700. After 9/11 many new ferry services were started up in an attempt to fill the gaps created by the destruction of the World Trade Center PATH station and the interruption of PATH service, as well as some NYC Transit subway service. By October 2002 ferry ridership had reached an historic peak of 69,700 per weekday. In December 2003 PATH service was restored and ferry ridership decreased substantially. Not surprisingly, by July 2006 (when the RPA report was being written), ridership had dropped to about what it had been prior to 9/11, about 37,000 on an average weekday.

Of the 24 routes that remained in place in 2006, the RPA report characterized them in six, sometimes overlapping, categories:

Ferry services that are part of the transit network and directly complement it
Ferry services that serve Lower Manhattan.
Ferry services from New Jersey to West Midtown.
Ferry services that fill a void for commuting because of poor ground transit alternatives.
Ferry services whose purpose is to create accessibility in areas with poor access to create opportunities for new or expanded development.
Ferry services that interconnect multiple locations.

Since then, the ferry industry in the region has been buffeted by steeply rising fuel prices that caused ferry operators to raise their fares, with a subsequent drop in ridership, and more recently by the decline in the national and local economy, which has lowered the number of commuters available that might consider ferries as a choice for travel to work. Moreover, since the bulk of ferry ridership in the Region is bound for Lower Manhattan, the onset of the financial job sector's troubles in the fall of 2008 has exacerbated the problem.

Fuel price rise can have two countervailing impacts on ferry use. On one hand, rising prices can cause the ferry operators to raise their fares, thus dampening ferry use. On the other hand, it would seem logical that with rising gasoline prices, some drivers would choose to shift from driving to public transit, including ferries. However, ferry demand modeling completed as part of this study on

existing ferry routes in the region suggests that the effect of higher gasoline costs in causing a shift to ferries has been essentially undetectable. This is borne out by the experience in the last two years. The findings of this study indicate that the price of regular gasoline slowly climbed from 2003 to 2005, reaching one peak in September 2005 and then climbed again to reach its peak of $ 4.18 per gallon in early July 2008 before plummeting to pre-2006 levels by the end of the 2009. Additionally, the price of diesel fuel, as expected, tracked closely with gasoline prices.

These huge variations over a short period of time make it difficult to measure the impact that diesel fuel prices might have had in this period. The ferry operators began raising their prices in June 2004 before the rise in fuel prices, in response to the need for added revenue when ridership declined and to increasing fuel costs. Using the 10-trip ticket as the benchmark, during 2004 and 2005 most routes saw two increases, the first in June 2004 ranged from 7 percent to as much as 44 percent. Another round of increases occurred in September and December 2005 and February 2006, but these were all less substantial. It would appear the operators were trying to recoup the losses of the slow creep of higher fuel prices.

Ferry ridership in the New York Region averaged 37,000 for the average weekday in 2006. With fuel prices relatively stable in 2007 ferry ridership remained flat. However, starting in 2008 the use of ferries began a slow decline, apparently in response to higher fuel prices that led to higher fares – fares were raised on some routes two or three from July 2007 to December 2008 – resulting in lower ridership. The high cost of driving did not appear to be enough to offset these declines.

Beginning in May 2009, ferry use declined significantly – by 9 percent following by months of declines of 7, 5, 6, 11, 8, 8, and 7 percent in December. As fuel pricing receded in the fall one would have expected that fares would be lowered to respond, but the decline of the economy in September 2009 also began to take hold. Auto use at the Port Authority facilities declined in relationship first to the high cost of fuel and then to the economy. In the second half of 2009, there was a greater drop in ferry use than in auto use, contrary to what should be expected. This is likely to be the case because ferry use is closely tied to the health of the financial industry in lower Manhattan which suffered greatly in late 2008; auto use across the Hudson is more closely tied to the general economy.

By contrast, the use of transit grew substantially when fuel prices were high; New Jersey Transit reported 7.1 percent growth in rail trips and 8.9 percent growth in bus trips to New York City in the July to September 2009 period. This growth rate declined in the last three months of the year – rail and bus ridership was up by 1.1 and 3.7 percent respectively – as the economic picture worsened. Meanwhile, ferry ridership was dropping by 8 percent, finishing an average of 5.2 percent lower in 2008 compared to 2007. These trends continued in 2009 and 2010. It would appear, then, that ferries have gotten the worst of both events of 2008. First, higher fares driven by fuel prices have not been offset by the higher ridership that one might have expected from higher auto costs, and second, the declining economy, which translates to fewer commuters.

## Regional Passenger Ferry Services at a Crossroads

One of the motivations for this study was the well-publicized reports of financial difficulties by one of the region's largest ferry operators. These problems raise a crucial question regarding the current system: To what degree are current problems cyclical versus structural? Currently the nation and the region are just emerging from of the most serious economic downturn since the early 1980s, with events potentially leading to the worst recession in the entire Post-War II era.

As with all transportation, ferries are feeling the effect of cyclical declines in employment directly on the journey-to-work market. Cause of the current problems could include inefficiencies in the

management of ferry operations in the region. For example, current routing patterns may not capture all potential network efficiencies. Alternatively, the system may have expanded beyond the densest, most profitable routes to include markets that cannot be expected to operate profitably without subsidy. Finally, could current problems be the result of over-expansion of the vessel fleet following the sharp (and mostly temporary) increase in ridership following the major disruptions to the transportation system from the attacks of September 11, 2001?

The study reveals that passenger ferry service performs well for routes that offer substantial time - savings to users and/or a reliable and pleasant modal alternative. Beyond these direct benefits, external benefits tend to be route- and template-specific. Routes with moderate ridership tend to offer limited external benefits in terms of road congestion relief, and mostly non-existent or even negative emissions benefits. However, while road traffic congestion relief attributable to private passenger ferries is modest, the indirect benefits to other transit users are arguably very significant. This is particularly the case with respect to benefits to the PATH service which, as has been detailed throughout the report, are significant. Indeed, daily ridership on ferry routes that act as relievers to the PATH (essentially Hoboken, Jersey City and Weehawken routes) total over 23,000 daily trips. Clearly, any significant proportion of this volume redirected to the PATH system would engender a considerable strain on capacity.

Modeling work performed as part of this study showed that, with several notable exceptions, there are limited possibilities for additional passenger ferry service in the region that could operate successfully on a farebox basis. This reinforces the need for a solid understanding of the public interest with respect to ferry passenger service. More importantly, how to measure this public benefit. This study is explicitly meant to be such an organizing framework.

## Regional Issues and Challenges

Ferry transportation continues to play a crucial role today in supplementing critical transportation linkages between New York and New Jersey, and is emerging as a support for community development in the boroughs of New York City and surrounding communities in the tri-state region. The Port Authority of New York and New Jersey and several other agencies and communities are investing in ferry facilities and services for select markets, and are seeking strategies that better integrate ferries into the regional transportation network and also enhance the financial stability of the privately-operated ferry services.

Public transportation funding in the region is at a premium, and ferry services are not immune to the competition for resources. Analysis of ferry transportation must not only account for waterborne trips, but also the improvements necessary to provide landside access and operations and maintenance costs associated with ferry transportation.

The Port Authority of New York and New Jersey served as administrative host of the regional ferry study. Additionally, a Steering Committee was responsible for reviewing the study content, as well as for providing a joint review of findings and recommendations. Steering Committee members included representatives from the Port Authority of New York and New Jersey, New York City Department of Transportation, New York City Economic Development Corporation, Metropolitan Transportation Authority, New York State Department of Transportation, New Jersey Department of Transportation, and New Jersey Transit.

In order to determine potential strategies to address the specific challenges and issues identified within the region, the Steering Committee identified seven particular areas of concern, identified through the study's outreach and ongoing Steering Committee discussions. These issues include:

- Regional agency coordination
- Municipality engagement
- Operator costs (including fuel & maintenance)
- Opportunities and mechanisms for regional cooperation among ferry operators
- Evaluation criteria for the establishment of new routes or service
- Funding coordination
- System redundancy and emergency response coordination

These issues are not new, or unknown, in other areas of the nation that have active passenger ferry operations. There are various examples of how other regions have attempted to address these issues. However, before addressing many of these issues, and providing recommendations, the Steering Committee believed that the public purpose role of government in passenger ferry service in the region must be defined.

## Public Policy Goals & Public Sector Roles

A key role of the Steering Committee was to come to a general agreement on the public sector goals, as well as what was the public purpose, of the regional passenger ferry system. Overall, there was general agreement on the following public sector goals for passenger ferry services in the region:

1. Time Savings: Offers significant travel time savings for travelers over existing transit services for the markets intended
2. Transfers: Offers a more convenient transit trip by reducing the number of transfers necessary from vehicle to vehicle.
3. Transit Connections: Offers more transit connections to existing transit service.
4. Diversion of Riders from Overcrowded Transit: Diverts transit riders from currently overcrowded transit service and provide more capacity in overcrowded corridors.
5. Positive Effect on Transit Revenues and Ridership: The ferry route can connect to existing transit to combine to offer a better option than driving, which can lead to a public benefit to transit in the form of positive revenues.
6. Diversion from Highways: Diverts many auto users from currently overcrowded highways.
7. Transit-oriented Development: Encourage transit-oriented development on or near the ferry waterfront sites.
8. Job Access: Provides greater access to jobs.
9. Recreational and Other Activities: Offers new transit access to recreational and other non-work trip activities.
10. Emergency Response: Establishes a fleet of vessels well positioned for deployment in the event of an emergency, such as an evacuation or rescue.

Thus, the Steering Committee believes there is a public role for ferry services in the region that translates into some degree of capital investments by the public sector. This public interest includes travel benefits, favorable impacts on existing transit, reductions in vehicle use (and related benefits for traffic, emissions reduction, etc.), waterfront development, recreational access, and emergency responsiveness.

## Roles of the Regional Passenger Ferry Partners

While there was general agreement on this general set of guiding public policy concepts, Steering Committee members also indicated very specific points about regional realities. Specifically, members stated that there is a need to clearly define and affirm the differences across various public sector ferry partners, particularly in terms of territories and roles.

Each public sector partner has a distinct territory and guiding mandate with respect to ferry service in the region, but this may not always be clear to the general public. While there is some overlap across the region, the ferry-related territories and roles of partner public sector study partners are as follows:

- The Port Authority provides limited capital investments (landings, maintenance facilities, etc.) and development support, focused on the Trans-Hudson markets, particularly the service between the multimodal Hoboken terminal and Lower Manhattan. In addition, the agency continues to evaluate potential viability of services between Manhattan and the region's major airports. The Port Authority does not provide subsidies for new service operations.
- New Jersey Transit (NJT) also focuses on supporting the Trans-Hudson market, with a primary focus on capital investments and a secondary interest in sustaining key existing routes.
- New York City Department of Transportation (NYCDOT) is responsible for operation and maintenance of ferry landings throughout the five city boroughs.
- The New York City Economic Development Corporation (NYCEDC) provides capital investment assistance benefitting intra-borough ferry service and is currently considering options for route expansion within the city boundaries.
- The Metropolitan Transportation Authority (MTA), does not provide passenger ferry services, excepting the routes that connect west of Hudson commuters with Metro-North Railroad (MNR) stations on the Hudson line.
- The New York State Department of Transportation (NYSDOT) does not provide ferry service, but has administered pass-through funding for some New York services. Additionally, the agency managesthe FHWA Ferry Boat Discretionary funds.
- The State of New Jersey Department of Transportation (NJDOT) Office of Maritime Resources manages the FHWA Ferry Boat Discretionary funds and handles the administration of Set-Aside, Competitive and Ear-Mark awards. The Office coordinates with the industry on operational and navigational issues through the Harbor Safety Navigation and Operations Committee of the Port of New York & New Jersey Passenger Vessel Sub-Committee.

These territories and roles stake out a regional division of responsibilities that has evolved among these agencies for public sector involvement in regional ferry service. At the same time, these agencies recognize the need for collaboration on shared concerns. This interagency study of regional passenger ferry service is an example of such collaborative efforts. Another example is the ongoing Memorandum of Understanding (MOU) between the Port Authority and New Jersey Transit to restore ferry slips at the historic Hoboken Terminal, which is consistent with each agency's focus on Trans-Hudson service. Such interagency initiatives are important to sustaining ferry service in the region and more are expected to develop on an as needed basis.

The Steering Committee recognized that this clear definition of public roles and territories, combined with a thorough consideration of specific issues and challenges, form the basis for the development of both the flexible structure for cooperative regional stewardship of passenger ferry services and practical implementation methods.

## Short-term Regional Issues and Challenges

While each public sector agency has its own specific interests in the region, there are always some key areas of overlap and common concern. Partner agencies already recognize this fact and have taken necessary action on an ad hoc basis. However, the Steering Committee reached a general consensus that the region could benefit from a more formalized joint approach to certain fundamental issues.

For instance, a more coordinated interagency approach to the pursuit of federal infrastructure funding could be beneficial to all partners. Meeting participants recognized that lack of intergovernmental communication can be one of the primary barriers to attracting the financial resources needed to effectively sustain the region's ferry infrastructure.

Another example of the need for a more coordinated regional approach is emergency response planning and funding. Private ferries have played significant response roles in a number of regional emergencies, but this has largely been on an ad hoc basis. While ferry operators have acted as good regional citizens during times of emergency, their willingness to help can be strained if they are not directly engaged in crisis planning and if they are not appropriately compensated for the costs incurred in responding to emergencies.

Since regional challenges and potential solutions are continuously evolving, all participants agreed that lack of regular communication between regional stakeholders should be detrimental. As a result, partners agreed that it would be useful to continue to meet periodically to reinforce interagency communication. By meeting on a regular basis, the current group of ferry partners could continue to accommodate existing regional roles and realities, while also being sufficiently prepared to respond to future changes and developments.

## Immediate Recommendations

### Create a Flexible Structure for Cooperative Regional Stewardship of Passenger Ferry Services

Study partners agreed that an ongoing dialogue should take place among the core public agencies within the region. These core public entities for the Regional Ferry Working Group would continue to include the study partners: the Port Authority, NJT, MTA, NYCEDC, NYCDOT, and NYSDOT. Additional core group partners would include NJDOT and the National Park Service. This Regional Ferry Working Group would meet quarterly to discuss current issues and tackle specific challenges facing all partners. Once a year, representatives from the regional Metropolitan Planning Organizations (MPOs) could be invited to participate in a quarterly meeting. During another one of the quarterly meetings, representatives from the regional private ferry operators could be invited annually to share their unique perspectives on the regional system.

### Coordinate Funding Strategies

For the partner agencies, an immediate concern is the need to maximize federal resource allocation and coordinate how it the resources are spent throughout the region is of most immediate concern. When positioning the New York/New Jersey Region in the increasingly intense competition for federal funding, a more consistent and well-coordinated approach to regional funding of ferry services, involving active participation from both public and private stakeholders, would be extremely beneficial.

One practical and implementable strategy for this is to make a coordinated effort to ensure that all eligible ferry miles in the region are reported to the National Transit Database (NTD). Since

annual allocations of Section 5307 UZA Formula Funding and 5309 Fixed Guideway Funding are based on National Transit Database (NTD) statistics, the region as a whole could benefit from this initiative. The specific service statistics driving the federal funding formula for Section 5307 funding are annual revenue vehicle miles (RVM), directional route miles (DRM), passenger miles (PM) and operating costs. Specific service statistics driving the Section 5309 Fixed Guideway modernization funding are RVM and DRM for routes over 7 years old. The Regional Ferry Working Group can work together to ensure that all private ferry operators are reporting these statistics on an annual basis. Since there is a two year lag in the annual reporting of transit service statistics and the resulting formula allocation to the UZA, regional partners should regard this task as a near-term priority.

While public agencies in New York and New Jersey (NYCDOT/Staten Island Ferry, NJT, NYSDOT, MTA) have been successful in securing large amounts of federal funding for their respective ferry systems/facilities, there does not appear to be sufficient coordination within the systems for pursuing funding or prioritizing regional ferry projects for funding. Each agency is in essence competing with other public ferry and transit interests to secure its "piece of the pie." This region's prospects for securing increased federal funding would be enhanced by a more consistent and well-coordinated approach to prioritizing regional projects for funding, involving both public and private stakeholders, could be extremely beneficial. A long-term federal funding strategy for the New York/New Jersey Region should include predictable, annual sources of funding supplemented with discretionary funding on an as-needed basis.

The Steering Committee also agreed to pursue the development of a common position on passenger ferry aspects of future federal transportation legislation. Overall, the Regional Ferry Working Group should construct a singular, consistent regional position intended to ensure that the region receives its fair share in the next transportation reauthorization process. Bills proposed in the House and Senate on reauthorization and ferry funding would continue the programs that have traditionally funded ferry service, along with some new programs that will favor transportation projects that increase transit use, benefit the environment, and support sustainable development /livable communities. The recently introduced reauthorization legislation in the House (STAA) and the United States Ferry Systems Investment Act of 2009 (USFSIA) introduced in the House and Senate show a movement away from specific system set-asides to a strictly formula based/discretionary allocation of funding. As the legislation develops over the next year, enhancements that could benefit the entire region include:

- Increased flexibility to use federal funding for capital or operating costs
- Programs that reward the unique transportation and land-use patterns of the New York/New Jersey region, including those that emphasize increased transit use, benefit the environment and support economic develop/livability
- Assurance that funding formulas continue to place a heavier weight on passengers carried than on vehicles carried
- Assurance that funding formulas are based on service statistics derived from both public and private ferry providers

## System Redundancy and Emergency Response Coordination

While both the New York City Office of Emergency Management (NYCOEM) and the New Jersey Office of Emergency Management (NJOEM) have incorporated ferries as key emergency response resources in their respective emergency planning documents, continued public/private coordination for emergency response is critical, with a more focused approach to relevant funding needs. Greater preparatory communication between various public and private

stakeholders is a key first step. A clear outline of roles, procedures, expectations, and eventual compensation should be developed and confirmed with all affected parties.

Some steps have already been completed to achieve these goals. For example, the NYC Office of Emergency Management, NJDOT, and the U.S. Coast Guard are working to improve preparedness for emergency response. In addition to revising their respective agency's existing operational plans, they work closely with the U.S. Coast Guard on the Area Maritime Security Committee and with the private ferry operators through AMSC Private Vessel Subcommittee. NJDOT and the NYC Office of Emergency Management are seeking funding to improve the trans-Hudson emergency landing infrastructure and are communicating with decision-makers at the Department of Homeland Security about the need to improve capacity beyond the floating barge landing at Liberty State Park.

An additional example is the recently adopted Trans-Hudson Emergency (T.H.E.) NY/NJ Plan, completed in cooperation with the NJ Office of Emergency Management, the NYC Office of Emergency Management, NJ Office of Homeland Security and Preparedness, NJDOT, NJ Transit, and the Port Authority of New York and New Jersey.

Finally, the Passenger Vessel Subcommittee is one of the standing subcommittees of the larger Harbor Safety, Navigation, and Operations Committee that was chartered by the Maritime Association of the Port of New York and New Jersey. As such the Passenger Vessel Subcommittee mandate is to review and advise the Harbor Operations Committee on all issues that may: 1) potentially hinder safe passenger vessel operations; 2) have a deleterious impact on environmental protection, or 3) adversely impact the business competitiveness of passenger vessel operations. Additionally, the subcommittee is further tasked with being the primary advocate for passenger vessel interactions with local, state and federal stakeholders and be a consolidating body in order to petition the various governments and their agencies for advice and assistance in promoting increased economic development and improvement within the industry.

Regional stakeholders must also work harder to coordinate around emergency preparedness funding. Currently, there are two main sources of federal funding for ferry security measures: the Port Security Grant Program (PSGP) and the Transit Security Grant Program (TSGP). In their current forms, neither program is particularly well-suited to meet the unique emergency preparedness needs of the regional ferry sector. Fortunately, both programs are evaluated and subsequently modified on an annual basis, to take into account such factors as the changing landscape of risk analysis in different areas of the country. This creates opportunities for engaged and vocal stakeholders to influence the future development of the programs. Port area stakeholders should work together to advocate legislative changes and pursue funding opportunities that could bolster the region's maritime security efforts. Ferry stakeholders should work with broader regional efforts, such as the Area Maritime Security Committee, to develop a common voice on port security funding options. For instance, regional partners could explicitly communicate their support for the concept of a National Ferry Emergency Response Trust Fund, which could be used to help compensate ferry operators that respond to regional emergencies.

## Regional Ferry Toolbox and Guide

It is possible to define how each of the public policy goals are met by having a reasonable estimate of a) likely ridership for prospective services or b) in the case of existing ferries, what choices customers would have if the ferry service was discontinued.

Building on the public policy objectives outlined by the Steering Committee, the study team developed a toolbox for prospective ferry services by the private and public sectors. This decision-making toolbox can be used broadly by various regional stakeholders, and would help the Regional Ferry Working Group encourage the responsible development of sustainable ferry service. The toolbox would help formalize the approach to implementing new ferry service in the region, with a strong emphasis on careful preparatory analyses.

The toolbox starts with a series of ten questions to draw out the likelihood that a particular service is in the public interest. If respondents do not know the answers for some of the questions, they are encouraged to indicate "Probably not or no" and investigate the issue further. These answers should be seen as a means towards validating (or tempering) enthusiasm for a ferry start-up and for the prospects of attracting government support and operator interest. The following questions are meant to address each of the identified public policy goals.

1. Will it offer significant travel time savings for travelers over existing transit services for the markets intended?
2. Will it offer a more convenient transit trip by reducing the number of transfers necessary from vehicle to vehicle?
3. Will it offer more transit connections to existing transit service?
4. Will it divert transit riders from currently overcrowded transit service and provide more capacity in overcrowded corridors.
5. Will it have a positive effect on existing transit revenues?
6. Will it divert many auto users from currently overcrowded highways?
7. Will it encourage the transit-oriented development on or near the ferry waterfront sites?
8. Will it provide greater access to jobs?
9. Will it offer new transit access to recreational and other non-work trip activities?
10. Will it establish a fleet of vessels well positioned for deployment in the event of an emergency, such as an evacuation or rescue?

Since estimating ridership is a very difficult thing to do, the Toolbox asks the user to postulate a possible service, assuming frequency of service, costing it out and then estimating the ridership necessary to break-even, or better. This can serve as a starting point for further discussions as to whether the service is a winning proposition. The second part of the Ferry Toolbox starts with this premise. The user is asked to establish the foundation for calculating annual operating costs by:

A. Defining hourly operating costs factors
B. Determining weekly round-trips
C. Indicating round trip distance for a proposed route

This analysis will provide initial feedback on two threshold criteria: 1) Whether the proposed service adequately meets the public interest goals that have been identified for passenger ferry service in the region; and 2) whether the estimated ridership provide a general sense of whether the proposed service meets break-even costs. In any case, while this analysis may provide some input on whether proposed routes meet the public interest goals and have the estimated ridership to meet break-even operating costs, additional analysis, (such as travel demand and market analysis, capital cost review, and interaction with the existing transit and ferry network) will be required.

## Conclusion

Over the past few decades, the regional private ferry route have evolved gradually to serve the daily transport needs of thousands of regional residents. During emergencies, it has provided important network redundancy. For the most part, service is privately run and operations are primarily self-sustaining from farebox revenues. While recent increases in fuel prices and regional unemployment have tempered growth, it is projected that ridership on most of the established routes will rebound as regional economic conditions improve. Beyond these core routes, there are very limited possibilities for expanded passenger ferry service in the region that could operate on an unsubsidized basis. In general, the public sector has avoided direct subsidization of regional ferry operations, although it has provided limited capital assistance for ferry facilities. This general policy makes sense in terms of both the low fare elasticities of ferry service and the modest external benefits of most individual regional ferry routes. Overall, public funding is currently severely constrained for all transport modes and is expected to remain so, at least for the near term.

Given these existing conditions, the primary near-term concern should be the continued operation of established routes at the core of the regional ferry services, without resorting to the provision of significant public subsidies. To be best prepared to respond to current challenges, ferry partners in the region must be equipped with a *clear organizing framework* for evaluating the public benefit of ferry service, a *flexible structure* for cooperative regional stewardship of passenger ferry services and *practical methods* that could be applied on a regional basis to identify synergies, all of which are key outcomes of this study. Decisions on operating public subsidies should be carefully weighed with how any subsidy meets the public interest criteria.

In this dynamic region, land-use changes, population growth, waterfront development, and evolving policies for delivering and pricing transportation services all could affect the viability of individual ferry routes in the future. Given this reality, this assessment serves as a guide for policy makers that would help inform future decision-making and planning for passenger ferry services. Key strategies to stabilize and support ferry services include:

- Creation of a Regional Ferry Group
- Regional coordination on funding strategies
- Improved coordination on emergency preparedness planning and funding,
- Implementation of the Regional Ferry Toolbox

Passenger ferries have played an important role in the region's transportation system, a role that, guided by a sound policy framework, could continue and even grow. In an era of growing and changing travel demand, concerns over security and sustainability, and tight financial resources, a stable passenger ferry sector is a regional asset. A good regional policy framework is the key to its survival and increases its potential to play a larger role in the regional transportation system.

# Section 2: *Introduction*

Halcrow, Inc. (Halcrow) is leading the work for the Port Authority of New York & New Jersey (Port Authority) for an important strategic study of the region's private passenger ferry system. The assignment, Performance of Expert Professional Services for the Completion of an Interagency Study of Regional Private Passenger Ferry Services in the New York Metropolitan Area (the study) also involves the Regional Plan Association, KPFF Consulting Engineers, Eng-Wong, Taub & Associates, Parsons and Spectrum Design (together, the study team).

The region's ferry system is unique in North America in that, with the notable exception of the New York City-run Staten Island Ferry, it is privately run and its operations are primarily self-sustaining from farebox revenues. The private ferry system carried about 28,800 daily passengers in 2009, principally from New Jersey destinations to Manhattan destinations at Pier 79, World Financial Center and Pier 11. Elsewhere in the United States and in Canada, ferry systems are operated under a variety of governance and funding models, but virtually all receive operating support from public sources. In many cases (Alaska, Vancouver, British Columbia, and Seattle, Washington), the public sector stepped in to support private marine operators around the early 1950s, when the availability of the private automobile became more affordable and as the landside infrastructure, including bridge links, was developed.

The existing regional system provides superior connections to those New Jersey residents with good accessibility to ferry facilities (either direct or through multi-modal connections) on the Hudson River waterfront. The system also serves a somewhat niche market from Monmouth County, where poor modal alternatives and relatively high incomes sustain a robust ridership. Other routes that have proven relatively successful include the Metro-North Railroad (MNR) feeder from Haverstraw to Ossining and the connection from Newburgh to Beacon.

The study is primarily concerned with the continued evolution of private ferry service in the region, and has addressed the following:

- Is there potential to further expand ferry service in the region?
- What are the funding conditions for expanded ferry service to occur, including farebox potential, value capture (such as real estate benefits) and the role of public subsidy?
- How does investment in ferry service operations support the public interest, including balancing the current fiscal realities faced by all the other transportation providers while understanding the important role ferry services provide to the region?
- In order to answer the foregoing, how should the public benefit be measured to justify the public investment?
- Once measurement of public benefit has been detailed, what should be the public role in expanding ferry service in the region?

Ferry transportation continues to play a crucial role today in supplementing critical transportation linkages between New York and New Jersey, and is emerging as a support for community development in the boroughs of New York City and surrounding communities in the tri-state region. The Port Authority of New York and New Jersey and several other agencies and communities are investing in ferry facilities and services for select markets, and are seeking strategies that better integrate ferries into the regional transportation network and also enhance the financial stability of the privately-operated ferry services.

Public transportation funding in the region is at a premium, and ferry services are not immune to the competition for resources. Analysis of ferry transportation must not only account for waterborne trips, but also the improvements necessary to provide landside access and operations and maintenance costs associated with ferry transportation.

The Port Authority of New York and New Jersey served as administrative host of the regional ferry study. Additionally, a Steering Committee was responsible for reviewing the study content, as well as for providing a joint review of findings and recommendations. Steering Committee members included representatives from the Port Authority of New York and New Jersey, New York City Department of Transportation, New York City Economic Development Corporation, Metropolitan Transportation Authority, New York State Department of Transportation, New Jersey Department of Transportation, and New Jersey Transit. The Steering Committee members were not only responsible for reviewing the study content and participating as members of the Committee, they provided invaluable technical expertise to the study. Examples of this expertise include New Jersey Transit's assistance on ferry route modeling and New York City EDC's preparation of two technical memorandums included in the Appendix of this report: *Nationwide Models of Ferry Service* and *Using Ferries for Transit Redundancy and Emergency Preparation*

The study was initially organized into seven distinct tasks. The Interim Reports for each of these tasks are included as Appendices to this document. For the purposes of this Final Report, these tasks have been grouped into three core phases: Background, Service Analysis, and Policy. In the following sections, the key findings of the tasks within each of the three phases will be summarized. The Background section will establish the foundation of information for the study and will be based on findings from both the review of previous ferry research and the study's various stakeholder outreach efforts. The Service Analysis section will present the relevant findings from a number of qualitatively- and quantitatively-based analyses, including the market analysis of existing service, the preliminary identification of potential new routes, the modeling of potential new routes, the Stated Preference (SP) survey of regional ferry travel preferences, and the ridership forecasts for select new routes. Finally, the Policy section will more directly address issues of the public interest and will focus on developing regional ferry policy goals, defining public sector roles, and establishing strategies and tools for facilitating future ferry initiatives.

# Section 3: *Regional Ferry Service Background*

## 3.1 Review of Ferries in the Region and Conditions Update

In 2006, RPA produced a report entitled *Ferries in the Region: Challenges and Opportunities*. In that report, RPA described the history of ferries in t`he New York/New Jersey Region, focusing on the period following their reintroduction in 1986 and the milestones leading up to 2006. The 2006 report discussed the issues facing ferry service at that time, pointing out that ferry service had appeared to reach its natural limits, with the most productive services having been tried and established and other services experimented with and found wanting. The report indicated that, of the 70 services put in place since 1986, only 24 were still operating in 2006.

The 2006 RPA report documented the rise and fall of ferry services. Just before 9/11, average weekday ridership had reached 35,700. After 9/11, many new ferry services were started up in an attempt to fill the gaps created by the destruction of the World Trade Center PATH station and the discontinuation of PATH service. By October 2002, ferry ridership had reached an historic peak of 69,700 per weekday. In December 2003, PATH service was restored and ferry ridership took a substantial nosedive. Not surprisingly, by July 2006 (when the RPA report was being written), ridership had dropped to about what it had been prior to 9/11, about 37,000 on an average weekday.

Of the 24 routes that remained in place in 2006, the RPA report characterized them in six, sometimes overlapping, categories:

1. Ferry services that are part of the transit network and directly complement it.
2. Ferry services that serve Lower Manhattan.
3. Ferry services from New Jersey to West Midtown.
4. Ferry services that fill a void for commuting because of poor ground transit alternatives.
5. Ferry services whose purpose is to create accessibility in areas with poor access to create opportunities for new or expanded development.
6. Ferry services that interconnect multiple locations.

The report also spoke of new services being considered at the time – from Yonkers, from Edgewater and from southern Staten Island.[1] The RPA report also suggested that some past failures might be revisited, correcting some of the flaws in the original services.

### Ferry Service in the Region: An Update

There have been two major events that have affected the ferry industry since 2006: the rise in the cost of fuel and the recent "Great Recession." The ferry industry in New York has been buffeted by steeply rising fuel prices that caused ferry operators to raise their fares, with a subsequent drop in ridership, and more recently by the decline in the national and local economy, which has lowered the number of commuters available that might consider ferries as a choice for travel to work. Fuel price rise can have two countervailing impacts on ferry use. On one hand, rising prices can cause the ferry operators to raise their fares, thus dampening ferry use. On the other hand, it would seem logical that with rising gasoline

[1] The first two of these have since been put in place, although the Yonkers route ultimately existed for only a short period of time as it was never able to come close to being self-funding from fare box revenues. With the sunset of its finite two-year operating support the service was discontinued.

prices, some drivers would choose to shift from driving to public transit, including ferries. However, ferry demand modeling on existing ferry routes in the region, conducted as part of this study and to be described later in this Final Report, suggests that the effect of higher gasoline costs in causing a shift to ferries has been essentially undetectable. This is borne out by the experience in recent years. It would appear then that ferries received the worst of both events of 2008. First, higher fares driven by fuel prices have not been offset by the higher ridership that one might have expected from higher auto costs, and second, the declining economy which translates to fewer commuters. Since the bulk of ferry ridership in the region is bound for Lower Manhattan, the considerable decline specifically in the financial job sector has exacerbated the problem.

An analysis of existing ferry service conducted as part of this study, and summarized later in this Report, suggests that the latter factor has proven to be the more important one in reducing ferry ridership. Consequently, the eventual recovery of the national and regional economies should be accompanied by a return to moderate ridership growth.

## Ferry Service in the Region: Public Policy Issues

The 2006 RPA report details the role of the public and private entities in place as of 2006 that had relevance to the establishment of ferry services – ferry operators, public transportation agencies, and those public entities with permitting and regulatory responsibilities regarding ferries. Among these agencies, only the Lower Manhattan Development Corporation has had a substantially different role now than it had at that time.

RPA interviewed many of these players as part of an information and opinion gathering effort in 2006. These interviewees and others involved with ferry planning in the New York/New Jersey Region, totaling approximately 70 people, were then assembled in late 2006 for a half day discussion of ferry issues. Three concurrent breakout roundtable sessions were held and the results reported back to the full group. While these results were not a formal part of the RPA report, the outcome is nonetheless relevant and a discussion of these deliberations is included here. A summary of the day's proceedings was prepared as a supplement to the RPA report and included thirteen recommendations that emerged from the discussions. These are paraphrased below.

- There is a legitimate mission for ferry services in the region and it that should be articulated by an interagency ferry group.
- There is a public sector role for the support of ferries and the form it takes should be based on an evaluation of the public interest in each case.
- The public interest can be defined. Twelve factors defining the public interest are suggested.
- There should be emphasis on supporting start up ferry services, especially by early marketing.
- Ferry operators must be open to full financial disclosure if they expect public sector financial support.
- Ferries should not be evaluated differently than other modes of public transit.
- More and better data, included surveys are needed and should be collected to assist in the evaluation of existing and potential ferry services.
- A formal ferry interagency task force should be created and non-agency members should be included when appropriate.
- Developer-supported ferry service should be subject to full disclosure regarding the extent and length of developer support.

- There should be greater emphasis on non-commuter ferry use, such as for tourists and excursions to lessen the peaking problem that creates financial pressure on ferry operators.
- Travel demand models for estimating ferry ridership should be developed to assist in evaluating new ferry routes.

It is encouraging that most of the recommendations either have been advanced or are embodied in the current study. In particular, the interagency task force, in the form of the Study Steering Committee, is in place and the search for potential new ferry services, including the process for evaluating them and judging whether they are in the public interest, are key components of this study. Defining the public interest for supporting ferry services is central to this endeavor. The 2006 RPA report provided useful guidance with regard to this process:

> *The matter of public operating subsidies is fundamental to any discussion of the future of ferries. It is clear that most ferry services today either require subsidies to continue operations or are getting closer to that point. Further, a number of potential new services or ones that were tried but failed in the past would require subsidies if they are to capture a market large enough to establish themselves. The absence of subsidies in advance inhibits these services from getting started.*
>
> *The public agencies – except in a few limited instances — are understandably reluctant to go down the direct subsidy path, given their larger existing financial responsibilities. To be sure the public sector has supported ferries in other ways with substantial investments in landing sites, well over $350 million and counting. Other means of support have been tried in some limited instances, including the provision of feeders services to ferries, coordinated ticketing and piggybacking of fuel purchases, but operating subsidies have mostly been off limits. One line of reasoning is that these measures are about all that can be expected from the public sector with its own budget difficulties. Another argument for subsidies is that the other transportation systems are now all subsidized so why then should ferries be treated differently? And if we object that ferry operators are entrepreneurial and are in business to seek a profit, we should be reminded that all the public transportation modes of the past started as private and eventually became public entities when the private sector no longer saw a profit in them. Whether ferries eventually head down that path is unclear, but if we believe that there are ferry services that are in the public interest as implied by the public capital investments to date, then perhaps we must also believe it is rational to subsidize them. Then we must ask ourselves in what particular circumstances is it in the public interest for the public sector to pay for ferry operations, i.e. what constitutes the public interest?*

The 2006 report suggests that an approach similar to cost-benefit analysis, involving a comprehensive comparison of all relevant social benefits and disbenefits, would be appropriate for defining the public interest in the evaluation of ferry service. These would include an assessment of the following impacts from an additional ferry service or route:

- The amount of travel time saved by ferry riders;
- The operating cost reductions possible for the ground transit mode;
- The reduction in fare revenues on ground transit modes;
- Relief of overcrowding on ground transit modes;
- Relief of highway congestion;
- The increase of fare revenues on existing transit systems as a result of ferries acting as a connecter to commuter rail (as in the case of feeder service such as Haverstraw to Ossining); and
- The amount of peak period capacity added in a corridor.

These traditional cost-benefit measures could also be supplemented by more general benefits that are not as easy to quantify:

- The amount of economic development made possible by the existence of the ferry service (at Port Liberte, in Weehawken, and prospectively on the Brooklyn and Queens waterfronts);
- More generally, the extent to which the service is an integral part of the transportation network, connecting various transportation and transit modes;
- The ability for the rider constituency to enjoy a premium service, with increased utility proxied by the willingness to pay higher fares in the absence of subsidies without resulting in the loss of significant ridership; and
- The ferry service could provide redundancy if existing transportation or transit service is disabled either in a short–term emergency or for an extended period of time.

The 2006 report identified some of the difficulties in deriving a single "decision rule" to assess the public interest:

> *Even if these factors could all be accurately calculated, it may not be possible to develop a single formula to decide if and how much subsidy is warranted….When is a subsidy too much to support? Shouldn't the ferry service first be subject to the same process that transit operators go through of looking at the financial picture or individual routes and decide when they need pruning or even abandonment? Is it possible to do the benefits analysis to an acceptable level of accuracy? Who does the research? Who decides? Which agency among the many existing ones today pays the subsidy if it is decided there should be one or is it a new agency established in part for this purpose? How do you determine if the ferry deficits are a result of bad management, where subsidies are just "bailing out" the operator? Is there a time limit placed on the subsidy until the service can establish itself or is the subsidy permanent? Is there a point when you pull the plug and how do you decide when that is?*

These issues indentified the 2006 report continue to be important themes throughout the current study. As detailed in the following sections, the study team worked with the Steering Committee to explicitly address these complexities, with the ultimate aim of defining a clear and workable vision for future ferry service in the New York/New Jersey Region.

## 3.2 Regional Ferry Stakeholders: Perspectives and Opportunities

While the 2006 RPA ferry research involved engagement of a broad spectrum of regional ferry stakeholders, it was important to follow-up with its own formal process of stakeholder outreach. The stakeholder outreach efforts engaged three broad regional groups: public sector/agency representatives, waterfront developers and private ferry operators. For the public sector representatives, a series of two half-day stakeholders workshops were arranged. To elicit comments and suggestions from each of the waterfront developers and private ferry operators, one-on-one interviews were employed. While specific talking points and questions varied for each stakeholder group, all outreach discussions touched upon issues of the public role in ferry provision, including reasons for (or against) public support and potential opportunities for coordination between various public and private stakeholders.

### Public Sector Stakeholders Workshops

During the week of November 9th, 2009, two stakeholder workshops were held, both of which were designed to elicit the public sector perspectives on ferries in the region. The first stakeholder workshop, held on Tuesday, November 10th, was hosted by New York Metropolitan Transportation

Council (NYMTC) and the invited participants generally represented public sector entities based on the New York side of the Hudson River. The second workshop, held on Thursday, November 12th, was hosted by New Jersey Transportation Planning Authority (NJTPA) and the invited participants generally represented public sector entities based on the New Jersey side of the Hudson River.

Through the stakeholder workshops, the study team engaged the participants on a number of policy issues related to the provision of ferry service in the region. The discussions generated at both of the stakeholder workshops have helped to inform a public-purpose decision-making framework that truly serves the current and future ferry transport needs of the New York/New Jersey Region.

The key questions for consideration during the workshop included:

- Should the region's governments encourage and sustain passenger ferry services as a transportation option in the greater metropolitan region?
- What kinds of ferry services merit government support?
- What roles should the private sector—ferry operators, real estate developers—play?
- If given ferry routes are deemed public transit services to be subsidized, why not evaluate them by same planning standards, budget prioritization, and cost effectiveness applied to other transit service?
- For public/private or privately operated start-up routes, is government support warranted for trial periods? How long? What government aid is most appropriate for each service type (template)?

In addition to the five key policy questions, the study team invited participants at each of the two sessions to consider a series of three hypothetical ferry scenarios. The large group discussion of threescenarios helped to tie the broad policy questions to the more challenging question of "In practice, how does the public sector determine policy for specific ferry services?"

The results of the discussions, triggered by identical sets of discussion questions and hypothetical scenarios were similar, to a point. The majority of participants supported the notion that ferry services were a good idea and should be encouraged and sustained (or, at the very least, facilitated) as part of the transportation network in the New York/New Jersey Region. Participants at each workshop agreed that ferries could serve public purposes that might justify public support, including better transit in markets otherwise poorly serviced, an attractive alternative to driving that could reduce road congestion and carbon emissions, either a reliever of overcrowded transit or an enabler of more transit use when ferries acted as feeders, and facilitator of development in areas that could overcome their poor accessibility. Ferries were also recognized as a redundant service in events of emergency situations.

There was also support for the public sector to invest in capital to facilitate ferry services and contribute toward the purchase of vessels. But when it came to support for subsidizing operations, opinions diverged. At one end of the spectrum was the opinion that ferries should be treated like other modes of transit, none of which are expected cover their operating costs from the farebox. At the other end of the spectrum was the laissez-faire approach – ferry operators should cover their costs from the farebox and if they cannot the ferry service should be discontinued, with subsidization of ferries an unrealistic expectation during these difficult financial times. The hypothetical scenarios helped to test these limits further, encouraging participants to be more specific about the point at which they would be (or would not be) willing accept greater levels of public support. However, most of the discussion nestled comfortably between the two extremes: **Operating support is**

**deserved if the public benefit can be shown, but within limits**. This comfort zone did little to resolve the dilemma: where to draw the line as to how much public benefit is enough to justify financial support? Who draws that line and do they have the tools to determine the public benefit received for public investment given? The discussants discussed, but resolved little with no firm path to resolution.

## Developer Interviews

The study team conducted one-on-one interviews with eight developers involved with waterfront projects throughout the New York/New Jersey Region. Some of the interviewed developers have worked extensively with the implementation of ferry service, whereas others have had somewhat more limited experience with ferries. Within the group invited for interviews, there was representation from both private development firms and public waterfront developers such as Brooklyn Bridge Park Development Corporation (BBDC) and Queens West Development Corporation (Queens West).

The developers expressed a diverse set of perspectives on the importance of ferry service. Overall, for developments and areas lacking alternative transport modes, ferries are seen as critical and worth the necessary investment. One interviewee said that ferries need to remain or expand to maintain the vitality and continued growth of the redeveloped Hudson waterfront, and that they succeed in taking cars off the road in these areas. However, ferry service is not generally viewed as a critical component if there are other, robust transit systems like PATH or New York City Transit nearby. Developers said that in areas well-served by other transit modes, ferries are an added plus and certainly welcome, but not essential.

Overall, the private developers expressed an unwillingness to contribute money to ferry operations. It was the general sentiment that, if other forms of transit are subsidized, why should ferries be any different? Since ferries promote smart growth development as much as other transit modes, the private sector developers see little reason why they should be expected to contribute to infrastructure development or operations costs any more than a developer building near a subway station. With the exception of one interviewee, none of the interviewed private developers were willing to subsidize or spearhead ferry service, either because they do not critically need ferry service or because they feel it is the government's responsibility to ensure service. The interviewed public developers (BBPDC/ Queens West) have no plans to subsidize or spearhead ferry service, but are willing to entertain the idea of entering into some type of partnership under appropriate conditions.

In general, there was no developer interest in ferry park-and-ride service. In redeveloping waterfronts throughout the New York/New Jersey Region, governments and developers are trying to remove parking and formerly industrial facilities to make way for parks, open space, and attractive residential areas. Any initiatives to rebuild paved lots on prime waterfront real estate are likely to be unpopular. Furthermore, the additional traffic that park-and-ride would generate would be undesirable to waterfront communities.

It was suggested that thorough consideration be given to determining the fare and ridership levels needed to sustain any new development-oriented ferry services. Furthermore, it should be determined specifically what advantages would such service provide to the public. Although ferry service tends to be conceptually attractive to the public, it is important to identify the demographics and service characteristics needed to make ferry service worthy of public or private subsidies.

There was the suggestion that a specific entity needs to take responsibility for regulating ferry services in the harbor. It was pointed out that ferries do cause damage to waterfront property

through wake, noise, and other similar externalities. Furthermore, any ferry operators should be required and able to maintain their docking and surrounding facilities with ongoing capital investment.

Finally, some of the developers were especially aware of the potential for new target ferry markets. It was pointed out that, while discussions about ferry service are often geared towards getting people from New Jersey and the outer boroughs to Manhattan, regional dynamics have been changing. The system should be looked at comprehensively and any evaluation should also take into account additional large destination markets, such as Jersey City. It was noted that a surprising amount of ferry use is actually during the day for intra-business trips and on the weekend for recreational travel.

## Operator Interviews

The study team conducted one-on-one interviews with five major private ferry operators based in the New York/New Jersey Region. Each operator serves a slightly different market niche, yet their answers to interview questions were often quite similar. If there was any divergence on a topic, it was most likely a reflection of differing perspectives between operators more focused on the recreation market and operators more focused on the commuter market.

### Current and Future Service

Most operators indicated that park-and-ride access at the origin point is critical to route success. However, this was also a function of geography, since most of the private ferry operators are currently serving locations with limited walk-on markets. To attract and retain ridership, dock side amenities are often just as important as other factors like departure frequency, off-peak service, and onboard amenities. It was acknowledged that the public sector can, and has, done a great deal to enhance the riders' wait time experience.

It was acknowledged that a route can be much more successful if there is also a reliable backup mode available. Passengers are more willing to use a service if they know they will not be stranded. This sense of reliability can be enhanced if the option of flexible ticketing could be provided. For instance, if a regular passenger missed the last ferry trip, she could use the ferry pass for access to another form of transit.

Special events are generally viewed as having the greatest potential for market growth. Based on their experiences with route development in the region, most operators think the establishments of any new permanent routes would require an operating subsidy. This was largely because operators sensed that the most lucrative permanent routes have already been tested by the private sector.

### Emergency Response & Disaster Recovery

All of the operators recognized that emergency response planning has occurred in the region and that ferries are clearly a significant component. However, there is also the sense that current evacuation plans count on ferries but make limited consideration of actual vessel availability. Also, at times of emergency, operators are not confident that they will be able determine who exactly in the public sector is in charge of major logistical decisions. Also, all operators would like to be compensated in some way for the expenses they incur preparing for and responding to emergencies.

Public/private coordination for emergency response will continue to be an area of critical importance, and steps have been taken to improve coordination. An example of this is the recently adopted Trans-Hudson Emergency (T.H.E.) NY/NJ Plan, completed in cooperation with the NJ Office of Emergency Management, the NYC Office of Emergency Management, NJ Office of

Homeland Security and Preparedness, NJ Department of Transportation, NJ Transit, and Port Authority of New York and New Jersey.

**Funding**

Some of the operators, generally those that provide more commuter service than leisure, expressed the belief that ferry service should be supported like other transit modes. However, there were also operators that felt strongly that the private sector is best equipped to be flexible and thrive in the ferry market.

There was the suggestion that, to support expansion of local ferry services, the public sector could create a funding "bank" to provide construction loans on a competitive basis. It was also suggested that a model for future new service could involve public ownership of vessels and facilities and private responsibility for operations and maintenance.

**Management**

Operators are generally unwilling to share vessels in the interest of improving overall system efficiency. There was the sense that coordinating this would not be worth the marginal benefits that might be achieved.

**Ferry Service and Waterfront Development**

New service to waterfront developments is challenging since potential demand is unknown. There is general resistance to become engaged with this type of route initiative.

**Environmental Impacts**

There have been general efforts to make the ferry fleets "greener", which could include strategies such as retrofitting engines, using low emission fuels, etc., sometimes with the support of public grants. However, this is still not a major priority for some ferry operators and additional incentives would be welcome. There is the sense that emission standards will become more stringent in the future, resulting in the need for additional mitigation actions.

## 3.3 Regional Ferry Service Background Conclusions

The common ideas and concerns expressed during the outreach, building on the themes identified in the earlier RPA 2006 report, serve as the foundation for the remaining work. There was a strong focus on the concept of the public purpose in the RPA 2006 work, but a solid definition of the public role was never truly achieved. Similarly, most participants in the outreach activities support the idea that there is a public role in the provision of regional ferry service, but the extent of this role was also largely undefined. At the same time, most of the developers interviewed said they were unwilling to take an initiative on ferry service, but still generally recognized the merits of such service to waterfront locations in the region. Finally, the regional ferry operators confirmed that the ferry route network has reached its limit, and is unlikely to experience any additional natural expansion without more participation from the public sector. With this understanding of current conditions in mind, the study team embarked on the next major phase of the study, which relied on a series of in-depth analyses to determine the future market potential for sustaining, and possibly expanding, ferry service in the region.

# Section 4: *Regional Ferry Service Analyses*

The background review and outreach provided a broad view of system current conditions and attitudes toward existing ferry service in the region. Moving forward from this starting point, the study team sought to understand how the future regional ferry system may evolve, with a consideration of both existing service and any potential new routes. As noted earlier, the regional private ferry system has evolved considerably over the past few decades. The 1980s saw a revitalization of private ferry service in the region. This new wave of independently financed ferry routes emerged as niche providers for markets experiencing heavy congestion or with few alternative routes. However, despite the advantages, many new routes could not survive market challenges and there has been significant turnover in service. Given this history, what future can be expected for the existing ferry routes? Is there potential for any new routes? Will a regional private ferry system of the future differ vastly from the system of today?

## 4.1 Market Potential of Existing Service

When developing a realistic future view of the regional ferry system, it is important to first establish a strong understanding of existing routes and their likely future performance. With this goal in mind, the study team developed an econometric model which incorporates the key variables that determine passenger ridership. This model determines passenger sensitivity to fare rates and quantifies the full effect of the economic recession. As summarized below, the model was then used to project long term growth and future ridership on the existing ferry lines.

The econometric model was built on monthly data for passenger volumes, explained in each period by the prevailing economic climate and fare levels[2]. The time period used to estimate the models was truncated between 2004 and 2009, to exclude the impacts of the post-9/11 PATH train rebuilding. The specifications for the model are as follows:

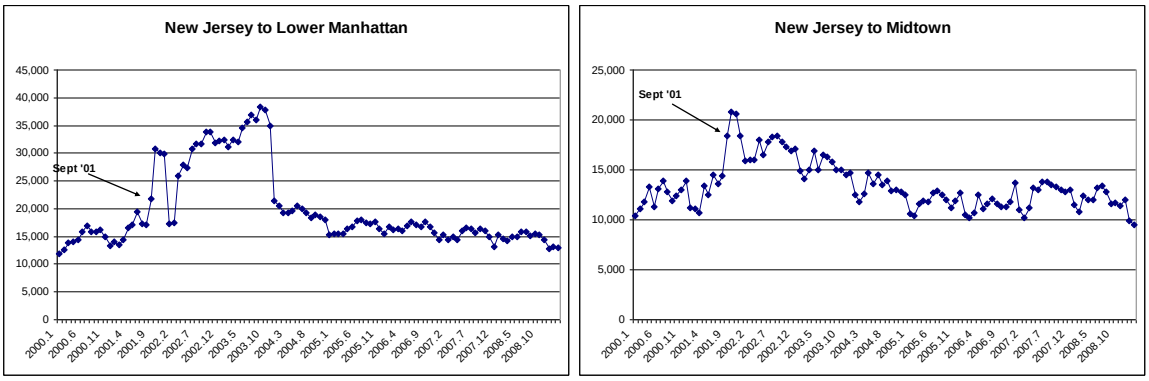
$$Ridership_{i,t} = f(Real\ Fares_{i,t}, Macroeconomic Variable_{i,t}, Monthly Seasonal\ Controls_{i,t}, Service\ Interruptions_{i,t})$$

**With:**
*i* identifies the service line or route
*t* is the time period (in months)
*Ridership* is defined as weekly average passengers
*Real Fares* is defined as real daily rates
*Macroeconomic Variables* such as employment in the finance industry, regional unemployment, and housing starts
*Monthly Seasonal Controls* are monthly "dummy variables" to account for seasonal cyclicality
*Service Interruptions* are "dummy variables" that control for otherwise unexplained past passenger impacts due to weather

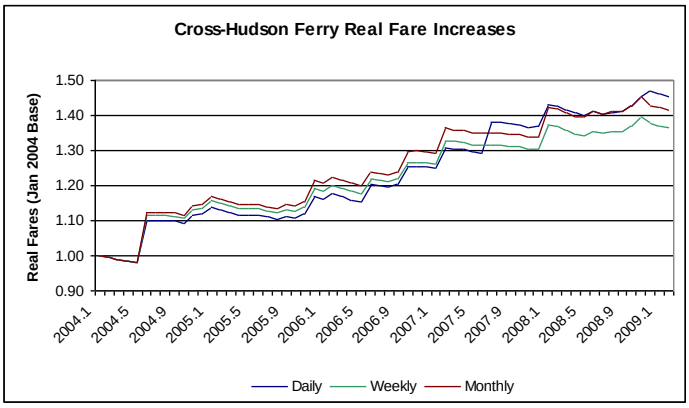
[2] On a more technical note, the model includes cross sectional fixed-effects that can be exploited in a panel model. The fixed effects for each service line essentially control for the fact that each route will have specific characteristics (such as density, ease of access, etc.) that are essentially unchanging over time but hard to incorporate explicitly in the model. The fixed effects procedure essentially removes these factors as a source of potential bias. We do not report the actual fixed effects here but report the relevant finding that these effects were significant and indicated the presence of unobserved heterogeneity across the routes.

The SeaStreak service lines to Monmouth County were considered separately from the other lines because that part of the region has fewer alternative routes than the Hudson River market. To address the structural differences, a separate SeaStreak model was constructed to estimate the fare elasticity, and the factors affecting ridership. The upper Hudson lines and East River lines were not modeled for different reasons. The upper Hudson lines, as a feeder route to rail, are too intrinsically tied to the rail services and too heavily subsidized to be accurately modeled. The East River lines are also difficult to model because the services have been inconsistent and services have been interrupted or rerouted a number of times. It is very difficult to isolate the heavy fluctuations in ridership caused by service interruptions from other explanatory variables. Service lines which been discontinued or have only started recently, such as the Edgewater-Midtown route, were also excluded so that the model would not be distorted by ramp-up effects.

**Weekly Average Ridership**




**The Cross-Hudson lines**, which include the Lower Manhattan and Midtown routes, were modeled together as a panel. The key economic variables in the model are employment in the financial sector, to account for commuter traffic to Midtown and Wall Street, and housing starts in the New York City Metropolitan Statistical Area (NYC MSA), to capture other travel purposes. The employment data is from the Bureau of Labor Statistics State and Metropolitan Area Employment (BLS SAE) dataset and the US Census.



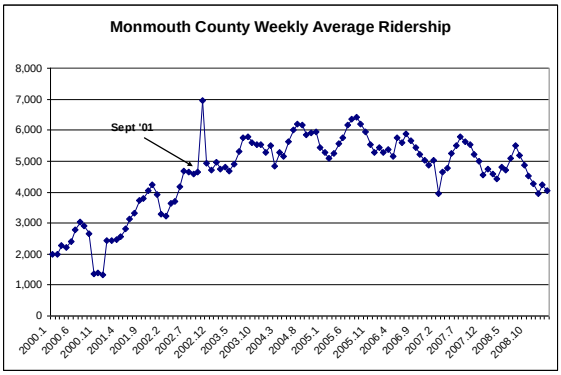

The data show an average annual increase in finance employment from January 2004 to January 2008 of 2.1%. In the past year, employment declined by 6.2%. During this same period, housing starts have experienced an even more pronounced decline, with an average 18% drop between 2004 and 2008, and a 7% drop in the last year. On average, the ferry services increased their real fares by 7% annually.

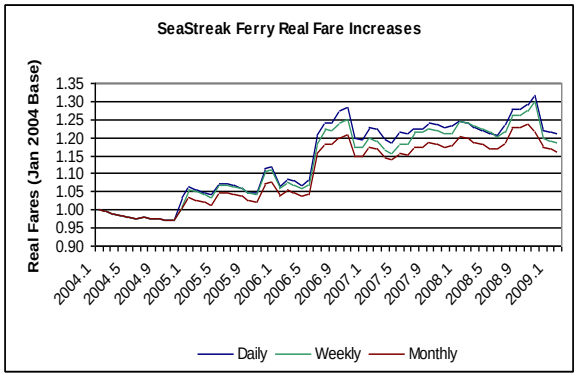
The econometric modeling results for the Cross-Hudson lines indicate that the passenger ridership has been strongly correlated with fare rates, employment in finance, and housing starts. The relationships are significant within the 95% confidence interval. The implied elasticity to real fares in this model is

approximately -0.27[3], meaning that a 10% fare increase has been observed to reduce ridership by 2.7% (holding all other effects constant). This is on par with the typical transit fare elasticity measures. The model also shows a positive and highly significant coefficient on employment, confirming that the economic downturn and decline in employment has greatly affected the number of passengers riding the ferry. This is an expected relationship, with declining employment leading to fewer people commuting overall. Finally, the relationship to housing starts is also positive and significant. Housing starts here is a measure of overall economic buoyancy in the region, and is expected to also capture the perceived wealth of residents and their expectations about the future.

**The SeaStreak Ferry routes** are modeled using local unemployment rates in Monmouth County as a key driver variable. The variable was chosen because it was found to be a better predictor of ferry ridership – possibly because there is a high proportion of residents working in Manhattan, and that the local unemployment rate will directly affect the pool of potential users more precisely than Manhattan employment measures.

The Monmouth County unemployment had been declining from 2004 to 2007, at an annual rate of 9%. But in 2008, the unemployment rates rose by 58%. By March 2009, their unemployment was at 8.0%, a development which was found to be closely tied to some of the observed reductions in ridership. The SeaStreak fares, much like the Cross-Hudson, have increased in the last 5 years, but have dropped incrementally in more recent months. The total increase in real fare rates from 2004 to 2009 is around 20%. A dummy variable statistical control was added for the month of February 2007, when the Highlands-Pier 11 line experienced weather-related service interruptions.




The econometric modeling results for SeaStreak indicate a more elastic response of users to fare increases, with an implied elasticity of -0.40 on real fares. The real fare coefficients indicate that a 10% increase in fares negatively impact ridership by 4.0%. The passenger elasticity on fares is higher than the Cross-Hudson line, as would be expected since the fares are higher on the SeaStreak routes. The model also shows that Monmouth County unemployment is a significant predictor of ridership. Both explanatory variables are significant at the 1% level. Regional unemployment has a significant coefficient of -0.28. This relationship would be expected as a significant portion of the ridership on the SeaStreak routes are commuters residing in Monmouth County.

[3] Because the model included a month lag to control for serial correlation, the true elasticity on fare rates has been damped such that if ε is the elasticity, then ε true= ε model / (1 – coefficient on lag). This is relatively close to the coefficient on real fares in the model excluding lags.

The results illustrate that the econometric forecasting models fit past trends well. Most importantly, these models replicate recent developments in ridership with a high degree of accuracy, indicating that a combination of slow regional economic growth and fare changes essentially explain these recent trends.

Forecasts

The econometric models are used to forecast ridership based on forecasts for the economic variables and assumptions of constant real fares.[4] The employment forecasts project that the decline in employment will continue to the end of 2010, with recovery from 2011 to 2014. Housing starts will make a slightly faster recovery, with recovery starting at the beginning of 2010 and growing thereafter.

| 2009-2025 CAGR | |
|---|---|
| Employment in Finance | -0.12% |
| Housing Starts (MSA) | 7.10% |
| Monmouth County Unemployment | -0.27% |
| Real Fares | 0.0% |

As shown in Table 4–1, the forecasted traffic bottoms out in 2010, and grow rapidly in the following few years as a result of economic recovery. The traffic plateaus to a 0.6% growth for the Cross-Hudson lines and a -0.3% decline for the SeaStreak line. The average CAGR for the Cross-Hudson and SeaStreak lines are 1.1% and 0.4%, respectively.

**Table 4-1: Aggregate Forecasts for Cross-Hudson and SeaStreak Ridership**

| Year | New Jersey / Manhattan | Y-O-Y Growth | SeaStreak | Y-O-Y Growth |
|---|---|---|---|---|
| *2009* | 21,727 | - | 2,612 | - |
| *2010* | 21,609 | -0.5% | 2,484 | -4.9% |
| *2011* | 22,286 | 3.1% | 2,569 | 3.4% |
| *2012* | 23,285 | 4.5% | 2,750 | 7.0% |
| *2013* | 24,077 | 3.4% | 2,883 | 4.8% |
| *2014* | 24,581 | 2.1% | 2,893 | 0.4% |
| *2015* | 24,816 | 1.0% | 2,869 | -0.8% |
| *2016* | 24,943 | 0.5% | 2,856 | -0.5% |
| *2017* | 25,013 | 0.3% | 2,847 | -0.3% |
| *2018* | 25,062 | 0.2% | 2,838 | -0.3% |
| *2019* | 25,167 | 0.4% | 2,828 | -0.4% |
| *2020* | 25,291 | 0.5% | 2,817 | -0.4% |
| *2021* | 25,411 | 0.5% | 2,806 | -0.4% |
| *2022* | 25,551 | 0.6% | 2,795 | -0.4% |
| *2023* | 25,713 | 0.6% | 2,783 | -0.4% |
| *2024* | 25,862 | 0.6% | 2,772 | -0.4% |
| *2025* | 26,024 | 0.6% | 2,763 | -0.3% |
| CAGR | 1.1% | | 0.4% | |

[4] The actual forecasts for the variables were produced by Economy.com and Global Insight.

### Conclusions

The modeling results indicate that the passenger ferry market is essentially stable, recently declining with poor economic growth and fare increases but otherwise showing no sign of structural changes. Based on assumptions for stabilized economic performance for the region, moderate growth is forecasted for the Cross-Hudson lines to 2025, a trend that encompasses expected declines in 2010 due to financial sector retrenchment as well as recovery over the four subsequent years. The forecast for the SeaStreak lines is similar over the long term, but the underlying short-term developments are different. Here the decline in 2010 is expected to be more severe, as the Monmouth County commuter market is more impacted by the economic downturn than the Cross-Hudson market. However, long-term trends after 2014 are for slow decline, a forecast that hinges heavily on the forecast for Monmouth County unemployment developed by Moodys. In the months since the completion of this analysis, it appears as though ridership levels are evolving predictably and should continue to increase as economic recovery eventually arrives.

## 4.2 Preliminary Market Identification – Potential Routes

Having established projections for the future of existing ferry service, the study team turned its sights to exploring the potential for future development of new routes. The study team identified a series of potential regional ferry routes within a geographic area essentially corresponding to the wider Port Authority region. The approach for selecting these routes involved a series of analytical steps, including:

- Estimate market size, including existing density of commuters to Lower Manhattan and Midtown;
- Define commuter-sheds, as defined by walk, car or transit access (including potential feeder bus service);
- Determine potential diversion to ferries based on travel time benefits

While the approach was comprehensive and data-driven, it was not designed to provide detailed ridership estimates for the potential routes. Rather, this analysis was designed to guide subsequent demand modeling using two separate regional transportation models and a SP survey will be deployed for ridership forecasts. These subsequent analysis stages will be described later in this Report.

### Identification Process

#### Initial Routes Considered

The process for identifying potential routes was largely based on current patterns of journey-to-work (JTW) from non-Central Business District (CBD) locations to the CBD.[5] In the first step, a list of potential ferry locations outside of the Manhattan CBD was compiled and then matched with potential ferry locations within the CBD. This list consists of 32 locations outside the CBD and six locations within the CBD. Within the CBD, various origin points were considered principally serving five locations: Lower Manhattan West (World Financial Center), Lower Manhattan East (Pier 11), Lower Manhattan Central (Battery Marine Terminal/Pier A), Midtown West (Pier 78) or Midtown East (34th Street). Lower Manhattan and Midtown transit times were calculated to the Manhattan landings or to the centroids in Lower Manhattan and Midtown.

[5] This does not mean that the Study ignored potential service that is not primarily built on JTW to the CBD. In particular, the Halcrow Team addressed the potential for other markets to be served. Both the tourism and waterfront development ridership estimates were more indicative than the modeling-based estimates developed for JTW and leisure trips. The Team made efforts to accurately gauge the potential for these markets despite the very significant data limitations.

The locations outside the CBD were as distant as Bridgeport on Long Island Sound, Newburgh on the Hudson River, and Long Branch on the Jersey Shore. Closer locations include Red Hook, Greenpoint, Long Island City in New York City and Jersey City Morris Canal on the Upper Harbor. Theoretically, 32 origins and five destinations yields 160 routes under consideration but some were immediately excluded as impractical, such as routes from Long Island Sound to West Midtown or from northern New Jersey to East Midtown. This left 124 routes for further examination.

**Market Size and Commuter-Sheds**

The heart of the screening and ranking process estimates market size by combining data on work trips from the 2000 United States Census with travel time advantages a ferry might create compared to existing transit services. The number of work trips was estimated by defining the commuter-sheds at both the non-CBD and CBD ends of commuting trips. For the non-CBD end, commuter-sheds were defined in two ways: walk-on commuter-sheds and drive-sheds for park and sail trips. The walk-ons were considered only where there was a sizable market within a half mile of the ferry location. For example, there is a walk-shed for Nyack but not for Alpine, where the ferry slip is located on parkland far from any residential community. The drive-sheds were considered for those locations where substantial amount of land was available for parking. The drive-sheds were defined by a fifteen minute drive. This was reduced where driving would require commuters to back-haul to reach the ferry. For example, for the Englewood ferry location, commuters living south of the ferry site were not included if they had to drive north to reach the ferry, taking them further away from the CBD. The 124 routes under consideration expanded to 188 when considering both the walk-sheds and the drive-sheds markets separately.

**Diversion to Ferries Based on Travel Time Benefits**

Determining the potential travel time advantages of ferry service first involved estimating the fastest transit time to the five locations in the CBD (or fewer if they were not all feasible). The basis of these estimates was published transit schedules. Ferry vessel travel times were calculated using a formula which assumed a docking and undocking time of five minutes plus cruising speed of 26.7 miles per hour. Access and egress times were added to the ferry running times to approximate the door to door times. Waiting times for all transit vehicles, including ferries, were not included on the assumption that they would cancel themselves out. As with mode choice analysis generally, the process here was to focus on the *difference in travel times*, making the absolute door to door times for each less relevant.

In the next step the share of work trips by transit and by auto identified in the *2000 United States Census JTW* that might shift to a ferry was estimated, using the travel time differences between existing transit and future ferry times calculated above. To accomplish this step, a simplified "diversion curve" was used. The curve assumes that where a 20 minute or more advantage exists for one mode over the other then 100 percent of the transit market will use the faster mode. Where the travel times for both existing transit and potential ferry service are the same the modes would split 50-50. The shares for time differences would follow an S-shaped curve.

Note that the diversion does not account for the fact that the ferry trip is likely to have a considerably higher fare than the existing transit mode: This assumption certainly results in a more liberal estimate of ferry ridership. However, for the purposes of this Market Identification, the study team was primarily interested in relative rankings of ferry routes based on potential ridership. As all routes are treated in this manner, there is no relative bias for one route over another unless the route is serving either particularly high or low income markets. Where the incomes are low, the ridership is likely to be overestimated; where incomes are high the ridership is likely to be underestimated. This fact should be borne in mind when interpreting the results.

To address the shift in current auto trips to the ferry, 25 percent of the transit to ferry diversion was used, based on the assumption that auto users are more resistant to changing to another transit mode than those already using transit. Once the diversions were applied to all the markets the resulting ferry ridership estimates were ranked from high to low.

**Assessing Feeder Bus Potential**

The analysis for drive-sheds and walk-sheds were used as a basis to determine if the addition of or use of an existing bus route feeding the ferry site would have an impact on the choice of possible ferry routes. With respect to the drive-shed situation, the analysis must ask if a feeder bus in place of or in addition to a park-and-ride would create greater potential for ferry use. From both a coverage and time perspective, a feeder bus would not be nearly as effective in place of a park-and-ride arrangement. However, a bus service could be seen as a complement to a park-and-ride. It would appear that for those ferry routes being considered as good possibilities the addition of a feeder bus could be of some advantage, particularly in areas where bus service already exists. However, the quantification of this potential advantage would be too nuanced for the purposes of the Market Identification stage. The analysis in the walk-shed is entirely different, because the feeder bus could expand the area of coverage, but with a time penalty for accessing the bus. Consequently, when analyzing the potential impact of a feeder bus in the walk-shed cases, it was assumed that a feeder bus could expand the total number of commuters by 3.75 times, but bus riders would face an access time penalty of 7 minutes.

## Results

Separate potential route lists were generated for the park-and-ride drive-sheds and the walk-sheds. A rough cutoff of 500 or more one-way work trips was established. A review of ferry ridership history since the mid-1980s indicates that routes of 500 one-way riders or more are likely to survive over time. This somewhat "soft" assumption, like the basic assumptions about fares and about headways underlying this analysis, should be viewed in the context of the purpose of this exercise, namely to provide a screen for those ferry routes with relatively high ridership potential. Put another way, the results should be viewed as relative values and a means of deciding which routes have the most chance of capturing sizable number of riders. Another caveat stems from the age of the data. Some ferry-shed areas may have grown substantially in population since 2000 and the commuting data may be outdated. It is clear that more detailed analysis of each route will be required, accounting for costs, operating feasibility and a host of other factors. More detailed route analyses were completed as part of the subsequent study work, as described later in this section. It is important to note these routes were evaluated for point to point service and not in the context of a transit corridor

**Drive-shed**

The interpretation of drive-sheds is discussed first, with the potential ridership discussed in rank order from the highest to the lowest estimated ridership.[6]

- The **Jersey City Morris Canal** park-and-ride has potential for new routes to Lower Manhattan Central and to both East and West Midtown. Currently, a private ferry operator brings commuters from Liberty State Park (Liberty Landing) on the south side of Morris Canal and from a residential area (Warren Street) on the north side of the Morris Canal. This service operates only to the World Financial Center ferry dock. Another private operator runs a service from Liberty Harbor/Marin Boulevard on the north side of the Morris Canal to Pier 11. There appears to be significant

[6] It is important to note that the Jersey City Morris Canal, Elizabeth and Carteret sites draw from overlapping markets and one or more of them might preclude the other(s). This possibility will be assessed in subsequent modeling tasks.

potential to other locations in Manhattan to attract park-and-riders from a wide catchment area along the New Jersey Turnpike mainline and west along I-78;

- The **Staten Island North** ferry service can also provide a large ridership base as a park-and-ride facility. The availability of parking at this location should be determined;
- A **Bayonne** park-and-ride ferry service to Lower Manhattan (at Central and East only) and to East Midtown meet the threshold. Much of its market can be captured from portions of northwestern Staten Island;
- A **Soundview** ferry from the Southeast Bronx to Lower Manhattan and East Midtown are next on the list, but this ranks well only if a park-and-ride can be provided in that Bronx community;
- An **Elizabeth** park-and-ride to Lower Manhattan Central and East follows, while an Elizabeth to East or West Midtown most likely does not have enough ridership. Its potential stems from the ability to capture a wide catchment area along the New Jersey Turnpike mainline as far as south as Exit 10;
- Like the Soundview ferry, a service from the **Yankee Stadium** area could be productive, but only if a park-and-ride could be established there and only for service to Lower Manhattan Central and East. Its walk-on potential is not adequate for service in the absence of a park-and-ride;
- **Carteret**, with service to all Lower Manhattan points, may show potential if navigational concerns through the Arthur Kill are addressed; **South Amboy** shows promise to Lower Manhattan Center and East;
- From Bergen County, ferry services from **Englewood** and from **Alpine** show promise to West Midtown and, in the case of Alpine to Lower Manhattan Central. Both of these ferry sites are located within Palisades Interstate Park and it may not be possible to develop them for ferry operations;
- A **Staten Island West** ferry and a **Staten Island South** ferry come next, with both showing potential for routes to Lower Manhattan Central and Lower Manhattan East;

**Walk-sheds**

When interpreting the walk-shed ferry results (without a feeder bus), the ferry services originating at **Bay Ridge**, **Upper East Side**, **West 125th Street**, and **Williamsburg**, in that order, all show potential. The Bay Ridge service might operate successfully to either Lower Manhattan or East Midtown; the Upper East Side ferry only to Lower Manhattan; the West 125th Street ferry only to Lower Manhattan; and the Williamsburg ferry only to East Midtown.

**Feeder bus Impacts on Walk-sheds**

The next step is to see how much the addition of a feeder bus routes could expand the locations and routes beyond the few cases were a walk-shed ferry service could have a sufficient market. At least theoretically, the feeder bus analysis should proceed in the same manner as the walk-shed analysis, taking the commuter shed volumes and factor by the diversion factor. However, two considerations must be accounted for. First, in **some** cases, feeder buses may not be able to physically reach the vicinity of the pier because of either the absence of roads with sufficient dimensions or because of elevation changes. Second, in some cases, particularly within New York City, the feeder bus territory would pass by the subway system, making it highly unlikely that riders would forgo a direct subway ride for a bus to ferry ride. Some key points from this part of the analysis include:

- The **Bay Ridge** to Lower Manhattan Center and East route already shows sufficient walk-shed ridership, and would benefit if ferry riders used existing bus routes B1 and B9;
- Both the **Astoria** and **Staten Island North to Lower Manhattan Center** routes have insufficient walk-shed riders and would benefit if ferry riders used existing bus routes (Q103 for Astoria and 40 and 90 for Staten Island North);
- **Williamsburg to East Midtown, Long Island City Queens West to East Midtown and Lower Manhattan Center, and Long Island City and Greenpoint to Lower Manhattan Center** would require new feeder bus routes or extension of an existing route to achieve sufficient ridership. In **Williamsburg** the route could be along Kent Avenue, Wythe Avenue or Berry Street. For the Long Island City locations extension of the Q103 might be possible. For **Greenpoint** the extension of B24 or a new route along Franklin Street to the pier location might be necessary;
- Routes from the **Upper East Side, West 125th Street, Riverdale, Yankee Stadium**, and **Red Hook**, with insufficient walk-shed riders, could not benefit sufficiently from feeder buses service.

### Non-Manhattan Destinations

The commuter market was also examined for the possibility of ferry routes to non-Manhattan work destinations. The largest non-Manhattan downtown in the region with the highest concentration of jobs is Downtown Brooklyn. Other large downtowns in the region such as White Plains and Jamaica are far removed from the water's edge; in the case of Newark, although close to the waterfront (Passaic River) a ferry route would be circuitous. To test Downtown Brooklyn the walk-shed from Fulton Landing on the East River was drawn to encompass the Downtown. The work trips from the US Census were determined for the highest ranking ferry sites from the drive-shed and walks-shed analyses. These included Jersey City Morris Canal, Bayonne, and Staten Island North from the drive-shed group, and Bay Ridge and the Upper East Side from the walk-shed group. In no case did the total number of trips approach 500—the highest was 186—meaning that even if everyone from these locations that are working in Downtown Brooklyn were to use the ferry, a direct ferry route to Fulton Landing would fall far short of having enough riders to be a likely route.

It may be possible to consider an extension of a Lower Manhattan Center or East route to Fulton Landing, but concerns about compromising the Lower Manhattan operations could make such and extension unwise, particularly in light of the long uphill walk from Fulton Landing to the Downtown. However, to assess the issue in a more systematic manner, the study team modeled several extensions of proposed routes from Lower Manhattan to Fulton Landing in the subsequent analyses.

### Potential Routes for Subsequent Analyses

The analysis ultimately identified 34 potential routes in the region. A number of ferry sites examined fall below what might be considered possible cost-effective services under any circumstances. These include Bridgeport, Floyd Bennett Field, Haverstraw, Long Branch, New Rochelle, Newburgh, Nyack, Oyster Bay, Perth Amboy, Red Hook, Riverdale, Rye, Sheepshead Bay, Stamford, and Yonkers. Some of these that are closer to the cutoff might be considered for further analyses.

The basis for selection has admittedly been oriented to the potential for serving a primarily JTW market, but the study team assessed the potential for non-JTW ridership potential, as well, though in a less formal approach. The next steps for the analysis involved modeling the ridership potential for the potential routes using formal travel demand tools.

## 4.3 Modeling of Potential Ferry Routes

As detailed above, the study team identified passenger ferry routes that appeared to have potential for sustained service. The subsequent step in the analysis, described herein, involved using two of the regional travel demand models, to test the potential for the routes in the context of a multi-modal network. Each of the routes were individually coded into the regional models as new service, with assumptions regarding peak period frequency, fare, in-vessel travel time defined, and the models were then re-run to ascertain ridership.

The commuter market was also examined for the possibility of ferry routes to non-Manhattan work destinations. The largest non-Manhattan concentration of employment in the region is Downtown Brooklyn, and several routes were considered to the nearest pier to Downtown Brooklyn, Fulton Landing.[7] Routes from several potential locations (Staten Island North, Upper East Side and Bay Ridge) to Fulton Landing were also included.

For the current exercise, to the study team relied on two of the regional models for the exercise: *New Jersey Transit Demand Forecasting Model* (NJTDFM) and New York Metropolitan Transportation Council's (NYMTC) *Best Practice Model* (BPM). These models are similar in their structure as four-step, network-based travel demand models.

While all modes are represented in both models, the NJTDFM is different from the BPM in that it treats ferries as a distinct mode in the crucial mode choice step, and the model incorporates some very specific survey-based information about ferry users as well. The BPM, by contrast, calculates ferry ridership during the transit assignment, meaning that ferries are indistinguishable from other forms of transit.

By detailing ferries in the mode choice step, the NJTDFM effectively incorporates information about users' preferences for ferries apart from the typical base characteristics of specific routes (fare, travel time, frequency and access time). These preferences (referred to as "mode specific constants") include the perceptions of comfort, safety, and reliability associated with a specific mode. Survey data completed by New Jersey Transit for South Amboy ferry service[8] suggest that these preferences are positive for regional ferries relative to other transit modes, and that a model that omits distinguishing between ferries and other transit until the last assignment phase will tend to systematically under-estimate ferry ridership.

Service assumptions for parking, access, and other features were developed in way so as not to act on as a constraint on ridership. By including sufficient parking or bus access, where needed, this allowed for assessment of "pure" ridership potential. Any further or more refined evaluation of those services likely would require adjustment to reflect site-specific issues.

### Results for New Jersey-Originating Routes

The potential New Jersey route origins include Jersey City Morris Canal, Bayonne, Elizabeth, Carteret, Englewood Cliffs Area, South Amboy and Alpine. Each of these routes was coded into the NJTDFM, with base fares assumed to follow existing prevailing fares in the Cross-Hudson ferry market, with adjustments for the length of the route. In-vessel travel times include dwell times and were also estimated to be partly a function of distance and average speeds, and headways followed existing trends (which also

[7] Other large downtowns in the region such as White Plains and Jamaica are far removed from the water's edge; in the case of Newark, although close to the waterfront of the Passaic River, would involve a ferry route that would be circuitous.

[8] Cambridge Systematics, 2007. *South Amboy Ferry Research Study*. Final report prepared for New Jersey Transit, March 2007

are strongly correlated with trip length).[9] As New Jersey routes were assumed to be car-accessed, parking capacity was coded into the NJTDFM. In each case, a capacity sufficient to not create a parking constraint was assumed. In terms of bus access, no additional service was assumed, as routes were either modeled as drive accessed or, in several cases, were found to have existing bus access from existing bus services.[10] [11]

Results were presented in terms of total daily trips in 2015 and routes with significant estimated ridership include Englewood Cliffs to Midtown West (4,030), South Amboy to Lower Manhattan West (1,504),[12] Bayonne to Lower Manhattan East (1,302) and Jersey City Morris Canal to East 34th Street (439).[13] Routes originating in Carteret were less promising, with both the connections to Lower Manhattan East (212) and to Lower Manhattan West (355) falling short on ridership.

One notable additional scenario modeled involves the Englewood Cliffs Area route: Under an alternative assumption, an extension of the Hudson-Bergen Light Rail (the Northern Branch) is coded. The provision of light rail service in proximity to the proposed ferry decreases ridership on the ferry service by 50%.

The modeling also involved testing the sensitivity of ridership to changes in fare and vessel headway. The results vary by route, but yield average elasticity estimates of approximately -0.19 for fares and -1.2 for headway. The former is quite comparable to the estimate for existing Cross-Hudson service developed by the study team and described in Section 3.1 of this Report, where an elasticity estimate of -0.1 was estimated.

### Results for New York City Originating Routes

The potential New York City route origins included Astoria, Bay Ridge, Long Island City Queens, Soundview, Staten Island North, Staten Island South, Staten Island West, Upper East Side, Williamsburg, and Yankee Stadium. New York City routes were modeled using the BPM. Fares, in-vessel time and headways were calculated to mirror patterns in the Cross-Hudson market as these are more accurate comparable services than existing multi-stop East River services. Parking assumptions were determined for the New York City routes where parking capacity was coded. In two notable instances additional bus service was coded to access piers. In the case of LIC Queens West, the existing Q103 bus service was extended to reach the pier, which it currently does not. For the Williamsburg route the existing B24 was extended along Franklin Avenue to provide transit access to the pier.

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[9] For vessel speeds on both the cross-Hudson and East River markets a base speed of 8.7 MPH (plus additional 2 MPH for every mile traveled) was used. This was capped at 26 MPH. This top speed was applied to the entire route on the longer South Amboy and Staten Island South routes. Fares followed the following formula for cross-Hudson and East River markets: $4.01 base with an additional $0.16 for every travel minute. For South Amboy and Staten Island South fares were $15.13 base with an additional $.01 for every travel minute. For headways, a multiple of travel time (based on average of all routes excluding the East River, which has multiple stops on routes) was used, with headway capped at 60 minutes.

[10] Each modeled route also included a limited walk access as well as drive access. The park-and-ride catchment area defined for each route were developed by New Jersey Transit and generally followed a 5 - 20 mile access distance to each landing site based on highway access.

[11] A bus connection between the Elizabeth pier and Newark Liberty International Airport was initially coded, but as it generated no additional ridership was discarded.

[12] The results for South Amboy are reasonably close to volumes observed on the now-discontinued service to Pier 11 and East 34th Street, where ridership was on the order of 1,000 daily trips.

[13] Model output revealed that Jersey City Morris Canal to Pier 11 drew its ridership heavily from the existing Liberty Harbor route.

As mentioned previously, the BPM does not include information about user preferences for ferries travel versus other transit modes. Existing surveys in the region suggest that users tend to prefer ferries over other transit, when available and after accounting for any differences in travel times or fares. This suggests the BPM will tend to underestimate ferry ridership when other transit modes are available. In fact, initial tests using the BPM confirmed that the model has a clear tendency to under-estimate ferry ridership – a fact that was demonstrated when the BPM attempted to replicate existing conditions on existing Cross-Hudson ferry services. To remedy this systematic bias, the study team relied on a simple process, essentially hard-coding an adjustment factor in the calculations that reflected a measure of preferences for ferry travel. The resulting model outputs were thereby improved, but a tendency to under-estimate ferry ridership on existing routes was still observed.[14]

Results were again presented in terms of total daily trips in 2015, calculated based on the assumptions detailed above. It was found that routes with significant ridership include Staten Island North to all destinations (ranging from 503 for Midtown West to 1,133 for Lower Manhattan West), Williamsburg to Midtown East (625) and Bay Ridge to Lower Manhattan East (206). Note that the results for Staten Island North were not confirmed by the survey-based estimates that were competed in the subsequent SP analysis, lending credence to the general imprecision of the BPM for modeling ferry ridership.

## General Findings

While some of the modeled routes appear to have daily ridership potential, it is important to view these in the full context of each specific case. For instance, the Englewood Cliffs to Midtown West route appears to be quite promising, but the additional assumption of expanded Hudson-Bergen Light Rail service quickly reduces the potential ridership. Parking constraints for this particular location could further reduce its prospects. In modeling the Englewood Cliffs routes, it was assumed that a convenient parking facility would be available, akin to one located near the pier. However, the Englewood Cliffs pier would be located within Palisades Interstate Park, which could well make a nearby parking facility infeasible. The nearest alternative option would be off the exit ramp of the Palisades Parkway at Palisades Avenue, which would likely mostly preclude walk access to the pier and necessitate some form of bus shuttle link. The implied increase in access time would certainly impact the unconstrained forecasts significantly. The estimated ridership for the South Amboy to Lower Manhattan West route also appears somewhat promising, but an actual test of this route proved that it was difficult to sustain even with over 600 riders a day, and was dropped in 2006. As for the Bayonne case, which shows potentially high ridership to Lower Manhattan East, with the extension of the Hudson Bergen Light Rail line south into Bayonne, using it in combination with PATH has become a lower cost option than ferry service could provide. In general, potential ridership figures tend to be much more modest for the New York City routes, even when correcting for flaws in the BPM model. This is not surprising given the fact that the most successful private ferry services have tended to serve the Cross-Hudson market, while attempted East River routes have tended to struggle. For much of New York City, there are either relatively low waterfront residential densities or, for locations with higher waterfront densities, very good subway connections. This is one explanation why there are very few options unsubsidized routes originating in New York City. The one notable exception is the Williamsburg route, which potentially indicates a longer-term potential for linking dense waterfront developments with Manhattan via ferry.

Overall, such a travel demand modeling exercise can help further refine ridership estimates for a particular route, but it presents no guarantee that a given route is a viable, self-sustaining service. A

[14] The adjustment process involved factoring the generalized cost of travel to force the BPM to replicate existing ferry ridership on cross-Hudson routes. For reasons that are somewhat complex and beyond the scope of this discussion, the factoring process could only be introduced up to a clear maximum level, and therefore a more accurate calibration to replicate existing ridership on these routes was impossible.

careful comparison of estimated service expenses and revenues is also needed to fully evaluate a route's long-run potential. Additionally, as discussed earlier with regard to the BPM, the results of a travel demand model are only as good as the underlying representation of user preferences and behavior. If regional preferences for ferry service are not accurately represented, the model will be significantly less likely to represent reality. One way to refine our understanding of mode preferences is to conduct a SP survey, an exercise that was undertaken as part of this study and the results of which are described below.

## 4.4 Stated Preference (SP) Survey and Ridership Forecasts for Potential Routes

To complement the modeling analyses described earlier, an extensive SP survey exercise focused on determining ferry travel preferences the five boroughs of New York City was developed. A recent Cambridge Systematics study – also based on SP techniques – focused on the New Jersey to New York ferry market, but the New York City market, despite several existing routes, was felt to be less well understood. As discussed previously, the BPM's effectiveness for modeling potential New York City ferry routes is flawed by the model's lack of information about user preferences for ferries travel versus other transit modes. Consequently, relying solely on the BPM is not sufficient for understanding the demand for New York City-based routes with a high degree of confidence. To gain a better understanding of the New York City ferry market, the study team completed a comprehensive SP survey analysis of potential ferry riders originating in the five New York City boroughs.

The implementation of the SP exercise involved intercepting travelers at various bus and subway locations to encourage participation in a web-based survey process. The web-based SP exercise presented survey respondents with a series of options for completing a hypothetical trip, either by ferry or by their current mode of transit (subway or bus). Respondents then chose their preferred mode in a series of scenarios with varying mode characteristics (principally the frequency, travel time, access time, and applicable fare for each mode). The results of the survey were then used to estimate a mode choice model which identifies the preferences for specific modes depending on travel time, headway and fare. The model was then used to predict mode shift and potential ridership for several hypothetical ferry routes originating in Staten Island North, Staten Island South and Williamsburg. The resulting ridership forecasts are seen as indicative of potential ferry demand rather than a guide to the development of future ferry service.

Based on the analysis of the SP surveys, the study team found that, by and large, the potential New York City ferry market appears to conform to expectations, at least in terms of the effect of fare levels, in-vehicle travel time, out-of-vehicle travel time and headway. With respect to fares, estimated price elasticities developed from survey responses of subway users conformed closely to findings from observed behavior of current ferry users originating in New Jersey, and in their magnitudes conform also to basic "rules of thumb" regarding transit fare elasticities.

Of significant interest was the way potential users perceive the inherent attractiveness of ferries. While the findings were not consistent across bus and subway users, there is some indication that ferries are viewed as an attractive transit option above and beyond fares and other characteristics. This finding was particularly pronounced in the case of subway users. When comparing SP-based ridership estimates to those previously obtained using the BPM for the hypothetical routes modeled, the SP-based models generate nearly identical results for Williamsburg routes, similar results for Staten Island South routes and quite dissimilar results for Staten Island North routes.

In general, the results of the SP exercise generated findings that greatly increase the understanding of the New York City market. These findings showed that, to a large degree, ferries are seen as an inherently

attractive transit option. The analysis reported here also revealed that, for the most part, impacts of different fares, travel speeds and frequency tended to conform to accepted norms for transit.

## 4.5 Regional Ferry Service Analysis Conclusions

Based on the ferry service analyses conducted as part of this study, a number of key conclusions emerge. In general, existing service, particularly along the Trans-Hudson corridor, is expected to remain relatively stable in future years. The economic downturn has had a significant impact on ridership, but recent data supports the prediction that recovery will occur as the economic climate improves. Various modeling techniques applied in this study also confirm that the fare elasticities for existing ferry service tends to be relatively low - for instance, 0.3 (Cross-Hudson routes) to -0.6 (Monmouth routes). This means that introducing operating subsidies on existing routes would be expected to have less-than proportional effects on ridership, which is a similar characteristic of transit services in general.

When considering the potential development of future routes, a number of possible options emerge but, when analyzed more thoroughly, only a handful of considered routes appear to generate ridership levels that may be sufficient to sustain service. This helps to confirm the general belief expressed by private operators and other stakeholders that most of the logical routes have already been tested. Not surprisingly, the potential routes with the highest ridership potential tend to be in the Cross-Hudson market, but all of these should be viewed with a critical eye. While it is a useful component of any analysis, especially when supported by accurate ferry preference assumptions, projected ridership estimates only present one aspect of a route feasibility evaluation. A more in-depth analysis of both the service context and service cost/revenue profile would be needed to determine the true potential for any identified routes. This concept is explored further in the following section, which focuses on public policy and strategies for sustaining a viable regional ferry system.

# Section 5: *Regional Ferry Public Policy: Goals, Roles, and Looking Forward*

To complement the thorough technical analysis of ferry system potential in the region, it is important to also consider existing and potential ferry service in terms of regional public sector goals and policy objectives. Based on an understanding of how ferries can serve the public interest, it is possible to more clearly define the ways in which the public sector can most effectively help to sustain ferry service in the region. This section will focus on defining that public interest, suggesting the means to measure it, outlining potential public sector roles, and recommending strategies for effective coordination around regional ferry issues.

## 5.1 Route and Service Analysis: Public Policy Goals

In earlier work, the concept of the public interest was established; i.e. public support of ferry service should be related to the extent that ferries are in the public interest. That leaves the task of defining that public interest, then taking the analysis to the next step by suggesting the means to measure it.

Beyond that, the study team applied the metrics used to gauge the public interest to ferry routes, both successful and unsuccessful, to test the efficacy of the evaluation process. Finally, the regional ferry routes were organized into categories, or templates, using the results of the evaluation. The expectation is that these steps will make it easier to make judgments about the worthiness of potential ferry routes.

### The Public Interest and How to Measure It

The public interest can be broadly defined as those benefits generated by a ferry service that accrue to:

- Those travelers who choose to use the ferry;
- Those travelers who do not, either choosing other transit modes or using automobiles;
- The other transportation systems, either transit or highway, as a result of the existence of the ferry service;
- Individual communities and more generally the surrounding environment;
- The local and regional economies;
- Access to recreational opportunities; and
- Emergency preparedness.

These benefits are defined more specifically and potential metrics for each of them is given below in italics.

**Direct Benefits to Ferry Passengers**

A faster overall door-to-door trip, *measured by reduction in door-to-door travel time*

A less expensive trip, *measured by decrease (or increase) in user out-of-pocket cost per trip*

A more convenient trip, i.e. easier and fewer transfers, shorter waiting times for vehicles, and shorter walks between ferry and other modes. *Measures of these more qualitative and subjective benefits can be obtained from survey analyses such as that carried out by the study team and described in Report Section 3.4.*

A more comfortable trip, i.e. more aesthetically pleasing, more pleasant walks between ferry and other modes, less crowding, more space per person, seat availability. *Measures of these more qualitative and subjective benefits can be obtained from survey analyses such as that carried out by the Halcrow Team and described in Report Section 3.4.*

A more reliable trip, *typically measured by the variance of a trip's travel time or as the percent of time a vehicle meets on-time criteria.*

A safer trip: shifting travel from cars to transit will always increase travel safety. *Measures of safety benefits attributable to ferry service are based on the users deviated from auto to ferry travel.*

Among these possible benefits, most are easily quantified, with the exception of values attached to comfort, reliability and other more qualitative factors which require survey or "revealed preference" data.

**Indirect Benefits to Transit Riders Who Remain on Other Transit Modes**

A shift of riders to ferries to relieve crowding on existing transit can offer a less congested option with less crowding, more seating, and faster boarding and alighting times than for those who remain on transit. However, in some cases, this could result in the transit operator curtailing some service because of declining ridership. This can be measured by an estimate of the volume of diversion from existing modes and a qualitative judgment made of the effects.

**Indirect Benefits to Those Who Remain as Drivers**

By shifting some travelers to ferries from driving, the ferry service could result in less driving and less highway congestion, speeding up road travel for those who remain. *This can be measured by overall increase in average highway travel speed and consequent reduction in auto travel time.*

**Indirect Benefits to the Other Transit Systems**

By providing connectivity to other transit systems, ferries can add ridership to them and make them more cost effective, i.e. adding riders at little or no cost. This must be compared to any loss in fare revenue that results from ferries competing directly with existing transit routes. *This can be measured by estimates of added riders when ferries act as feeders to other transit, loss of riders from ferry service and the net fare and operating cost impacts.*

By helping other transit systems shed their over-capacity load, the ferry service can not only provide a more comfortable ride to those who remain, but serve to make the transit system operate more effectively and reliably. *This can be measured by an estimate of the number of riders subject to less crowding on the existing transit mode.*

**Indirect Community and Environmental Impacts**

Besides congestion benefits, the shift from autos to ferries would mean a reduction in vehicle-miles traveled by motor vehicles on highways resulting in a reduction in less non-renewable fuel consumption. This can be coupled with passenger ferry improvements that reduce ferry vessel fuel consumption, such as: new, advanced prime movers (electric, hybrid, fuel cell ); new, advanced propulsion systems; new ship/hull designs; engine precombustion and exhaust after-treatment control devices; alternate fuels (biodiesel, low sulfur diesel, CNG, etc.); and operational changes, such as idle reduction.

Besides congestion benefits, the shift from autos to ferries would mean a reduction in vehicle-miles traveled by motor vehicles on highways resulting in a change in harmful vehicle emissions. This change in harmful emissions due to a reduction in vehicle-miles traveled can be coupled with passenger ferry improvements that reduce ferry vessel emissions, such as: new, advanced prime movers (electric, hybrid, fuel cell ); new, advanced propulsion systems; new ship/hull designs; engine precombustion and exhaust after-treatment control devices; alternate fuels (biodiesel, low sulfur diesel, CNG, etc.); and operational changes, such as idle reduction.

**Economic Development Impacts**

Real estate development impacts: A central premise of many regional ferry initiatives is that vast areas of the region's waterfront, due to past industrial uses, are relatively inaccessible. Ferries can therefore play an important role in increasing access to undeveloped or underdeveloped land. *This can be measured by real estate values or acres of developable land now accessible.*

Increased access to jobs through expanded ferry services; Improving transit access in a local labor market will result in improved "matching" between employers and employees, a benefit that will only be discussed qualitatively here.

**Direct Benefit of Access to Airports**

Ferry service to airports may have the potential to divert air passengers from rubber-tired modes, reducing auto traffic and reducing parking requirements at airports. *Increased access to airports in can be measured by the number of air passengers likely to use the ferry to reach one of the region's major airports.*

**Direct Benefit of Access to Recreational Opportunities**

Ferry service establishes or expands markets and access to previously difficult to access locations, such as parks, beaches, sports venues; while primarily qualitative measures are used here, *the willingness-to-pay for the recreational ferry service itself indicates a minimum value attached by users.*

**Direct Benefit for Emergency Response and Safety**

The availability of the ferry fleet to respond to emergencies such as blackouts, terrorist threats or attacks, and other unforeseen events can be of value; *measured by the size of a fleet and its carrying capacity in the Upper New York Harbor, lower Hudson River and East River.*

Work carried out previously for this study allows some broad conclusions to be drawn about passenger ferry service in the region and the types of benefits conveyed. These conclusions are presented below, followed by a more detailed assessment of individual routes.

**Direct benefits to ferry users can be substantial**

» Not surprisingly, several routes with significant ridership offer substantial travel time savings. This is the case for routes between Monmouth County (Highlands, Atlantic Highlands and Belford) and Pier 11, World Financial Center and East 34th Street. For Atlantic Highlands in particular, travel time savings between ferry and passenger rail is on the order of 40 to 64 minutes depending on final destination. Edgewater to West 38th Street confers a travel time saving of 20 minutes. For other routes, such as those originating in Hoboken, Lincoln Harbor and Weehawken, travel time advantages for ferry service are much more modest and tend to be in the 4 to 6 minute range.

- Safety benefits are assumed to be positive for regional passenger ferry relative to auto use, though the lack of regional passenger ferry safety data means that we cannot state this with certainty. In general transit performs much better in terms of safety, with light rail fatality rates per mile one quarter those of auto and commuter rail 1/30th of auto rates.
- Ferry users value the comfort, reliability, and general experience of the mode. While a precise measurement of the value of each factor is not possible here, we can infer a value for a general mode preference based on the study's modeling work. Here, the Halcrow Team found consistent evidence of a positive preference for the ferry mode above and beyond the various travel time, frequency and fare characteristics. This mode preference translated into a monetary value roughly equal to $1 to $2 per trip.

**Indirect benefits to others are varied depending on route**

- In general a detailed analysis of emission levels for regional ferries and passenger vehicles showed that ferries perform poorly in this area. Based on data from New York State Energy and Development Authority (NYSERDA), the regional fleet in 2006 generated 19 grams of NOx and 0.86 grams of PM per passenger mile. Comparable findings for the regional auto fleet using the US Environmental Protection Agency's (EPA) Mobile 6.2 software are 0.8 grams for NOx and 0.26 grams for PM. Future standards for ferries should narrow and even reverse the differential by 2030 for PM, but NOx differential should remain strongly favorable to auto use.
- Indirect benefits to other transit users are significant in the case of PATH users. Specifically, the users of the Hoboken South and Jersey City routes can be seen as users who would very likely use PATH in the absence of passenger ferry service. These services account for roughly 20,000 trips per weekday, and even a proportion of this number would have significant impacts on PATH service.
- While some routes divert significant numbers from auto use, indirect benefits to road network users are modest. This is principally due to the fact that the actual number of auto trips diverted is small in absolute terms as well as relative to the capacity of the road network. Modeling as part of this study suggests that auto diversion will be highest for routes such as Edgewater and the Monmouth County routes, where it could approach close to 50% of ferry users. Overall, however, based on prior modeling it is unlikely that the total diversion from autos accounts for more than 15% of the 33,000 weekday ferry trips – a number that would generate additional auto traffic equal to roughly 1% of the current daily volume on the George Washington, Lincoln and Holland tunnels.
- Indirect benefits in terms of waterfront development were certainly important for several existing routes, such as Weehawken and routes serving Hoboken and Jersey City. Such benefits would certainly be derived from future service between Williamsburg in Brooklyn, where residential development on the waterfront in considerable, and Manhattan. The actual value of the service would be capitalized into real estate values according to standard "rules of thumb" observed for transit-oriented development elsewhere.

## Route Level Benefit Analysis and Organizing by Template

The 17 metrics can then be used to evaluate the public interest benefits of ferry services - either those that are in place today, those that no longer exist, or those that might be experimented with in the future. To calibrate these measures of the public interest, the 17 measures are applied to all those services that have been tried, whether they remain today or not. In Table 4.1, these 17 metrics are characterized in four categories, with scores of three, two, one or zero, depending on how well the ferry might be expected to perform.

**Table 4-1**

**Metrics to Measure the Public Interest**

| | | Level of Benefit | | | |
|---|---|---|---|---|---|
| | | **High** | **Moderate** | **Minor** | **None or negative** |
| **#** | **Score >>>** | 3 | 2 | 1 | 0 |
| A - 1 | Shorter overall travel time by ferry | 20 min or more | 10 to 20 min | Less than 10 min | None or longer |
| A - 2 | Lower fares by ferry | Lower ferry fare | Same fare | Slightly higher fare | Much higher fare |
| A - 3 | More convenience trip by ferry | Vastly superior | Moderately superior | Slightly more c or c | No more c or c |
| A - 4 | More comfortable trip by ferry | More | Slightly more | Same | Less |
| A - 5 | More reliable trip by ferry | More | Slightly more | Same | Less |
| A - 6 | Safety | Measurably fewer accidents | Modest reduction | Same | Less safe |
| B - 7 | Better transit for remaining transit riders | Measurable reduction in crowding | Modest reduction | Minor reduction | No gains or worse |
| C - 8 | Less highway congestion | Measurable LOS gain | Some vehicle reduction | Minor reduction | No change in congestion |
| D - 9 | Transit system gains riders and revenues | Measurable gain | Some gain | Minor gain | Loss of revenue |
| D - 10 | Improved transit operations | Smoother, more efficient | Some gain | Same | Worse |
| E - 11 | Less non-renewal fuel consumption | Measurable gain | Some gain | Same | Worse |
| E - 12 | Less carbon emissions | Measurable gain | Some gain | Same | Worse |
| F - 13 | More access to developable land | Opens up major land area | Opens up some land area | Opens up little land | Does not open any |
| F - 14 | More access to jobs | Adds access to many | Adds access to some | Adds access to few | Does not add access |
| F - 15 | More access to airports | Significant ridership | Modest ridership | | Few or none |
| G - 16 | More access to recreation | Opens up site to new users | Adds access to site | | Little or no benefit |
| G - 17 | Emergency preparedness | More than 6 boats avail. | 4 to 6 boats avail | 0 to 3 boats avail | No more avail. |

To test how well this scoring system might work in evaluating future ferry services, it is helpful to see how well the system might evaluate existing and past services.

An analysis reveals that surviving routes tend to score higher using the Public Interest (PI) index. In fact, the average score for the survivors is 15 and for those that have been discontinued only about 11. Among the 24 routes still in operation, only one scored below 14, while 24 of the 31 non-survivor routes scored below that level. The ten highest ridership routes all scored at or above that level.

It is also clear, and hardly unexpected, that ridership is much higher among the survivors. Ridership on the remaining averaged over 1,200 one-way riders in 2009, while the routes no longer in place averaged only 185 in their last full year of service. Of the 24 routes still operating, all but five have 400 or more riders. By contrast, of the 31 routes that have been discontinued, only five exceeded 400 riders. Clearly, there is a close correlation among the ridership, route survival and public interest scores.

That ridership and the public interest scores are tied together should come as no surprise. If more riders are attracted to a service it must be because it has features, compared to other transit and auto options, which are superior and meet a public need. Moreover, the more riders using a route the more likely that it meets community goals such as lower VMT, greater diversion from highways, and fewer emissions, and more likely that there will interest in development parcels near the ferry service. Even the ability to provide redundancies for emergencies is somewhat related to ridership – the more riders, the larger the fleet, the larger the fleet, the greater its value in emergencies. *This suggests that the best way of judging the public interest value of a ferry route is its ability to attract ferry riders*. That said, like any sweeping conclusions, there are exceptions. Some relatively low ridership routes scored high on the public interest scale. For example, the Haverstraw to Ossining route with only 460 riders achieved the highest public interest score at 18. Conversely, some high ridership routes had a relative low PI index; the St. George to East 34th Street and the Hunter's Point to East 34th Street each showed relatively low PI scores despite high ridership.

The fact that, in general, the survivors scored higher using the PI index and had higher ridership is quite logical. Routes that perform better do so because they offer benefits that give them a raison d'etre. This suggests that the public interest scoring system can be used to assess the likelihood that future routes will be successful. However, before proceeding based on some sweeping conclusion, it would be wise to examine the outliers from this analysis. Some routes were dropped despite scoring well on the PI index. Perhaps their demise was unwarranted. Similarly, some routes that scored badly using the index might better exit from the scene if their public interest is limited.

The ferry routes – both those that have succeeded and those that have failed – can be organized rather clearly into groups. This is done below with the number of survivors and "drop-outs" indicated. This information is also displayed graphically in Figure 1.

Short Trans-Hudson or upper New York Harbor routes linked to Lower Manhattan—9 exist / 1 dropped

Short Trans-Hudson or upper New York Harbor routes linked to West Midtown—6/1

Raritan Bay routes linked to Lower Manhattan or East Midtown—3/3

Mid-range Upper Bay route to Lower Manhattan or East Midtown—1/5

Longer Trans-Hudson route to either Lower Manhattan or Midtown – 0/4

Hudson Valley feeder routes to Metro North—2/0

Short Trans East River routes to Lower Manhattan—0/2

Short Trans East River routes to East Midtown—1/2

Longer East River routes to either Lower Manhattan or East Midtown—0/4

Intra-East River routes—0/4

LaGuardia Airport routes—0/5

Arraying the data this way confirms that the successful routes, with minor exceptions fall into four categories – mostly short routes across the Hudson to either Lower Manhattan or West Midtown, across Raritan Bay, and feeder routes to MNR in the Hudson Valley. Three of these four categories serve commuters almost exclusively; the West Midtown route also serves non-work related trips.

Each category serves its commuters somewhat differently. The short routes to Lower Manhattan complement the existing transit system, serving to connect to it (New Jersey Transit at Hoboken, for example) or offer a route closer to the Manhattan destinations near the water (World Financial Center or east Wall Street). The West Midtown routes provide a superior option to the bus network in New Jersey and the Port Authority Bus Terminal. The Raritan Bay routes provide a shorter and faster alternative to the circuitous ride from Monmouth County. The Hudson Valley feeders avoid the cost and time penalty of driving to east of Hudson rail stations. It can be said then that the successful routes all offer a superior option for enough commuters for the route to survive.

This discussion suggests the following somewhat overlapping templates.

- Template A: Journey to Work 1—Routes intended to complement the existing commuter oriented transit system, connecting to it and working to make the transit system function synergistically either as a load shedder or as a feeder.
- Template B: Journey to Work 2—Routes that fill a niche for commuters by offering access to jobs close to the water's edge
- Template C: Journey to Work 3—Routes that save time compared to the existing transit system.
- Template D—Routes that can interconnect activities along the waterfront.
- Template E—Routes that open up access to land supporting new development opportunities.
- Template F—Routes to airports or other concentrated trip generators other than the work trip.
- Template G—Routes that open up access to recreational opportunities.

Using these seven templates categories, it is now possible to explore how a step-by-step approach can be constructed for evaluating the potential for new ferry routes, with the steps varied to match each template. When the 55 existing and discontinued routes are assigned to one or more of the seven templates with their PI indices scores arrayed with the 17 benefit criteria, the following general conclusions can be drawn:

Complementary routes categorized in Template A: Journey to Work 1 scored uniformly well whether they exist or were discontinued. To qualify as a complementary route, the ferry must at a minimum make the existing system perform better, by either adding to its revenue or reducing its cost of operation, or by reduced congestion on the transit system. The ferry service does not necessarily have to provide substantial time savings to the rider, nor attract many automobile trips, reduce emissions or provide any other benefits such as development and access benefits, but it must work well with the existing transit network.

Routes categorized in Template B: Journey to Work 2, are those that serve the commuter by filling a niche with one or both ends of the market along the water, or where there is virtually no transit service in the market or corridor. From a public interest perspective, the 14 routes that have survived provided job access opportunities and attracted a relatively large share of commuters from autos compared to the 14 that did not.

Routes categorized in Template C: Journey to Work 3 save substantial amounts of time over the existing transit system and are characterized, as might be expected, by large time savings, more convenience and by more comfortable transit rides. This was true for both the existing and discontinued routes, suggesting that the strong scores related to private benefits to the customer did not permit the service to survive in the market place.

Routes categorized as part of Template D are defined as routes intended to interconnect activities along the waterfront. All of the services intended for this purpose are now defunct. It would appear that there is an insufficient market given the current level of activities along the water's edge to sustain a service that is not primary intended to serve commuters. The five discontinued routes, many variations of the same route along the East River, scored uniformly poorly using the PI index.

Template E routes are those that create development and/or job access opportunities. The chief distinction between the existing and the discontinued routes is that the former showed substantial job access opportunities while the latter did not. This suggests that to survive a route needs to be able to attract work trips.

For Template F, those routes that scored well from a recreational access perspective, that have survived, they did so not because of the recreational factor but because of their value for the work trip.

The routes that served airports (LaGuardia in every case) had little to redeem themselves from a public interest perspective. This conclusion is based on two related factors: Due to the difficulty of linking the airport terminals themselves by ferry, as discussed previously, the actual or potential ridership is modest. If the ridership is constrained, the external benefits (notably congestion relief on roadways) will also be modest.

It would appear that those routes that clearly service commuters directly by filling a niche in the network, or through saving time, or by complementing the transit system can score well using the PI index. These are also the routes more likely to survive *primarily due, under the current privately-run system, to their high ridership*. This suggests that, in evaluating potential viability of a ferry route, primary attention should be focused on how well the work trip is served. Creating development opportunities can be helpful as well. Other benefits, such as environment or highway congestion relief are likely to be small; using current technology, emissions benefits will tend to be negative and the auto diversion of most Cross-Hudson routes would also be modest.[15] Establishing ferry service for recreational access or for airport access is unlikely to serve the public interest in any substantial way, *at least not a public interest as described in the template exercise*. Any value they may provide would be insufficient on their own.

## Key Conclusions

This analysis reveals that passenger ferry service performs well for routes that offer substantial time savings to users and/or a reliable and pleasant modal alternative. Beyond these direct benefits, external benefits tend to be route and template-specific. Routes with moderate ridership tend to offer limited

[15] For reference, if 15% of current ferry users were to switch to autos this would translate into approximately 1% more vehicles using the George Washington Bridge, Lincoln Tunnel and Holland Tunnel.

external benefits in terms of road congestion relief, and mostly non-existent or even negative emissions benefits.

However, while road traffic congestion relief attributable to private passenger ferries is modest, the indirect benefits to other transit users are arguably very significant. This is particularly the case with respect to benefits to the PATH service which, as has been detailed throughout this section, are significant. Indeed, daily ridership on ferry routes that act as relievers to the PATH (essentially Hoboken, Jersey City and Weehawken routes) total over 23,000 daily trips. Clearly, any significant proportion of this volume redirected to the PATH system would engender a considerable strain on capacity.

Modeling work revealed that, with several notable exceptions, there are limited possibilities for additional passenger ferry service in the region that may operate successfully on a farebox basis. This reinforces the need for a solid understanding of the public interest with respect to passenger service, and, especially, how to measure this public benefit. The work contained in this section is explicitly meant to be such an organizing framework.

## 5.2 Public Interest Goals and Ferry Service Toolbox

Based on the study findings and Steering Committee input , the project team developed a Ferry Toolbox that provides an evaluation to help determine under what conditions, and to what degree, new ferry service may be worth considering. It emphasizes the importance of both public/regional network goals and private sector market considerations in developing new ferry services. It is intended to assist those with an interest in starting up and promoting ferry services in the New York/ New Jersey Region. The Toolbox uses a basic spreadsheet form with accompanying background guidance to assist interested parties – possible ferry operators, local governments and civic advocates – in more accurately gauging the strengths and weaknesses of a potential ferry service. The Toolbox supports an initial evaluation of the likely visibility of a proposed service. In the two sections of the toolbox, a simple form structure is used to guide the user to understand the likelihood of achieving both public and private objectives.

### Toolbox Section I: Public Interest Scores

The toolbox provides a series of ten questions to draw out the likelihood that a particular service is in the public interest. If respondents do not know the answers for some of the questions, they are encouraged to indicate "Probably not or no" and investigate the issue further. These answers should be seen as a means to sustain (or temper) enthusiasm for a ferry start-up and for the prospects of encouragement from the public sector.

To aid in interpretation of the public interest ("PI") scores, a "Regional Score for PI" table has been provided as an attachment to the Toolbox. It shows how both existing and defunct regional ferry routes would score and generally suggests that a score of 11 or better is a reasonable indicator of route success. However, it is important to remember that even a relatively high PI score does not guarantee route success.

### Toolbox Section II: Private Goals/The Bottom Line

The second section of the Toolbox focuses on the potential business case for the proposed service, with a focus on operational costs and revenues. The process of determining the financial viability of a ferry service requires a great deal of iterative examination. Logically, the process has the following steps:

Estimate how many people will ride the ferry

Size the ferry vessel to meet that demand

Cost out the that operation based on the size of vessel, speed, distance of trip, frequency, and span of service

Estimate the revenue that will brought in by an assumed fare

Adjust the ridership based on that fare

Recalculate the ridership to see if the service postulated can carry the number of riders; and

Adjust as necessary.

Since estimating ridership is a very difficult thing to do, it helpful to start at steps 2 and 3, postulating a possible service, assuming as frequency of service, costing it out and then estimating the ridership necessary to breakeven, or better. This can serve as a starting point for further discussions as to whether the service is a winning proposition. Section II of the Toolbox starts with this premise and guides the user through the steps of estimating annual operating costs, based on operating cost per mile, the typical operating speed of the vessel, the pattern of service frequency you wish to operate, and the distance of the route. Then, the Toolbox guides the user through estimating annual operating revenue and determining the annual ridership needed to breakeven or better.

As a reality check on the operating break-even estimates, the Toolbox then leads the user through a basic calculation to help determine if the selected vessel size is compatible with the breakeven annual ridership. If the average ridership for a peak period ferry trip is less than the capacity of the selected vessel, then they are compatible. If it seems as if there is too much capacity, the user is encouraged to consider a smaller vessel. On the other hand, if the average per peak trip ridership exceeds your vessel capacity, the user is instructed to consider a larger vessel.

## After the Toolbox: Next Steps

The Toolbox is not intended to provide a definitive answer with regard to the potential success of a prospective ferry service. Rather, it is intended to serve as the first screening step in a process that could ultimately involve detailed ridership demand analyses; complex financial analyses and planning; and extensive discussions with the public sector about permitting, infrastructure development, and ways to better align with the regional transport network. If a route still appears to be promising after screening with the Toolbox, the following must then be thoroughly considered:

### Ridership Demand Considerations

As exemplified by the demand modeling analyses completed as part of this study, the development of reasonable route ridership projections is a highly complex process. If the underlying assumptions of a model are not entirely correct, the resultant ridership estimates can be significantly less indicative of reality. Even after a set of projections are generated, it is very difficult to determine what they might mean for the long-run success of a proposed route. In the study analyses described in Section 3, it was assumed that a route with daily ridership levels less than 500 was less likely to survive. However, as demonstrated by the history of ferry service in the region, this is certainly not a hard and fast rule. When trying to determine the potential demand for a prospective route, it is important to remember that estimating ferry ridership is an art not a science, and like art, it is often not easy to agree on what constitutes quality. Much effort has been spent on estimating ferry ridership with uneven success. It is recommended that a combination of professional judgment, the ridership levels experienced by similar ferry routes, and the ridership levels rules of thumb be considered. Statistical models can provide guidance, too.

**Financial Considerations**

The Toolbox provides only a very basic view of the potential operating costs and revenues for a proposed route. A more detailed financial model would be needed to generate reliable long-run cost, revenue and profit projections. Such a model should consider budget sensitivity to potential future changes in major expenses such as fuel, maintenance and labor. It should also consider the impacts of major capital expenses, such as the purchase of vessels and the development of pier and maintenance facilities. All of these factors will influence the long-run viability of a proposed service.

**Public Sector Coordination Considerations**

At a minimum, every ferry operator in the region must coordinate with the public sector in the following ways:

- Obtain operating insurance to a satisfactory level
- Obtain Operating permit from NYCDOT, when origin and/or destination is in New York City.
- Obtain landing slot license from the operator of each proposed landing site
- Obtain landing rights from the operator of each proposed landing site
- Report their ridership to the NYCDOT, as well as to the U.S. Coast Guard as part of the agency's maritime evaluation database.
- Take into account navigational or operational issues, and work with the U.S. Coast Guard or other relevant agencies to review potential issues.

As emphasized throughout this report, the public sector generally plays a very limited role in the provision of ferry service for the New York/New Jersey Region. While much of the pier infrastructure through the region is publicly financed, owned and operated, regional agencies do not typically support the actual operations of a ferry service. If, based on preliminary analyses, the route serves the public interest in some significant manner, it may be beneficial to commence a dialogue with relevant public agencies. However, it is important to remember that most coordination with the public sector should focus on issues relating to infrastructure and other capital requirements.

## 5.3 Understanding the Government Role and Potential Strategies

In order to determine potential strategies to address the specific challenges and issues identified during the study, the study team turned to the experiences of other ferry systems in North America for guidance. These issues include the seven areas of concern identified through in the outreach and ongoing Steering Committee discussions:

1. Regional agency coordination
2. Municipality engagement
3. Operator costs (including fuel & maintenance)
4. Opportunities and mechanisms for regional cooperation among ferry operators
5. Evaluation criteria for the establishment of new routes or service
6. Funding coordination
7. Emergency response coordination and system redundancy

Key findings from these on-going considerations are highlighted here.

## Regional Partnership Themes: Issue Identification and Potential Strategies

### 1. Regional Agency Coordination

*Issue Identification*

The perspectives of a number of agencies and regional public sector entities have been represented over the course of the study, both at the stakeholder outreach sessions and on the regular study Steering Committee. During this time, the regular interaction between various members of the Steering Committee has been beneficial for short-term coordination of ferry-related activities. A more formalized method for communication and coordination could be potentially useful for long-term management of the regional ferry network. For example, such a structure could potentially resemble the existing Project Steering Committee and could meet on either a regular basis or as needed. What is the appropriate vehicle, or vehicles, for ongoing interagency, multi-stakeholder ferry coordination?

*Potential Strategies*

When considering ways to enhance overall regional coordination for ferry service, the Puget Sound Region provides a model in which a core public entity provides key coordination and guidance for regional cooperation, but actual provision of ferry service continues to remain relatively decentralized. The Puget Sound Regional Council (PSRC), the Metropolitan Planning Organization (MPO) for the four-county region that comprises the Central Puget Sound Region, has implemented a three-pronged approach to coordination: development of The Regional Passenger-Only Transportation Study; passage of Resolution EB-09-01: Supporting the Development of Passenger-Only Ferry (POF) Service in the Puget Sound Region; and establishment of the Puget Sound Regional Council's Transportation Operators Committee. Such initiatives could provide guidance to the New York/New Jersey Region as it develops a more formal process for regular regional communication and coordination. This could include the following initiatives:

- Conduct periodic re-evaluations of ferry service in the region.
- Convene a regional coordinating forum to foster coordination among various stakeholders, including ferry service providers, local agencies, transit agencies and the private sector.
- Establish a Standing Committee to serve as the primary forum for discussing and resolving issues of common concern.

### 2. Municipality Involvement

*Issue Identification*

A number of waterfront municipalities were represented at the stakeholder workshop events. Ferry routes have served some, either currently or in the past. Others may not have had direct experience with ferry service, but may be considering it as a transportation option for the future. The stakeholder workshop provided the rare opportunity for various municipal perspectives to come together and jointly address the key issues surrounding ferry service. Following the workshops, some municipalities expressed interest in becoming involved with an ongoing dialogue about ferry service and efforts to strengthen the regional system. However, the potential form of any future planning and coordination was unclear. What is the appropriate vehicle for ongoing municipality engagement in the provision of regional ferry service? Is there an opportunity for municipalities in the region to take on additional responsibility with regard to ferry service management and funding?

*Potential Strategies*

In most cases, municipalities have generally not taken a central role in ferry service provision and funding. The same challenges that make it unwieldy for towns and cities to run ferry systems are the same ones that tend to mean that bus, subway, and rail service is managed and operated by a special-purpose transit district. There have some select cases of municipalities playing a more active role in ferry service provision. However, such cases are limited and rarely involve a sustained direct contracting relationship between a municipality and a private ferry provider. A more realistic option for greater involvement of communities served by ferries may be to engage stakeholder municipalities in regional coordination activities through the creation of some form of Steering Committee or Board of Directors, as is the case in Casco Bay, Maine. This could be linked to the proposed regional coordination initiatives described above. As a supplementary component of this approach, there can also be efforts to educate and coordinate the ferry funding activities of municipalities.

**3. Operator Costs**

*Issue Identification*

From the operator interviews, it became clear that current and anticipated increases, as well as general volatility in fuel costs, are significant concerns. Major unexpected changes in fuel-related expenses could potentially have a devastating impact on an operator's ability to sustain existing ferry routes. There have been some attempts by the operators to mitigate the impact of this, but a long-term , coordinated, strategy may prove to be beneficial.

Another major cost faced by operators is the cost of maintaining the ferry fleet. Each of the current private operators maintains their own overnight moorage and light maintenance facility. These facilities are near the origin of their primary service area which reduces deadheading after the last trip of the day. New York Waterway (PIFC) and BillyBey Ferry Company (BBFC) share a facility & maintenance staff and this facility is also capable of heavy maintenance like vessel haul-outs. However, based on the operator interviews, there is a clear reluctance to let anyone else operate their boats, which most likely extends to a reluctance to let anyone else have responsibility for maintenance of their boats.

The New York/New Jersey Region is unique in that the regional waterborne passenger transport system, and its readiness to respond to regional emergencies, is largely dependent on the financial stability of the private operators. For this reason, it is in the best interest of the regional transport network that the operator costs are managed as effectively as possible. Is there a way to leverage the collective demand of the regional ferry service providers to achieve greater efficiencies in operator costs? What are specific strategies for containing fuel costs that could be beneficial to the region? Given the current approach to and attitudes regarding fleet maintenance in the region, is there anything additional that can be done to help streamline and reduce the costs of vessel maintenance in the region? What are specific strategies for containing maintenance costs that could be beneficial to the region?

*Potential Strategies*

Fuel Acquisition Strategies: Significant increases in operator costs can cut sharply into the revenues of private operators, thus potentially threatening the long-term continuation of certain routes and schedules. One of the greatest challenges to operator budget stability is any significant variability in fuel costs. Given these conditions, there could be potential interest in expanded fuel acquisition partnerships such as joint fuel purchasing with other regional entities, a well-conceived fuel price hedging strategy, and increased regional fuel storage capacity. There are a number of fuel acquisition strategies that have been employed by other regions.

Maintenance Cost Reduction Strategies: Another major cost that could potentially impact the long-term stability of certain ferry routes is the cost of vessel maintenance. Other regions have invested in more efficient mooring and maintenance facilities, and have cultivated dedicated teams of maintenance staff, to streamline the multitude of maintenance tasks required to keep vessel fleets in top condition. At this time, it does not appear as though immediate changes would be needed, nor even welcomed, by the regional private operators. However, if there are any major structural changes in the future or if the operators express interest in future maintenance coordination, the experiences of other regions could be highly instructive.

Vessel maintenance is grouped into two categories: basic and intermediate. Basic vessel maintenance is also referred to as shipboard preventative maintenance, and includes activities that can be accomplished by the ship's operating crew while the vessel is in service or moored for the night. Examples of this maintenance include oil changes, tune-ups, and systems adjustments. Intermediate vessel maintenance includes activities that require removing the vessel from service. Most intermediate maintenance activities are accomplished at a maintenance facility or by specialty vendors. Often this work requires a shore-based infrastructure that is not available aboard ship. Examples of this maintenance include rebuilding engines, hydraulic component overhauls and upholstery repair.

Peer ferry systems have taken various steps to support the multi-step process of maintaining vessels. For example, the Washington State Ferry system implemented the ferry system's Maintenance Productivity Enhancement Tool (MPET) system helps WSF track vessel maintenance by transferring data from ship to shore via a wireless computer system. This system makes the maintenance department more consistent, more efficient, and will allow WSF to reduce paperwork and inventory. The tool provides WSF employees the ability to review planned maintenance schedules, the maintenance history of each piece of machinery, preventative maintenance processes, and total costs of maintenance including labor, travel time, and materials.

**4. Operator Coordination**

*Issue Identification*

In terms of operating and maintenance costs, it is clear that the private operators have common concerns. In theory, coordination between the operators could help achieve greater efficiencies and provide some protection against major cost increases. However, through most of the operator interviews, there appeared to be great resistance to coordinating with competitors. Any potential gains in efficiency appeared to be less important than maintenance of control over routes. Given this situation, is it realistic to expect greater coordination between the private operators? To what extent does the public sector have a role in encouraging this if it is in the best interest of the regional transportation network?

*Potential Strategies*

While it might make sense for private operators to coordinate, particularly when it could reduce costs and increase overall system efficiency, there is very little precedent for this type of coordination within specific ferry service areas. The realities of daily competition tend to outweigh any potential benefits of direct coordination. Discussions with private operators within the region further enforce this view. Perhaps a more reasonable first step for greater operator cooperation is to support private initiatives to rally around common legislative or funding causes that could benefit the entire region. Ongoing discussions with operators regarding potential points of coordination should occur on a regular basis, perhaps as part of any ongoing standing Steering Committee efforts. Operators may not be part of the standing Steering Committee, but they could

provide inputs and participate in discussions when appropriate. A reasonable set of beginning steps could include the following:

- Invite operator involvement in an advisory role to the regional Standing Committee.
- Encourage operator engagement in regional efforts to lobby for and pursue federal funding.
- Assist operators in developing a more comprehensive regional approach to National Transit Database reporting.

**5. New Route Evaluation/Establishment & Multi-modal Coordination**

*Issue Identification*

A number of considerations are required when determining whether establishment of a new ferry route is worthwhile or whether an existing route is worth maintaining. As seen above, the private sector decision is primarily based upon financial considerations. However, additional factors become relevant when determining if a route is potentially deserving of some form of public support. This was a major theme during the stakeholder workshop sessions.

During the stakeholder discussions, there was a focus on the relationship between ferries and other modes. Are ferries more likely to be load shedders for other transit modes or do they represent a serious competitive threat? There was general agreement that, for the transit system as a whole, additional transport capacity provided by ferries will be more beneficial than detrimental. Additionally, ferry service that reduces congestion, provides access to jobs, supports economic development, and/or creates redundancy in the transit system are potentially worth implementing. When evaluating options, the public should be promoting "smart transit" that doesn't contribute to greater regional sprawl. There was also a lively discussion about evaluating ferries by the same standards as other transit modes, i.e. an even playing field. While a number of excellent perspectives and ideas were expressed at the workshops, a full consensus on the major considerations was elusive.

While specific methodologies for new route evaluation have been applied for the purpose of this study, a preferred regional framework for new route evaluation has not been outlined in detail and adopted for ongoing use. Such a framework ideally includes a set of clearly defined technical measures, both quantitative and qualitative, to be used in the evaluation of each route, as well as an agreed-upon political process for stakeholder engagement. Is it possible to create a broadly accepted, and consistently followed, process for new route evaluation and implementation of selected routes as an integral part of the region's multi-modal network?

*Potential Strategies*

Various approaches to new route evaluation and establishment have been discussed throughout the study. This was a central point of discussion during the stakeholder outreach sessions and was an underlying theme for various analyses. The key components and considerations of a new route analysis have been outlined and examined, but a more systematic ferry route evaluation and implementation process for the New York/New Jersey Region has not been fully adopted. Section 4.2 offers a framework with significant potential as the preliminary route screening step for such a regional process. Many of the route evaluation considerations that emerged during stakeholder outreach and have subsequently formed the basis of this evaluation framework are very similar to those that had been previously incorporated in the Puget Sound, King County Ferry District, and Vancouver Harbor examples. These examples also provide further guidance on how selected routes could be effectively incorporated into the regional multi-modal transportation network.

- Puget Sound Approach: The region studied 33 existing and potential new POF routes in the Puget Sound Region, including routes on Puget Sound and on Lake Washington. Of these, eleven potential new routes were subjected to more detailed analysis, and of these, three were selected for inclusion in the region's 20-year transportation plan, Transportation 2040. Evaluation criteria follow. Three cross-sound routes were selected for inclusion in the region's long-range transportation plan—all are cross-sound routes linking origins and destinations in separate counties.
- King County Ferry District Approach: The region studied 20 potential passenger only ferry routes within King County. Since no route had ridership exceeding 300 passengers per day, the Ferry District opted not to implement any demonstration route at that time.
- Vancouver Harbor Approach: The region studied 10 potential routes in the Greater Vancouver area. The study concluded that TransLink should continue to explore the potential for developing new ferry service in Vancouver Harbor, and indicated which of the routes studied offered the strongest potential for success. However, to date, no additional service has been implemented.

### 6. Funding Source Coordination

*Issue Identification*

From the stakeholder workshops, it was clear that, at least in theory, ferry service is favored by a number of public sector entities. However, when faced with the crucial question of "who pays and how?", opinions diverged sharply. Aside from the key, and highly nuanced, debates surrounding public role determination and subsidy justification, there is the very basic question of "If there happened to be a public benefit, where could the money come from?" There are a number of existing sources of funding applicable for ferry service provision, much of which is at the federal level, but full understanding of and coordinated pursuit of these funding sources appears to be lacking in the region. Could there be a more formalized ongoing process for coordinating region-wide ferry funding pursuits?

*Potential Strategies*

Since the commencement of this study, the funding landscape has shifted considerably. Old opportunities have evolved or disappeared, new opportunities have emerged, and identifying the most effective process for optimizing regional funding continues to involve a complex tangle of formulae and interagency coordination. While public agencies in New York and New Jersey (NYCDOT Staten Island Ferry, NJT Hoboken terminal, NJDOT, NYSDOT, MTA) have been successful in securing large amounts of federal funding for their respective ferry systems/facilities, there does not appear to be coordination among systems in pursuing funding or prioritizing ferry projects for funding. Each agency is in essence competing with other public ferry and transit interests to secure their "piece of the pie." Federal funding opportunities, at least in the near term, are expected to be relatively limited with intense competition for each potential dollar. Private operators clearly do not appear to be benefitting from the levels of federal funding (both discretionary and formula allocations) that are being realized by the public sector, though their role, scope and reach in providing a public benefit is just as significant in the region. When positioning the region in the increasingly intense competition for federal funding, a more consistent and well coordinated approach to regional funding of ferry services which involves both public and private entities could be extremely beneficial. For instance, there is a need to jointly monitor opportunities to shape additional transportation "jobs bills" and/or reauthorization of transportation legislation.

At this time, the key ferry funding opportunities include:

Immediate Opportunities (within the next 6 months)

» 2010 Transportation, Housing and Urban Development and Related Agencies (THUD) appropriations bill:

- 2011 Ferry Boat Discretionary Program – While the deadline for discretionary applications for $40 mill in 2010 FBD funding has lapsed, the THUD appropriations bill included funding for the 2011 FBD program at ¼ of the amounts allocated in 2009, through December 31, 2010. FHWA may be issuing an additional call for discretionary ferry projects for 2011 projects prior to this date, with deadlines set by NJDOT. Additionally, NYSDOT coordinates the FBD applications in New York State.

Mid-Term Opportunities (6-12 months), but Immediate Inter-agency Co-ordination Needed

» USDOT 2012 Earmarking - House and Senate applications for 2012 earmarks will be solicited in January/February of 2011. Requests are expected to move through appropriations subcommittees in April/May. Concerned regional agencies therefore need to consider developing their "ask" immediately through their congressional delegations in conjunction with its project partners, if they wants to get in line for any FHWA, FBD or FTA earmarking in 2012.

» USDOT Multi-modal Grant Program (TIGER III) – Amount to be determined. It is anticipated that that USDOT will issue another call for projects for what would be the third round of its multimodal, discretionary grant program, some time in federal fiscal year 2011.

Long-Term Opportunities (12 months and beyond)

» FTA Section 5307 Formula, 5309 Fixed Guideway Modernization Funding - Need to begin laying foundation in the near term with State DOTs, MPOs and/or designated recipients in New York and New Jersey for possible formula funding, as many regions program formula funds three years or more into the future.

» 2011 Infrastructure Investment Bill: On Sept 6, 2010, the Obama Administration announced its intention to develop a 6-year Infrastructure Investment bill to be funded upfront at the $50 billion level. Administration officials will immediately begin discussions with both parties in Congress.

» Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) Reauthorization - With High Priority Project (HPP) requests issued by the House Transportation and Infrastructure (T&I) Committee in 2009, a reauthorization blueprint, Surface Transportation Authorization Act of 2009 (STAA) introduced by the House in 2009, and the US Ferry Systems Investment Act of 2009 (USFSIA) introduced in the Senate and in the House, there are still opportunities to participate in a reauthorization bill in the near term. The Port Authority should continue to establish beneficial partnerships (New York/New Jersey Ferry Stakeholders, Public Ferry Coalition, Senate Members and others), to support ferry formula distributions in the Ferryboat Discretionary Program that recognize and benefit both public and private ferry operations as well as developing a solid program of regional ferry services/projects for high priority project consideration in reauthorization.

» Department of Homeland Security (DHS) – Port Security Grant Program (PSGP), Transit Security Grant Program (TSGP) – With these programs (particularly the ferry portion) being

evaluated and modified on an annual basis there is an opportunity to impact the direction of the programs in 2011/2012.

- Other Federal Discretionary Programs – Monitor new discretionary programs emanating from current/future transportation, housing and security authorization bills.
- Non-Federal Sources: In the long-term, it will be important to monitor current and future funding developments on the state and local level. However, given current conditions and the dearth of pre-existing programs, it is highly unlikely that non-federal sources will provide significant ferry funding for the New York/New Jersey Region in the near term.
- The New York State Statewide Transit Operating Assistance Program (STOA) - The New York State Department of Transportation distributes about $3.0 billion annually in Statewide Mass Transportation Operating Assistance (STOA), and other transportation assistance, to approximately 130 transit operators. In SFY 2007-08, the portion of the total STOA appropriation subject to the required matching provisions remained at $224 million. However, State Transportation Law (Section 18-B) clearly states that any commuter ferry line commencing operation after July 1, 1993 is not eligible to receive statewide mass transportation operating assistance. There is the opportunity to investigate whether STOA should be reopened and made available again for commuter ferry line operations, whether for private operators or publicly subsidized ferry routes and program.

### 7. Emergency Response Coordination and System Redundancy

*Issue Identification*

In recent years, there have been a number of instances in which the private ferry operators have provided crucial support for emergency response in the New York/New Jersey Region. Recognizing the importance of waterborne passenger transport to regional emergency preparedness, both the New York City Office of Emergency Management (NYCOEM) and the New Jersey Office of Emergency Management (NJOEM) have incorporated ferries as key emergency response resources in their respective emergency planning documents. All of the private ferry operators interviewed were aware that emergency response planning has occurred in the region and that ferries are clearly a significant component. However, there is also the sense that, while current evacuation plans count on ferries, they make limited consideration of actual vessel availability. Also, at times of emergency, operators are not confident that they will be able determine who exactly in the public sector is in charge of major logistical decisions. Additionally, all operators indicated that would like to be sure that they would be compensated in some way for the expenses they incur preparing for and responding to emergencies. Overall, it became apparent that public/private coordination for emergency response could be managed much more effectively and with a more focused approach to relevant funding needs.

*Potential Strategies*

The role of the ferry system in regional security and emergency response planning is a major issue that includes elements of many of the themes explored elsewhere in the report including regional coordination, operator costs, operator coordination, route evaluation, and funding. While there have been efforts to incorporate ferries into regional emergency response planning and funding, more could be done to ensure a truly robust approach. A clear outline of roles, procedures, expectations, and eventual compensation should be developed and confirmed with all key parties.

Some steps have already been completed to achieve this goal. For example, the NYC Office of Emergency Management, NJDOT, and the U.S. Coast Guard are working to improve

preparedness for emergency response. In addition to revising their respective agency's existing operational plans, they work closely with the U.S. Coast Guard on the Area Maritime Security Committee and with the private ferry operators through AMSC Private Vessel Subcommittee. NJDOT and the NYC Office of Emergency Management are seeking funding to improve the trans-Hudson emergency landing infrastructure and are communicating with decision-makers at the Department of Homeland Security about the need to improve capacity beyond the floating barge landing at Liberty State Park.

An additional example is the recently adopted Trans-Hudson Emergency (T.H.E.) NY/NJ Plan, completed in cooperation with the NJ Office of Emergency Management, the NYC Office of Emergency Management, NJ Office of Homeland Security and Preparedness, NJDOT, NJ Transit, and the Port Authority of New York and New Jersey.

Finally, the Passenger Vessel Subcommittee is one of the standing subcommittees of the larger Harbor Safety, Navigation, and Operations Committee that was chartered by the Maritime Association of the Port of New York and New Jersey. As such the Passenger Vessel Subcommittee mandate is to review and advise the Harbor Operations Committee on all issues that may: 1) potentially hinder safe passenger vessel operations; 2) have a deleterious impact on environmental protection, or 3) adversely impact the business competitiveness of passenger vessel operations. Additionally, the subcommittee is further tasked with being the primary advocate for passenger vessel interactions with local, state and federal stakeholders and be a consolidating body in order to petition the various governments and their agencies for advice and assistance in promoting increased economic development and improvement within the industry.

Continued coordination among the NYC Office of Emergency Management, NJDOT, and the U.S. Coast Guard, the Trans-Hudson Emergency (T.H.E. Plan) and the Passenger Vessel Subcommittee provide promising avenues that can continue to address these issues. Examples such as the San Francisco Bay and Puget Sound approaches can offer elements for incorporation into the New York/New Jersey plan. Overall, there is interest from the Port Authority Port Security representatives in incorporating the ferry system more thoroughly as a resource for emergency response. In addition to ferrying people out of emergency areas, ferries can also serve as carriers of supplies to emergency areas. However, more coordination, both in terms of logistics and funding, is needed to achieve this.

Concurrently, key stakeholders should work together to advocate for legislative changes and pursue funding opportunities that could bolster the region's maritime security efforts. Greater ferry stakeholder coordination with regional efforts to enhance port security funding opportunities should be encouraged. The same focused, sustained, and coordinated approach to funding pursuits recommended earlier should also be extended to all security-related funding opportunities. The examples below outline additional strategies that coordinate regional maritime emergency response, as well as secure additional security funding.

- Relevant San Francisco Bay Area Emergency Response Coordination Strategies
  - » Developing, communicating and coordinating the implementation a grant program strategy with other affected stakeholder groups.
  - » Review of existing Emergency Response and Management Plans and participation in response community planning and training
  - » Establishment of agreements with public and private sector asset owners and service providers

  - » Develop funding strategy. In the case of the New York/New Jersey Region, this could involve stronger coordination between ferry stakeholder interests and region-wide pursuits of federal security funding, such as the PSGP

- Relevant Puget Sound Emergency Response Coordination Strategies
  - » Establish a Marine Stakeholders Working Group that could potentially include includes port representatives, public and privately operated passenger vessels, NYCDOT, NJDOT, NYSDOT, and , public transit operators, the region's Metropolitan Planning Organizations and municipal, state, and federal emergency managers. In the case of the New York/New Jersey Region, this Working Group could coordinate in some way with a Standing Committee established to address general region-wide ferry issues. Such a Working Group could provide a venue for ferry security related coordination among the region's agencies. Representatives from the Port Authority Office of Port Security have expressed strong interest in greater involvement with ferry issues in the region.

- Security Funding Opportunities
  - » While many regions have worked effectively over the past nine years to establish collaboration in emergency response, security planning and prioritization, the funding for the capital and ongoing operations and maintenance to support these measures is still woefully inadequate. At the federal level, the DHS through FEMA has been a crucial source of security funding for transit agencies, ferry systems and ports through its Port Security Grant program (PSGP), Transit Security Grant Program (TSGP) and Urban Areas Security Initiative (UASI) grant program, among other programs. The Port Authority Office of Port Security has been active in pursuing security-related federal funding opportunities for all Port infrastructure. There is certainly interest in greater engagement of ferry stakeholders in this process.
  - » One potential opportunity for regional collaboration on ferry security issues is in endorsing the concept of the National Ferry Emergency Response Trust Fund. As seen with previous events, ferry terminals and vessels have been on the frontline for response to major regional emergencies. However, the private ferry operators are never fully compensated for their efforts. As a result, the concept of a National Ferry Emergency Response Trust Fund has emerged, with strong support in the New York/New Jersey Region. The basic concept is that a relatively small amount of seed money could be dedicated annually from the PSGP to start building up a national Trust Fund. Ferry operators that would like access to the Trust Fund would have to sign an agreement that they (1) will respond in the case of an emergency and (2) they will follow certain standards in terms of onboard emergency equipment, personnel training, etc. Then, in the case of an emergency, these operators can be assured that they will be compensated for their efforts. It is hoped that legislation along these lines will be incorporated in the Maritime Transportation Security Act of 2010.

## Government Role Conclusions: Key Regional Focus Issues and Actions

For each of the seven regional ferry concerns, the central issues have been identified and potential strategies have been described. This provides a clear menu of possible options for the New York/New Jersey Region. The diverse experiences of other ferry systems can be modified to suit the unique needs of the New York/New Jersey Region, and distinctive elements from these other examples can be used as the basis for of a comprehensive regional ferry approach. When determining the extent to which the

public sector in the New York/New Jersey Region should implement these types of strategies in support of specific regional ferry services, it is crucial to determine the level of public benefit that would be gained. Section 4.1 of this report summarizes such an analysis, based on a series of key metrics and a set of route categories, or templates, to guide a thorough determination of potential public interest.

As part of this study, a Working Group Meeting of study partners was convened to discuss the role of the public sector and preferred strategies for moving forward as a region. The study partners discussed the following issues, agreed on these specific findings, and recommended actions:

**Territories and Roles for Regional Ferry Partners**

While the set of public purpose concepts, as discussed in Section 4.1 of this report, provide a general framework for regional ferry service provision, there is a need to clearly define and affirm the differences across various public sector ferry partners, particularly in terms of territories and roles. Each public sector partner in the region has a guiding mandate and de facto territory where it is likely to have or share a lead role in ferry service. However, this may not always be clear to the general public. While there is some overlap across the region, the ferry-related territories and roles of partner public sector study partners are as follows:

- The Port Authority provides limited capital investments (landings, maintenance facilities, etc.) and development support, focused on the Trans-Hudson markets, particularly the service between the multimodal Hoboken terminal and Lower Manhattan. In addition, the agency continues to evaluate potential viability of services between Manhattan and the region's major airports. The Port Authority does not provide subsidies for new service operations.
- New Jersey Transit (NJT) also focuses on supporting the Trans-Hudson market, with a primary focus on capital investments and a secondary interest in sustaining key existing routes.
- New York City Department of Transportation (NYCDOT) is responsible for operation and maintenance of ferry landings throughout the five city boroughs.
- The New York City Economic Development Corporation (NYCEDC) provides capital investment assistance benefitting intra-borough ferry service and is currently considering options for route expansion within the city boundaries.
- The Metropolitan Transportation Authority (MTA), does not provide passenger ferry services, excepting the routes that connect west of Hudson commuters with Metro-North Railroad (MNR) stations on the Hudson line.
- The New York State Department of Transportation (NYSDOT) does not provide ferry service, but has administered pass-through funding for some New York services.
- The State of New Jersey Department of Transportation (NJDOT) Office of Maritime Resources manages the FHWA Ferry Boat Discretionary funds and handles the administration of Set-Aside, Competitive and Ear-Mark awards. The Office coordinates with the industry on operational and navigational issues through the Harbor Safety Navigation and Operations Committee of the Port of New York & New Jersey Passenger Vessel Sub-Committee.

While these territories and roles stake out a division of responsibilities for public sector involvement in regional ferry service, the various public sector agencies will often collaborate when ferry-related interests overlap. This interagency study of regional passenger ferry service is an example of such collaborative efforts. Another example is the ongoing Memorandum of Understanding (MOU) between the Port Authority and New Jersey Transit to restore ferry slips at the historic Hoboken Terminal, which is consistent with each agency's focus on Trans-Hudson service. Such interagency

initiatives are important to sustaining ferry service in the region and more are expected to develop on an as needed basis.

**Coordinate Funding Strategies**

For the partner agencies, the need to maximize federal resource allocation and coordinate how federal dollars arespent throughout the region is of most immediate concern. When positioning the New York/New Jersey Region in the increasingly intense competition for federal funding, a more consistent and well coordinated approach to regional funding of ferry services, involving active participation from both public and private stakeholders, could be extremely beneficial.

One practical and implementable strategy for this is to make a coordinated effort to ensure that all eligible ferry miles in the region are reported to the National Transit Database (NTD). Since annual allocations of Section 5307 UZA Formula Funding and 5309 Fixed Guideway Funding are based on National Transit Database (NTD) statistics, the region as a whole could benefit from this initiative. The specific service statistics driving the federal funding formula for Section 5307 funding are annual revenue vehicle miles (RVM), directional route miles (DRM), passenger miles (PM) and operating costs. Specific service statistics driving the Section 5309 Fixed Guideway modernization funding are RVM and DRM for routes over 7 years old. The Regional Ferry Working Group can work together to ensure that all private ferry operators are reporting these statistics on an annual basis. Since there is a two year lag in the annual reporting of transit service statistics and the resulting formula allocation to the UZA, regional partners should regard this task as a near-term priority.

While public agencies in New York and New Jersey (NYCDOT/Staten Island Ferry, NJT, NYSDOT, MTA) have been successful in securing large amounts of federal funding for their respective ferry systems/facilities, there does not appear to be sufficient coordination within the systems for pursuing funding or prioritizing regional ferry projects for funding. Each agency is in essence competing with other public ferry and transit interests to secure their "piece of the pie." When positioning the New York/New Jersey Region in the increasingly intense competition for federal funding, a more consistent and well coordinated approach to prioritizing regional projects for funding, involving both public and private stakeholders, could be extremely beneficial. A long-term federal funding strategy for the region should include predictable, annual sources of funding supplemented with discretionary funding on an as-needed basis.

Further funding-related efforts could include the development of a common position on future federal transportation legislation. Overall, the Regional Ferry Working Group could craft a singular, consistent regional position intended to ensure that the region receives its fair share in the next transportation reauthorization process. Given legislation drafts from the House and Senate on reauthorization and ferry funding, the programs that have traditionally funded ferry service will likely continue, along with some new programs that will favor transportation projects that increase transit use, benefit the environment and support economic develop/livable communities. The recently introduced reauthorization legislation in the House (STAA) and the United States Ferry Systems Investment Act of 2009 (USFSIA) introduced in the House and Senate show a movement away from specific system set-asides to a strictly formula based/discretionary allocation of funding. As the legislation develops over the next year, enhancements that could benefit the entire region include:

- Increased flexibility to use federal funding for capital or operating costs
- Programs that reward the unique transportation and land-use patterns of the New York/New Jersey Region, including those that emphasize increased transit use, benefit the environment and support economic develop/livability

- Assurance that funding formulas continue to place a heavier weight on passengers carried than on vehicles carried
- Assurance that funding formulas are based on service statistics derived from both public and private ferry providers

**Coordinate Emergency Preparedness Planning and Funding**

While both the New York City Office of Emergency Management (NYCOEM) and the New Jersey Office of Emergency Management (NJOEM) have incorporated ferries as key emergency response resources in their respective emergency planning documents, continued public/private coordination for emergency response is critical. Greater preparatory communication between various public and private stakeholders is critical. Continue work on a clear outline of roles, procedures, expectations, and eventual compensation should continue to be developed and confirmed with all affected parties.

Previously mentioned ongoing regional initiatives, such as the NYC Office of Emergency Management, NJDOT, and the U.S. Coast Guard working to improve preparedness for emergency response, the recently adopted Trans-Hudson Emergency (T.H.E.) NY/NJ Plan, and the Passenger Vessel Subcommittee are examples of continued cooperation among not only public agencies, but among public agencies and private operators.

Regional stakeholders must also work to coordinate around emergency preparedness funding. Currently, there are two main sources of federal funding for ferry security measures: the Port Security Grant Program (PSGP) and the Transit Security Grant Program (TSGP). In their current forms, neither program is particularly well-suited to meet the unique emergency preparedness needs of the regional ferry system. Fortunately, both programs are evaluated and subsequently modified on an annual basis, to take into account such factors as the changing landscape of risk analysis in different areas of the country. This creates opportunities for engaged and vocal stakeholders to influence the future development of the programs. Port area stakeholders should work together to lobby for legislative changes and pursue funding opportunities that could bolster the region's maritime security efforts. Ferry stakeholders should work with broader regional efforts, such as the Area Maritime Security Committee, to develop a common voice on port security funding options. For instance, regional partners could explicitly communicate their support for the concept of a National Ferry Emergency Response Trust Fund, which could be used to help compensate ferry operators that respond to regional emergencies.

**Develop and Encourage the Use of a Regional Ferry Toolbox to Evaluate Proposed New Routes**

A decision-making toolbox that can be used broadly by various regional stakeholders would help the Regional Ferry Working Group encourage the responsible development of sustainable ferry service. Such a toolbox could help formalize the approach to implementing new ferry service in the region, with a strong emphasis on careful preparatory analyses. Such a toolbox would include the following characteristics:

- Consider the public purpose of proposed ferry service, based on the ferry template work that was completed for earlier study tasks
- Provide basic procedures to undertake a first-cut analysis of the major elements of any ferry service, including ridership requirements, operating requirements , and capital requirements

- Establish a clear distinction between the relatively straightforward requirements for building pier infrastructure and the much more complex requirements for programming a sustainable ferry service
- Use key lessons from the region's extensive history of private ferry service to help stakeholders understand what has worked (and has not worked) and why

**Regional Actions**

- Partner agencies will determine additional participants and a suitable schedule for quarterly Regional Ferry Working Group meetings. Initial agendas should include a discussion of actions for funding coordination and emergency preparedness coordination, as outlined in the practical methods section of this report.
- Partner agencies will assign specific responsibilities for ensuring regional NTD reporting compliance.
- The Regional Ferry Toolbox will be deployed for practical use by partner agencies and other regional ferry stakeholders.

## 5.4 Regional Passenger Ferry Public Policy Conclusions

The region is a dynamic one, where land-use changes, coupled with growth in population, waterfront development, and evolving policies towards transportation pricing could all affect the viability of individual ferry routes in the future. Passenger ferry service has expanded to play a role in the region's transportation system, and one that, guided by a sound policy framework, could continue and even grow. This section creates that policy framework, with a clear definition of public sector goals, roles and strategies.

While ferries generate many direct benefits to users, the external benefits of ferry ridership in the region, aside from load shedding for PATH service, can be rather modest. This does not negate the importance of ferry service. On the contrary, the importance of ferry service is underscored in a variety of examples, such as in emergency operations, network redundancy, and recreational opportunities, etc. Additionally, many of the regional partners have shown their commitment to regional private passenger ferry service by their investment in capital projects, such as ferry terminals and landings.

However, the modest external overall benefits of ferry ridership in the region is a reason why the current regional policy to avoid long-run public operating subsidies for ferry service can be justified. Instead, regional public partners can continue to support the private ferry system in other, less direct ways through both a *flexible structure* for cooperative regional stewardship of passenger ferry services and *practical methods* that could be applied on a regional basis to identify synergies. First and foremost, the regional ferry partners each have clearly defined territories and roles of their own with regard to regional ferry service. However, through the proposed Ferry Standing Committee, they can also have a venue for coordination of funding pursuits, coordination of emergency preparedness planning, and further development of strategies to strengthen the regional ferry system.

# Section 6: *Conclusions*

Over the past few decades, the regional private ferry route have evolved gradually to serve the daily transport needs of thousands of regional residents. During emergencies, it has provided important network redundancy. For the most part, service is privately run and operations are primarily self-sustaining from farebox revenues. While recent increases in fuel prices and regional unemployment have tempered growth, it is projected that ridership on most of the established routes will rebound as regional economic conditions improve. Beyond these core routes, there are very limited possibilities for expanded passenger ferry service in the region that could operate on an unsubsidized basis. In general, the public sector has avoided direct subsidization of regional ferry operations, although it has provided limited capital assistance for ferry facilities. This general policy makes sense in terms of both the low fare elasticities of ferry service and the modest external benefits of most individual regional ferry routes. Overall, public funding is currently severely constrained for all transport modes and is expected to remain so, at least for the near term.

Given these existing conditions, the primary near-term concern should be the continued operation of established routes at the core of the regional ferry services, without resorting to the provision of significant public subsidies. To be best prepared to respond to current challenges, ferry partners in the region must be equipped with a *clear organizing framework* for evaluating the public benefit of ferry service, a *flexible structure* for cooperative regional stewardship of passenger ferry services and *practical methods* that could be applied on a regional basis to identify synergies, all of which are key outcomes of this study.

In this dynamic region, land-use changes, population growth, waterfront development, and evolving policies for delivering and pricing transportation services all could affect the viability of individual ferry routes in the future. Given this reality, this assessment serves as a guide for policy makers that would help inform future decision-making and planning for passenger ferry services. Key strategies to stabilize and support ferry services include:

- Creation of a Regional Ferry Working Group
- Regional coordination on funding strategies
- Improved coordination on emergency preparedness planning and funding,
- Implementation of the Regional Ferry Toolbox

An immediate action to act on the strategies recommended in this study is the creation of a Regional Ferry Working Group, where regionwide ferry funding and emergency preparedness coordination will take shape. In addition to addressing these near-term issues, the Working Group will also be well-positioned to tackle future challenges as they emerge. For instance, when faced with any future proposals for service expansion, the Working Group and other regional ferry partners can employ the Ferry Service Toolbox to help encourage the responsible evaluation and development of sustainable ferry service. This balanced approach can help ensure that private ferry service remains a strong component of regional transport, without overreliance on limited public funding.

Passenger ferries have played an important role in the region's transportation system, a role that, guided by a sound policy framework, could continue and even grow. In an era of growing and changing travel demand, concerns over security and sustainability, and tight financial resources, a stable passenger ferry sector is a regional asset. A good regional policy framework is the key to its survival and increases its potential to play a larger role in the regional transportation system.

***APPENDIX I*** *TASK B INTERIM REPORT: REVIEW OF THE REGIONAL PLAN ASSOCIATION (RPA) REPORT – FERRIES IN THE REGION: CHALLENGES AND OPPORTUNITIES*

## ***APPENDIX II*** *TASK C INTERIM REPORT: STAKEHOLDER OUTREACH*

## ***APPENDIX III*** *TASK D INTERIM REPORT: PRELIMINARY MARKET IDENTIFICATION*

***APPENDIX IV*** *TASK E2 INTERIM REPORT: MARKET POTENTIAL OF EXISTING SERVICE*

***APPENDIX V*** *TASK E3-5 INTERIM REPORT: MARKET MODELING OF POTENTIAL FERRY ROUTES WEST AND EAST OF THE HUDSON – ANALYSIS USING REGIONAL MODELS*

***APPENDIX VI*** *TASK E7 INTERIM REPORT: STATED PREFERENCE SURVEY AND RIDERSHIP FORECASTS FOR POTENTIAL ROUTES*

***APPENDIX VII*** *TASK F INTERIM REPORT: ROUTE AND SERVICE ANALYSIS – PUBLIC POLICY GOALS*

***APPENDIX VIII*** *TASK G INTERIM REPORT (PART I): PRELIMINARY REVIEW OF GOVERNMENT ROLE*

***APPENDIX IX*** *TASK G INTERIM REPORT (PART II): REVIEW OF GOVERNMENT ROLE*

***APPENDIX X*** *TASK G INTERIM REPORT (PART III): WORKING GROUP MEETING SUMMARY*

***APPENDIX XI*** *TASK H INTERIM REPORT: FERRY TOOLBOX AND GUIDANCE DOCUMENT*

## ***APPENDIX XII*** *NYCEDC MEMORANDUM: NATIONWIDE MODELS OF FERRY SERVICE*

## ***APPENDIX XIII*** *NYCEDC MEMORANDUM: USING FERRIES FOR TRANSIT REDUNDANCY AND EMERGENCY PREPARATION*