A Feasibility Study for a Kingston-based Ferry Service

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Fairweather Consulting

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Introduction

The City of Kingston has been working toward the revitalization of the Rondout Creek and Hudson River waterfronts. A Local Waterfront Revitalization Program and a Revitalization Implementation Plan are in place. Those plans call for the commencement of ferry service to provide access between the Hudson Landing site, Kingston Point, the core revitalization area in the vicinity of the foot of Broadway and the hamlet of Rhinecliff. This service would be available for tourists, boaters, commuters and others as a transportation alternative between sites and other modes of transportation (rail). This will be based on discussions with existing service providers, waterfront businesses including marinas, maritime sources including but not limited to existing excursion and tour boat operators, and water taxis and state agencies.

This study examines the feasibility of ferry service for the City of Kingston including three sites within the City: the Hudson Landing site, Kingston Point, and the core revitalization area in the vicinity of the foot of Broadway. In addition, the potential of service to Rhinecliff for tourism and commuting by rail is evaluated, along with the inventorying sites that may have a long-term potential for participating in a tourism-based water taxi service originating in Kingston.

This report includes:

- An analysis to identify whether ferry service to the sites described above are economically viable and feasible;
- Identification of existing or appropriate locations for landings and docks;
- Identification of the types and sizes of vessels that would be feasible to operate;
- Projections of the demand for such service by residents, commuters and tourists;
- Preliminary revenue and expense projections and conceptual operating schedules;
- Identification of federal, state and local permits and approvals that would be needed for the work necessary for the initiation of service;
- An implementation strategy to achieve the goal of initiating ferry service; and Identification of potential ferry operators and funding/grant opportunities.

Interviews with Key Stakeholders

As part of the process of understanding the challenges and opportunities, Fairweather Consulting conducted interviews with 24 individuals representing:

- local business and marina owners,

- regional tour boat, water taxi operators and small ferry operators;
- Local and County planning organizations;
- Local or regional tourism promotion agencies;
- NYS Department of State and Empire State Development;
- U.S. Army Corps of Engineers;
- Other appropriate organizations (MTA, New York Waterways, NYSDOT, etc.)

The table below lists those stakeholders contacted for this project.

Table 1. Stakeholders Interviewed for this Study	
Lisa Berger, Ulster County Tourism	Russell Lange, Hudson River Maritime Museum
Suzanne Cahill, Kingston Planning	Donald Liloia, Consultant, NY Waterway
Peter Cohen, Amtrak	Ann Loeding, Rondout Bus. Assoc.
Kate Cook, Kingston Heritage Area	David Markowitz, NYSDOT, Reg. 8
Tom Cordier, Tivoli	Daniel O'Connell, MetroNorth
Tom Fox, NY Water Taxi	Brian Orzel, Army Corps of Engineers
Huntley Gill	Kent Patterson, MetroNorth
Sandy Henne, HR Cruises	Matt Perricone, The Cornell
Scott Herrington, Kingston Marina	Paul Rakov, Ulster County Development Corporation
William Holister, Amtrak	John Scarrano, Scarrano Boats
Steve Laden, Trolley Museum of New York	Tony Todisco, Rhinebeck Waterfront Committee
Patrick Landewe, Town of Saugerties Lighthouse Keeper	Alex Wade, Town of Saugerties Waterfront Commission

These interviews provide a variety of insights into the process of creating a sustainable water-based service for Kingston. For example, it was pointed out by several interviewees that commuter service would be the most difficult to establish. It requires a relatively high degree of punctuality on the part of the operator as well as redundancy. That is to say, a commuter operator should have the ability to provide alternative means to transport customers to their destination (e.g., the Rhinecliff train station) either via a "back up" boat in case of an equipment failure or by having access to another means (e.g., shuttle bus service) to transport commuters in case of equipment failure, inclement weather, etc.

To be successful, any ferry service must be able to compete on travel time. That is, the travel time to the Rhinecliff train station via the ferry must be comparable to (and preferably better than) travel time via car or other available modes.

It was also recommended that any vessel deployed for this service should be capable of serving as an excursion boat as well as ferry and/or water taxi in order to supplement the revenue from the operation by holding events on the boat when it is not in service.

A Kingston/Rhinecliff commuter ferry would most likely be seasonal in nature. Both the Newburgh/Beacon and Haverstraw/Ossining ferries had to suspend service this past winter due to river icing. It was pointed out that this problem is likely to be even more prevalent in the Kingston/Rhinecliff area where the water has lower salinity and therefore is even more likely to freeze compared to points south.

Several key landside issues also emerged from the stakeholder interviews:

- Docking facilities should be located in close proximity to desired destinations. For example, a Kingston/Rhinecliff ferry must depart from an area that is easily reached by commuters using the service. Commuters must also be able to disembark in close proximity to their desired destination (i.e., the Rhinecliff train station).

- Parking: as will be discussed elsewhere in this report, in order to be sustainable (even on a subsidized basis) existing trans-Hudson ferry services require 300 to 500 trips per day. Thus a fully operational commuter ferry service may require as many as 200 to 300 parking spaces on the Kingston side.

- Infrastructure to service and maintain the boats must be factored into the equation. This includes ready access to nearby power supplies, a pump-out capacity and refueling capacity for the vessel(s) involved in the service.

- Ticketing must be located conveniently for commuters. At the same time, the cost of providing ticketing an terminal services should be minimized. Several stakeholders in the transit and boat businesses warned against devoting scare resources to building a terminal and to focus those resources on the operation of the ferry service itself.

Finally, in order for a commuter ferry route to achieve any targeted ridership numbers, the involved governments must be prepared to heavily promote and market the route to target audiences.

According to the interviews, tourism operations may not be as demanding as daily regularly scheduled commuter service, but they come with their own challenges. For example, while commuters focus on time-savings as the key factor in evaluating their ride, tourists focus on the experience. Consequently, the boat ride must be pleasant experience in and of itself. In addition, a tourist ferry service must link "activity nodes." That is, when disembarking tourists expect each and every stop to provide them with options in terms of activities and experiences. Finally, it was pointed out that operations must be fully integrated with tourism promotion efforts of both Kingston and Ulster County in order to maximize the audience for such a service.

These insights helped shape the three models of service delivery that are analyzed later in this report.

Inventory of Existing Conditions

The inventory of existing conditions was undertaken to understand the opportunities and constraints related to initiating Kingston-based ferry service. The inventory of existing conditions was created by consulting the reports and plans listed in Appendix B of this report.

From this preliminary inventory, sites in Kingston, Rhinecliff and Esopus were identified as potential landings for a Kingston-based ferry service. The sites included in the inventory were found within 20 river miles of the Kingston waterfront and had a documented ability to handle commercial boat traffic (i.e, the site currently accommodates tour boats or the relevant Local Waterfront Revitalization Program indicated that it was capable of doing so).

Fourteen sites were listed in the inventory. The only sites considered for service by this analysis were those in the City of Kingston, the Town of Esopus and the Town of Rhinecliff. The sites included in the inventory were:

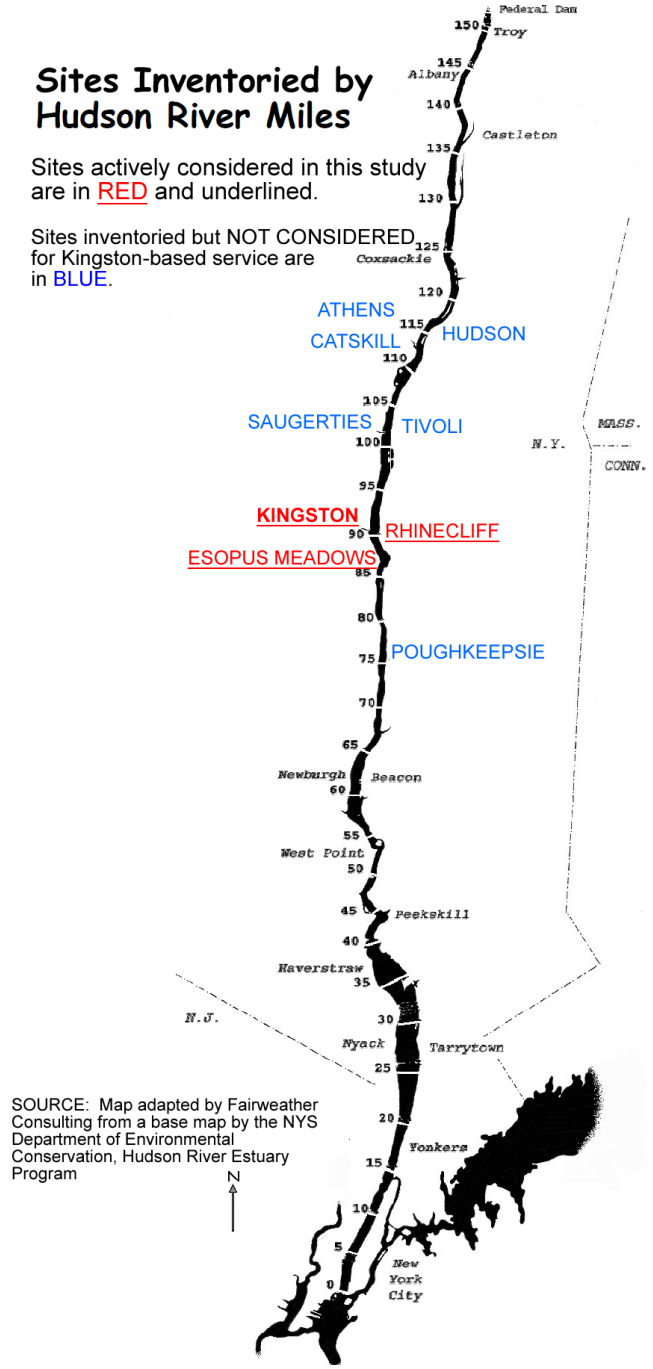
Municipality:	Site:
Sites Considered for Ferry Service:	
City of Kingston	Hudson River Maritime Museum Dock*
City of Kingston	Kingston City Dock
City of Kingston	Kingston Ferry Slip*
City of Kingston	Kingston Point Park
City of Kingston	Hudson Landing*
Town of Rhinebeck	Rhinecliff Dock
Town of Esopus	Esopus Meadows*
Town of Esopus	Rondout Waterfront*
Sites Included in General Inventory:	
Village of Athens	Riverfront Park
Village of Catskill	Catskill Point
City of Hudson	Hudson Waterfront
City of Poughkeepsie	Waryas Park
Village of Saugerties	Esopus Creek Dock
Village of Tivoli	Tivoli Landing

*privately owned site.

Note: a sixth Kingston site is possible: the Sailor's Cove site north of the Rondout and south of Hudson Landing. However, the site is the subject of a development proposal that is still in preliminary consideration. Consequently, it is difficult to define the ultimate uses associated with the site at this time. However, the site was a former brickyard that maintained a barge dock in the past. Therefore, the site should be considered a long-term potential host for future ferry service of some type. Another site with a history of deepwater docking that was not included was Clermont State Park. The Clermont estate had its own ferry dock in the late 19th and early 20th centuries, and various reports have called for its restoration. However the site remains unimproved. In addition, even if the dock were restored, it

would provide access only to Clermont State Park. Given its distance from Kingston, it did not seem worth including to provide such a limited access opportunity. The map below shows the locations of the sites that were considered in this analysis.

Figure 1.
Map of Sites Inventoried and Sites Considered for Service by Kingston-based Ferry/Water Taxi.



City of Kingston: Hudson River Maritime Museum Dock

This site is currently used by the Hudson River Cruises' water taxi, the *Lark*. It is a few hundred feet northwest of the Kingston City Dock and the "Strand" neighborhood.

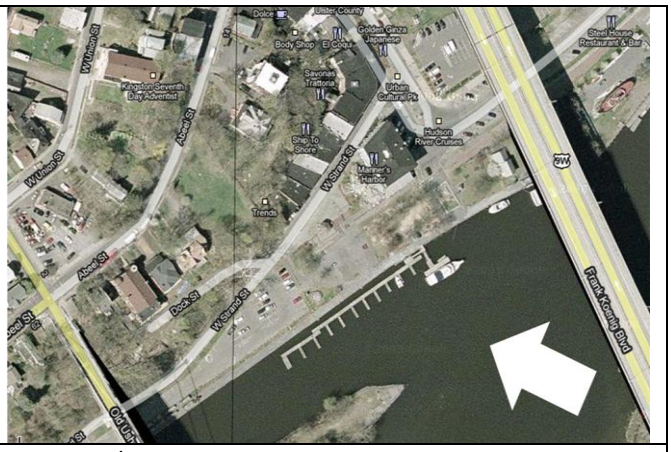
Potential Improvements: The site could benefit from the creation of landside passenger infrastructure such as a ticket booth and possible a passenger shelter. NOTE: the Museum is working with the Hudson River Sloop Clearwater to dock the Clearwater at the Museum during the winter. But the dock would be available for ferry/taxi service during summer months.

Nearby Land Uses:	Urban land uses consisting of commercial/mixed use development
Water-based Uses:	Recreational boating via public and private marinas
Zoning:	Mixed Use (Rondout Creek District--RFR)
Transport systems in addition to automobiles:	Citibus Transit Service
Approximate water miles from Kingston:	NA

City of Kingston: Kingston City Dock

The dock is owned by the City of Kingston and operated by Kingston Marine Corporation. The site is currently used by the Hudson River Cruises' Rip Van Winkle, a 125-foot, 300 passenger cruise vessel. The dock is located at the base of the "Strand" neighborhood, a major site for dining and tourism.

Potential Improvements: This site would require only minimal improvements, including a ticket both.



Nearby Land Uses:	Urban land uses consisting of commercial/mixed use development
Water-based Uses:	Recreational boating via public and private marinas
Zoning:	Mixed Use (Rondout Creek District--RFR)
Transport systems in addition to automobiles:	Citibus Transit Service
Approximate water miles from Kingston:	NA

City of Kingston: Hudson Landing

Located northeast of the Rondout Creek, the site was formerly used by the Tilcon Cement Company. Hudson Landing site has been the subject of an extensive mixed-use development project.

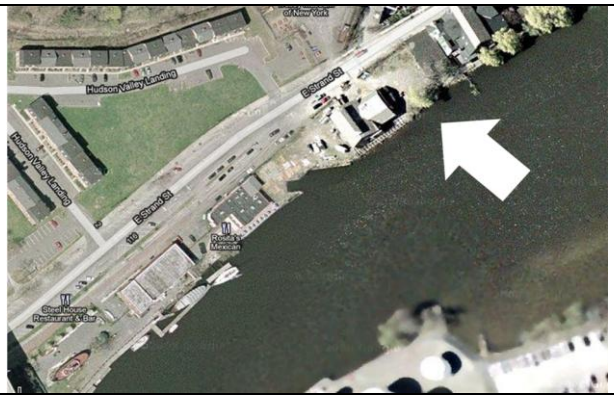
Potential improvements: Although not part of the project approved by the City, the site may have the potential to accommodate a ferry dock for commuter service between Kingston and Rhinecliff (or other points in Kingston) . In addition to parking, improvements could include a dock, ticketing area and pedestrian improvements.

Nearby Land Uses:	This site is proposed for an extensive mixed use development combining residential uses of varying densities with commercial and recreational uses
Water-based Uses:	The site is currently largely vacant, but historically served as a freight dock for Tilcon Cement and other industries.
Zoning:	The site will be redeveloped under a planned unit development that will accommodate mixed uses ranging from residential to commercial to recreational (including water-based uses).
Transport systems in addition to automobiles:	It is anticipated that the Landing site will be served by Citibus transit service.
Approximate water miles from Kingston:	NA

City of Kingston: Kingston Ferry Slip

Located adjacent to the Hudson River Maritime Museum, the former dock for the Kingston/Rhinecliff ferry service is immediately northeast of the "Strand" neighborhood. All that is left of the old dock is several pilings in the water.

Potential Improvements: This site would require restoration of the dock and bulkheading along with the creation of landside passenger infrastructure such as a ticket booth and waiting area.



Nearby Land Uses:	Urban land uses consisting of commercial/mixed use development
Water-based Uses:	Recreational boating via public and private marinas
Zoning:	Mixed Use (Rondout Creek District--RFR)
Transport systems in addition to automobiles:	Citibus Transit Service
Approximate water miles from Kingston:	NA

City of Kingston: Kingston Point Park

This site was once a landing for the New York City-based Dayline cruises and a terminus for local train and trolley service. At this point a replacement for Dayline dock is being planned. The park's shoreline is the focus of a restoration effort, as is the stabilization of the footbridge abutments.

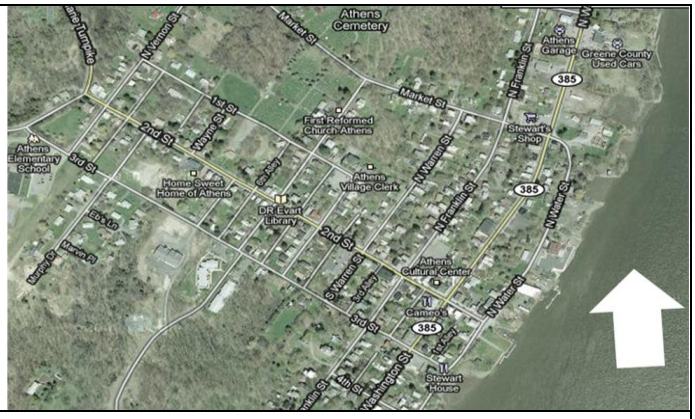
Potential Improvements: This site has the potential to one day be an important stop for ferry or water taxi service once the dock has been rebuilt.

Nearby Land Uses:	Open space/park uses adjacent to residential uses and some limited industrial uses with substantial proposed residential/mixed use development to the North of the site at Hudson Landing.
Water-based Uses:	Recreational boating via public and private marinas; Limited commercial barge service
Zoning:	Mixed Use (Hudson Riverfront District--RFH & Rondout Creek District--RFR)
Transport systems in addition to automobiles:	Citibus Transit Service
Approximate water miles from Kingston:	NA

Village of Athens: Riverfront Park

This is the site of the former Athens/Hudson ferry service. It is at the base of the small village's central business district.

Potential Improvements: According to Athens's Local Waterfront Revitalization Program the old ferry dock would require bulkhead restoration & dredging to restore depth sufficient for commercial boating.



Nearby Land Uses:	Parkland
Water-based Uses:	Recreational boating via floating docks
Zoning:	Nonresidential mixed use, including recreation, cultural, education, scientific research (Waterfront--W)
Transport systems in addition to automobiles:	None
Approximate water miles from Kingston:	25

Village of Catskill: Catskill Point

According to the Village's Downtown and Waterfront Revitalization Strategy, Catskill Point currently serves as a dock for tourboats as well as the site of the Beattie-Powers Mansion and farmers' market in the summer months.

Potential Improvements: The Downtown and Waterfront Strategy includes recommendations for redesign of the parks areas, reorganizing the pedestrian areas and providing additional public amenities.

Nearby Land Uses:	Mixed use, recreational boating
Water-based Uses:	Recreational boating
Zoning	No data
Transport systems in addition to automobiles:	None
Approximate water miles from Kingston:	22

Town of Esopus: Esopus Meadows

This is the site of Scenic Hudson's Esopus Meadows Point Preserve and Environmental Center operated by the Sloop Clearwater (which docks at the site). Immediately offshore is the Esopus Meadows Light, the last wooden lighthouse on the Hudson.

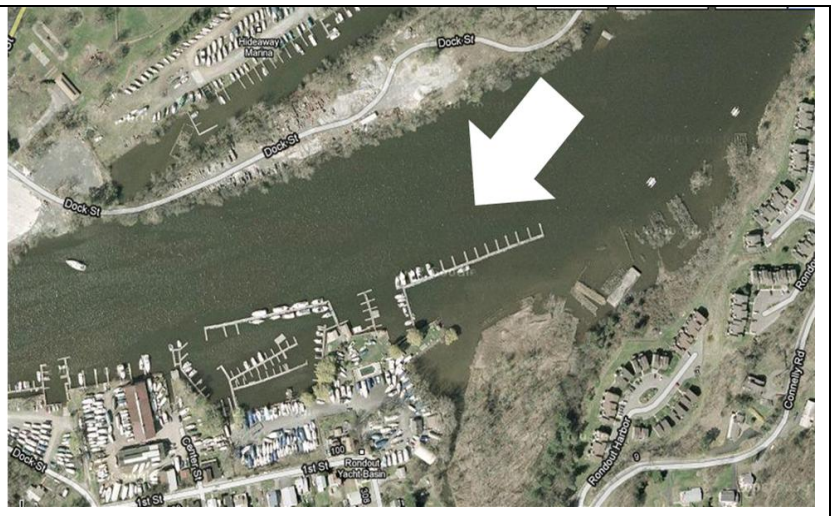
Potential Improvements: In its LWRP, Esopus calls for enhanced waterfront paths, improved scenic overlooks and the creation of an historic trail to improve the experience on the Town's waterfront, including Esopus Meadows.

Nearby Land Uses:	Open space/low-density residential
Water-based Uses:	Estuary research center with dock; land-launching of boats; passive recreation
Zoning:	Low-density residential (R-40)
Transport systems in addition to automobiles:	None
Approximate water miles from Kingston:	5

Town of Esopus: Rondout Waterfront

This site is located immediately south of the Kingston waterfront across the Rondout Creek. It is the site of several marinas devoted to smaller, private pleasure crafts.

Potential Improvements: The Town's LWRP recommends removal of abandoned barges and the creation of waterfront paths to improve the area. It would also require creation of a passenger shelter and docking area.



Nearby Land Uses:	Village-density residential development with some commercial (e.g., marinas).
Water-based Uses:	Recreational boating via private marinas/privately owned landing site.
Zoning:	Waterfront-dependent commercial activities, (Waterfront--W), waterfront recreational activities including marinas (Waterfront Recreation--WR) and low-density residential (R-40)
Transport systems in addition to automobiles:	None
Approximate water miles from Kingston:	NA

City of Hudson: Hudson Waterfront

With a maritime tradition extending back to Hudson's time as a whaling center, the waterfront is currently has a deep water port and waterfront park. Hudson's Amtrak station is easily accessible. The city's downtown area is reached via a relatively steep grade along Ferry Street. A Hudson/Athens boat ride is currently offered on special occasions during the summer and fall months.

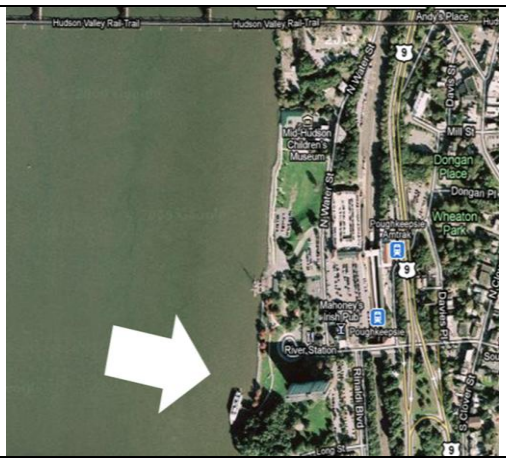
Potential Improvements: This site may benefit from pedestrian linkages and a shelter/ticketing area for the docking area.

Nearby Land Uses:	Parks, industrial, vacant land
Water-based Uses:	Recreational boating, freight operations
Zoning:	Industrial (I-1) and High-density residential (R-4)
Transport systems in addition to automobiles:	Amtrak passenger rail service
Approximate water miles from Kingston:	25

City of Poughkeepsie: Waryas Park

The landing site for the former Highland/Poughkeepsie ferry service and the Hudson River Day Liner. The Sloop Clearwater docks at the site, and it has a public boat launch. The park is adjacent to the Poughkeepsie railroad station (featuring both Amtrak and MetroNorth service) and approximately one-half mile from the Walkway Across the Hudson.

Potential Improvements: This site would require minimal improvements, possibly the creation of a passenger shelter/ticketing area.



Nearby Land Uses:	Municipal Park, high-density residential.
Water-based Uses:	Recreational boating
Zoning:	Nonresidential mixed-use (recreation, retail, institutional, etc.) in the waterfront district (W) and transportation Center district (T)
Transport systems in addition to automobiles:	MetroNorth and Amtrak passenger rail service; Dutchess Co. LOOP bus service
Approximate water miles from Kingston:	15

Town of Rhinebeck: Rhinecliff Dock

This is the former landing site for the Kingston/Rhinecliff ferry service. Extensive rebuilding has been carried out at this site starting in the 1980s, and includes total reconstruction of the entire landing bulkhead and boat launch ramp, which remains in good repair.

Other improvements include the addition of three floating docks for smaller watercraft, two picnic pavilions including cooking grilles and the installation of an irrigation system. A joint effort between the City of Kingston and the Town of Rhinebeck resulted in placement of an additional floating dock to accommodate the 40-passenger water taxi *Lark* that began service in the summer of 2010.

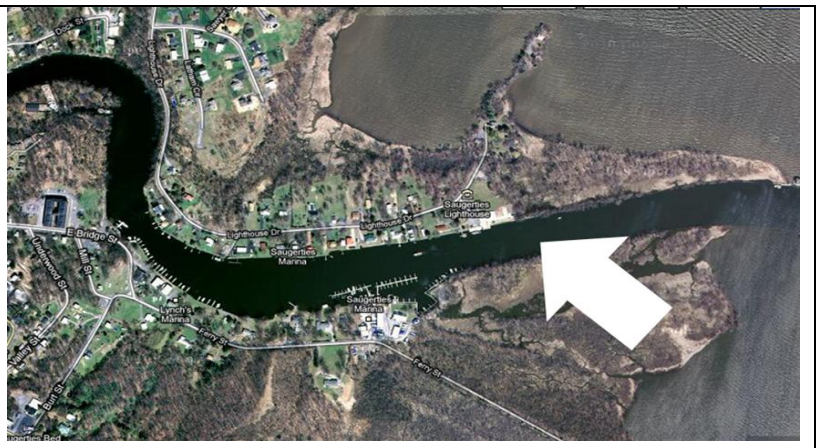
Potential Improvements: The site could benefit from the creation of a shelter/ticketing area for passengers and improved pedestrian connections to the surrounding area.

Nearby Land Uses:	Village-density residential development with some commercial (e.g., the Amtrak station and Rhinecliff Hotel)
Water-based Uses:	Recreational boating via a public dock and boat launch
Zoning:	Residential (Rhinecliff Hamlet--RcH) and Commercial (Rhinecliff Business--RcB)
Transport systems in addition to automobiles:	Amtrak passenger rail service
Approximate water miles from Kingston:	2

Village of Saugerties: Esopus Creek

The Esopus Creek was the original landing site for the Saugerties/Tivoli ferry. Saugerties and Tivoli are pursuing grants money to re-establish some kind of ferry service linking the two villages. The Saugerties Lighthouse is found at the Creek's mouth.

Potential Improvements: The Village's LWRP calls for the dredging of the harbor area, repair of bulkheads and the creation of improved waterfront access. This may also involve siting a floating dock and creating a passenger shelter/tickeing area.



Nearby Land Uses:	Village-density residential development with some commercial (e.g., marinas)
Water-based Uses:	Recreational boating via public and private marinas
Zoning:	Single-Family Residential (R1, R2, R3 & R1W), Mixed Residential (R2 & R3), Mixed Use (Planned Waterfront--PW)
Transport systems in addition to automobiles:	UCAT service to Ulster Mall Area
Approximate water miles from Kingston:	14

Village of Tivoli: Tivoli Landing

Tivoli Landing has long been separated from the rest of the Village by the rail lines that parallel the shore. The landing area itself is quite small. The Village recently secured funding to build an overpass to allow direct pedestrian access to the shore from the landside. This is the landing site for the former Saugerties/Tivoli ferry and located adjacent to the Kaatsbaan International Dance Center. The central business district of Tivoli is just under a mile from this site.

Potential Improvements: The site would benefit from the creation of a dock with a passenger shelter.

Nearby Land Uses:	Low-density residential and institutional (Kaatsbaan International Dance Center)
Water-based Uses:	Recreational boating via a public boat launch
Zoning:	Residential (R2A) with some Mixed uses and commercial uses (RB)
Transport systems in addition to automobiles:	None
Approximate water miles from Kingston:	16

Evaluation of Sites

Given this inventory of landing sites, which combination would have the greatest potential as components in a route (or routes) for ferry service or water taxi service? Several studies have reviewed ferry and water taxi operations throughout the United States and developed criteria for successful services that can be used to evaluate the extent to which various sites can successfully be included in a ferry or water taxi route. A *Water Taxi Feasibility Study* prepared in 2005 for the Sarasota/Manatee Metropolitan Planning Organization by the Renaissance Planning Group provided a set of evaluation criteria that encompasses those factors in a single evaluation system. The system rated these factors in term of their ability to support a water taxi service. Each factor was rated using the following measures:

High: High level of support for water taxi service

Medium: Average or moderate support

Low: Low support.

Table 2 outlines the criteria used to establish whether each factor provides "high," "medium" or "low" levels of support for such service.

Table 2.
Criteria for Evaluating Sites for Water Taxi Service

Factor\Rating:	High	Medium	Low
Estimated Travel Time	Less than 30 minutes	30 to 60 minutes	Over one hour
Vessel Size Needed	Large (Over 49 passengers)	Medium (25 to 49 passengers)	Small (fewer than 25 passengers)
Existing Facility	Large Marina, Shelter available	Small Marina or covered dock	Small dock or no existing facility
Frequencies	More than two departure per hour	One departure per hour	Less than one departure per hour
Environmental Issues	None known	(n/a)	Known environmental issues
Connectivity to public transportation	Within ¼ mile of 2 or more bus routes OR 30 min. or better frequency	Within ¼ to ½ mile from at least one route	More than ½ mile
Connectivity to existing or planned bike, pedestrian, greenways/trails	High accessibility – connected sidewalks, trails, bicycle paths to activity center/ downtown/ destination within ¼ mile (5 min)	Moderate accessibility – some sidewalk gaps or bicycle or trail facilities to destination within ½ mile (10 min)	Poor accessibility – sidewalk gaps, no bicycle or trail facilities, distance to destinations over ½ mile
Alternative to congestion	Provides direct (point-to-point) service in heavily congested corridor or bridge	Provides indirect service in heavily congested corridor	Service not within congested corridor

Table 2. Criteria for Evaluating Sites for Water Taxi Service			
Factor\Rating:	High	Medium	Low
Parking availability (current)	Adequate parking available (within ½ mile)	Moderate parking available	Parking limited
Supportive Development Plans	Plans for market (Origin and Destination) that include a mix of land uses, strong pedestrian accessibility, water taxi facilities and other demand-inducing strategies	Plans for either Origin or Destination that include any or all of the development criteria	No plans that directly support the land use and transportation needs of water taxi service
Source: Adapted by Fairweather Consulting from Renaissance Planning Group, *Water Taxi Feasibility Study Final Report*. Sarasota/Manatee Metropolitan Planning Organization, April, 2005. Other studies used to confirm these criteria: Nelson/Nygard, et al., Willamette River Ferry Feasibility Study Final Report, City of Portland, Oregon, June, 2006; Nelson/Nygard, *Regional Passenger Only Ferry Study*, Executive Summary, Puget Sound Regional Council, November, 2008.			

These factors are then applied to the potential sites to evaluate their suitability for ferry service or water taxi service from Kingston. A few factors were removed from the evaluation. For example, since this evaluation is focused on one Kingston-based ferry service the "vessel size needed," "frequencies [of service]" are the same for all sites. Therefore, those factors have been eliminated from consideration. In addition, the "alternatives to congestion" factor has been eliminated since none of the corridors potentially included in this service (e.g., Kingston/Rhinecliff, Kingston/Saugerties, etc.) can be considered heavily congested at the present time.

Table 3 below provides the results of evaluating the potential docking sites using the factors discussed above. The evaluation was conducted by converting the high, medium and low rating factors into a numeric scale. Factors rated highly were given 2 points. Factors given a moderate rating were awarded 1 point and factors that provided low support were not given any points. It is important to note that this evaluation focuses on the suitability of these sites for service originating in Kingston. Ratings for some of the more distant sites were lowered by the fact that the estimated travel time from Kingston by river was more than one hour.

Table 3. Evaluation of Potential Sites for Kingston-based Passenger Ferry/Water Taxi								
2 = Provides high level of support 1 = Provides moderate support 0= Provides low support	Estimated Travel Time	Existing Facility	Environmental Issues	Connect-ivity to public transportation	Connect-ivity to green-ways/ trails	Parking avail-ability (current)	Support-ive Develop-ment Plans	Overall Score
Kingston: Hudson River Maritime Museum Dock	2	2	1	1	2	1	2	11
Kingston: Kingston City Dock	2	2	1	1	2	1	2	11
Kingston: Kingston Ferry Slip	2	2	1	1	2	1	2	11
Kingston: Kingston Point Park	2	0	1	1	2	1	2	9
Kingston: Hudson Landing	2	0	1	1	1	1	1	7
Athens: Riverfront Park	0	1	0	0	2	1	2	6
Catskill: Catskill Point	0	1	1	0	2	1	2	7
Esopus: Esopus Meadows	2	1	1	0	0	0	0	4
Esopus: Rondout Waterfront	2	1	1	1	2	1	2	10
Hudson: Hudson Waterfront	0	1	1	1	2	1	2	8
Poughkeepsie: Waryas Park	0	1	1	1	2	1	2	8
Rhinebeck: Rhinecliff Dock	2	2	1	2	1	0	1	9
Saugerties: Esopus Creek Dock	1	1	1	1	2	1	2	9
Tivoli: Tivoli Landing	1	0	1	0	1	0	0	3

That being said, the highest rated sites were the Hudson River Maritime Museum Dock, the Kingston City Dock, the Kingston Ferry Slip and the Rondout Waterfront. They all gained from the fact that:

1. There was low travel time (since they would be the point of origination)
2. The existing facility is in or near a large marina

3. There is good connectivity to public transit and pedestrian walkways

4. Supportive development plans are in place to strengthen the existing dense and connected mixed-use nature of the site

The Rhinecliff Dock and Kingston Point Park were rated just below these other sites. They share the other sites' connectivity and supportive development, but face constraints in terms of parking (for Rhinecliff) and facilities for Kingston Point Park. The sites in Hudson, Poughkeepsie and Saugerties lost points due to travel time. This suggests that, if travel time can be reduced by increasing the speed of the boats, each of these sites would be strong candidates to be included as part of any proposed Kingston-based service. (NOTE: Kingston Point Park would receive an even higher rating should the Dayline dock be restored on the site—a project currently in the conceptual design phase. Indeed, the site would be even more attractive with improved trolley linkages to the Rondout and other areas on the City.)

One of the lower-rated sites deserves special consideration. The Esopus Meadows site (4 total points) was hurt by the fact that it does not readily connect to existing nodes of activity. While that is true, Esopus Meadows is a special case. While it is completely lacking as far as providing connectivity to dense mixed-use development, the site hosts the Clearwater's Environmental Center and provides opportunities for environmental interpretation programs, scenic river views and hiking. It is possible that this site could be included as part of an ecotourism experience, particularly given its close proximity to Kingston.

The results of this evaluation suggest that three models of Kingston-based water transportation be evaluated:

- **Model 1**: Kingston/Rhinecliff commuter ferry service to provide access to New York City-bound Amtrak train service for commuters from the west bank of the Hudson River.
- **Model 2**: Kingston/Rhinecliff water taxi to link sites along the Kingston waterfront while also providing tourism excursions to other nearby stops such as Esopus Meadows, Saugerties and Tivoli.
- **Model 3**: An extended water taxi "loop" tourism excursion service including Tivoli and Saugerties and possible Hudson and Poughkeepsie (Note: this would require a higher speed boat)

The section below provides detailed estimates of the costs and revenues associated with each of the three models.

Alternative Cost and Revenue Scenarios

Table 4.
Water-based Transit Market Types and Service Requirements*

Characteristic	Commute Market	Visitor/ Circulator Market
Service Hours	Focus on peak commute hours	All day service – ridership peaks midday
Vessel Size	Class II Passenger Vessels – capacity 80 – 120 passengers	Small vessels – capacity 20 passengers
Vessel speed	Fast boats that compete with auto travel times (30 knot max.)	Slower boats with good visibility ideal (8 knot max ok)
Amenities Needed	Comfortable seating, warm indoor space, large bicycle storage capability, food service if possible, quiet operation, fast loading and unloading	Good visibility, covered seating area, interpretation if possible, bicycle storage
Seasonality	Year round - little variation	Reduced service in winter
ADA Accessibility	Yes	Yes
Typical Market Demographics	Mid to high include commuter, values time, willing to pay premium fare. High auto access rates at home end of trip require Park-&-Ride opportunities.	Visitor including local visitor who wants to connect to the river. Not as time focused as commute market. Ferry trips as part of experience. Some may ride for excursion purpose only.
Connections/Access	Ferry riders less likely to use existing transit modes, but may walk or bike longer distances for connections. Likely to drive 15+ minutes on home end and walk 10 to 15 minutes on work end.	Will walk or take transit from other Central City visitor sites. Local users may drive. Not highly sensitive to time required to access ferry. Use may be one element of waterfront experience.

*Service markets were identified [by the authors cited below] through a series of interviews with stakeholders and interest groups in the Portland area as well as peer system research, including the experience of systems in the Puget Sound, San Francisco Bay Area, British Columbia, New York, Chicago, Baltimore and elsewhere. SOURCE: Adapted by Fairweather Consulting from Nelson\Nygaard Consulting Associates, *Willamette River Ferry Feasibiilty Study*, City of Portland, OR, 2006. P. 1-14.

In this section, we analyze the costs and revenues associated with each of the three models for water-based service based in Kingston. We begin the discussion of each model with a projection of potential ridership based upon trends in the markets served by each. In addition, the analysis provides an estimate of operating costs and associated capital costs (i.e., estimated purchase price for the boat). The analysis also creates estimates for potential revenue sources of each model.

The three alternatives being evaluated in this analysis fall into two distinct categories of service. In their 2006 *Willamette River Ferry Feasibility Study done for the City of Portland Oregon*, Nelson\Nygaard Consulting Associates provided a dichotomy for the important features of each of these two types of services. That study identified the two options as either the commuter market (what the present study terms "commuter ferry service") and the visitor/circulator market (herein called "water taxi" service). The differences between the two types of services are summarized in Table 4 above.

The two types of service requirements listed in Table 4 have served as the basis for the three models considered for Kingston-based service. Two of Nelson/Nygaard's service requirements have been modified to meet the special circumstances related to Kingston. First, given the relatively short distance from Kingston to Rhinecliff, commuter ferry service need not be as fast as the 30-knot recommendation. The commuter ferry model created for Kingston/Rhinecliff service will be based upon 15-knot service. In addition, in the visitor/circulator market, the present study will look at slightly larger, faster speed service. A passenger capacity of approximately 45 passengers is used so that the boat would have greater potential to accommodate private parties and functions when not in regular service. The analysis also assumes an average speed of approximately 15-knots for Model 2 ("water taxi") and 25 knots for Model 3 (the "water taxi loop service). This reflects the fact that the sites included in those two models are at a greater distance from each other than such sites would be for a service in a heavily urbanized area.

Estimating Potential Ridership for each Model

The effort to estimate ridership began with Model 1: the commuter passenger ferry service. This model assumes that daily passenger ferry service will be provided to and from the Rhinecliff Amtrak station, primarily serving commuters to New York City. The first step in assessing this model is to estimate the potential size of commuters (and other travelers) who could be likely passengers on this ferry. This analysis uses several key sources to arrive at its estimates:

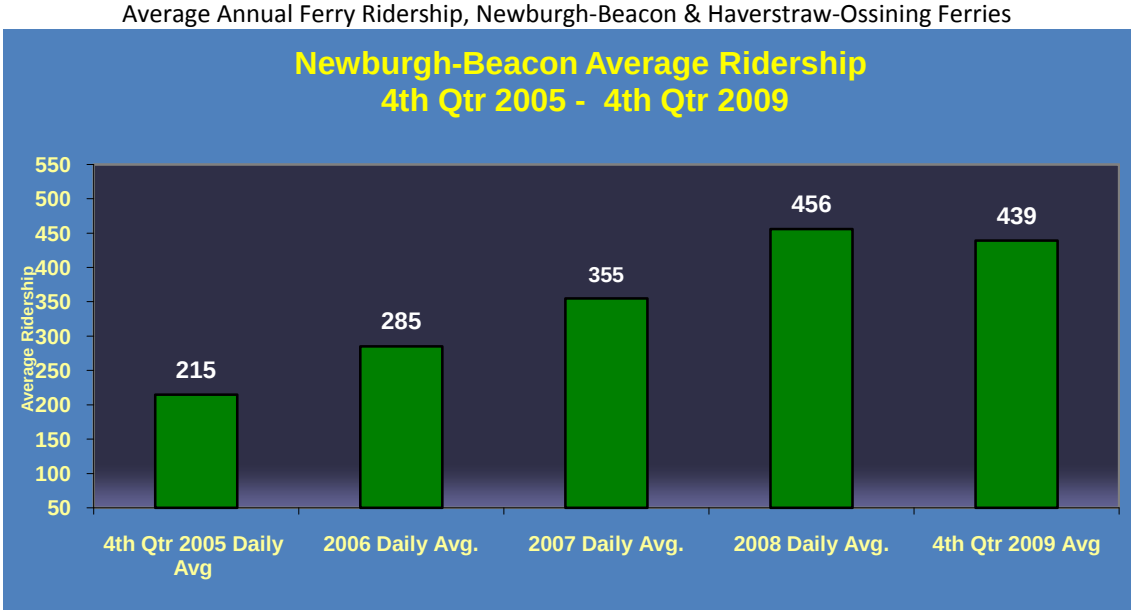
MetroNorth's Existing Ridership Statistics

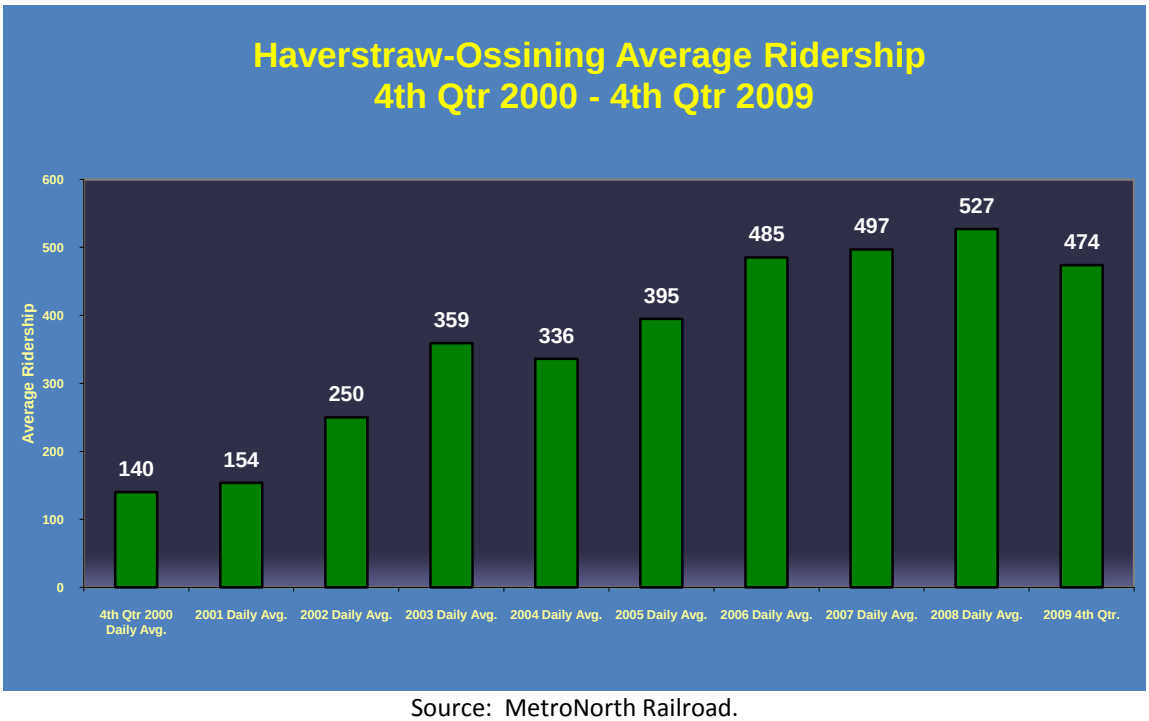
As part of gauging the potential market for Kingston/Rhinecliff commuter ferry service, we examined trends in ridership statistics for the two ferry services maintained by MetroNorth at Newburgh and Haverstraw. A shown in Figure 2, the Newburgh/Beacon ferry has averaged approximately 400 riders per day for the last two years, with average daily ridership doubling since the service's inception in 2005. In 2008, the Haverstraw/Ossining averaged slightly more than 500 average daily riders. These figures will be used as part of the effort to estimate potential ridership for a Kingston/Rhinecliff commuter ferry service.

Amtrak Ridership Statistics

Figures for the sales of 10-trip and monthly Amtrak tickets for New York City from the Rhinecliff station provide a sense of current commuter travel on Amtrak. From October, 2005 until August, 2009, between 50 and 100 monthly tickets were sold per month. During that same time period, the sale of 10-trip tickets tended to range between 200 to 250 per month. This suggests that the approximate number of regular commuters at the Rhinecliff station runs between 250 and 350 per day.

Figure 2.
Average Annual Ferry Ridership, Newburgh-Beacon & Haverstraw-Ossining Ferries





Source: MetroNorth Railroad.

Note however that most of these tickets are 10-trip tickets. This suggests that many of those who regularly take Amtrak into New York City from Rhinecliff do not do so on a daily basis. It suggests that these commuters will travel to New York a few times a week, staying overnight before returning to Rhinecliff for a long weekend. Thus the figure of 250 to 350 commuters per day is very likely to be high, since most of these are not in fact daily commuters. This means that the total number of commuters

using the Amtrak station at Rhinecliff is less than the total average daily ridership for either the Newburgh or Haverstraw ferries. All of which suggests that it may be difficult for a Kingston/Rhinecliff ferry service to generate ridership comparable to Newburgh or Haverstraw.

US Census Bureau's Longitudinal Employer/Household Dynamics Database combines payroll data and Census data to provide annual estimates of the residency of workers in labor markets throughout the US. It can be used to estimate the number of residents in a particular area that commute to another specified area (e.g., a county, city, etc.). This database was used to identify the number of residents in Kingston and other areas that work in New York City for the years 2006 and 2008.

The table also provides data on New York City commuters who reside in Saugerties and the greater Northern Ulster area (which includes the Ulster County towns of Saugerties, Kingston, Shandaken, Marbletown, Olive, Hurley, Esopus, Ulster, Woodstock and the City of Kingston, as well as the Greene County Town of Hunter and the Delaware County Town of Middletown). In addition, the table also shows commutation data for towns of Newburgh and New Windsor in Orange County, as well as the Town of Haverstraw in Rockland County. Note: this analysis did not include communities south of Esopus because commuters in the southern part of Ulster County that do not drive to New York are more likely to either take MetroNorth at Poughkeepsie or commute via the Adirondack Trailways bus service from Rosendale and New Paltz.

Table 5.
Commutation into New York City by Commutershed

Commutershed:	2008 Count	2008 Share	2006 Count	2006 Share
City of Kingston	884	100.0%	822	100.0%
Greater Northern Ulster Area	3,228	100.0%	2,926	100.0%
Towns of Newburgh and New Windsor	3,333	100.0%	3,554	100.0%
Average Daily Ferry Ridership	456	13.7%	285	8.0%
Town of Haverstraw	2,427	100.0%	2,494	100.0%
Average Daily Ferry Ridership	527	21.7%	485	19.4%
Estimated Ferry Ridership Using Share for Newburgh & New Windsor				
City of Kingston	121	13.7%	66	8.0%
Greater Northern Ulster Area	442	13.7%	235	8.0%
Estimated Ferry Ridership Using Share for Haverstraw				
City of Kingston	192	21.7%	160	19.4%
Greater Northern Ulster Area	701	21.7%	569	19.4%

Source: Compiled by Fairweather Consulting from US Census Bureau, LED OnTheMap Origin-Destination Database. (Beginning of Quarter Employment, 2nd Quarter 2008, 2006.

As shown in Table 5, in 2008, 884 Kingston residents commuted to New York City, up from 822 in 2006. The entire greater Northern Ulster area produced 3,228 individuals who commuted to New York City.

Note that the total number of commuters from this extensive area is still less than those commuting from just the town of Newburgh and New Windsor. Note also that the Town of Haverstraw, by itself, had 2,427 individuals who commuted to New York City in 2008.

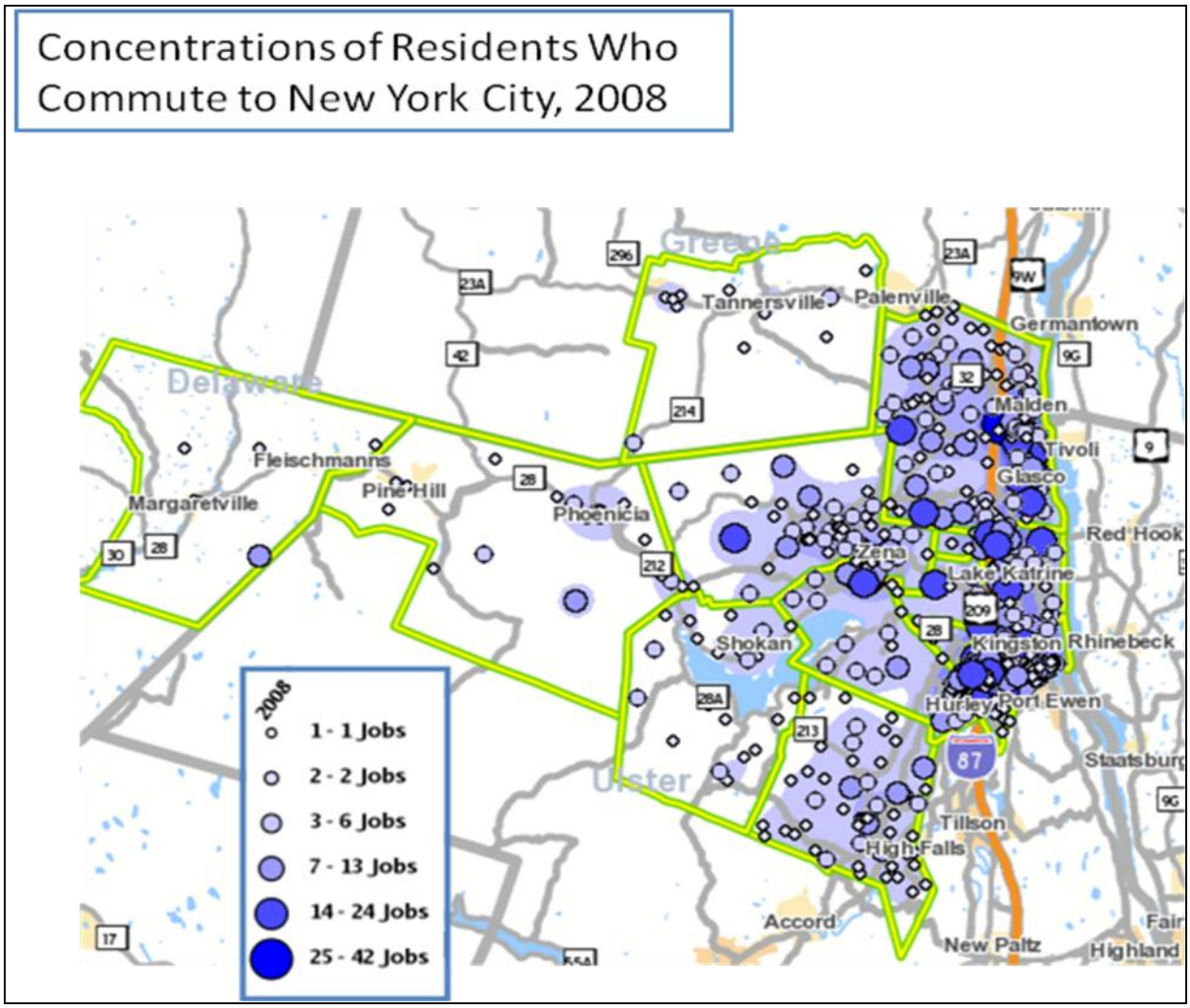
These data suggest that it will be difficult for commuter ferry service out of Kingston to generate a level of ridership comparable to Newburgh or Haverstraw. The last two sections in the table include an estimate for potential ridership for Kingston, Saugerties and the entire greater Northern Ulster area assuming that those areas will generate ferry riders at the same ratio to the overall commuting population as did the Town of Newburgh and the Town of Haverstraw.

As shown in the Table 5 the projected number of commuters from the City of Kingston ranges from 121 using the Newburgh/New Windsor ratio to 192 using the Haverstraw ratio. These are well below typical ridership for either the Newburgh or Haverstraw ferries. It is possible to generate substantial projected ridership by applying the Newburgh/New Windsor and Haverstraw ratios to the total commuters from the greater Northern Ulster area. However, Figure 3 shows that outside of Kingston, these commuters are concentrated in Saugerties and, to a lesser extent, Woodstock and Hurley. It is not likely that people living in those towns would be willing to drive to 10 to 15 minutes to Kingston to take a ferry to board an Amtrak train. This suggests that, under current conditions, the ridership of the Kingston/Rhinecliff commuter ferry would be well below the levels of Newburgh and Haverstraw.

Note: growth associated with the recent Hudson Landing project is likely only to make modest contributions to ferry ridership. The Final Generic Environmental Impact Statement for the project estimates that, at build-out, the development would have a population of 5,352 that would yield an additional 20 average daily trips for commuters using Amtrak service from Rhinecliff to New York City. Applying the ratios of population to ferry riders from the Newburgh/New Windsor area or Haverstraw yields a similar result, with the projected number of average daily trips ranging from 29 (based on the Newburgh/New Windsor ratio) to 46 (using the Haverstraw ratio).

This analysis suggests that, while there appears to be some potential ridership for a Kingston/Rhinecliff commuter ferry service, the numbers are well below the figures for both the Newburgh/Beacon and Haverstraw/Ossining ferries.

Figure 3.
Physical Distribution of Commuters in Northern Ulster Commutershed.



Source: US Census Bureau, LED OnTheMap Origin-Destination Database.

Cost and Revenue Estimates for Commuter Ferry Service

The operating costs for the three models created for this study use assumptions and estimates from a variety of sources. Some of the key assumptions are derived from the Water Taxi Feasibility Study prepared in 2005 for the Sarasota/Manatee Metropolitan Planning Organization by the Renaissance Planning Group, modified where necessary to reflect conditions in the Kingston area based upon discussion with businesses operating or servicing tourboats. These operating assumptions are listed below:

LABOR

The size of the crew required is dependent on the number of passengers carried and the vessel's configuration. Prior to issuing a Certificate of Inspection, which is required to carry passengers, the local US Coast Guard Marine Safety Office must approve the vessel's manning plan. It is strongly recommended that they be consulted early in the process to ensure the proposed plan will be acceptable. The following discussion is based on current operations and is provided as general guidance only.

For vessels with fewer than 50 passengers operating within protected waters, only an operator is generally required. The Long Beach [California] AquaBus is a good example of this sort of operation. The route is relatively short and protected, there are four stops, each with a unique attraction, and the system is accessible for people with disabilities. For budgetary purposes, the rate for the operator of this size vessel should be about $20 to $22 per hour, exclusive of benefits. For larger vessels, a master plus at least one mate/deckhand per deck is the usual complement. The licensing requirements for the master on larger vessels are more stringent and a rate of $24 to $27 per hour should be used for budgeting. [Based on recommendations from those in the ferry industry, this study uses $30 per hour.] Deckhands do not need formal training and should be budgeted at $10-$12 per hour. If a crew of three is required, the operating budget should include $16 per hour for a mate/mechanic.

FUEL & OIL

The cost of fuel becomes a more significant factor in the overall operating cost as vessel size and speed increase. For most vessels, doubling the speed will result in quadrupling the fuel consumed, if such speeds are even possible. For pure displacement hulls, such as the electric and diesel electric hybrids discussed above, there is a speed, known as the "hull speed", which cannot be exceeded by an appreciable amount regardless of the power applied. As long as the vessel is operated somewhat below hull speed, the rate of fuel consumption will be relatively low. Marine diesel fuel is budgeted at $3.00 per gallon. [Note: this adjusted from the original study's price of $1.75 per gallon.]

MAINTENANCE

MACHINERY

For the purposes of this feasibility analysis, the machinery maintenance costs are estimated as a function of the amount of fuel consumed. This cost includes both regular maintenance, such as changing the oil and filters, and annual maintenance, which requires taking the vessel out of service. While the vessel is out of service, the annual inspection required by the US Coast Guard is also conducted. For a 49 passenger, eight knot vessel, the annual maintenance cost is estimated at $10,000 per year.

HULL & OUTFIT

Hull and outfit maintenance costs are based on the number of passengers carried and includes daily and weekly maintenance as well as any work done during the annual haul-out, such as cleaning and painting the underside of the hull. For an 80 passenger vessel operating 3,000 hours per year, the annual hull and outfit maintenance budget will be approximately $7,200. [Thus, a

45-passenger vessel operating 540 hours would have $3,600 in annual hull and outfit maintenance.]

TERMINALS

To ensure high quality service, all of the terminals within the system will require periodic cleaning and maintenance. Regular cleaning of the terminals will likely be done by the same personnel who clean the other transit stops within the system and will have a negligible impact on that budget. Annual maintenance of the terminal piers, gangways, and floats will primarily consist of painting and minor maintenance, with an annual budget of $2,500 per terminal per year.

MOORAGE

The annual operating budget should include the cost of overnight moorage for the vessels. For this study, a budget of $200 per month was assumed for each vessel.

INSURANCE

The three types of insurance required for vessel operations are hull & machinery insurance, liability insurance, and pollution insurance. Hull and machinery insurance is based on the replacement cost of the vessel and generally costs seven cents per $1,000 of value. For an 80 passenger, diesel catamaran with a replacement cost of $1.5 million, the hull and machinery insurance will cost about $10,500 per year.

Liability insurance is a function of the number of passengers carried annually and is a fixed amount for the initial $1 million in coverage, a somewhat smaller amount for each additional $1 million in coverage up to $5 million in total coverage, and yet another amount for each $1 million above $5 million. This liability insurance does not cover passengers before they enter the boarding facility or after they depart. For a system carrying approximately 50,000 passengers per year, $5 million in total coverage will cost about $13,000 per year.

Pollution insurance is required to cover the cost of any accidental fuel, oil, or other hazardous material spills. It is not required for electric boats. The amount of pollution insurance required is a function of the size of the vessel and the amount of fuel carried.

MANAGEMENT & ADMINISTRATION

The operation of a waterborne transit system will require some support from personnel on shore. This shore-based staff will be responsible for managing the crews, scheduling maintenance, and ordering supplies. In addition, customer service and/or marketing support may be required, depending on the relationship between the waterborne service and the rest of the transit system administration.

For a system comprised of two or fewer vessels, the maintenance planning can be performed by the Chief Master, in which case only a general manager will be required. . . . The annual budget for a General Manager should be $65,000. . . Benefits will add an additional 25 to 30 percent to these rates. [For purposes of this analysis, it has been assumed that one-third of the general manager's time will be charged to the operation of the part-year services. One-half of the general manager's time is charged to the operation of the year-round ferry service.]

OVERHEAD

Overhead costs include dock access fees, overnight vessel moorage, rents, utilities, license fees, [costs of ticket sales,] etc. In addition to the administrative offices, a small workshop for vessel maintenance and parts storage will be required. The total overhead costs can be estimated at 12 percent of all other operating costs.

Source: Adapted by Fairweather Consulting from Renaissance Planning Group et al., *Water Taxi Feasibility Study Final Report*, Sarasota/Manatee Metropolitan Planning Organization, April, 2005, pp. 18-20.

In addition to these assumptions, the analysis also assumes that each model will have an annual promotional/marketing budget of $50,000. Using these assumptions, operating cost estimates have been created for each of the three models of ferry/water taxi service identified above.

Model 1, the commuter ferry, assumes it operates year-round with a 150-passenger boat with a 15-knot cruising speed and that it attracts an average of 120 riders per day (i.e., 60 roundtrips). In addition, it is assumed that the ferry operator runs 30 events each year that attract 100 riders each at a net revenue to the operator of $10 per rider.

Model 2, the tourism water taxi service, is assumed to operate from April to the end of October with a 50 passenger vessel operating at a 15-knot cruising speed.

Model 3, the higher-speed "loop" taxi service, is assumed to operate from April to the end of October with a 50 passenger vessel operating at a 25-knot cruising speed.

Note: for both models 2 and 3, we have assumed an annual daily ridership of 50 passengers. This is based upon the previous experience with tourism "water taxi" service provided by Hudson River Cruises through its vessel, the *Lark*. It is also consistent with the average daily attendance for the past three years at the New York State Trolley Museum and its trolley ride from the Rondout area to Kingston Point. In addition, in models 2 and 3, it is assumed that the boat operator runs 30 events each year that attract 50 riders each at a net revenue to the operator of $10 per rider.

NOTE: These models use a fare of $10/passenger based upon experience of other water taxis/passenger ferries as well as the results of a survey of waterfront visitors in Kingston in 2008. At that time, a majority of respondents indicated that they would be willing to pay a fare between $7.00 and $12.00 for excursions/taxi service to such destinations as Rhinecliff. (A compilation of that survey is included in the report appendices.)

Estimates of the operating costs and revenues of each of the three models are provided in tables 6, 7, and 8 below.

Table 6. Projected Annual Operating Costs and Revenues for Model 1 (15 knot Passenger Ferry)					
Annual Operations:		Hrs./Day	Days/Wk.	Wks./Yr.	Total
		6	5	52	1,560
Crew	Position	Hourly	Per Boat	Hrs.yr.	Annual Cost
	Captain	30	1	1,560	$ 46,800
	Deckhand	12	1	1,560	18,720
	Base Wages				65,520
	Taxes and benefits			30%	22,932
Total Yearly Crewing Costs (rounded value)					**$ 88,500**
Fuel	Total hours/year	Gallons/hour*	Fuel Price		Annual Cost
	1,560	4	$ 3.00		$ 18,720
	Total Fuel Costs				**$ 18,720**
Other	Type of Cost				Annual Cost
	Maintenance				
	Machinery				$ 15,000
	Hull and Outfit				7,200
	Terminals				2,500
	Moorage				2,400
	Insurance				25,000
	Adminstration				42,250
	Ice-breaking (40 days @ $1,000/day)				40,000
	Promotion/Marketing				50,000
	Overhead				18,368
	Total Other Costs				**$ 202,718**
Total	Total Annual Vessel Operation Cost (rounded value per vess				**$ 309,900**
	Hourly Operating Cost				**199**
Projected Operating Revenues					
	Days of Operation				260
	Average Daily Passengers				60
	Fare (round-trip)				$ 10
	Total Projected Operating Revenue				**$ 156,000**
	Operating Surplus/(Deficit)				**$ (153,900)**
	Other Revenue				
	Events (30 events of 100 people each netting $10 each)				$ 30,000
	Subsidy				$ (123,900)

*precise consumption is based upon duty cyle of the boat (the percentage of time in which the boat operates close to capacity speed). This estimate assumes 80 percent of full speed.

See bibliography for sources consulted in creating cost estimates.

Table 7. Projected Annual Operating Costs and Revenues for Model 2 (15-knot Water Taxi)					
Annual Operations:		Hrs./Day	Days/Wk.	Wks./Yr.	Total
		3	6	30	540
Crew	Position	Hourly	Per Boat	Hrs./yr.	Annual Cost
	Captain	22	1	540	$ 11,880
	Deckhand	12	1	540	6,480
	Base Wages				18,360
	Taxes and benefits			30%	6,426
Total Yearly Crewing Costs (rounded value)					**$ 24,800**
Fuel	Total hours/year	Gallons/hour*	Fuel Price		Annual Cost
	540	4	$ 3.00		$ 6,480
	Total Fuel Costs				**$ 6,480**
Other	Type of Cost				Annual Cost
	Maintenance				
	Machinery				$ 10,000
	Hull and Outfit				3,600
	Terminals				2,500
	Moorage				2,400
	Insurance				15,000
	Adminstration				28,167
	Promotion/Marketing				50,000
	Overhead				8,178
	Total Other Costs				**$ 119,844**
Total	Total Annual Vessel Operation Cost (rounded value per vess				**$ 151,100**
	Hourly Operating Cost				**$ 280**
Projected Operating Revenues					
	Days of Operation				180
	Average Daily Passengers				50
	Fare:				$ 10
	Total Projected Operating Revenue				**$ 90,000**
	Operating Surplus/(Deficit)				**$ (61,100)**
	Other Revenue				
	Events (30 events of 50 people each netting $10 each)				15,000
	Subsidy				$ (46,100)

*precise consumption is based upon duty cyle of the boat (the percentage of time in which the boat operates close to capacity speed). This estimate based upon experience of similar boats operating on the Hudson in the Kingston vicinity.
See bibliography for sources consulted in creating cost estimates.

Table 8. Projected Annual Operating Costs and Revenues for Model 3 (25-knot Water Taxi)						
Annual Operations:		Hrs./Day	Days/Wk.	Wks./Yr.	Total	
		5	6	30	900	
Crew	Position	Hourly	Per Boat	Hrs./yr.	Annual Cost	
	Captain	22	1	900	$	19,800
	Deckhand	12	1	900		10,800
	Base Wages					30,600
	Taxes and benefits			30%		10,710
Total Yearly Crewing Costs (rounded value)					**$**	**41,300**
Fuel	Total hours/year	Gallons/hour*	Fuel Price			Annual Cost
	900	20	$ 3.00		$	54,000
	Total Fuel Costs				**$**	**54,000**
Other	Type of Cost					Annual Cost
	Maintenance					
	Machinery				$	10,000
	Hull and Outfit					3,600
	Terminals					2,500
	Moorage					2,400
	Insurance					15,000
	Adminstration					28,167
	Promotion/Marketing					50,000
	Overhead					13,880
	Total Other Costs				**$**	**125,547**
Total	Total Annual Vessel Operation Cost (rounded value per vess				**$**	**220,800**
	Hourly Operating Cost				**$**	**245**
Projected Operating Revenues						
	Days of Operation					180
	Average Daily Passengers					50
	Fare:				$	10
	Total Projected Operating Revenue				**$**	**90,000**
	Operating Surplus/(Deficit)				**$**	**(130,800)**
	Other Revenue					
	Events (30 events of 50 people each netting $10 each)					15,000
	Subsidy				$	(115,800)

*precise consumption is based upon duty cyle of the boat (the percentage of time in which the boat operates close to capacity speed). This estimate assumes 80 percent of full speed. See bibliography for sources consulted in creating cost estimates.

Model 1 would operate six hours a day, five days a week for 52 weeks each year. It is projected to have annual operating costs of approximately $310,000 and, at an average of 120 passengers per day (i.e., 60 roundtrips), revenues of $156,000. If the operator was able to generate an additional $30,000 in events revenue, then the total annual operating deficit would be approximately $124,000, or about $8.00 per passenger.

Model 2 would operate 3 hours per day (two 1-hour trips) for 6 days each week for 30 weeks. It is projected to have annual operating costs of $150,000 and, at an average of 50 passengers per day, revenues of $90,000. If the operator was able to generate an additional $15,000 in events revenue, the total annual operating deficit would be approximately $46,000, or about $7.00 per passenger.

Model 3 would operate 5 hours per day (two 2-hour trips) for 6 days each week for 30 weeks. It is projected to have annual operating costs of $220,000, and, at an average of 50 passengers per day, revenues of $90,000. If the operator was able to generate an additional $15,000 in events revenue, the total annual operating deficit would be approximately $116,000, or about $15.00 per passenger.

Note: under these assumptions, the level of ridership at which the operating revenues of Model 1 would equal the operating costs would be at approximately 110 passengers per day. The "break even" ridership for Model 2 would be at approximately 100 passengers per day. For Model 3 it would be at approximately 180 passengers per day.

Not surprisingly, these results suggest that reaching a self sustaining level of ridership is problematic for each option. For Model 1, the results suggest that it would require significant penetration into existing commuter market beyond what has taken place in either the Newburgh/New Windsor area or Haverstraw.

As mentioned above, several other factors indicate how difficult it would be to establish regular commuter service to the Rhinecliff Amtrak station as the first step in creating a water-based transit service in Kingston. For example, the ferry services in Newburgh and Haverstraw connect to the MetroNorth commuter railroad. Amtrak's passenger service involves a much higher monthly or per trip fare for train service that is less frequent and involves a significantly longer trip than MetroNorth service from Poughkeepsie. In addition, it is worth remembering that it is aggressive subsidies by the New York State Department of Transportation and MetroNorth that enable the MetroNorth service (and the connecting ferries from Newburgh and Haverstraw) to be so much less expensive than service described under Model 1 in this study. In the current fiscal situation it would be difficult to envision those two agencies providing similar subsidies to a Kingston/Rhinecliff service.

Models 2 and 3 have their own challenges. Model 2 would have to double ridership. Yet that would involve increasing ridership by fifty passengers per day. Model 3 would have to increase ridership by 80 passengers. In addition, the model works against the experience of some tourboat operators. It has been pointed out that, with speed comes increased noise and loss of the quality of the experience on

the vessel itself. In that sense, speed only matters for commuters and can be a detriment for a tourism-based service where much of the attraction is based upon the quality of the ride itself.

A Hypothetical Business Plan for Water-based Transit Service for Kingston

Given the challenges involved in creating a commuter passenger ferry service (e.g., the need for high reliability, a clear time advantage in the total trip itself, the need for redundant transit services and the relatively small commutershed in the area at present), it would be difficult to begin any water-based transit service for Kingston using Model 1. At the same time, Model 3, the water taxi loop service has challenges associated with maintaining the speed needed to reach the more distant sites while at the same time providing the quality experience important to tourists. This suggests that the way to begin water-based transit in the Kingston area is with Model 2, the slower tourist-based water taxi service. Thus the hypothetical business plan presented here is built upon Model 2. The first five years of operation would involve a modest tourism-based water taxi service serving Kingston, Rhinecliff, Esopus Meadows and possibly as far afield as Saugerties and Tivoli. The service would operate 3 hours a day, six days a week for 39 weeks. After five years of experience, the service would be expanded an additional 3 hours per day (possibly including limited commuter service to Rhinecliff). Ridership is assumed to grow at a 10 percent annual rate throughout the 10-year time frame.

For this analysis, it is assumed that general costs increase 1 percent per year for the life of the analysis. Fuel costs are assumed to increase by 3 percent annually. To be conservative, the fare for the service is fixed a $10 per passenger for the 10-year life of the analysis. Table 9 provides a pro forma analysis of the costs and revenues of the service over ten years. As shown in the table, the service would require an operating subsidy throughout the 10 years, including a first year subsidy of $46,000, which would diminish to $30,000 by year 10. Note that the operating deficit is reduced to $18,700 by Year 5. It increases after than due to the fact that in the following year, average hours per day of operation increase from 3 to 6 as ridership grows. The added fuel and crew costs lead associated with those increase hours of operation contribute to the somewhat larger operating deficits in years 6 through 10.

NOTE: This subsidy does not include capital costs associated with securing a vessel or vessels to provide the service. According to interviews conducted during this study, costs for a vessel could vary between $75,000 for a used 49-passenger vessel to $250,000 to $300,000 for a new vessel. The annual debt service for a new $250,000 vessel financed over 20 years at a 4 percent interest rate would be approximately $18,400 per year. If a used vessel were obtained for $75,000 and financed under similar terms, it would add approximately $5,500 to the annual costs. If such capital costs are included, the annual subsidy would be increased accordingly.

Note also that the business plan does not include the waterside capital costs associated with implementing the service. These are detailed in the next section of the report in the implementation plan.

Table 9. Projected Annual Operating Costs and Revenues for Model 2 (15-knot Water Taxi)

Annual Operations:		Hrs./Day	Days/Wk.	Wks./Yr.	Hrs. of Operation									
					Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
		3	6	30	540	540	540	540	540	1,080	1,080	1,080	1,080	1,080
Crew	Position	Hourly	Per Boat	Total hrs/y	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost
	Captain	22	1	540	$ 11,880	$ 11,999	$ 12,119	$ 12,240	$ 12,362	$ 24,972	$ 25,222	$ 25,474	$ 25,729	$ 25,986
	Deckhand	12	1	540	6,480	$ 6,545	$ 6,610	$ 6,676	$ 6,743	$ 13,621	$ 13,757	$ 13,895	$ 14,034	$ 14,174
	Base Wages				18,360	18,544	18,729	18,916	19,105	38,593	38,979	39,369	39,762	40,160
	Taxes and benefits			30%	6,426	6,490	6,555	6,621	6,687	13,508	13,643	13,779	13,917	14,056
Total Yearly Crewing Costs (rounded value)					**$ 24,800**	**$ 25,000**	**$ 25,300**	**$ 25,500**	**$ 25,800**	**$ 52,100**	**$ 52,600**	**$ 53,100**	**$ 53,700**	**$ 54,200**
Fuel	Total hours/year	Gals./hr.*	Fuel Price		Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost
	540	4	$ 3.00		$ 6,480	$ 6,674	$ 6,875	$ 7,081	$ 7,293	$ 15,024	$ 15,475	$ 15,939	$ 16,417	$ 16,910
	Total Fuel Costs				**$ 6,480**	**$ 6,674**	**$ 6,875**	**$ 7,081**	**$ 7,293**	**$ 15,024**	**$ 15,475**	**$ 15,939**	**$ 16,417**	**$ 16,910**
Other	Type of Cost				Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost	Annual Cost
	Maintenance													
	Machinery				$ 10,000	$ 10,100	$ 10,303	$ 10,615	$ 11,046	$ 11,495	$ 12,202	$ 13,082	$ 14,166	$ 15,493
	Hull and Outfit				3,600	$ 3,636	$ 3,709	$ 3,821	$ 3,977	$ 4,138	$ 4,393	$ 4,710	$ 5,100	$ 5,578
	Terminals				2,500	$ 2,525	$ 2,576	$ 2,654	$ 2,762	$ 2,874	$ 3,050	$ 3,271	$ 3,542	$ 3,873
	Moorage				2,400	$ 2,424	$ 2,473	$ 2,548	$ 2,651	$ 2,759	$ 2,928	$ 3,140	$ 3,400	$ 3,718
	Insurance				15,000	$ 15,150	$ 15,455	$ 15,923	$ 16,569	$ 17,242	$ 18,303	$ 19,623	$ 21,249	$ 23,240
	Adminstration				28,167	$ 28,448	$ 29,020	$ 29,899	$ 31,114	$ 32,377	$ 34,369	$ 36,848	$ 39,901	$ 43,639
	Promotion/Marketing				50,000	$ 50,500	$ 51,515	$ 53,076	$ 55,231	$ 57,474	$ 61,010	$ 65,410	$ 70,830	$ 77,466
	Overhead				8,178	8,275	8,449	8,705	9,049	10,309	10,886	11,593	12,453	13,494
	Total Other Costs				**$ 119,844**	**$ 121,058**	**$ 123,499**	**$ 127,241**	**$ 132,399**	**$ 138,667**	**$ 147,141**	**$ 157,677**	**$ 170,640**	**$ 186,501**
Total	Total Annual Vessel Operation Cost				**$ 151,100**	**$ 152,700**	**$ 155,700**	**$ 159,800**	**$ 165,500**	**$ 205,800**	**$ 215,200**	**$ 226,700**	**$ 240,800**	**$ 257,600**
	Hourly Operating Cost				**$ 280**	**$ 283**	**$ 288**	**$ 296**	**$ 306**	**$ 191**	**$ 199**	**$ 210**	**$ 223**	**$ 239**
Projected Operating Revenues														
	Days of Operation				180	180	180	180	180	180	180	180	180	180
	Average Daily Passengers				50	55	61	67	73	81	89	97	107	118
	Fare:				$ 10	$ 10	$ 10	$ 10	$ 10	$ 10	$ 10	$ 10	$ 10	$ 10
	Total Projected Operating Revenue				**$ 90,000**	**$ 99,000**	**$ 108,900**	**$ 119,790**	**$ 131,769**	**$ 144,946**	**$ 159,440**	**$ 175,385**	**$ 192,923**	**$ 212,215**
	Operating Surplus/(Deficit)				**$ (61,100)**	**$ (53,700)**	**$ (46,800)**	**$ (40,010)**	**$ (33,731)**	**$ (60,854)**	**$ (55,760)**	**$ (51,315)**	**$ (47,877)**	**$ (45,385)**
	Other Revenue													
	Events (30 events of 50 people each netting $10 each)				15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
	Subsidy				$ (46,100)	$ (38,700)	$ (31,800)	$ (25,010)	$ (18,731)	$ (45,854)	$ (40,760)	$ (36,315)	$ (32,877)	$ (30,385)

*precise consumption is based upon duty cyle of the boat (the percentage of time in which the boat operates close to capacity speed). This estimate based upon experience of similar boats operating on the Hudson in the Kingston vicinity. See bibliography for sources consulted in creating cost estimates.

NOTE: Table 9 does NOT include the capital costs for purchasing a ferry boat to provide service. As indicated on page 31, costs for a vessel could vary between $75,000 for a used 49-passenger vessel to $250,000 to $300,000 for a new vessel. The annual debt service for a new $250,000 vessel financed over 20 years at a 4 percent interest rate would be approximately $18,400 per year. If a used vessel were obtained for $75,000 and financed under similar terms, it would add approximately $5,500 to the annual costs.

Implementation

As the analysis in the previous sections suggest, creating a passenger ferry service based in the City of Kingston presents many challenges. As the analysis shows, the current commuting population in the area around Kingston will make it very difficult to generate ridership associated with ongoing operations in both the Newburgh/Beacon area and the Haverstraw/Ossining area. As indicated above, the ability to support a commuter ferry is made even more problematic by other constraints:

- The nearest link to rail service to New York City is to Amtrak service from Rhinecliff which is not primarily a commuter service (unlike the MetroNorth service that originates in Poughkeepsie). Consequently, a Kingston/Rhinecliff commuter ferry would provide service to a more expensive train service that has service to New York City that is less frequent than MetroNorth's commuter trains.

- The farther north on the Hudson River a ferry service is located, the greater the likelihood that service would be interrupted due to icing on the River during the winter months. This means that the ferry service must pay for icebreaking services and/or must provide alternative bus service for those days when the River is impassable.

Consequently, this analysis indicates that it may be best to consider operating any ferry service as a tourism water taxi/excursion service, at least in its first decade of operation. Even this alternative has significant challenges. These include funding annual operating subsidies that can range from $30,000 to $46,000 per year for at least the first ten years of operation. As noted on page 31, on top of these operating costs, amortized capital costs for a boat that could range from $5,500 for a used vessel to $18,400 for a new vessel.

Regulatory Requirements

Most of the regulations involved in establishing ferry service are related to waterside improvements required to support the service. This includes installation of docks, bulkheading, etc. There also may be some areas were dredging is required to deepen a channel to permit boats of the requisite size. Consequently, a wide range of agencies may be involved in issuing permits to develop ferry service in the Hudson River. These agencies include:

The United States Army Corps of Engineers which regulates activities that include dredging or construction activities in or over any navigable waters of the United States, the placement of any dredged or fill material in any waters of the United States (including coastal or inland wetlands) and the regulation of any projects affecting the course, location, condition or capacity of such waters.

The New York State Department of Environmental Conservation (DEC) whose regulatory powers extend to activities undertaken in officially designated protected streams and navigable waters. This can include such activities as the construction of bulkheads, docks, boathouses and dams. DEC is also

responsible for regulating activities in or near tidal wetlands. Its regulatory authority also extends to such issues as the use of pesticides to control aquatic vegetation.

The New York State Department of State (DOS), through its Coastal Management Program, requires that the actions of all State and federal agencies are consistent with the policies of the Program. Any activities requiring a permit from the Army Corps of Engineers are subject to a Coastal Consistency Concurrence, ensuring that, prior to the issuance of such a permit, the proposed actions adhere to the principles of the State Coastal Management Program and are consistent with any DOS-approved Local Waterfront Revitalization Programs.

The New York State Office of General Services (OGS) can, under the Public Lands Law, issue land grants, easements and permits to upland property owners for the use and occupation of underwater lands held in the public trust by the State. These approvals typically involve request for the use of such lands for parks, docks and moorings, water treatment or utility rights of way. Such approvals are not given until the project under question has received the necessary permits and approvals from the Army Corps, DEC and DOS.

New York State's Joint Application Form

In order to expedite the review of projects affecting streams, waterways, waterbodies, wetlands and other such areas, in 2008 New York State and the U.S. Army Corps of Engineers created a joint application form that enables an applicant to simultaneously submit such an application to each of the four agencies listed above. More information on the Joint Application form can be found on the DEC website at www.dec.ny.gov/permits/46707.html. Alternatively, an applicant may contact the DEC's Division of Environmental Permits at:

NYSDEC Division of Environmental Permits
625 Broadway, 4th Floor
Albany, NY 12233-1750
Phone: 518-402-9167

Other Potential Regulatory Agencies

Depending upon the type of work required to establish ferry service, two other regulatory agencies may be involved.

New York State Office of Parks, Recreation and Historic Preservation (OPRHP) is required to review any project that may affect any duly designated historic resources to ensure that such resources are protected as required under Section 106 of the National Historic Preservation Act of 1966. Information on this review process can be found on the OPRHP website at www.nysparks.state.ny.us/shpo. Interested parties can also contact the State Historic Preservation office at:

NYSOPRHP
PO Box 189

Waterford, NY 12188-0189
Phone: 518-237-8643

United States Coast Guard (USCG) is required to inspect any vessel, regardless of size and propulsion, carrying more than six passengers for hire. While typical inspections focus on such safety requirements as the maintenance of adequate life saving and fire equipment, the Coast Guard also has the authority to inspect machinery, electrical installations, hull strength and the stability of these vessels, as well as establish the routes on which the vessels are allowed to operate and the maximum number of passengers that may be carried by such vessels. Information on the Coast Guard inspections can be found on the website for the USCG's 1st Division (serving New England and Eastern New York State) at www.uscg.mil/d1/D1%20Divisions.asp. The 1st Division can also be contacted at:

First Coast Guard District
Capt. John Foster Williams Bldg.
408 Atlantic Avenue
Boston, MA 02110-3350
Phone: 617-223-8555

Implementation Costs

In addition to regulatory requirements, there are significant capital costs involved in implementing a tourism-based water transit service for Kingston. For example, if the City of Kingston had to purchase a new vessel to stage the service, this alone could require a capital cost between $250,000 and $300,000. Under current market conditions, it may be possible to secure a used vessel for as little as $75,000. On the other hand, it may be possible to contract out the service to an operator of a 50-passenger vessel, avoiding the outlay for a boat. Nonetheless, there would be capital costs involved in preparing landside sites to serve as stops for the service.

For example, tables 10 through 17 provide hypothetical examples of waterside capital costs for sites in Kingston, Esopus and Rhinecliff using project recommendations from those community's Local Waterfront Revitalization Programs with cost estimates either supplied in the plan or using a 2009 study of such projects in Maryland. While these are only for illustration purposes, they provide a sense of the order of magnitude for such improvements. Some sites would require only minor improvements. For example, for illustration purposes, this analysis suggests that the Hudson River Maritime Museum Dock, the Kingston City Dock, Esopus Meadows and the Rhinecliff Landing could be improved for less than $50,000 each. On the other hand, based upon the information in each LWRP, the costs of improving the Kingston Ferry Slip, Kingston Point Park and the Rondout Waterfront in Esopus run from several hundred thousand dollars to over $2 million for Kingston Point Park.

Table 10. Illustrative Capital Costs
Hudson River Maritime Museum Dock

Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Ticket Booth	Lump Sum	1	$ 25,000	$ 25,000
Waiting Shelters	Each	1	$ 10,000	$ 10,000
Subtotal - Landside Capital Costs				**$ 35,000**
Total Capital Costs				**$ 35,000**

Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.

Table 11. Illustrative Capital Costs
Kingston City Dock

Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Ticket Booth	Lump Sum	1	$ 25,000	$ 25,000
Subtotal - Landside Capital Costs				**$ 25,000**
Total Capital Costs				**$ 25,000**

Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.

Table 12. Illustrative Capital Costs Kingston Ferry Slip				
Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Ticket Booth	Lump Sum	1	$ 25,000	$ 25,000
Pedestrian Improvements	Lump Sum	1	$ 20,000	$ 20,000
Waiting Shelters	Each	1	$ 10,000	$ 10,000
Subtotal - Landside Capital Costs				**$ 55,000**
Waterside Infrastructure				
Floating Dock	Square Foot	2000	$ 75	$ 150,000
Subtotal - Waterside Capital Costs				**$ 150,000**
Total Capital Costs				**$ 205,000**
Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.				

Table 13. Illustrative Capital Costs Kingston Point Park				
Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Parking Lot	Parking Space	100	$ 7,000	$ 700,000
Ticket Booth	Lump Sum	1	$ 25,000	$ 25,000
Pedestrian Improvements	Lump Sum	1	$ 20,000	$ 20,000
Subtotal - Landside Capital Costs				**$ 745,000**
Waterside Infrastructure				
Restoration of Dayline Pier (pilings, bulkhead, etc.)*			$ 75	$1,500,000
Subtotal - Waterside Capital Costs				**$1,500,000**
Total Capital Costs				**$2,245,000**
Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009. *Estimate from 1992 LWRP was $950,000. This has been inflated to 2010 dollars using US Consumer Price Index.				

Table 14. Illustrative Capital Costs Hudson Landing				
Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Parking Lot	Parking Space	100	$ 7,000	$ 700,000
Ticket Booth	Lump Sum	1	$ 25,000	$ 25,000
Pedestrian Improvements	Lump Sum	1	$ 20,000	$ 20,000
Subtotal - Landside Capital Costs				**$ 745,000**
Waterside Infrastructure				
Floating Dock	Square Foot	2000	$ 75	$ 150,000
Subtotal - Waterside Capital Costs				**$ 150,000**
Total Capital Costs				**$ 895,000**
Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, Potomac River Commuter Ferry Feasibility Study and RPE Results, Prince William County MD, 2009.				

Table 15. Illustrative Capital Costs Rhinecliff Dock				
Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Pedestrian Improvements	Lump Sum	1	$ 20,000	$ 20,000
Waiting Shelters	Each	1	$ 10,000	$ 10,000
Subtotal - Landside Capital Costs				**$ 30,000**
Total Capital Costs				**$ 30,000**
Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.				

Table 16. Illustrative Capital Costs Esopus Meadows				
Item	Unit	Quantity	Unit Price	Extension
Landside Infrastructure				
Pedestrian Improvements	Lump Sum	1	$ 20,000	$ 20,000
Waiting Shelters	Each	1	$ 10,000	$ 10,000
Subtotal - Landside Capital Costs				**$ 30,000**
Total Capital Costs				**$ 30,000**

Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.

Table 17. Illustrative Capital Costs Town of Esopus Rondout Waterfront					
Item	Unit	Quantity	Unit Price	Extension	
Landside Infrastructure					
Waiting Shelters	Each	1	$ 10,000	$ 10,000	
Subtotal - Landside Capital Costs				**$ 10,000**	
Waterside Infrastructure					
Floating Dock	Square Foot	2000	$ 75	$ 150,000	
Removal of Abandoned Barges				???	
Subtotal - Waterside Capital Costs				**???**	
Total Capital Costs				**$ 160,000**	

Source: Adapted by Fairweather Consulting from Greenhorne & O'Mara, *Potomac River Commuter Ferry Feasibility Study and RPE Results*, Prince William County MD, 2009.

Funding Sources

In order to undertake these improvements, the City of Kingston should look to federal and State sources of financial support. Several key sources for such support are described in Table 18 below:

Table 18. Potential Funding Sources to Support Capital Investments related to Ferry Service			
Program	Purposes Related to Implementation of Ferry Service	Limitations/Conditions	Administering Agency
Ferry Boat Discretionary Fund	Provide a special funding category for the construction of ferry boats, ferry terminal facilities, ferry maintenance facilities and clean fuel program. FBD funds are available for construction/improvement to ferry boats or ferry boat terminals where: • It is not feasible to build a bridge, tunnel, combination thereof, or other normal highway structure in lieu of the use of such ferry. • The operation of the ferry is on a route classified as a public road within the State and which has not been designated as a route on the Interstate System. Projects under this subsection may be eligible for both ferry boats carrying cars and passengers and ferry boats carrying passengers only. • The ferry boat or ferry terminal facility is publicly owned or operated or majority publicly owned if the Secretary determines, with respect to a majority publicly owned ferry or ferry terminal facility, that such ferry boat or ferry terminal facility provides substantial public benefits. • The ferry does not operate in	Intended for publicly owned, majority publicly owned, or publicly operated ferry boats and ferry terminal facilities. Consideration is given to requests that will expedite the completion of a viable project. Because the annual requests for funding far exceed the available FBD funds, commitment of other funding sources to complement the requested FBD funding is an important factor.	Regional Planning & Program Management Group NYS Department of Transportation, Region 8 Eleanor Roosevelt State Office Building 4 Burnett Boulevard Poughkeepsie, NY 12603 Phone: 845 431-5743

Table 18. Potential Funding Sources to Support Capital Investments related to Ferry Service			
Program	Purposes Related to Implementation of Ferry Service	Limitations/Conditions	Administering Agency
	international waters except for: Hawaii; Alaska; any Territory of the United States; and between a State and Canada.		
New York State Environmental Protection Fund	The NYS Environmental Protection Fund provides funding for a variety of project types related to the acquisition and development of public parks and related facilities.	Limitations vary by sub-program as described below.	Varies by sub-program as described below.
Local Waterfront Revitalization Program	• Planning, design and feasibility studies for specific projects • Marketing of specific projects to advance eligible activities • Technical assistance to waterfront communities on plans and projects • Construction projects needed to advance eligible activities	Intended to assist cities, towns, villages and counties to refine or implement their Local Waterfront Revitalization Programs. Grant awards do not exceed 50 percent of the total eligible costs for the project.	Division of Coastal Resources NYS Department of State 99 Washington Avenue, Suite 1010 Albany, NY 12231 Phone: 518-474-6000
Park Development and Planning	Development of parks and recreational facilities to preserve, rehabilitate or restore lands, waters or structures for such projects.	Federal funds are allowed as match for all projects. Grants may be provided for up to 75 percent of the project cost when the poverty rate is greater than or equal to 10 percent in the area in which the project is proposed. Project planning is eligible for stand-alone funding in all three program areas. This funding is intended for project-specific planning, such as designs and specifications for rehabilitation of an historic property or structural assessment of a dock for public fishing, not for comprehensive Open Space or Management Plans. Therefore, applications will use the same format and be rated by the same criteria as development projects, but will be ranked separately in three grant	New York State Office of Parks, Recreation and Historic Preservation Palisades and Taconic Region Taconic Regional Office 9 Old Post Road Staastburg, NY 12580 Phone: 845-889-3865
Land Acquisition	Acquisition of a permanent easement or fee title to lands, waters or structures for park, recreation or conservation purposes and for projects identified in a local heritage area management plan.		See above.
Historic Property Preservation & Planning Program	Improve protect, preserve, rehabilitate or restore properties listed on the State or National Registers of Historic Places and for structural assessments or planning for such projects.		See above.
Heritage	Projects to preserve, rehabilitate		See above.

Table 18. Potential Funding Sources to Support Capital Investments related to Ferry Service			
Program	Purposes Related to Implementation of Ferry Service	Limitations/Conditions	Administering Agency
Area System Development & Planning Program	or restore lands, waters or structures, identified in the approved management plans for Heritage Areas designated under section 33.01 of the Parks, Recreation and Historic Preservation Law and for structural assessments or planning for such projects. Note: according to the website of the New York State Office of Parks, Recreation and Historic Preservation, Kingston is a designated heritage area, but does not have a Heritage Management plan.	categories (Park Planning, Historic Property Planning, Heritage Areas System Project Planning).	
Boating Infrastructure Grant (BIG) Program	Provides funding to States, the District of Columbia, Commonwealths, and territories for the development and maintenance of facilities for transient nontrailerable recreational vessels. Facilities are on navigable waters, allowing reasonable public access to all recreational vessels, charging equitable fees, and being open for reasonable periods. Facilities construction or renovation is designed to last at least 20 years. Facilities are for temporary (less than 10 day visit) use by non-trailerable (greater than or equal to 26 feet) transient recreational vessels (operated primarily for pleasure). Facilities are in water greater than or equal to 6 feet of depth at the lowest tide. Facilities provide security, safety, and service (including a pumpout station within 2 miles for overnight facilities). Boating Infrastructure refers to features that provide stopover places for transient nontrailerable recreational vessels to tie up.	Private organizations, public organizations, marinas or other vessel facilities are eligible to apply. (Not-for-profit corporations subject to New York State's not-for-profit corporation law, must have a charities registration number and be approved for tax-exempt status under the IRS code.	New York State Office of Parks, Recreation and Historic Preservation Palisades and Taconic Region Taconic Regional Office 9 Old Post Road Staastburg, NY 12580 845-889-3865

Table 18. Potential Funding Sources to Support Capital Investments related to Ferry Service			
Program	Purposes Related to Implementation of Ferry Service	Limitations/Conditions	Administering Agency
Land & Water Conservation Fund	Create parks and open spaces, protect wilderness, wetlands, and refuges, preserve wildlife habitat, and enhance recreational opportunities through the creation of playgrounds, bicycle paths, hiking trails, etc.	The following are not eligible under LWCF: • Not-for profit corporations • Indoor recreational facilities • Appraisals and legal fees • Payment advances • The value of municipally-owned land as matching share • The acquisition of parkland without prior approval of the National Park Service • State funds are eligible for match, certain restrictions apply	New York State Office of Parks, Recreation and Historic Preservation Palisades and Taconic Region Taconic Regional Office 9 Old Post Road Staastburg, NY 12580 845-889-3865
Legislative Initiative Grants	Funds are secured by the legislative representative whose district includes the location of the project. The project can be used to support a wide variety of purposes, from project planning to land acquisition to facility development.	Funding is awarded to a municipality or registered charity. All projects must result in a public benefit.	Once awarded by the legislature, grants are funded by regional representatives designated by the New York State Office of Parks, Recreation and Historic Preservation for that purpose.

Suggested Implementation Plan

As indicated above, this analysis suggests that the most feasible path to implementation would be to create a tourism based ferry service as described in Model 2. This would be a service operated 30 weeks each year using a 15-knot, 49-passenger vessel serving points in Kingston, Rhinecliff and Esopus.

In order to build ridership for a tourism-based ferry, it is important to tie the service closely to existing attractions and tourism markets. A Kingston-based service has two distinct opportunities in this regard. One is the Kingston waterfront itself. The area has developed a wide variety of amenities including parks, the newly opened walkway, galleries, museums and a wide variety of restaurants. Thus, one aspect of the tourism-base service would be to provide an additional amenity to tourists already enjoying the waterfront. This would involve providing a water taxi service along the waterfront itself as well as enabling waterfront visitors to take excursions to nearby areas of interest that may include Rhinecliff and Esopus Meadows.

The second opportunity is to provide a means for tourists from the New York City area to experience the Hudson River and the Kingston waterfront via ferry service linked to Amtrak service in Rhinecliff. Indeed, conversations with Amtrak respresentatives suggests that, if Amtrak views such a service as promoting ridership on the train, Amtrak would consider creating a joint ticketing promotion such that tourists in New York City could purchase a single ticket providing them with roundtrip train and ferry service for an excursion to Kingston directly from New York.

The opportunity to tap into the New York City tourism market could be further developed if resorts near to Kingston could be persuaded to participate in a joint ticketing venture, such that tourists in New York City could purchase a single ticket that would take them by train to Rhinecliff, where they would cross the Hudson by ferry to Kingston where a shuttle from the resort would meet them. This could also be cross-promoted with restaurants and other attractions in the waterfront area.

Creating such an opportunity through Model 2 would involve the following tasks:

1. Securing agreements with a private operator to run the scheduled tourism ferry service to Rhinecliff (including Friday evening and Sunday evening service for those passengers participating in a joint ticketing promotion with a local resort).

2. Ensuring that the landing sites are adequately prepared for landings (and any necessary ticketing) in Kingston and Rhinecliff.

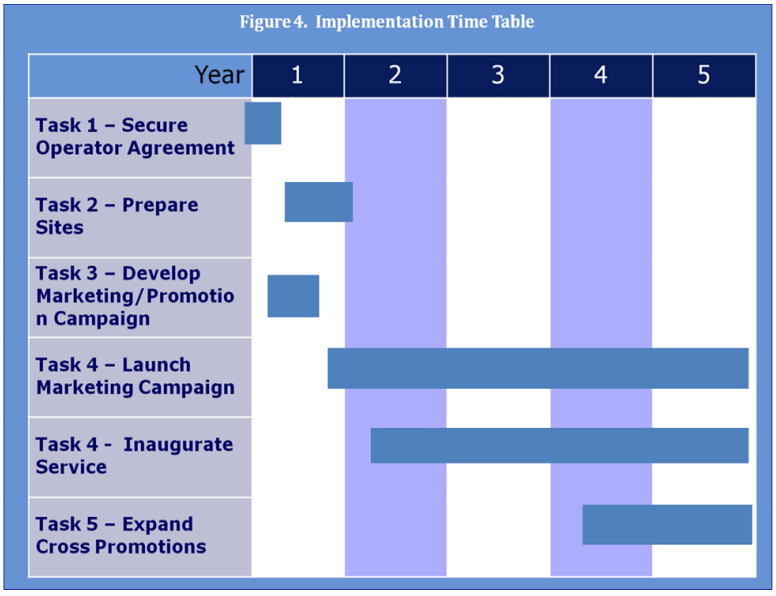
3. Developing an extensive promotion and marketing campaign in concert with Ulster County Tourism, Amtrak, the Rondout Business Association, participating resorts/destinations and the ferry operator.

4. Launching the marketing campaign at least six months prior to inaugurating service.

5. Inaugurating the service in the late Spring of the first year of operation.

6. Following the inauguration of the service, seeking other opportunities to cross promote the service as a means for New York City tourists to access other attractions and events in the greater Kingston area.

Figure 4. Implementation Time Table



The initial cross promotion opportunities may just involve the ferry with the Rondout Business

Association as such nearby resorts such as the Emerson, the Mohonk Mountain House, the Pine Grove Resort and others. Should these promotions prove successful, similar ventures could be attempted linking the ferry service with venues such as HITS, annual festivals and local B&Bs.

Figure 4. provides a suggested schedule for implementing this plan.

The success of this plan will depend upon the quality of the partnerships formed and—ultimately—the response of tourists to the opportunities thereby created. In any case, it is important that the efforts to create a tourism-based ferry service for Kingston must build upon the following three principles:

Start small: The market analysis suggests that the initial opportunities for ridership are limited. Therefore the first offerings of service must be relatively low cost as well. Model 2 is based upon a seasonal, limited service so that the operating costs can be scaled to the market opportunity.

Build ridership through cross promotion: By itself, a ferry service will never become a substantial tourist attraction. Integrating the service with established tourism destinations will build patronage for the service while providing new opportunities for those established destinations. Building a track record of successful cross promotions will enable the ferry service to attract and take advantage of other such opportunities.

Consider regular commuter service as the last step in the process: The market analysis for this report shows that the preliminary market for traditional commuter traffic is much more limited than commuter service in locations like Newburgh and Haverstraw. In addition, the Kingston/Rhinecliff/New York commuter route would be more difficult to serve (due to the greater likelihood of icing conditions on the River), more expensive (given the higher fares associated with Amtrak) and less convenient (given the scheduling limitations associated with a noncommuter service such as Amtrak).

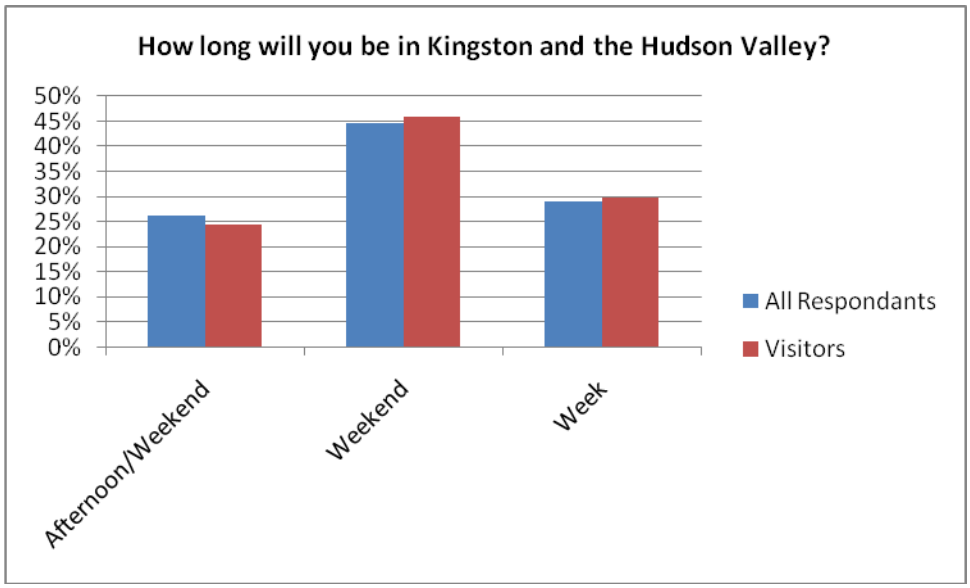
Thus, the results of this study clearly indicate that creating a sustainable ferry service based in Kingston is fraught with difficulty. At the same time the study does suggest that it may be possible to create a modest initial offering that has the potential to grow into a more substantial service over time.

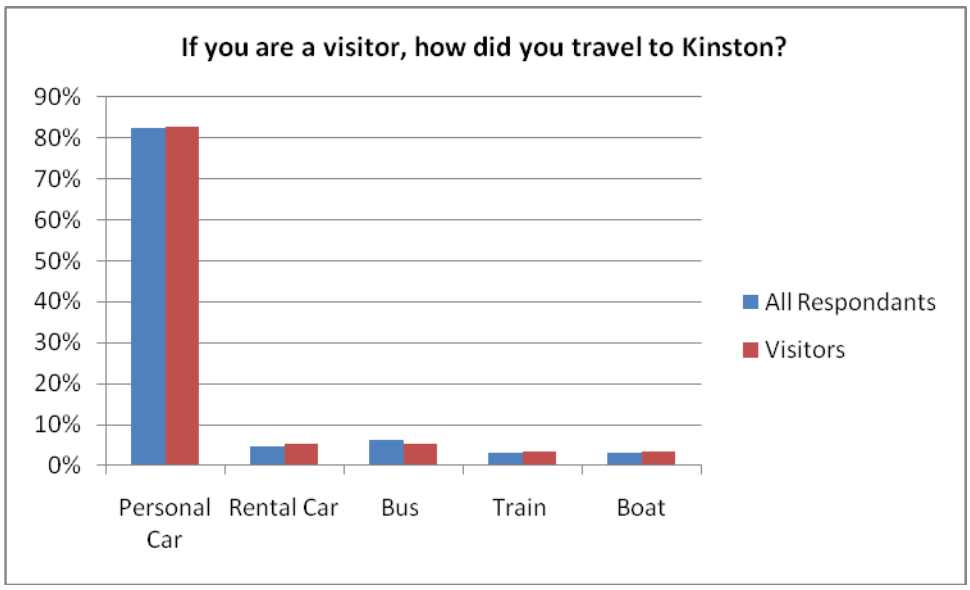
Appendices

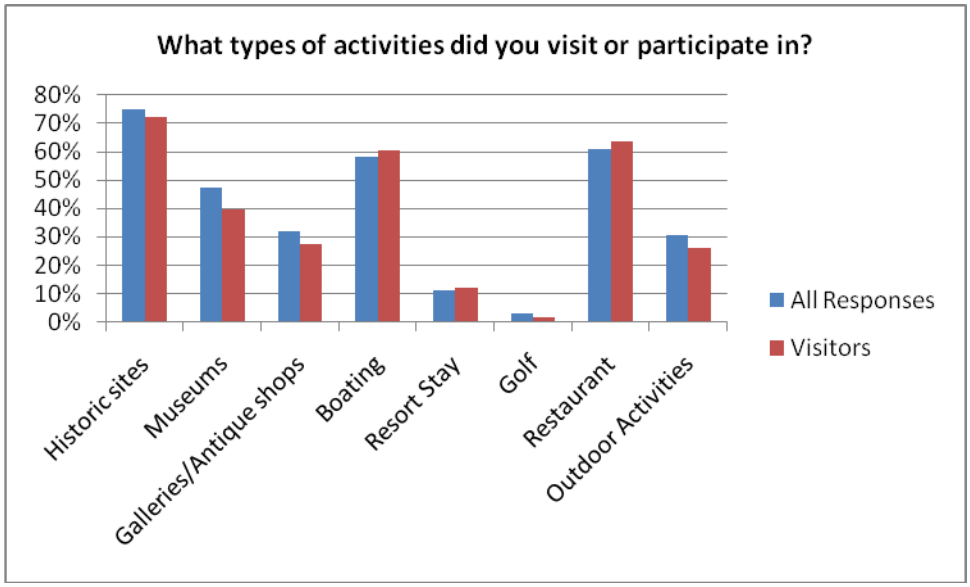
Appendix A: Visitor Survey Results

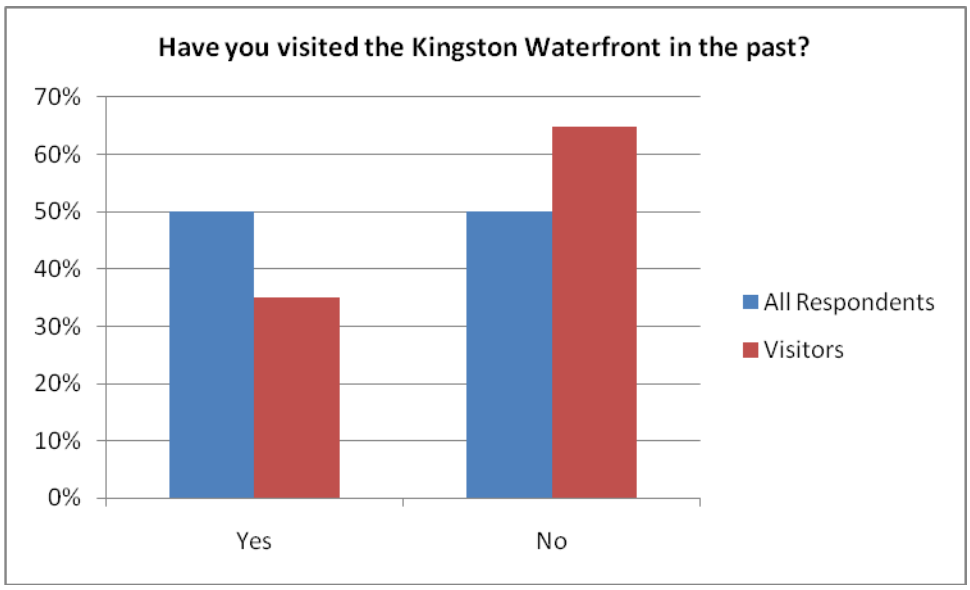
A visitor survey was conducted on behalf of the Kingston waterfront to further understand visitors and residents attitudes towards the area. The survey was conducted in the spring and summer of 2009. There were a total of 77 respondents. 22 percent were residents and 78 percent were visitors.

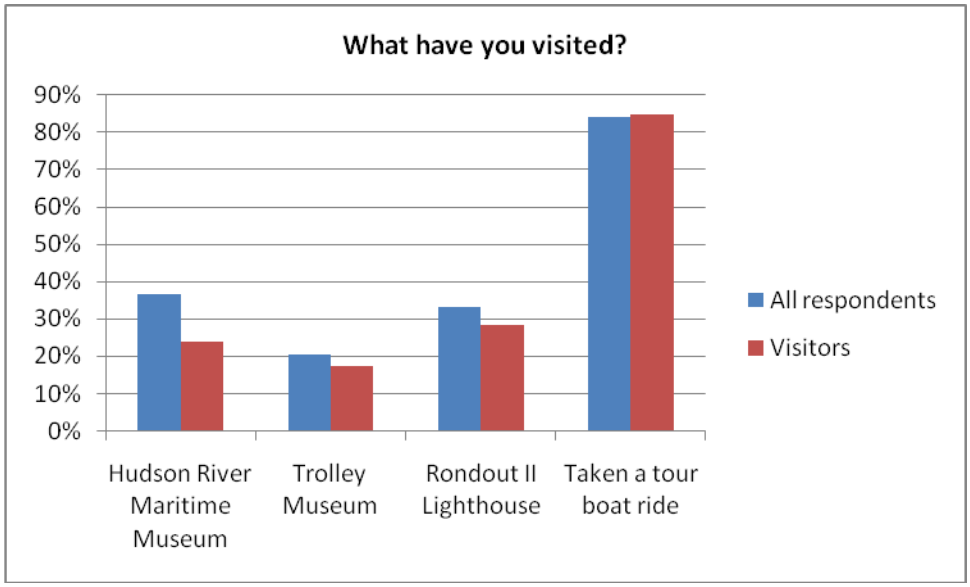
The following graphs provide a tabulation of the results from each of the multiple choice survey questions.

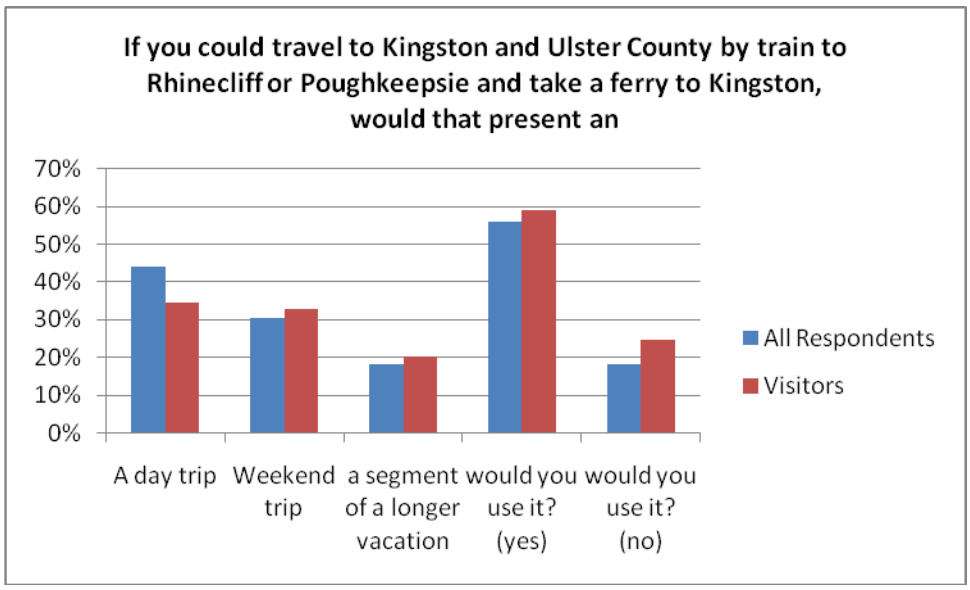


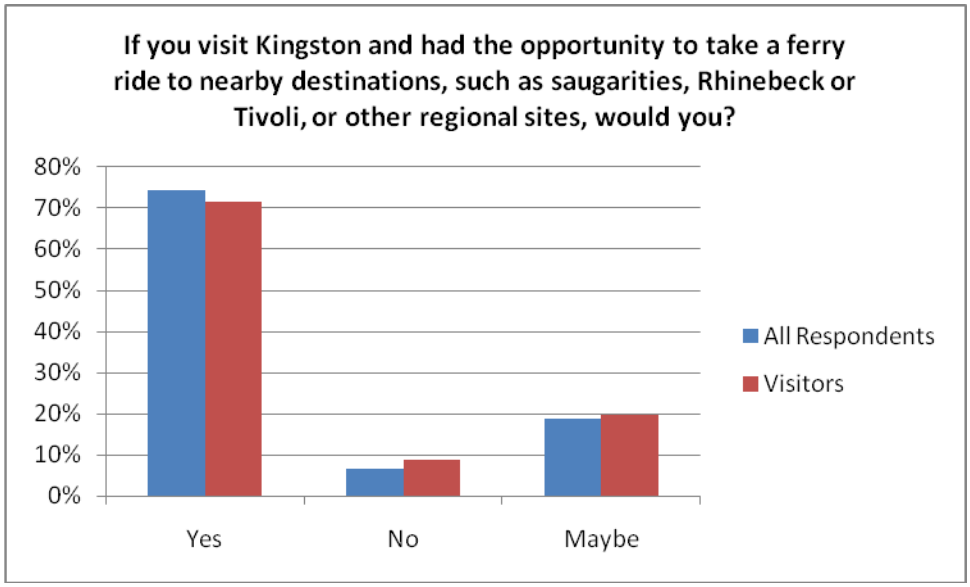

If you are a visitor, how did you travel to Kinston?
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Personal Car
Rental Car
Bus
Train
Boat
All Respondants
Visitors

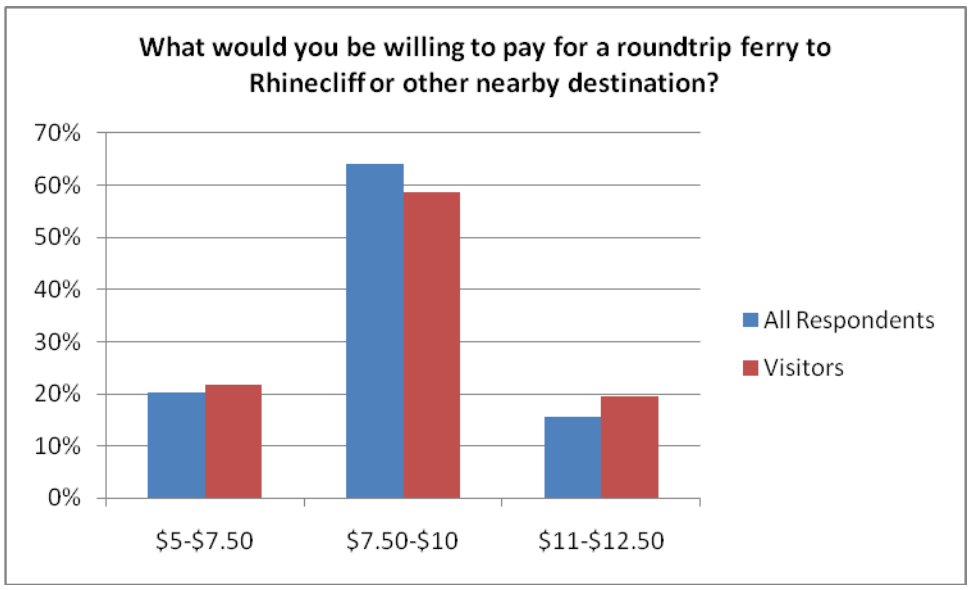

What types of activities did you visit or participate in?
80%
70%
60%
50%
40%
30%
20%
10%
0%
Historic sites
Museums
Galleries/Antique shops
Boating
Resort Stay
Golf
Restaurant
Outdoor Activities
All Responses
Visitors

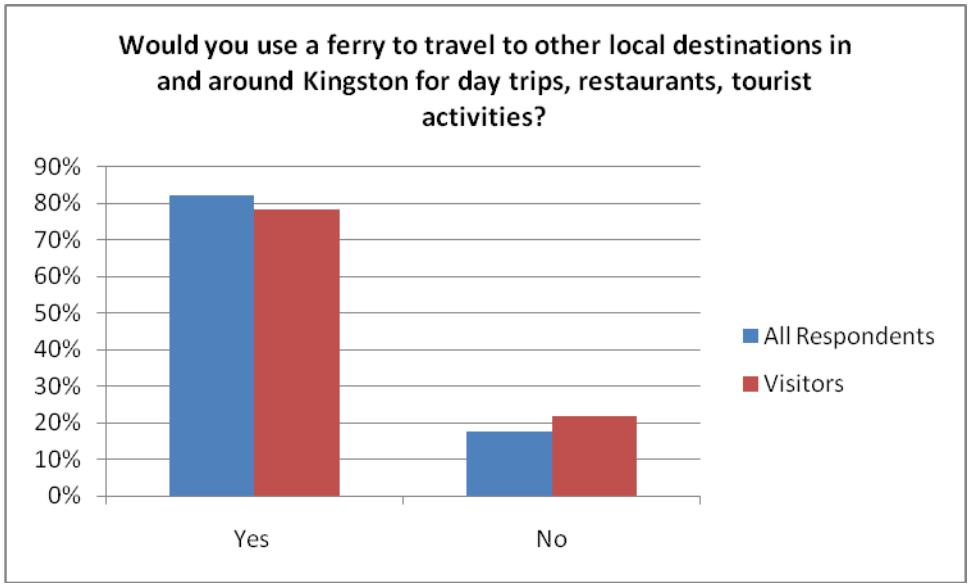

Have you visited the Kingston Waterfront in the past?
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No
All Respondents
Visitors

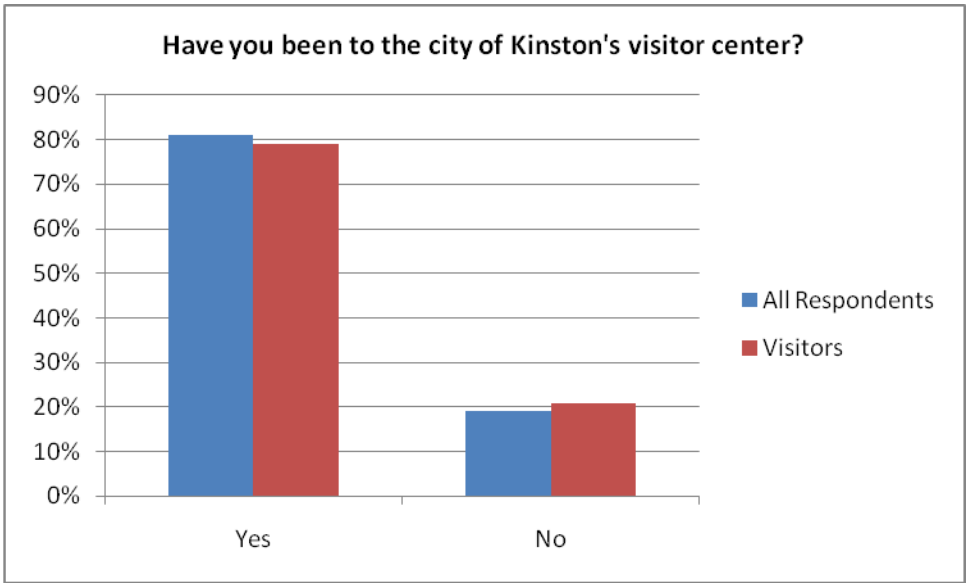

What have you visited?
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Hudson River Maritime Museum
Trolley Museum
Rondout II Lighthouse
Taken a tour boat ride
All respondents
Visitors


If you could travel to Kingston and Ulster County by train to Rhinecliff or Poughkeepsie and take a ferry to Kingston, would that present an
70%
60%
50%
40%
30%
20%
10%
0%
A day trip
Weekend trip
a segment of a longer vacation
would you use it? (yes)
would you use it? (no)
All Respondents
Visitors


If you visit Kingston and had the opportunity to take a ferry ride to nearby destinations, such as saugarities, Rhinebeck or Tivoli, or other regional sites, would you?
80%
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No
Maybe
All Respondents
Visitors


What would you be willing to pay for a roundtrip ferry to Rhinecliff or other nearby destination?
70%
60%
50%
40%
30%
20%
10%
0%
$5-$7.50
$7.50-$10
$11-$12.50
All Respondents
Visitors


Would you use a ferry to travel to other local destinations in and around Kingston for day trips, restaurants, tourist activities?
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No
All Respondents
Visitors


Have you been to the city of Kinston's visitor center?
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No
All Respondents
Visitors

Appendix B: Sources Consulted

General Reference

ARCADIS Geraghty & Miller, Inc. *Commercial Marine Activity in Deep Sea Ports in the United States.* Michigan: US Environmental Protection Agency, 1999.

Bennet, Georgia and Rick Donnelly, ed. *Proceedings of the Ninth TRB Conference on the Applications of Transportation Planning Methods: Baton Rouge, LA, 2003.* Washington, D.C.: Transportation Research Board, 2004.

Burmeister, Caren. "River Taxi Would Offer Stories of History as well as Trip." *Florida Times- Union*. 7 May 2010. Web. 6 June 2010. <jacksonville.com/community/nassau/2010-05-06/story/river-taxi-would-offer-stories-history-well-trip>.

Cambridge Systematic, Inc. *Long Island Sound Waterborne Transportation Plan.* Massachusetts: Cambridge Systematic, Inc., 2002.

Cambridge Systematic, Inc. *Long-Term Ferry Funding Study.* Washington: Washington State Transportation Commission, 2009.

Ceder, Avishai, and Majid Sarvi. "Design and Evaluation of Passenger Ferry Routes." *Journal of Public Transportation.* 10.1 (2007): 1-21

City of Kingston Office of Planning. *Final Generic Environmental Impact Statement for Hudson Landing.* City of Kingston and Town of Ulster County, NY, 2008.

Concept Marine Associates, Inc. *Supplement to Treasure Island Ferry Terminal Location Study.* California: Concept Marine Associates, 2004.

Davis, Christopher. "Port of Pittsburgh to Start Weekday Water Taxi Service." *Pittsburgh Business Times.* 12 September 2003. Web. 6 Jun 2010. <http://www.bizjournals.com/pittsburgh/stories/2003/09/15/story4.html?t=...>.

Environmental Compliance Services, Inc. *Draft Generic Environmental Impact Statement for the Landing at Kingston and Ulster.* New York: The City of Kingston Planning Board, 2005.

Fickenscher, Lisa. "Ferry Sends S.O.S." *Crain's New York Business.* 15 March 2009. Web. 6 Jun 2010. <http://www.crainsnewyork.com/article/20090315/FREE/303159976

Gorsche, Jennifer. "Ferried Away." *Architect's Newspaper.* 8 December 2009. Web. 6 Jun 2010. <http://www.archpaper.com/e-board_rev.asp?News_ID=4089>.

Haverstraw-Ossining Average Ridership 4th Qtr 2000- 4th Qtr 2009. Graph. New York: MTA Metro North railroad.

Imperatore, Arthur E. *Message to Our Valued Customer*. March 2010. Letter.

Jennings and Associates. *Feasibility Study and Consultant's Report: Marina Expansion and Large Houseboat Rental Enterprise on Dworshak Reservoir.* Idaho: City of Orofino, 2006.

Kahn, Kathy. "Newburgh, Poughkeepsie restaurants launch water taxi." HVBiz. 7 June 2010: 6.

Kreowski, Kevin C. *Port Harford Chandlery & Pub Business Proposal*. California: The Alcove Unique Gifts, Inc., 2003.

Landmark Engineers, Inc. *Windsor Central Riverfront Implementation Plan- Segment 4 Canal and Marina, Project Scoping and Technical Feasibility Report.* Ontario: Landmark Engineers, Inc., 2009.

The League of Women Voters of Washington. *Washington State Ferries: Both a Part of the State Highway System and a Mass Transit Provider.* Washington: League of Women Voters of Washington Education Fund, 2007.

Lyons, Charles. "Hail the Water Taxi." *Real Deal.* 1 August 2007. Web. 6 Jun 2010. <http://therealdeal.com/newyork/articles/hail-the-water-taxi-2>.

MTA Metro North Railroad. *Haverstraw-Ossining Ferry and MTA Metro-North Railroad Schedule.* New York: MTA Metro North Railroad, 2009.

MTA Metro North Railroad. *Haverstraw- Ossining Ferry Rail Link Facts and Highlights.* New York: MTA Metro North Railroad.

Metro North Railroad. *The Newburgh-Beacon Ferry and MTA Metro-North Railroad Schedule.* New York: MTA Metro-North Railroad, 2009.

Newburgh-Beacon Average Ridership 4th Qtr 2005- 4th Qtr 2009. Graph. New York: MTA Metro North Railroad.

Opinion Research Corporation. *2008 Ferry Customer Survey: Final Report Executive Summary.* Washington: Washington State Transportation Commission, 2008.

Opus International Consultants Limited. *Commuting by River Feasibility Study.* New Zealand: Environment Waikato and Hamilton City Council, 2005.

Portland State University Department of Civil and Environmental Engineering. *Willamette River Passenger Ferry Transit Service Compilation of Eastside Site Evaluations.* Oregon: Portland State University, 2005.

Puget Sound Regional Council. *Ferry Ridership Declines Continue.* Washington: Puget Sound Regional Council, 2009.

Rhode Island Public Transit Authority. *Background and History of RIPTA's Water Ferry Service.* Rhode Island: Rhode Island Public Transit Authority, 2006.

Santa Cruz Port Commission. *Regular Public Session of Santa Cruz Port Commission.* 26 January 2010.

Suman, Elizabeth. "Best Kept Secret Cash Poor Baltimore: Free Water Taxi." *Baltimore Brew* (2010): Web. 5 Jun 2010. <http://baltimorebrew.com/blog/2010/05/14/best-kept-secret-in-cash-poor-baltimore-free-water-taxi/>.

Washington. Department of Transportation. *Washington State Department of Transportation Ferries Division Final Long-range Plan.* Washington: Washington State Ferries, 2009

US Army Corps of Engineers: New York District. *Hudson River, NY Condition Survey.* New York: US Army Corps of Engineers, 2010.

Veronica Sanchez Consulting. *Port of San Francisco Water Taxi Feasibility Study: Presentation to San Francisco Port Commission Water Taxi.* California: Walther Engineering Services, Inc., 2009.

Vine Associates. *Fort Point Channel Watersheet Activation Plan: Marine Infrastructure Design and Costs.* Massachusetts: Vine Associates, 2001.

Feasibility Studies Consulted to Develop Cost Estimates

City University of New York (CUNY) Hunter College. *Ferry Parking and Landside Access Study: Task 1 Deliverable Literature Review.* New York: New York Metropolitan Transportation Council.

Connecticut. Department of Transportation Office of Intermodal Planning. *Intrastate Passenger Commuter Ferry Study: New Haven, Bridgeport, Norwalk, Stamford.* Connecticut: The Connecticut Department of Transportation, 2001.

Nelson Nygaard Consulting Associates. *Regional Passenger-Only Ferry Study: Executive Summary.* Washington: Puget Sound Regional Council, 2008.

Nelson Nygaard Consulting Associates. *Willamette River Ferry Feasibility Study: City of Portland River Renaissance Initiative.* City of Portland, OR, 2006.

PB Consult, Inc, FXM Associates and PBQ&D. Inc. *Maryland-Virginia Ferry Feasibility Study.* Somerset County & City of Crisfield, NY, 2004.

The Prince William County Department of Transportation. *Potomac River Commuter Ferry Feasibility Study and RPE Results.* Virginia: Prince William County Department of Transportation, 2009.

Renaissance Planning Group. *Water Taxi Feasibility Study: Final Report.* Florida: Sarasota/Manatee Metropolitan Planning Organization, 2005.

Urbitran Associates, Inc. *Glen Cove Ferry and Boat Basin: Final Draft.* City of Glen Cove, NY, 2004.

Local Waterfront Revitalization Plans & Other Local Planning Documents Consulted

BFJ Planning. *City of Hudson Local Waterfront Revitalization Program*. City of Hudson, NY, 2009.

City of Poughkeepsie. *Local Waterfront Revitalization Plan.* City of Poughkeepsie, NY.

Dutchess County Department of Planning. *Local Waterfront Revitalization Program.* Town of Rhinebeck, NY, 2007.

Elan Planning and Design, Inc. *Village of Catskill, NY Downtown and Waterfront Revitalization Plan*. New York: Greene County Industrial Development Agency, 2009.

Friends of Athens Riverfront Park. *Athens, NY Riverfront Park.* Athens: Friends of Athens Riverfront Park, 2007.

Greene County Soil & Water Conservation District Waterfront Revitalization Program. *Athens Waterfront Rehabilitation*. Village of Athens, NY.

LRC Planning Services. *Town of Poughkeepsie Zoning Map*. Town of Poughkeepsie, NY, 2007.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. Village of Athens, NY, 1999.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program.* Town of Esopus, NY, 1987.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. City of Kingston, NY, 1992.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. Town of Poughkeepsie, NY, 1999.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. Town of Red Hook, NY, 1995.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program.* Town of Rhinebeck, NY, 2007.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. Village of Saugerties, NY, 1985.

New York State Department of State, Division of Coastal Resources and Waterfront Revitalization. *Local Waterfront Revitalization Program*. Village of Tivoli, NY, 1991.

Town of Poughkeepsie. *Poughkeepsie Town Plan and Final Generic Environmental Impact Statement.* Town of Poughkeepsie, NY, 2007.

Village of Athens. *Comprehensive Zoning Local Law for the Village of Athens*. Village of Athens, NY.