



# Newburgh Area Transportation & Land Use Study



## Short Term Transit Improvement Program *Recommended Plan*

Submitted to:  
**Orange County**  
**Department of Planning**

Submitted by:



***Gannett Fleming***

ABRAMS-CHERWONY GROUP  
of Gannett Fleming, Inc.

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## **Introduction**

The Orange County Planning Department, on behalf of the Orange County Transportation Council, has initiated a comprehensive transportation and land use study for northeastern Orange County. The Newburgh Area Transportation and Land Use Study will produce an overall assessment and multi-modal plan for transportation, integrated with local and regional land use planning policies, to enhance mobility while preserving quality of life and the environment. The primary study area is the City of Newburgh and the four surrounding Towns of Newburgh, New Windsor, Montgomery and Cornwall with their Villages of Walden, Montgomery, Maybrook and Cornwall-on-Hudson. The study will also engage in more detailed planning for certain corridors and nodes, including Route 9W, Broadway/17K, and the Vails Gate area.”

One aspect of the study is an examination of the short range public transportation needs of the study area. A widely held view is that the current service is not adequate to meet the mobility needs of residents and support the economic development of the community. The objective of this study phase is to recommend changes to the current bus services offered by public agencies and private firms which rely on tax support for operating assistance and capital improvements.

To prepare this public transportation plan, a work program of several sequential tasks was undertaken. Initial efforts were directed at developing a description of the study area in terms of key demographic and socioeconomic characteristics related to transit use. Of particular interest are those groups that typically rely on transit for meeting their travel needs, such as incomes at or below poverty or households with no available automobiles. Information was also obtained on the journey to work of individuals who either reside or work in the study area. An inventory of current public transportation services was also prepared and included bus, rail, ferry and demand responsive modes. Because the focus of the analysis was on the local bus service, recent trends on key operating, ridership and financial measures was presented. These results were documented in a previously prepared interim report.

Based on a review of the information in that first report as well as input from the public and other study participants, a series of route alternatives were prepared. They suggested changes in the bus routes operated by the Newburgh Beacon Bus Corporation. The alternatives varied in terms of alignment, frequency and span; with the understanding that coverage and level of service alternatives could be combined in a variety of ways. These alternatives included service that circulates in the City of

Newburgh and adjacent communities as well as the shuttle service which links the Beacon rail station, 17K Park & Ride lot, the Newburgh area and Stewart International Airport. The alternatives differed in terms of their dimensions as measured by required vehicles, which in turn influenced other operating statistics as well as operating cost and subsidy.

The alternatives presented in the second interim report were the basis for dialogue among the study participants on the appropriate scale of the bus system and specific alignment and frequency options. Key operating and financial results were estimated for each alternative along with various performance measures. Based on these forecasts and discussions, a single preferred plan was identified and subject to field tests and subsequent refinement. This plan was described in the third interim report. This plan was presented at a public meeting to solicit comments on the proposed changes to services operated by the Newburgh Bus Company. The plan received a positive reception from the audience with the desire to move forward with implementation. Many comments were made on other transit related issues which are also documented in the report.

Financial forecasts for the recommended plan are presented in both constant and current year dollars for revenue, costs and funding. Accompanying the plan are other elements of a transit program that will need to be implemented. This includes a capital improvement program that provides various rider amenities to enhance the transit experience along with major marketing proposals to increase transit system awareness and ridership. Combined, the various plans comprise a detailed blueprint for short term public transportation improvements in the Newburgh area.

## **Recommended Plan**

The initial study process involved mainly gathering data on the existing bus services and the transportation setting in which they operate. The data has consisted of quantitative items, such as ridership levels and density of senior citizens, as well as some qualitative input from existing passengers and some of the area's stakeholders. Based on the available data and the various other inputs, a series of service alternatives were presented and described in an earlier interim report.

The service alternatives ranged from maintaining the current transit system to greatly expanding service. More routes with increased coverage and more frequent service would attract more riders, but also generate the need for significant increases in transit funding. Clearly, the selection of a recommended plan will be influenced by the benefits of increased mobility and financial resources that will be required for operating assistance and capital expenditures.

For the local bus routes, the assessment of routing and scheduling alternatives is dependent on the number of buses that can be financially supported. Generally, the alternatives include a two-bus system, a three-bus system or a four-bus system, in addition to the Newburgh Beacon Shuttle. More than a single plan has been created for each of the three-bus and four-bus system alternatives, as well as two options besides the current service for the Newburgh-Beacon Shuttle. Other alternatives considered were innovative strategies such as route deviation, ride request and rover bus. These types of service were not viewed as necessary since the Towns of Cornwall, Montgomery, Newburgh and New Windsor offer Dial-A-Ride which is well suited to the low density development patterns in these municipalities. In the City of Newburgh, the taxis companies offer similar services to the general public with a fare of only five dollars.

### **Service Alternatives**

A three-step process was followed in the development and selection of a single recommended plan as follows:

- **Initial Alternatives** - For each of the service types (i.e. local and shuttle), a number of alternatives were identified. The local alternatives varied in terms of the number of buses assigned to the service and ranged from two buses (the number currently deployed) to as many as four. Different plans were

formulated for the two, three and four bus scenarios, as summarized in Table 1. A complete description of the alternatives is presented in *Interim Report: Service Alternatives* and illustrations of the alternatives are presented in Appendix A.

**Table 1- Initial Local Service Alternatives**

<b>Alternative</b>	<b>Number Of Buses</b>	<b>Number Of Routes</b>	<b>Typical Headways</b>	<b>Newburgh/17K Transfer</b>
1A: Existing Local Routes	2	2	120	No
1B: Operator Proposal	4	3	30/120	No
2: Two Bus System	2	2	60	No
3A: Three Bus System	3	2	30/60	Yes
3B: Three Bus System	3	2	60	No
4A: Four Bus System	4	3	40/80	Yes
4B: Four Bus System	4	3	60/90	No

Alternative 1A is the existing system which consists of two routes, both of which operate over a common alignment on NY State Routes 17K (Broadway) and 300. One route serves neighborhoods in the northern portion of Newburgh while another route serves areas to the south.

Alternative 1B is an initial proposal from the operator, which would consist of a trunk bus line along NY State Route 17K and two large one-way loops that serve Newburgh and outlying areas to both the north and south of the City. The loop routes require customers to ride the entire length of the route to make a round trip. Also, much of the service area of the loop routes are in areas with little nearby development.

Alternative 2 would maintain the current configuration of both Northside and Southside routes, although the alignment through the City of Newburgh is revised. This approach provides a one-seat ride for Newburgh residents destined for many locations since both the Northside and Southside routes have a common alignment on NY State Routes 17K and 300. This one-seat ride is common to other alternatives which require more than two buses. The key feature of this alternative is that it has a smaller circulation loop in the core portion of Newburgh.

Alternatives 3A and 3B involve buses with coverage extended, to a limited extent, beyond the current service area. Alternative 3A would have a single spine route operating along NY State Routes 17K and 300. In addition, a north-south bus line would perform local circulation in Newburgh and adjacent areas and would require some patrons to transfer to reach many

destinations along NY State Routes 17K and 300. In contrast, Alternative 3B is similar to the current system and Alternative 2 in that buses circulate in local areas in Newburgh and then continue along NY State Routes 17K and 300.

The most ambitious alternatives are 4A and 4B, along with Alternative 1B, in that they call for the operation of four buses. Alternative 4A is similar to Alternative 3A in that some patrons might have to transfer. In addition, a longer north-south route was proposed to serve outlying areas. Alternative 4B was similar to Alternative 3B in that the Northside and Southside bus routes would circulate in neighborhoods in Newburgh and then continue along NY State Routes 17K and 300. This alternative would have a north-south route that operates from Cornwall to a terminus along North Park Road.

For the shuttle service, the number of buses remained unchanged (i.e., two peak buses), but the alignment and sequence of stops varied. Alternative 5A is the existing route which links the Beacon rail station with the 17K Park & Ride and Stewart International Airport. The buses make intermediate stops in Newburgh. Alternative 5B serves the same locations in a more user friendly way with the focus on both the air traveler market and commuter trips made by local residents. The last alternative (Alternative 5C) provides an express alignment with little service opportunities oriented to Newburgh residents.

- **Preferred Alternative** - Each of the initial alternatives were the subject of considerable discussion by the study stakeholders. Consideration was given to socioeconomic and transit inventory data provided in the *Interim Report: Baseline and Existing Conditions*. Also, comments received during the outreach efforts were an input to the planning process. In addition, the impacts for each alternative were estimates in terms of key operating, ridership and financial statistics. These results are presented in the Appendix B. The selected plans for further refinement were Alternative 4B for the local service and Alternative 5B for the shuttle service.
- **Recommended Plan** - The study participants had a few suggestions to enhance the performance of the preferred route for the local service. In addition, the alternatives were field tested with a bus provided by Newburgh Beacon Bus Corporation. This testing generally confirmed estimated running times, as well as identified any safety issues. The use of a bus allowed study

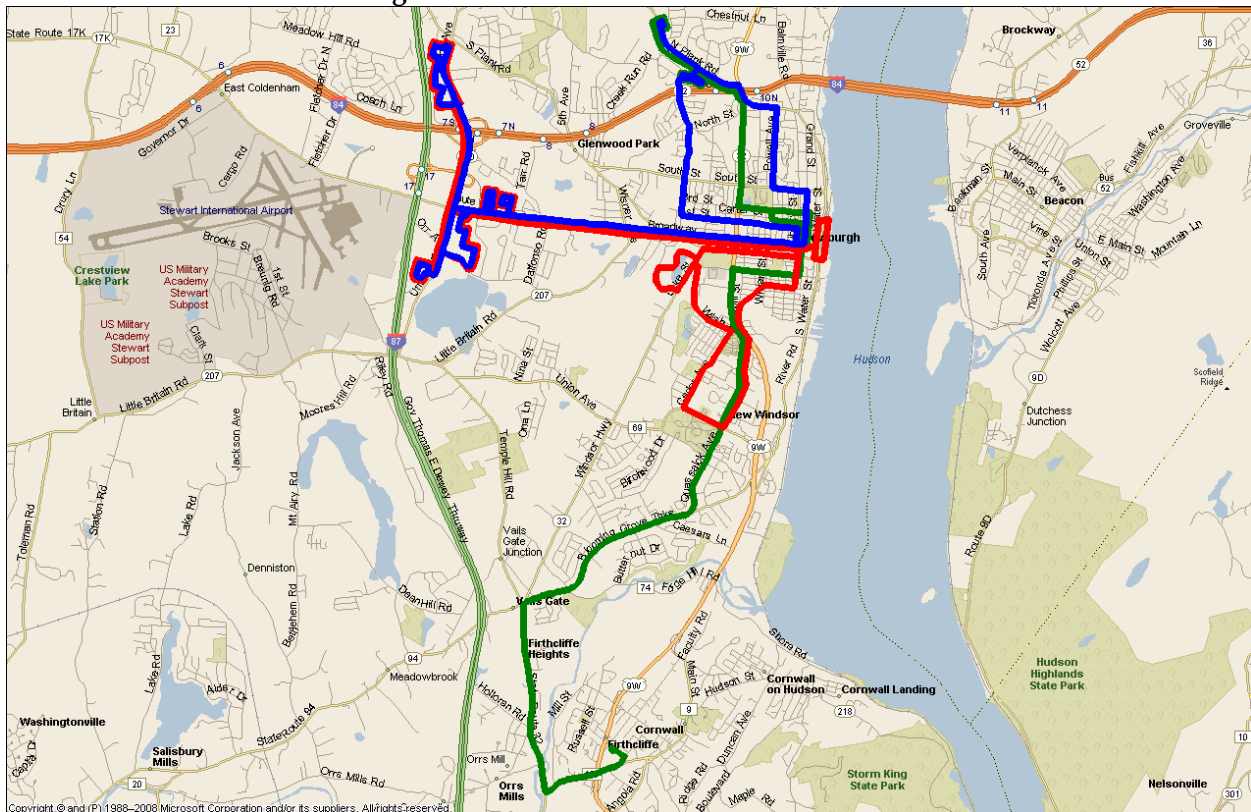
participants to view the service area and make suggestions. As a result of this process, minor changes were made to the routes comprising Alternative 4B which is the recommended plan for local service. One minor comment was made at the public meeting which may be included as part of the fine-tuning of the plan as it proceeds to implementation (Appendix C).

## **Service Plan**

This portion of the report focuses on the recommended plan, alignments of each proposed route for this plan, as well as explaining the route timings, headways and transfer opportunities between bus routes and different services. The service alternatives are for both the local service in and around the City of Newburgh and the commuter shuttle between Newburgh and Beacon, and were devised using several inputs, as mentioned previously. The recommendation for the local service was Alternative 4B, which represents a significant expansion of service. The recommended plan for the commuter shuttle is Alternative 5B. Both recommended plans differ only slightly from the previously preferred alternatives which reflect inputs derived from a field test of the proposed routings and discussions with the project team.

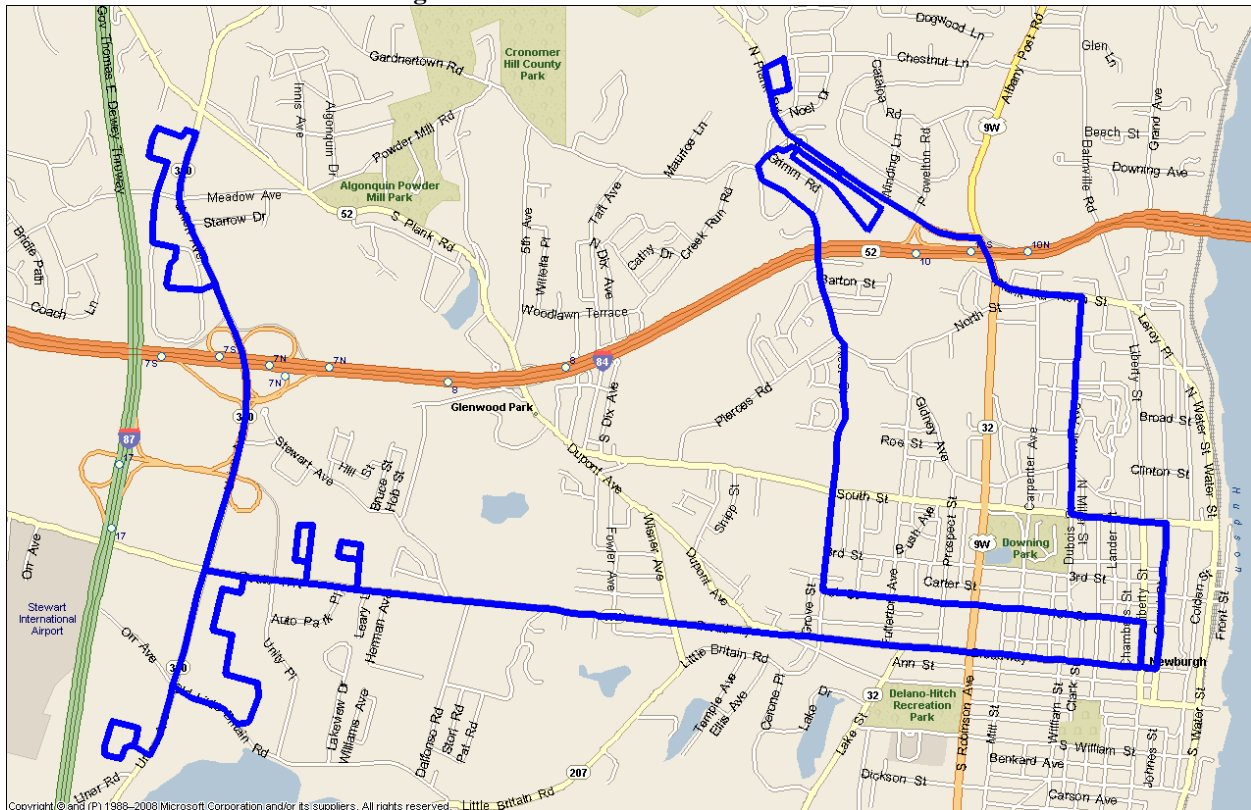
**Local Service** - Three routes are proposed to replace the two current routes. Two of the new routes will resemble the existing Northside and Southside routes, in that both offer bi-directional service on Broadway and operate through the communities directly to the north and south of this corridor. However, the alignments for these two routes would be less circuitous and focused on areas with the greatest ridership potential. In addition, the alignment would permit a 90 minute round trip time on the north and south routes. With an increase in the number of assigned buses, better service would be provided throughout the City of Newburgh and to key major generators. The third route would operate between the Mid-Valley Mall and St. Luke's Cornwall Hospital's Cornwall facility/Vails Gate, offering a one-seat ride between St. Luke's Cornwall Hospital's two area locations. Figure 1 presents the recommended local bus system in the Newburgh area.

Figure 1 - Recommended Local Bus Service



**Northside Route** - The route that would serve Broadway and the Northside of Newburgh would operate as it currently does between the Stop & Shop/Newburgh Mall area along Union Avenue/Route 300 and WalMart, Kohl's and Adam's Fairacre Farms. From there, the vehicle would exit onto Route 17K and head to the 17K Park & Ride Lot to offer connections to the various other transit alternatives that serve this lot. The service would then go to the Target-Ames Plaza before heading to downtown Newburgh via Broadway. This route would remain on Broadway past Liberty Street and then turn left onto Grand Street, followed by another left onto South Street. The vehicle would then turn right onto Powell Avenue, left onto North Street, right onto Robinson Avenue (Route 9W) and left onto North Plank Road. The bus route would then operate to the Shop-Rite and then the Mid-Valley Mall, one of the locations where transfers to the Mid-Valley Mall to St. Luke's Cornwall Hospital route could be facilitated. From the mall, the route would operate on Gidney Avenue and would make a right onto West Avenue, followed by a left onto 1<sup>st</sup> Street. The route would then turn right onto Liberty Street and head towards Broadway, where transfers can be made to either of the other two local routes. From there, the route would return to the Target-Ames Plaza and the 17K Park & Ride Lot via Broadway/Route 17K, and then return to the beginning of the route via Union Avenue/Route 300 (Figure 2).

Figure 2 - Recommended Northside Route



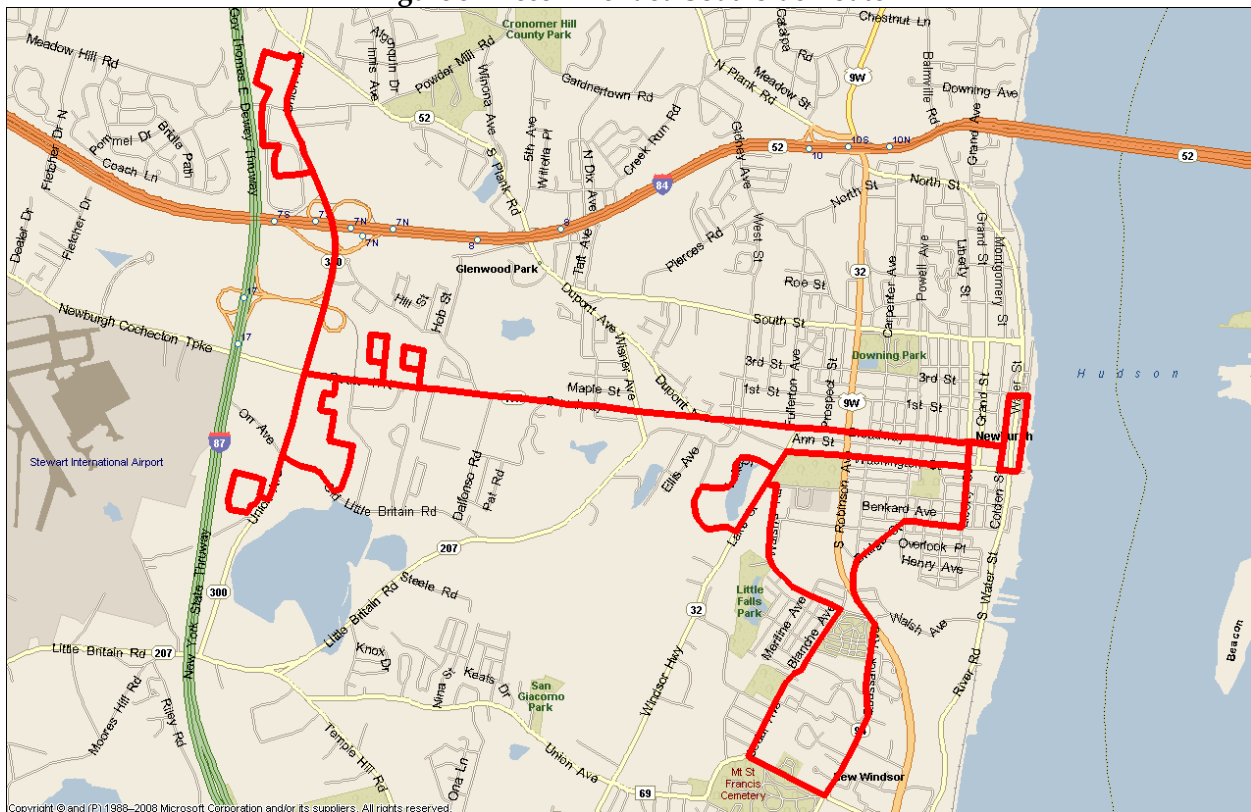
This route would operate approximately 20.2 miles per each round trip and would take 90 minutes to complete each trip which includes a layover time of about five minutes. The route would operate Monday through Friday, between the hours of 6:00 AM and 7:00 PM, and on Saturday between 7:00 AM and 7:00 PM. This represents an increased span of service which is common to both recommended local bus routes. Bus service would be operated at hourly headways throughout both service days.

**Southside Route** - The Southside route would also serve the Stop & Shop, Newburgh Mall, WalMart, Kohl's, Adam's Fairacre Farms, 17K Park & Ride Lot and Target-Ames Plaza as it currently does and would then operate along Broadway through downtown Newburgh to Liberty Street. Transfers could be made between either of the other two services at this Broadway and Liberty Street location. It should also be noted that this route would operate through the 17K Park & Ride Lot in both directions, which is not presently performed.

Continuing from Broadway and Liberty Street, the route would turn right onto Liberty Street, followed by a right onto Washington Street and a left onto Lake Street. The vehicle would then turn right onto Lake Drive and operate through the Lake Drive

Apartment complex before returning to Lake Street. Then the vehicle would turn left onto Williams Street followed by a right onto Walsh Avenue. The bus would then turn right onto Cedar Avenue, left onto Union Avenue and left onto Quassaick Avenue/Route 94. The vehicle would then return to downtown Newburgh via Robinson Avenue, Mill Street, Bridge Street, Renwick Street and Liberty Street. The route would then offer service to the Newburgh-Beacon Ferry and the waterfront development by turning right onto Broadway, right onto Washington Place, left onto Washington Street followed by a left onto Front Street to access the Newburgh-Beacon ferry dock. From the dock, the route would operate back to Broadway and Liberty Street via Front Street, Colden Street, 2<sup>nd</sup> Street and Broadway. The vehicle would then return to the Target-Ames Plaza and 17K Park & Ride Lot and then returning to the beginning of the route at the Stop & Shop (Figure 3). One comment made at the last public meeting was that this route be diverted to Cedrone Place to reduce walking distances to the bus. The concern with this suggestion is that it will add time to the bus running time which may preclude timed transfers with other bus lines and the use of clockface headways. The decision on whether to make this fine tuning adjustment will be made as part of the detailed implementation steps.

Figure 3 - Recommended Southside Route



The use of the terms beginning and ending points of a route are for purposes of describing the recommended routes in this report. The actual terminal locations might be different when the service is implemented and timetables prepared.

The Southside route is approximately 22.1 miles, round trip, which would take 90 complete, including a five-minute layover. This route should also be operated between the hours of 6:00 AM and 7:00 PM Monday through Friday, with service offered on Saturday between the hours of 7:00 AM and 7:00 PM. This represents an increased span of service which is common to all the recommended local bus routes. Bus service would be operated at hourly headways throughout both service days.

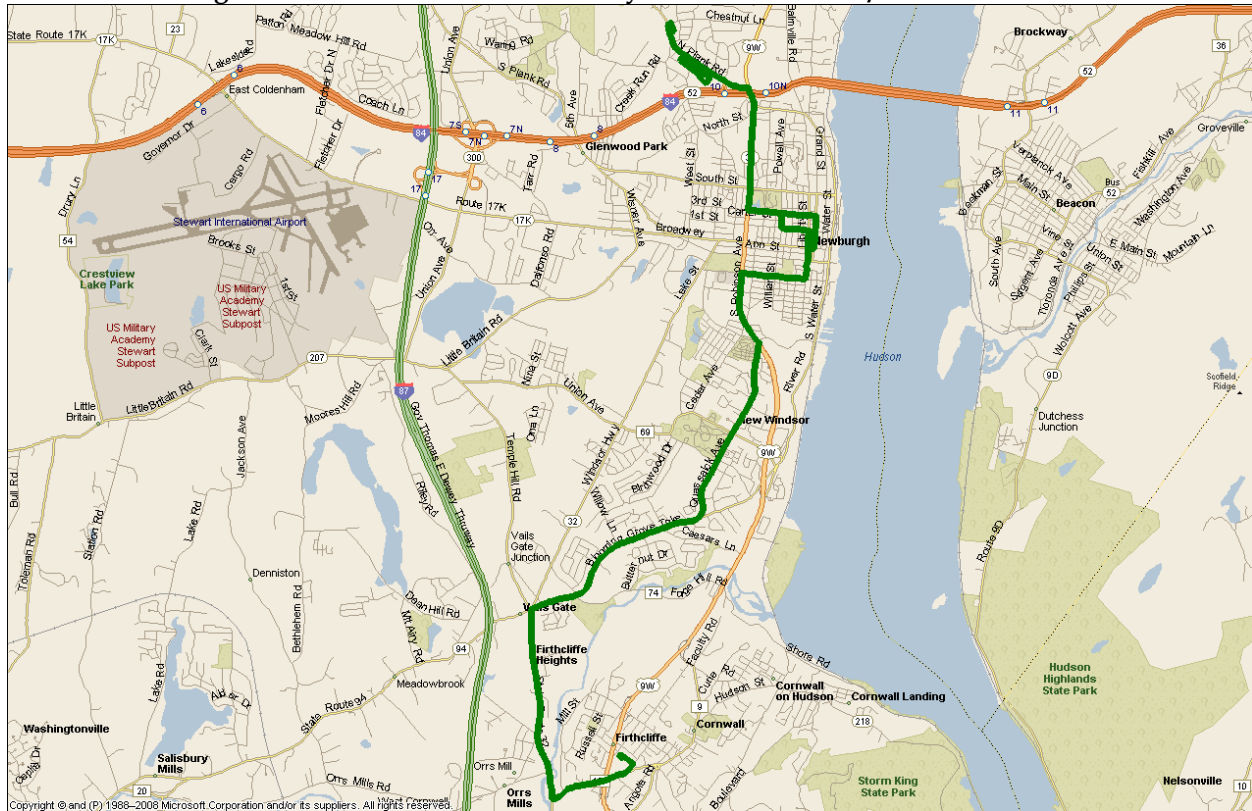
**Mid-Valley Mall to Vails Gate/Cornwall Route** - The third route of the recommended plan for Newburgh's local bus service would operate between the Mid-Valley Mall and Vails Gate/Cornwall. The route would begin at the Shop-Rite and operate to the Mid-Valley Mall via North Plank Road, and then through the malls internal roadways. The vehicle would then turn right onto North Plank Road followed by a right onto Robinson Avenue/Route 9W and operate towards downtown Newburgh before turning left onto 3<sup>rd</sup> Street. Then the route would turn right onto Dubois Street, offering service to the St. Luke's Cornwall Hospital's Newburgh Campus. From there the route would turn left onto 1<sup>st</sup> Street, followed by a right onto Liberty Street. At Broadway and Liberty Street passengers would be able to transfer between any of the local services. Due to the one-way roadway alignments on Liberty and Grand Streets, the return trip from Vails Gate would operate from Broadway and Liberty Street via Grand Street and 3<sup>rd</sup> Street. Passengers going to the St. Luke's Cornwall Hospital Newburgh Campus would access the hospital at 3<sup>rd</sup> and Dubois Streets.

Continuing southbound from Broadway and Liberty Street, the route would operate on Liberty Street, and would then turn right onto Williams Street followed by a left onto Robinson Avenue (Route 9W). The vehicle would then turn right onto Quassaick Avenue/Route 94 and then right onto Blooming Grove Turnpike/Route 94, operating towards Vails Gate. Then, the route would turn left onto Route 32, followed by a left onto Quaker Avenue/Route 107, before turning left onto Elm Street to access the St. Luke's Cornwall Hospital Cornwall Campus. From there the route would operate towards downtown Newburgh in the reverse order of the alignment described above. Figure 4 illustrates this route.

The Mid-Valley Mall to Vails Gate/Cornwall route is approximately 21.7 miles long per each round trip, including five minutes for layover. As with the other recommended local routes, this service would operate Monday through Friday between the hours of 6:00 AM and 7:00 PM, and then on Saturday and Sunday between 7:00 AM

and 7:00 PM. This represents an increased span of service which is common to all the recommended local bus routes. Bus service would be operated at 90-minute headways throughout both service days.

Figure 4 - Recommended Mid-Valley Mall to Vails Gate/Cornwall Route



The proposed bus routes were subjected to test trips using a Newburgh Beacon Bus Corporation vehicle to simulate actual street conditions and to establish appropriate running times. The operator found the times presented here reasonable, although additional test trips should be run as part of the implementation process. These running time results are shown in Tables 2, 3 and 4. The tables present the time required to travel from one point on the proposed route to another, but does not list all of the stops. Service could be started at any point along the routes; the tables merely presents the running time for one complete round trip.

Currently, the Northside and Southside routes have 120-minute frequencies, with one vehicle dedicated to each route. The recommended plan would have three buses operating on the Northside and Southside routes; each route having a 90-minute cycle time and a combined cycle time of three hours. Drivers would make alternating trips on the Northside and Southside routes. With three buses, this allows 60-minute

headways on each route, a significant increase in service from the current frequency of 120 minutes.

Additionally, the tables detail the transfers that can be made between the routes. Transfers can be made to the Northside (NS) route, Southside (SS) route, Mid-Valley Mall to Vails Gate (VG) route, and to the Newburgh-Beacon Shuttle (NB). The one location where transfers can be made between any of the recommended routes is Broadway and Liberty Street. While not serving all bus routes, the 17K Park & Ride would also continue to be an important transit focal point.

**Table 2 - Northside Route Timing and Transfer Opportunities**

<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>	<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>
Stop & Shop	:00	SS	Shop-Rite	:49	VG
Newburgh Mall	:04	SS	Price Chopper (Mid-Valley Mall)	:54	VG
WalMart	:09	SS	Planet Fitness (Mid-Valley Mall)	:55	VG
Kohl's	:17	SS	North Plank & Gidney	:57	
Adam's Fairacre Farms	:19	SS	Gidney & West	:58	
17K Park & Ride Lot	:22	SS, NB	West & South	:60	
Target-Ames Plaza	:26	SS	West & 1st	:61	
Broadway & Fullerton	:30	SS, NB	1st & Robinson	:64	
Broadway & DuBois	:32	SS, NB	1st & Dubois	:66	VG
Broadway & Liberty	:34	SS, VG, NB	1st & Liberty	:68	VG
Grand & 1 <sup>st</sup>	:37	VG, NB	Liberty & Broadway	:69	SS, VG, NB
Grand & South	:38	VG, NB	Broadway & DuBois	:71	SS, NB
South & Powell	:40		Broadway & Fullerton	:73	SS, NB
Powell & Willet	:42		Target-Ames Plaza	:77	SS
Powell & North	:43		17K Park & Ride Lot	:81	SS, NB
North & Robinson	:44		Stop & Shop	:85	SS

**Table 3 - Southside Route Timing and Transfer Opportunities**

<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>	<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>
Stop & Shop	:00	NS	Walsh & Cedar	:48	
Newburgh Mall	:04	NS	Cedar & Union	:51	
WalMart	:09	NS	Union & Quassaick	:52	VG
Kohl's	:17	NS	Mill & Bridge	:55	VG
Adam's Fairacre Farms	:19	NS	Bridge & Renwick	:57	
17K Park & Ride Lot	:22	NS, NB	Renwick & Liberty	:58	
Target-Ames Plaza	:26	NS	Liberty & Washington	:60	
Broadway & Fullerton	:30	NS, NB	Liberty & Broadway	:61	NS, VG, NB
Broadway & DuBois	:32	NS, NB	Ferry Stop	:64	
Broadway & Liberty	:34	NS, VG, NB	Front & Carpenter	:66	
Liberty & Washington	:35	VG	Broadway & Liberty	:69	NS, VG, NB
Washington & Robinson	:37		Broadway & DuBois	:72	NS, NB
Washington & Lake	:39		Broadway & Fullerton	:74	NS, NB
Lake St & Lake Dr	:42		Target-Ames Plaza	:78	NS
William & Walsh	:46		17K Park & Ride Lot	:81	NS, NB
			Stop & Shop	:85	NS

**Table 4 - Mid-Valley Mall to Vails Gate/Cornwall Route Timing and Transfer Opportunities**

<b>Towards Vails Gate</b>			<b>Towards Mid-Valley Mall</b>		
<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>	<b>Bus Stop</b>	<b>Time</b>	<b>Transfer</b>
Shop-Rite	:00	NS	St Luke's Cornwall Hospital (C)	:41	
Price Chopper (Mid-Valley Mall)	:05	NS	Route 32 & Blooming Grove	:47	
Planet Fitness (Mid-Valley Mall)	:06	NS	Blooming Grove & Forge Hill	:49	
Robinson & North	:10	NS	Blooming Grove & Quassaick	:51	
Robinson & South	:13		Quassaick & Union	:54	SS
Robinson & 3 <sup>rd</sup>	:14		Quassaick & Route 9W	:56	SS
St. Luke's Cornwall Hospital (N)	:15		Robinson & Williams	:60	
1st & Liberty	:18	NS, NB	Williams & Liberty	:62	SS
Liberty & Broadway	:19	NS, SS, NB	Liberty & Washington	:64	SS
Liberty & Washington	:20	SS	Liberty & Broadway	:66	NS, SS, NB
Liberty & Williams	:22	SS	Grand & 1st	:69	NS, NB
Williams & Robinson	:24		Grand & 3rd	:71	NS, NB
Route 9W & Quassaick	:27	SS	St Luke's Cornwall Hospital (N)	:73	
Quassaick & Union	:29	SS	3rd & Robinson	:75	
Quassaick & Blooming Grove	:31		Robinson & South	:77	
Blooming Grove & Forge Hill	:33		Robinson & North	:81	NS
Blooming Grove & Windsor Hwy	:35		Shop-Rite	:85	NS
St Luke's Cornwall Hospital (C)	:41				

**Newburgh-Beacon Shuttle** - The recommendation for the Newburgh-Beacon Shuttle would be to operate all trips along the same alignment throughout the service day. The sequence of bus stops would be different depending on the time of day

In the morning, the route would begin in Newburgh at Robinson Avenue and North Plank Road and head towards downtown Newburgh via North Street, Leroy Place, Grand Street, South Street and Liberty Street. The vehicle would then turn right onto Broadway and operate past the 17K Park & Ride Lot to Stewart International Airport via Broadway/Route 17K, Union Avenue/Route 300, Little Britain Road and Breunig Road. Should a passenger want to get off at the 17K Park & Ride Lot, the bus would stop outside of the facility (i.e., remaining on Route 17K). Safety considerations would suggest pedestrian crosswalks and other traffic control features. From the airport the route would go to the 17K Park & Ride Lot, entering the facility this time. Then the bus would operate to the Beacon station via Interstate 84. From Beacon station the route will return to Newburgh via Interstate 84, exiting at Route 9W and then starting its next trip at Robinson Avenue and North Plank Road. The morning direction of the Newburgh-Beacon Shuttle is approximately 23.5 miles round trip, and will take an estimated 75 minutes to complete each trip, leaving each bus with 15 minutes of layover time per trip.

This alignment will provide a direct connection to the Beacon rail station from the 17K Park & Ride Lot, and not require passengers who got on at the park-ride facility (the stop location on this route with the highest usage) to travel through either the City of Newburgh or Stewart International Airport. It should also be noted that the route will not go into the park-ride facility after operating through the City of Newburgh so as to not create confusion in regards to the destination of the vehicle (i.e., Stewart International Airport versus Beacon station).

The afternoon direction would start at the Beacon rail station and operate directly to the 17K Park & Ride Lot via I-84 to Union Avenue/Route 300 and Route 17K. The service would then head towards Stewart International Airport via Route 17K, Union Avenue/Route 300, Little Britain Road and Breunig Road. Then the vehicle would turn around operate in reverse towards downtown Newburgh (offering service to the park-ride facility if requested, but not onto the property) via Broadway/Route 17K, and would then use Grand Street, Leroy Place, North Street, North Plank Road and Robinson Avenue to access Interstate 84 and return to the Beacon Station. Provisions would have to be made to assure that transit riders can safely cross the street to reach the 17K Park & Ride Lot. The afternoon direction is approximately 23.8 miles round trip and will take an estimated 75 minutes to complete each trip. Each bus would then have 15 minutes of layover time.

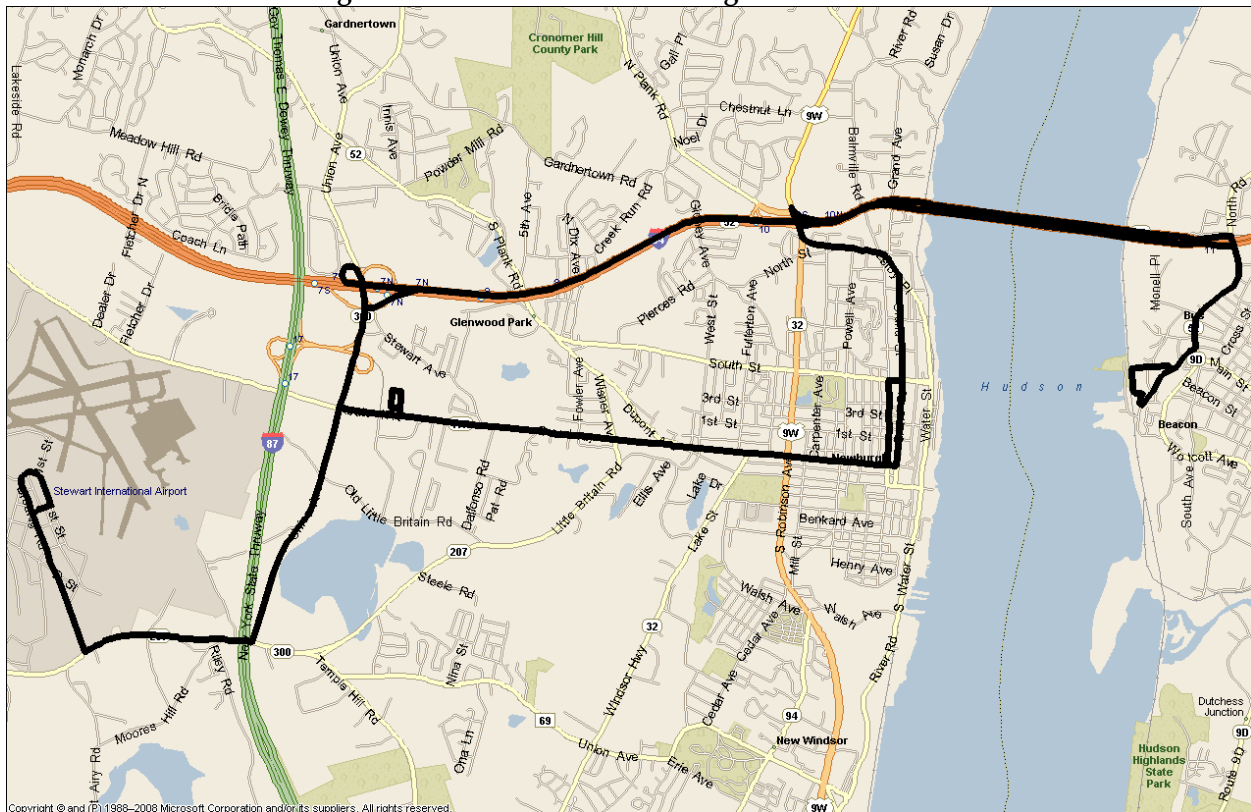
This service would continue to operate with its current span of service, beginning at 4:55 AM and continuing to 11:05 PM during weekdays, and from 8:12 AM to 10:25 PM on Saturdays and Sundays. The route would continue to meet every

inbound and outbound train throughout its service day. Two buses would operate every 45 minutes on weekdays with a single bus assigned to the shuttle on weekends with service every 90 minutes. Figure 5 presents the recommended Newburgh-Beacon Shuttle routing. Table 5 provides the route timing for both the AM and PM directions. The route timing table also details the available transfer locations to the recommended local services.

**Table 5 - Newburgh-Beacon Shuttle Route Timing and Transfer Opportunities**

AM Route			PM Route		
Bus Stop	Time	Transfer	Bus Stop	Time	Transfer
Robinson & N. Plank	:00	NS, VG	Beacon Station	:00	
Liberty & Broadway	:05	NS, SS, VG	17K P&R Lot	:20	NS, SS
Broadway & 9W	:08	NS, SS	Stewart Intl. Airport	:35	
Broadway & West	:10	NS, SS	17K P&R Lot (stop on 17K)	:50	NS, SS
17K P&R Lot (stop on 17K)	:15	NS, SS	Broadway & West	:55	NS, SS
Stewart Intl. Airport	:30		Broadway & 9W	:57	NS, SS
17K P&R Lot	:45	NS, SS	Broadway & Liberty	:60	NS, SS, VG
Beacon Station	:65		N. Plank & Robinson	:65	NS, VG
Robinson & N. Plank	:75		Beacon Station	:75	

**Figure 5 - Recommended Newburgh-Beacon Shuttle**



During the study process, NYSDOT which sponsors the shuttle route indicated that financial pressures might force them to reduce the funding levels for this service. Under these circumstances, various changes could be made to the bus route to achieve economies. This would include a reduced span of service in terms of hours and days of operation. For example, significant cost savings could be achieved by eliminating Sunday or possibly weekend service. Other possibilities could include operating service between the 17K Park & Ride Lot, through Newburgh and the Beacon rail Station with reduced service to Stewart International Airport. Since the service is operated through a contract between NYSDOT and Newburgh Beacon Bus Corporation, the final service plan would be specified by the New York State. However, it is recommended that the changes specified in this report be incorporated in the final service contract.

Another point to note regarding the recommended plan is that this is only the first step in implementing a major revision of bus service in Newburgh and the surrounding areas. Once these recommendations have been implemented, it is logical to expect additional improvements in service. These could include more frequent service and longer hours of operation.

## **Forecasts**

The next step in the analysis was to develop estimates of key operating statistics, such as revenue hours, revenue miles and peak vehicles. In turn, these results can be converted to operating costs utilizing a three-variable cost allocation model. This is the same technique that was used to evaluate the current local bus routes and the Newburgh-Beacon Shuttle. One difference is that the forecasts are based on available information for the last fiscal year (i.e., 2009). Another element of this work is to estimate the ridership with the proposed service changes. The ridership estimates were then combined with fare assumptions to estimate the revenue associated with implementing the recommended plan. Next, the operating deficit is derived as the difference between the operating costs and fares paid by riders. Finally, estimates of funding from different sources were prepared.

A few points are worth noting regarding the forecasts. First, the forecasts are presented for only the fixed route portion of the transit system. It does not include demand responsive services operated by Newburgh Beacon Bus Corporation under contract to Orange County to meet the ADA requirements for a complementary paratransit service. The expanded hours of service and expanded coverage could result in increased trips on the demand responsive system. Second, the forecast were

prepared for a five year horizon period which includes the current year (i.e., 2010) through 2014. Third, the study participants opted for a single implementation phase where the entire recommended plan would be implemented at once. Accordingly, the forecast have been prepared assuming continuation of the current route network through the remainder of 2010 and the recommended plan between 2011 through 2014.

A final point to note regarding the forecasts is that they are based primarily on previously observed trends which have been reported in the National Transit Database submission to the Federal Transit Administration and the 17A Forms to the New York State Department of Transportation for the period 2004 through 2009. As noted in a previous report, there are certain inconsistencies in the various statistics reported. Nonetheless, it provides detailed and comprehensive data on transit operations.

**Operating Statistics** - The initial step in the forecasting process was to estimate the revenue hours, revenue miles and required peak vehicles for the recommended plan's local and shuttle routes. Separate estimates were prepared for each bus route by service day, which were then annualized based on the number of weekdays, Saturdays and Sundays. For the purpose of this analysis, it was assumed that there would be 253 weekdays of service (i.e., the total number of weekdays, 260, less seven holidays when no service is operated), 52 Saturdays and 52 Sundays in a typical year. The recommended local routes have a total of 15,700 revenue hours and 222,100 revenue miles (Table 6). Revenue hours and revenue miles are when buses are in service and available to the public. It excludes deadheading when bus travels between the garage and the beginning of the first trip in service and later that day the bus travels between the end of the last trip in service and the garage.

**Table 6 - Estimated Local Service Operating Statistics - Recommended Plan**

<b>Statistic</b>	<b>Northside</b>	<b>Southside</b>	<b>MV-VG</b>
Route Length (miles)	20.2	22.1	21.7
Round Trip Time (minutes)			
Running	85	85	85
Layover	5	5	5
Cycle	90	90	90
Daily Hours of Service (Weekday/Saturday)	13/12	13/12	13/12
Days of Operation (Weekday/Saturday)	253/52	253/52	253/52
Annual Revenue Hours	5,900	5,900	3,900
Annual Revenue Miles	79,000	86,500	56,600

These estimates for the recommended Newburgh-Beacon Shuttle routing are shown in Table 7. While the plan calls for changes to the shuttle service, the overall dimensions in terms of key operating statistics would not change from current levels.

**Table 7- Estimated Newburgh-Beacon Shuttle Operating Statistics - Recommended Plan**

<b>Statistic</b>	<b>Value</b>
Route Length (miles)	23.7
Round Trip Time (minutes)	
Running	75
Layover	15
Cycle	90
Daily Hours of Service (Weekday/Sat/Sun)	18/11.5/11.5
Days of Operation (Weekday/Sat/Sun)	253/52/52
Annual Revenue Hours	11,800
Annual Revenue Miles	186,900

Table 8 presents the revenue hours, revenue miles and peak vehicles for the last complete fiscal year (i.e., January 1 to December 31, 2009) as compared to estimates for the recommended plan. The exhibit indicates that both revenue hours and revenue miles associated with the recommended services would increase significantly from what is presently operated. These changes in revenue hours and revenue miles reflect the additional vehicles in service and the increased frequency of service, as well as the lengthened daily span of service of the local services, on both weekdays and Saturdays.

**Table 8 - Operating Forecasts**

<b>Year/Service</b>	<b>Revenue Hours</b>	<b>Revenue Miles</b>	<b>Peak Vehicles</b>
2009	18,100	262,700	4
Recommended Plan			
Local	15,700	222,100	4
Shuttle	11,800	186,900	2
Total	27,500	409,000	6

**Ridership** - Forecasts were prepared for each of the recommended routes for a typical weekday, Saturday and Sunday. To estimate ridership, each route's productivity level (i.e., passenger per mile) was estimated based on a combination of current productivity levels, elasticity of ridership to service parameters and the experience in other areas. Weekend ridership was estimated to be about two-thirds of the weekday ridership productivity levels. Three points are worth noting regarding the ridership estimates in relation to the results for the last fiscal year. First, the recommended plan should generate a substantial increase in ridership, which is attributable to the increased frequency and span of service, more direct and less circuitous alignments and an expanded coverage area. Second, the forecasts assume an extensive marketing effort and branding of the bus system along with various amenities to improve the transit experience. Finally, the shuttle route ridership is affected, to an extent, by flight activity and air passengers at Stewart International Airport. The forecasts are based on the current shuttle experience, which is less than when SkyBus

operated air service. Table 9 presents the ridership estimates for the recommended plan and the actual ridership for 2009.

**Table 9 - Ridership Forecasts**

<b>Year/Service</b>	<b>Riders</b>
2009	124,200
Recommended Plan	
Local	166,400
Shuttle	49,100
Total	215,500

**Financial** - The next step in the process was preparation of estimates for both operating costs and farebox revenue. All of the estimates were initially prepared in 2009 or constant dollars. This represents the last complete year for which data was available. Operating cost forecasts were prepared using a three-variable cost allocation model, which relates the cost of the bus service to revenue hours, revenue miles and peak vehicles. This analytical tool was used to assess the performance of the existing bus routes. For the forecast, information was obtained for the most recent fiscal year (i.e., 2009). Using cost data provided by the Newburgh Beacon Bus Corporation Newburgh to NYSDOT, separate cost models were developed for the local and shuttle services. The operator assigns each individual expense item to the local and shuttle services and these data were used in the current analysis to develop the cost models which are presented in Table 10.

**Table 10 - Fully Allocated Cost Model (FY2009)**

<b>Variable</b>	<b>Amount (\$)</b>	<b>Operating Statistic</b>	<b>Unit Cost (\$)</b>
<b>Local</b>			
Revenue Hours	153,100	6,300	24.34
Revenue Miles	182,500	75,800	2.41
Peak Vehicles	116,000	2	58,000
Total	451,600		
<b>Shuttle</b>			
Revenue Hours	252,300	11,800	21.34
Revenue Miles	221,700	186,900	1.19
Peak Vehicles	87,100	2	43,550
Total	561,100		

A significant portion of all of the bus system expenses in the last fiscal year were assigned to revenue hours. The allocation to this variable includes drivers' wages and fringe payments. Accounts allocated to revenue miles included fuel, insurance and parts along with wages and fringe benefits paid to mechanics and service personnel and include another large portion of operating expenses. Some cost items were assigned to

peak vehicles and includes maintenance of the garage and general and administrative employee compensation. The three-variable cost model was applied to the estimates of the three operating statistics presented in Table 6 and 7, with the resulting operating cost estimates in 2009 dollars presented in Table 11. Because the fixed operating costs were allocated to peak vehicles, this unit cost was applied at one-fourth for the increase of two peak vehicles. For example, it is unlikely that the administrative expenses would increase appreciably with the addition of two buses to the local route network.

Forecasts of revenue were based on the prevailing fare structure (i.e., passengers pay \$1.50 for a trip on the local service and \$1.00 per Newburgh-Beacon Shuttle trip) and recent trends. The current average fare for the Newburgh local service is \$1.48 while the average fare for the Newburgh-Beacon Shuttle is \$1.07. Both average fares are consistent with the average fare levels during the past few years, although they appear somewhat high in light of various discount provisions (e.g., senior citizens and disabled). The use of transfers would reduce the average fare and account to some extent for recent average fares. The estimates of future farebox revenue include payments by riders only and make no provisions for ancillary revenue. In 2009, the ancillary revenue (e.g., advertising) was only \$900 while in previous years it has ranged from about \$9,000 to \$10,000. Estimates of farebox revenue in 2009 dollars are also presented in Table 11.

**Table 11 - Financial Forecasts  
(All Amounts in Constant 2009 Dollars)**

<b>Year/Service</b>	<b>Farebox Revenue (\$)</b>	<b>Operating Cost (\$)</b>	<b>Operating Deficit (\$)</b>
2009	164,100	1,012,800	848,700
<b>Recommended Plan</b>			
Local	246,200	1,061,400	815,200
Shuttle	53,300	561,100	507,800
<b>Total</b>	<b>299,500</b>	<b>1,622,500</b>	<b>1,323,000</b>

As the table shows, the operating costs are expected to increase by approximately \$609,700; however, the revenue is expected to increase by approximately \$135,400, which reflects the expected increase in ridership from the implementation of the recommended services. The deficit of the recommended plan is expected to be more than \$1.3 million during its first year of operation, in 2009 dollars and with no allowance for inflation.

It should be recognized that while the transit industry definition of operating deficit is merely the difference between operating costs and fares paid by passengers, the term has different connotations for the local and shuttle services. For the local routes, subsidy is available to underwrite the cost of service. The Newburgh-Beacon

Shuttle is provided through a contract with NYSDOT and the payments should cover the cost of the service. Because of the different nature of the local and shuttle routes, all forecasts are presented separately for each service.

In the current analysis, financial forecasts were prepared in a two-step process. First, estimates were prepared in constant 2009 dollars as shown in Table 11, which include the costs incurred by the operator (i.e., Newburgh Beacon Bus Corporation). Second, all amounts were escalated in the actual year of expenditure to reflect the consequences of inflation (Table 12).

**Table 12 - Operating Financial Forecasts  
(All Amounts in Current Year Dollars)**

<b>Year</b>	<b>Farebox Revenue (\$)</b>	<b>Operating Cost (\$)</b>	<b>Operating Deficit (\$)</b>
<b>Local</b>			
2010	112,400	470,600	358,200
2011	246,200	1,152,400	906,200
2012	246,200	1,200,800	954,600
2013	246,200	1,251,200	1,005,000
2014	246,200	1,303,800	1,057,600
<b>Shuttle</b>			
2010	51,700	584,700	533,000
2011	53,300	609,200	555,900
2012	53,300	634,800	581,500
2013	53,300	661,500	608,200
2014	53,300	689,300	636,000

Bus operating costs for 2010 reflect operation of the existing bus system while 2011 through 2014 are based on implementation of the recommended plan. The study does not call for a fare increase which results in revenues remaining unchanged between 2011 and 2014 when the recommended plan is in service. In contrast, operating costs are expected to increase to reflect inflation. During 2004 and 2009, the average cost per hour increased by 4.2 percent annually. Accordingly, this escalation rate was applied to the estimates in 2009 dollars.

An integral part of study recommendations is an aggressive marketing plan to re-brand the bus system before implementing the recommended plan. This would include printing new timetables, system maps, advertising and other marketing activities, along with painting buses in a new, distinctive color scheme. Current plans of Orange County anticipate delivery of new buses in 2013 which would suggest that existing vehicles be repainted. Assuming seven buses (i.e., six peak buses and one spare coach) would be repainted at a unit cost of \$6,000 an expenditure of \$42,000 for

buses has been included in the marketing cost. Another \$70,000 has been estimated for other start-up marketing activities. In 2011, the annual marketing activities are estimated at \$30,000 which would increase \$2,000 each subsequent year. Approximately two-thirds of the marketing cost have been assigned to the local service which is consistent with the number of buses assigned to the local and shuttle routes. The combined operating deficit and marketing costs are shown in Table 13.

**Table 13 - Operating and Marketing Financial Forecasts  
(All Amounts in Current Year Dollars)**

Year	Operating Deficit (\$)	Marketing Cost (\$)	Total Deficit (\$)
<b>Local</b>			
2010	358,200	76,000	434,200
2011	906,200	21,000	927,200
2012	954,600	22,400	977,000
2013	1,005,000	23,800	1,028,800
2014	1,057,600	25,200	1,082,800
<b>Shuttle</b>			
2010	533,000	36,000	569,000
2011	555,900	9,000	564,900
2012	581,500	9,600	591,100
2013	608,200	10,200	618,400
2014	636,000	10,800	646,800

**Operating Assistance and Funding** - A variety of funding sources are available to cover the total deficit since fares paid by riders only cover a small portion of the costs of the bus system. For the Newburgh Beacon Bus Corporation, the source of these funds are the New York State Department of Transportation (NYSDOT) and the Federal Transit Administration (FTA), both via Orange County. The former includes operating assistance and contract payments for operation of the shuttle. The FTA provides funding under a variety of programs with the most likely being Section 5307. In addition, federal transportation dollars are available through the Congestion Mitigation Air Quality program. A brief description of each program is presented below:

- **State Transit Operating Assistance** - NYSDOT provides funds to help local transit operators close the gap between operating costs and passenger fares. Payments are based on the number of miles operated and passengers carried. A unit reimbursement rate is established for miles (i.e., \$0.69 per mile) and passengers (i.e., 40.5 cents per passenger). These rates vary and the amounts paid are based on the amount of funding provided in each year's budget. In 2009, Orange County earned payments of \$299,200 for Newburgh Beacon Bus Corporation, which

included subsidies for both the fixed route and paratransit services. In view of the current economic situation, there is considerable uncertainty regarding transit funding by NYSDOT. Nevertheless in the current analysis, it is assumed that STOA funding will increase by two percent annually. When the recommended plan is implemented, funding will rise substantially to reflect increased miles of service and passengers carried as well as in response to inflation.

- **Contract Payments** - NYSDOT contracts with the Newburgh Beacon Bus Corporation for the operation of the shuttle service. Between 2004 and 2009, the contract payment for the shuttle ranged from \$243,600 to \$625,800. The maximum payment was made in 2008, when SkyBus was in operation and air traveler volumes were high. In 2009, the payment for the existing service was \$427,900. Since the shuttle service is operated under contract to NYSDOT, the payment must cover any unfunded deficit which is the operating cost, less fares paid by riders and the STOA subsidies.

The contract payment is negotiated between NYSDOT and the operator and Newburgh Beacon Bus Corporation is paid for both operating and annualized capital expenses. No specific amount is identified for the provision of buses and the use of their maintenance facilities and equipment. Currently, the operator provides buses which are used in the shuttle service and a portion of the negotiated amount includes the annualized cost of buses, although no dollar amount is identified. This is expected to continue through 2012, but will need to be revised in 2013 and 2014 when Orange County provides buses for the shuttle service. Based on the 2009 NTD submission by Newburgh Beacon Bus Corporation, approximately \$77,600 was attributable to vehicle lease for the bus system (i.e., four vehicles for both local and shuttle routes). About half that amount (\$38,800) can be used as an adjustment when Orange County provides two buses for the shuttle service.

- **Section 5307** - The Federal Transit Administration provides operating assistance for transit systems in urbanized areas. Orange County is eligible for these funds, which are allocated to the Metropolitan Planning Organization encompassing Orange, Dutchess and Ulster Counties. Because the urbanized area has a population in excess of 200,000, Section 5307 funds are determined on a formula basis which includes the amount of service supplied. The funds coming to the metropolitan area are in turn

allocated among the various operators. Orange County is the designated recipient which passes these funds to eligible operators such as Newburgh Beacon Bus Corporation. In 2009, \$173,700 was paid to the operator by Orange County which was the recipient of the Section 5307 funds.

As with NYSDOT funding, there is considerable uncertainty regarding federal support for public transportation. The multi-year funding authorization for surface transportation has expired and funding is provided through continuing resolutions of Congress. It is likely that a new authorization will become law in a year or two, but the types of transit programs and funding levels are still speculative at this time. Nevertheless, it seems reasonable to expect increased funding since at each five year iteration of the transportation authorization legislation, greater amounts have been provided for public transportation.

- **Congestion Mitigation Air Quality (CMAQ)** - Federal funds are available to regions that are designated as air quality “non-attainment” areas such as Orange County. The program seeks to reduce emissions by funding transportation related projects. These transportation projects are submitted to the Metropolitan Planning Organization and funds are awarded on a competitive basis. CMAQ grants are only for a three year period with the understanding that the grantee would continue the program.

In the current analysis, it is assumed that funding will be provided through STOA, NYSDOT contract payments, Section 5307, CMAQ or other federal programs. The funding forecasts for each program and year are shown in Table 14. As noted previously, the funding of the local and shuttle routes are treated differently. The local routes would be eligible for STOA and the federal programs. In contrast, the shuttle route would have to be funded by only STOA and contract payments.

**Table 14 - Operating Funding Forecasts  
(All Amounts in Current Year Dollars)**

Year	NYSDOT STOA (\$)	NYSDOT Payment (\$)	FTA/CMAQ Other (\$)
<b>Local</b>			
2010	78,700	--	355,500
2011	240,800	--	686,400
2012	245,700	--	731,300
2013	250,600	--	778,200
2014	255,600	--	827,200
<b>Shuttle</b>			
2010	125,500	443,500	--
2011	130,600	434,300	--
2012	133,200	457,900	--
2013	135,800	482,600	--
2014	138,500	508,300	--

The analysis presented above assumes introduction of the recommended plan in 2011 with some preparatory steps (e.g., marketing) undertaken in 2010. Interest has been expressed in implementation of the recommended plan in the last quarter of 2010. This would require an extremely intensive effort during the next few months to assure proceeding with the capital improvements and marketing efforts in advance of the service changes. Moreover, implementation of the new service plan in 2011 will require an ambitious schedule and set of activities. Many transit systems utilize a six to nine month schedule for more modest service changes with little marketing and capital programs proposed with the recommended plan. This would also include a number of activities such as additional test trips, preparation of blocks and runs, head signs and numerous operational activities. To the extent that this ambitious schedule could not be met, activities would be undertaken later and expenditures would be incurred in subsequent periods.

### **Capital Program**

The capital program is concerned primarily with major expenditures during the planning period that support the existing bus system and the service recommendations. Capital outlays are typically for buses and facility upgrades, but can also include the purchase of bus stop signs and poles, information kiosks and bus shelters. The costs for the following capital needs are presented in current year dollars.

- **Vehicles** - Typically, the single largest outlay of a capital program is the purchase of buses since the cost of one vehicle can exceed several hundred

thousand dollars. Orange County is in the process of ordering new buses utilizing funds from the American Recovery and Reinvestment Act of 2009. It is assumed that the ordered vehicles will be delivered painted in a manner consistent with the branding of the recommended plan. However, since the buses will not be delivered until sometime in late 2012 or early 2013, the current vehicles will be utilized in the interim and likely repainted as noted previously. The cost of painting existing buses was discussed previously as part of the marketing effort.

- **Transit Hub** - It is currently envisioned that a transit hub could be created in the vicinity of Broadway and Liberty Street, the one location where all of the local routes and the Newburgh-Beacon Shuttle pass through. The hub could be implemented through a set of streetscape improvements and additional signage to indicate where and how a transfer can be made. While the planning and design of a potential transit hub have not been completed at this time, it is estimated that construction could be accomplished with a budget of approximately \$250,000. Additionally, the 17K Park & Ride facility will continue to act as a transit hub, where the intercity routes offered by CoachUSA's Shortline service and Adirondack Trailways will connect with the local and shuttle bus routes. This facility is currently under redesign and no additional money will be required to implement changes attributable to the recommended plan for improved bus service.
  
- **Bus Shelters** - There are a number of locations in the Newburgh area which would require new or replacement bus shelters. Transit generators, such as the Newburgh Mall, WalMart, Mid-Valley Mall, St. Luke's Cornwall Hospital (both locations) and the Broadway corridor, should have passenger waiting shelters to protect passengers from the elements. Some potential locations will require approval from the property owner in order to allow for installation of the shelter. In total, it is suggested that 15 shelters be purchased and installed. Each shelter would cost approximately \$10,000, including the cost of installation.

Some communities opt to have an agreement with an outdoor advertising agency to provide, install and maintain each shelter in exchange for the right to advertise in each shelter. Additionally, a portion of the advertising revenue would be given to the holder of the agreement. Agreements are usually made between the advertising agency and the municipality where the shelter would be located. The advertising revenue

could be used to reduce the deficit of the recommended plan. The advertising agency would most likely want to install several shelters and there are sometimes issues regarding the advertising content, which some communities have identified as a concern.

The design of a bus shelter can range from the simple to the abstract. Figure 6 offers several different designs, illustrating the range of available bus shelters.

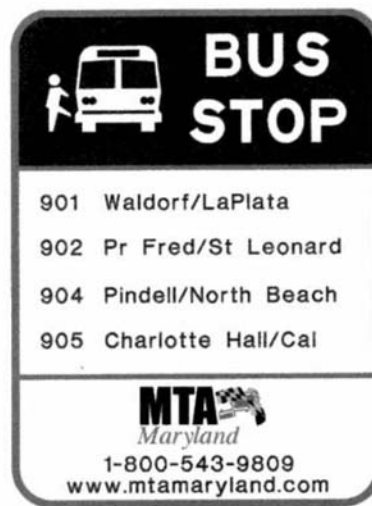
**Figure 6 - Sample Bus Shelter Designs**



- **Bus Stop Signs** - Bus stop signs will need to be purchased and installed at every bus stop location in order to inform passengers where to wait for the bus. The signs also act as a way of advertising the service. One of the main complaints about the current service is that people are not sure where to wait for the bus. Installing a bus stop sign at each location will

help solve this issue. Each sign would represent the overall branding theme, as well as contain information on the bus routes that serve each individual stop location, have a telephone number to call for route information, and list the website where additional information can be obtained. The plan would require an estimated 250 bus stop signs. Including the cost of the pole and installation, each bus stop sign would cost approximately \$120. The total outlay for bus stop signs would be \$30,000. Figure 7 displays a good example of a proper bus stop sign.

**Figure 7 - Bus Stop Sign Example**



Additionally, a ride guide could be placed at each stop location which would display a timetable and map of the routes serving that location. This plan does not call for such an amenity at this time; however, the option is available and could be installed later.

- **Information Kiosks** - The final capital outlay would be for information kiosks. An information kiosk would contain schedule information – including maps and timetables – of the recommended local routes and the Newburgh-Beacon Shuttle, as well as information on the other transit providers in the area, such as CoachUSA, Ulster County Area Transit (UCAT) and MTA Metro-North’s Hudson Line, to name a few. These kiosks should be installed at locations expected to generate relatively high ridership (e.g., Mid-Valley Mall, WalMart and the 17K Park & Ride Lot).

Assuming that 10 kiosks would be installed, at a price of \$3,000 per kiosk, the total cost for information kiosks would be \$30,000. It should be

recognized that the price of an information kiosks depends almost exclusively on its design. There are more costly units which are more aesthetically pleasing that could be purchased. Some agencies have even installed interactive kiosks with computers that are on the high end in terms of price. Several examples of information kiosks are displayed in Figure 8 and detail the wide range of available models.

**Figure 8 - Examples of Information Kiosks**



The proposed capital program is summarized in Table 15 which indicates a total capital outlay of \$422,500. As mentioned previously, it is assumed that all of these amenities will be purchased before the recommended plan is put into service with the one exception being the transit hub.

**Table 15 - Capital Improvement Program**

<b>Item</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Amount</b>
Transit Hub	1	\$250,000	\$250,000
Bus Shelters	15	\$10,000	\$150,000
Bus Stop Signs	250	\$120	\$30,000
Information Kiosks	10	\$3,000	\$30,000
<b>Total</b>			<b>\$460,000</b>

With the exception of the transit hub, it is expected that the capital items would be in place prior to service implementation at the start of 2011. In terms of priorities, vehicles (i.e., repainting) and bus stop signs would have maximum importance followed by kiosks and shelters. Similar to the operating and marketing issues, the capital program would mandate an ambitious schedule.

Capital expenses are funded by the federal, state and local governments. The federal government will pay 80 percent of the capital expenses through the Federal Transit Administration’s (FTA) Section 5307 program, which provides capital assistance for new buses, related equipment and facilities. New York State routinely provides ten percent of the capital expenses (or half of the overall non-federal share). In Newburgh, the remaining ten percent is paid by either Orange County or the operator. With this funding formula, the necessary capital assistance is shown in Table 16.

**Table 16 - Capital Funding**

<b>Source</b>	<b>Share (%)</b>	<b>Amount (\$)</b>
FTA	80	368,000
NYSDOT	10	46,000
Orange County	10	46,000
Total	100	422,500

## **Marketing Program**

An aggressive marketing program is essential for the success of the recommended plan. A common complaint regarding the bus system during the outreach meetings was the “stealth” nature of the bus system. People did not know what services are available and how to get information on how to use the bus system. Further, materials should be bi-lingual (i.e., English and Spanish) to promote ridership within the Hispanic community. As mentioned previously, an initial outlay of \$70,000 (excluding repainting buses), and annual expenses of about half that amount in subsequent years, has been suggested for marketing. The branding of the recommended plan is a key aspect of the marketing program, as it will create an impression with current and potential riders. This is especially important in Newburgh where many people choose to drive and others without a car often opt for a taxi. The taxis offer a relatively convenient, door-to-door service with a low pricing strategy. They are an attractive competitor to the bus system and their wide spread use reflects the public’s view of the taxi and bus systems.

Failure to pursue the marketing activities may result in less use of the bus system with the negative impact on the financial results and greater subsidy needs. A number of marketing elements are suggested for the proposed service, as highlighted below:

- **Framework** - Planning of the marketing effort should be detailed and comprehensive. Emphasis should be placed on setting objectives, project design and evaluation. Coordination should be maintained between

Orange County, Newburgh Beacon Bus Corporation, NYSDOT and municipalities to implement the marketing efforts. A consistent design theme should be maintained for all marketing materials so that the brand can be easily identified.

- **Logo** - A clearly identified logo should be prepared and possibly include a simple one or two syllable name. The logo will provide a standard item to be used in all marketing efforts.
- **Unique Vehicle Appearance** - The vehicle should have an attractive look and feel which reflects the logo and the service. As noted previously, existing buses will be painted or wrapped with graphics that portray the overall theme of the improved bus service. When new buses are delivered, they will conform to the same design and paint scheme.
- **Bus Stop Signs** - Signs should be installed at all bus stop locations, which would include the logo, and a telephone number and website address where people can obtain additional information about the service. Similar to the buses, bus stop signs should be a visual reminder of the local and shuttle services and the overall brand.
- **Brochure/Timetable** - A user ride guide describing the new services should be prepared and distributed. It would include a map, timetable and a description of any connecting service (e.g., UCAT, Coach USA and Metro North). The brochure should be designed to be included in any housing, retail establishments, healthcare and education facility information package, to be placed in “take one” racks at various locations, and to be used as self-mailers. Another feature of the guide is that it be compatible with the materials prepared by Orange County.
- **Publicity** - Considerable energy should be focused on making people aware of the recommended plan from its introduction. Publicity on the service’s “roll out” should be created, as this is a one-time opportunity. This would include news articles, media coverage and a press conference.
- **Website** - A website should be created and regularly maintained, which describes the local and shuttle services and explains its use. The site should share a design theme with the logo and will contain the schedule, a map of the service, as well as information on, and links to, the connecting transit services. Links to other area generators, such as the healthcare and

housing facilities along the route, should be included on the website. The website will help create awareness for the service.

- **Posters** - Posters should be prepared for use on bulletin boards at locations such as the 17k Park & Ride, Beacon rail station, housing locations throughout the service area, shopping locations along Route 300 and Broadway and at other major generators. Each poster should include a “take one” box that has an available supply of service brochures.

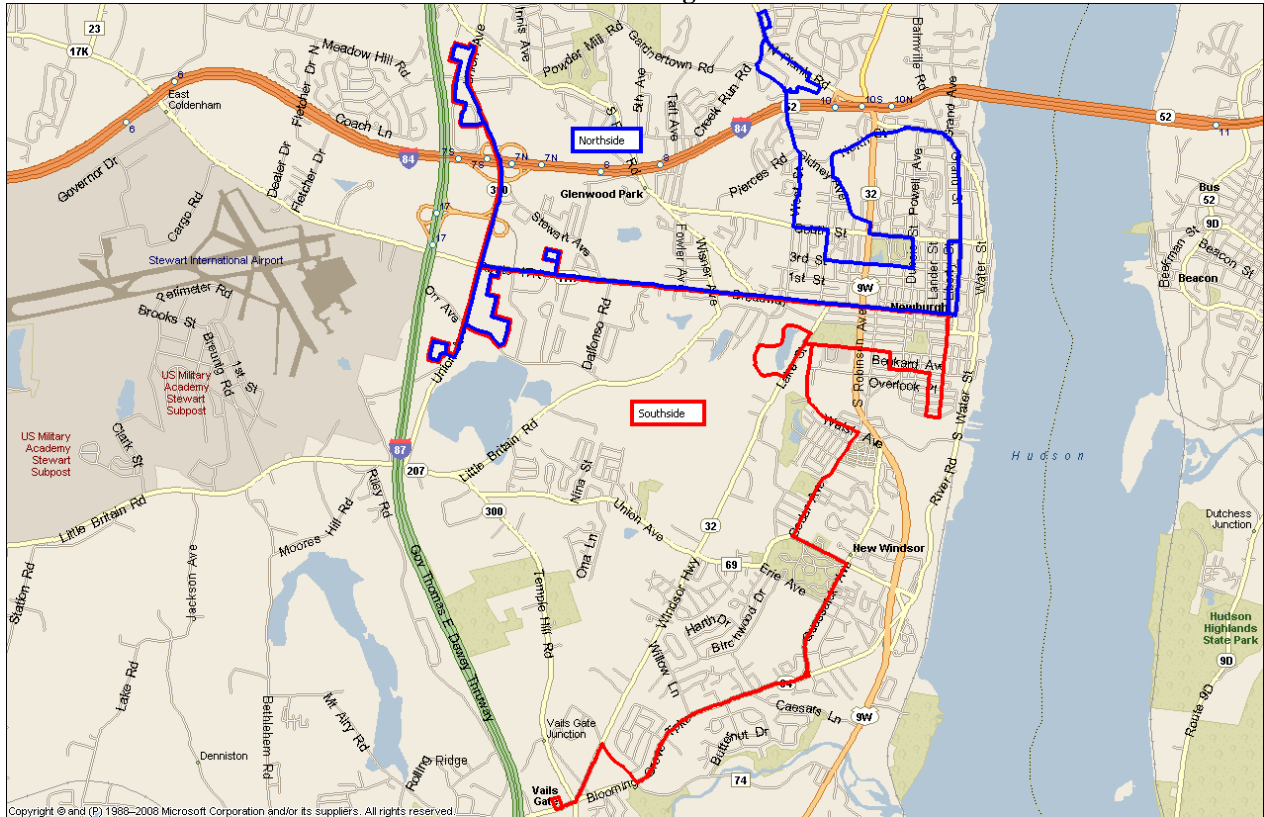
An ambitious marketing plan is essential for achieving a successful transit program within the Newburgh service area. Most of the items should be implemented prior to the introduction of service and continued during the next few years.

## **Appendix A: Initial Alternatives - Routings**

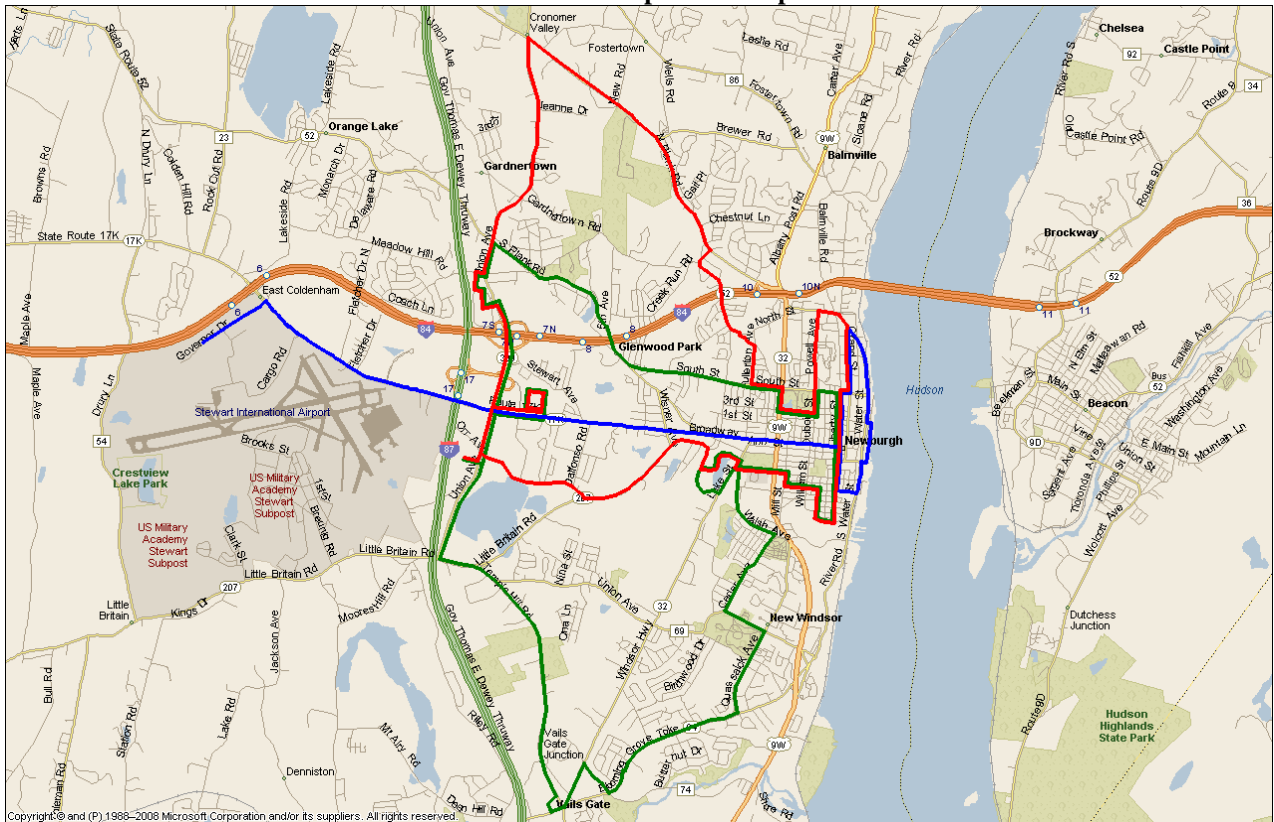
An illustration is presented for each of the initial alternatives as follows:

- Local Routes: 1A, 1B, 2, 3A, 3B, 4A and 4B
- Shuttle Route: 5A, 5B and 5C

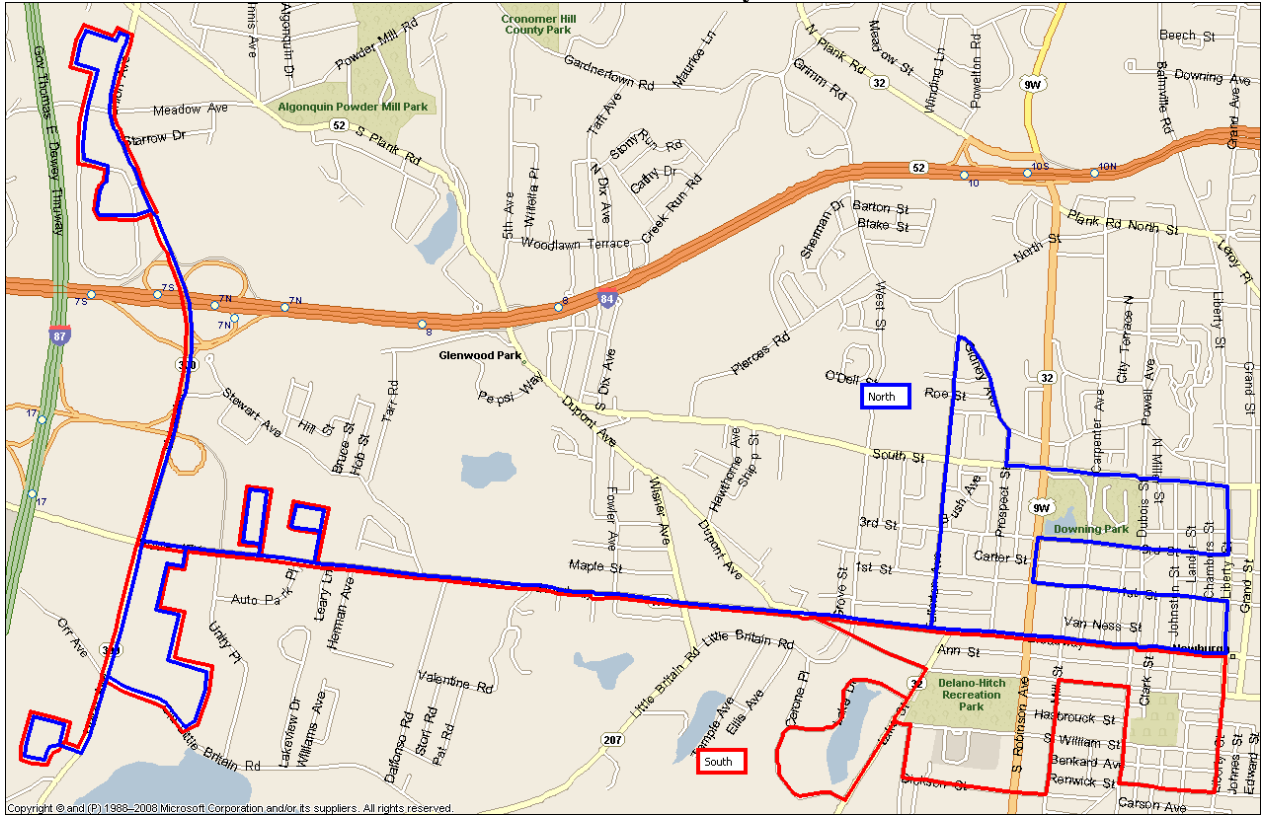
### Alternative 1A: Existing Local Routes



### Alternative 1B: Operator Proposal

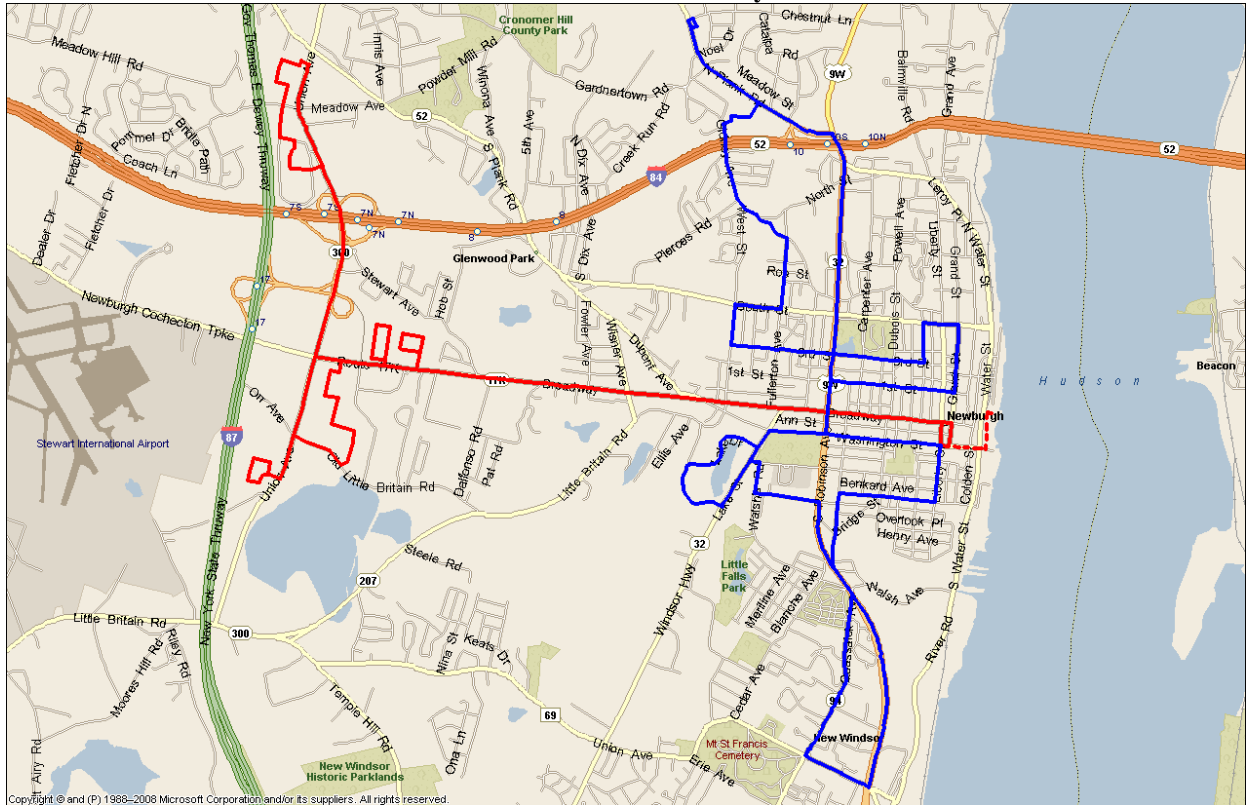


### Alternative 2: Two Bus System



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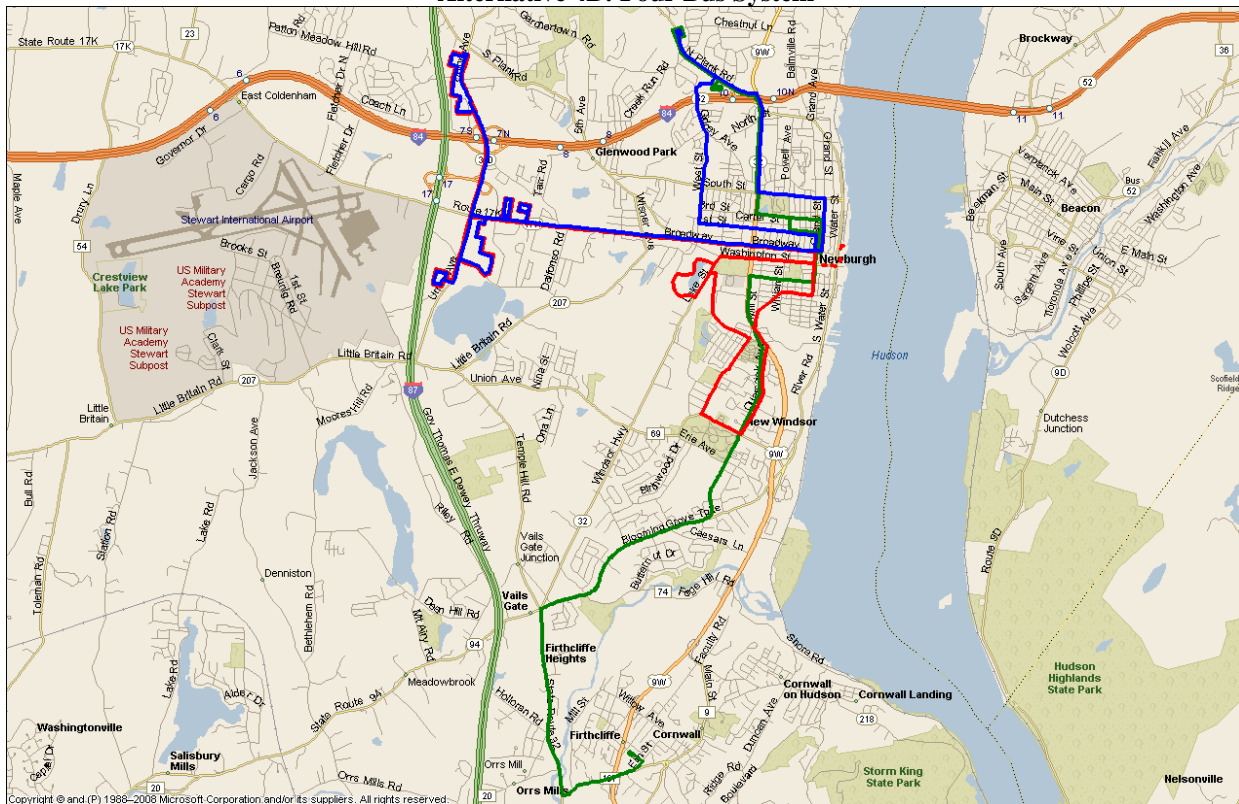
### Alternative 3A: Three Bus System



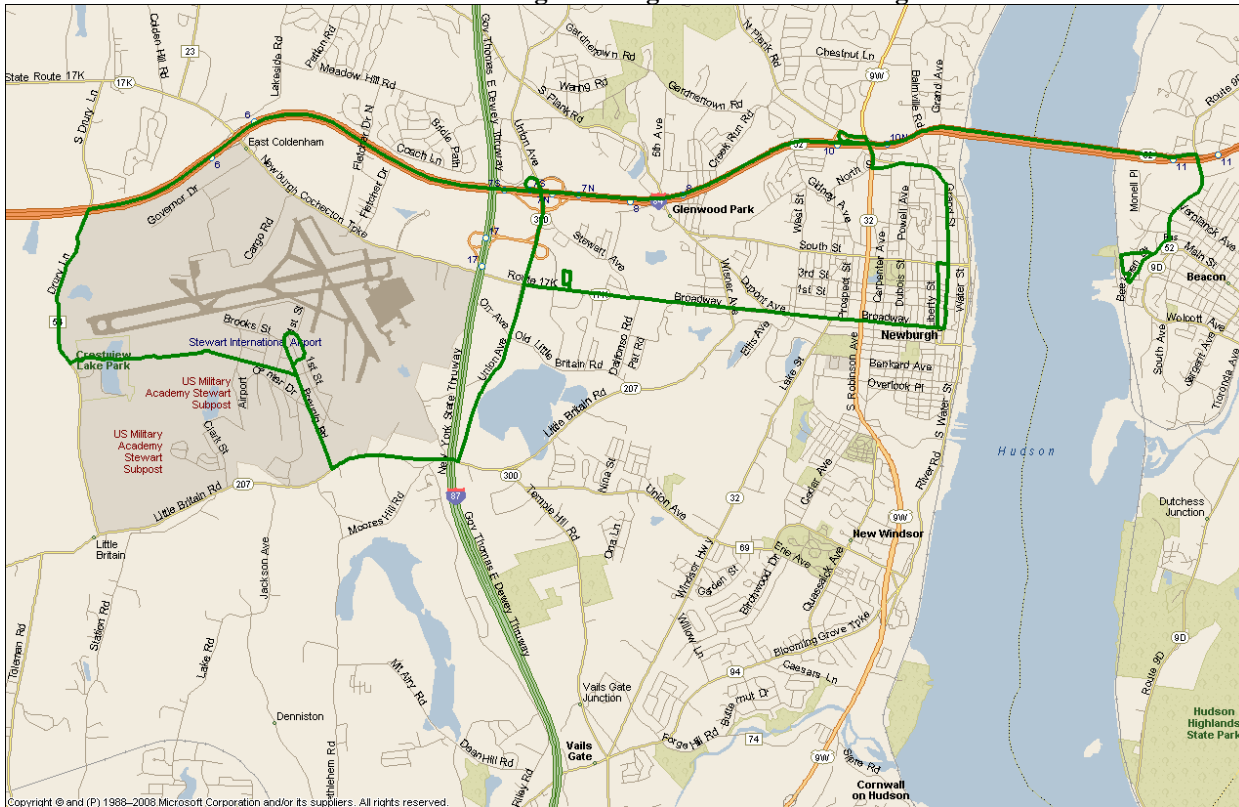
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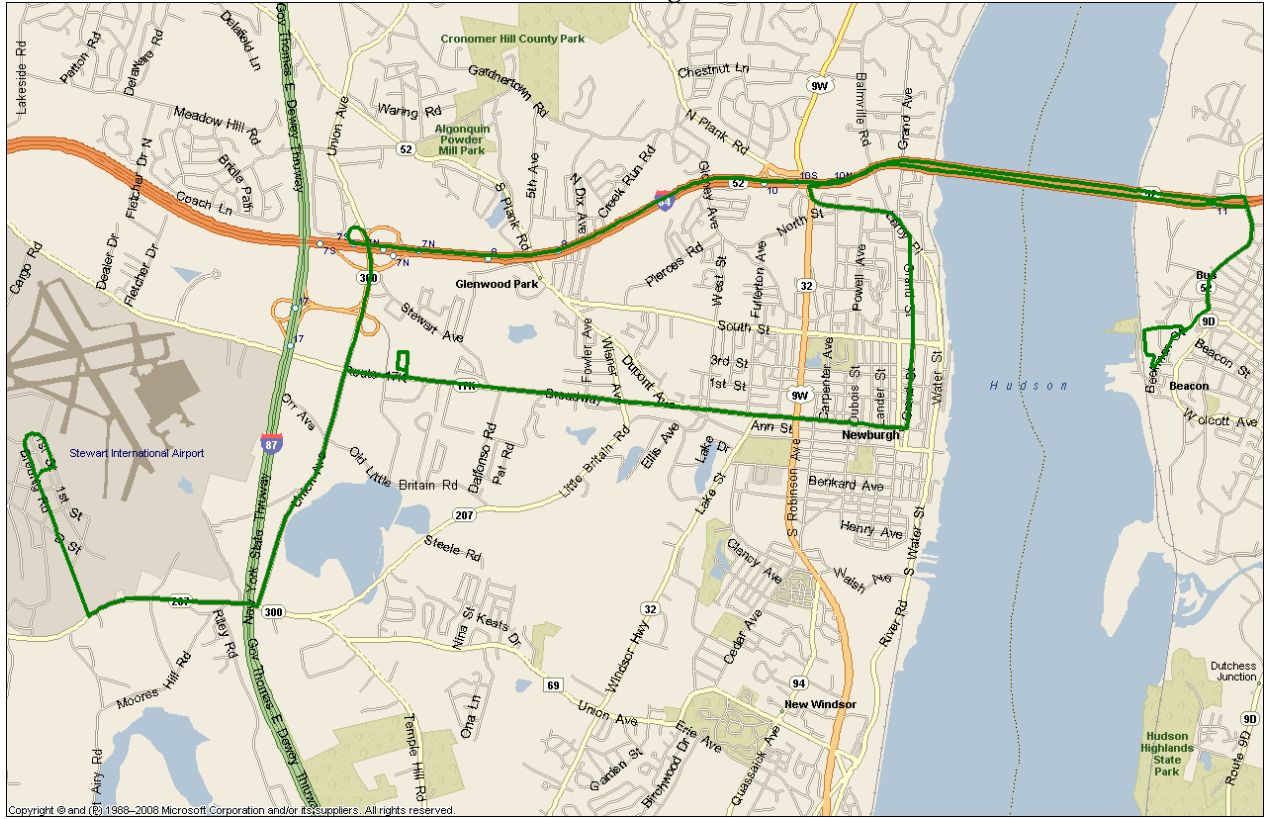
### Alternative 4B: Four Bus System



### Alternative 5A: Existing Newburgh-Beacon Shuttle Alignment

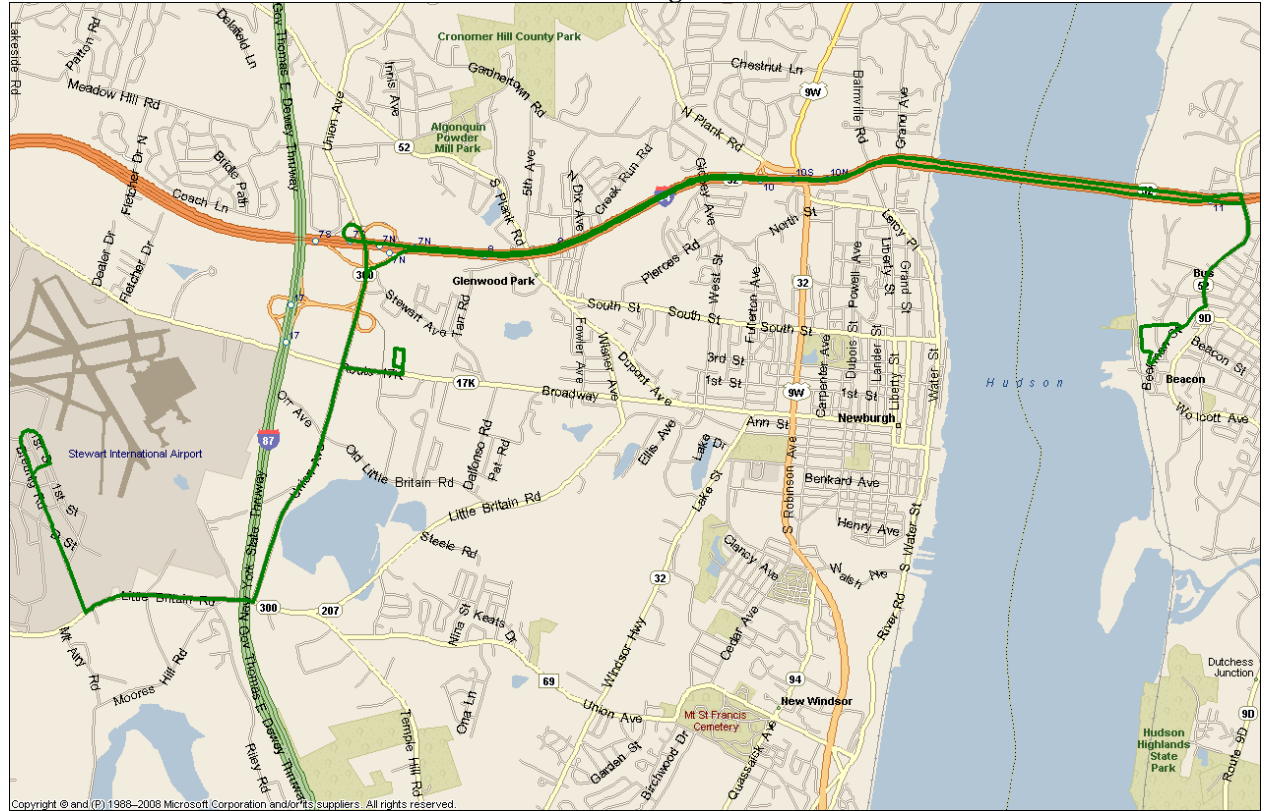


### Alternative 5B: Newburgh-Beacon Shuttle



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### Alternative 5C: Newburgh-Beacon Shuttle



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## **Appendix B: Initial Alternative - Forecasts**

As part of the evaluation process, the impacts of each of the alternatives was forecast and these results presented to study participants. These results are presented for each local and shuttle alternative along with a summary by service type. A common format and analysis process was followed and consisted of the following:

- **Span** - For the local routes, estimates were prepared based on two levels of service. First the existing span of service was analyzed with buses operating between 7:00AM and 5:30PM on weekdays and between 8:30AM and 5:30PM on Saturdays for the Northside route. A similar length of service would be operated by the Southside route, although the start and end times would be 30 minutes later. Another option investigated would be to extend the span of service 1.5 hours of operation on both weekdays and weekends.
- **Times** - Based on current and assumed speed of operations, estimates were made of running times for each route. In turn, layovers were specified at about ten to 15 percent, although consideration was given to appropriate values of cycle times to produce user friendly and clockface headways. Percent layover was also computed to test the reasonableness of values computed and selected.
- **Distance and Operating Speed** - Using computer generated map distances and confirmed with odometer readings from field tests, the round trip distance of each route was computed. By dividing the distance in miles by cycle time in hours, the operating speed was computed.
- **Headway** - As noted above, headways were selected, to the extent possible, to permit user friendly values (e.g., 30 or 60 minutes) which are recurring and easy to remember and eliminate the need for a schedule. These clockface headways results in a bus being at a location at uniform intervals (e.g., 7:15, 7:45, 8:15, 8:45, etc.)
- **Operating Statistics** - Based on the characteristics of the route, daily estimates of revenue hours and revenue miles were computed and converted to annual estimates based on 253 weekdays (no service on some holidays) and 52 Saturdays. The peak vehicles variable is merely cycle time divided by headway.

- **Ridership** - Three techniques were used to estimate anticipate ridership for each alternative. The first procedure was to assume ridership levels would be the same as the current system. The second relied on similar routes where judgments were made on the applicability of similar service elsewhere. Finally, an elasticity approach was followed where a change in a service parameter generated a change in the ridership levels. Factors considered were frequency of service, hours of operation and whether the trip involved a one-seat ride or transfer.
  
- **Costs** - As part of the route diagnostics analysis, a three-variable cost allocation model was developed. With this technique, each line item of expense is assigned to one of three operating statistics – revenue hours, revenue miles and peak vehicles. In turn, the costs allocated to each operating statistic were divided into the appropriate value. The unit costs statistics used in the analysis are \$24.01 per revenue hour, \$1.45 per revenue mile and \$32,318.25 per peak vehicle. The computed costs are based on 2007 NTD information. While somewhat data, the calibrated cost model is useful for purposes of comparing alternatives. The forecasts for the recommended plan rely on more recent 2009 data.
  
- **Revenue** - Average fares for the current system were used in the analysis with the Northside and Southside routes having an average fare of \$1.53 and \$1.51, respectively. The shuttle service has a lower average fare of \$1.03. The estimated ridership was multiplied by the appropriate average fare to determine the forecasted revenue.
  
- **Financial** - The operating costs and farebox revenue are presented along with the resulting deficit and farebox recovery.
  
- **STOA** - State Transit Operating Assistance was computed based on subsidy values of 40.5 cents per passenger and 69.0 cents per revenue mile.

The discussion above highlights the computation process used to estimate the impacts of each alternative. At this stage of the analysis, the focus was on comparing the alternatives and selecting a preferred plan for subsequent refinement.

A separate table is presented for each initial alternative and a summary exhibit is presented for the local and shuttle service types.

Alternative 1A - Existing Local Routes

Day	Existing Span of Service						Extended Span of Service					
	Northside			Southside			Northside			Southside		
	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7:30A-6P	9A-6P		7A-7P	8:30A-7P		7:30A-7:30P	9A-7:30P	
Time (minutes)												
<i>Running Time</i>	110	110		115	115		110	110		115	115	
<i>Layover Time</i>	10	10		5	5		10	10		5	5	
<i>Cycle Time</i>	120	120		120	120		120	120		120	120	
<i>Percent Layover</i>	9%	9%		4%	4%		9%	9%		4%	4%	
Distance (miles)	23.7	23.7	23.7	28.5	28.5	28.5	23.7	23.7	23.7	28.5	28.5	28.5
Operating Speed (mph)	12.4	12.4	12.4	14.3	14.3	14.3	12.4	12.4	12.4	14.3	14.3	14.3
Headway (minutes)	120	120	120	120	120	120	120	120	120	120	120	120
Operating Statistics												
<i>Annual Revenue Hours</i>	2,292	405	2,697	2,304	407	2,711	2,620	463	3,083	2,633	465	3,099
<i>Annual Revenue Miles</i>	28,439	5,025	33,464	32,853	5,804	38,657	32,705	5,779	38,484	37,781	6,674	44,456
<i>Buses Required</i>	1	1	1	1	1	1	1	1	1	1	1	1
Ridership												
<i>Passengers/Mile</i>	0.81	0.55	0.77	0.82	0.56	0.78	0.81	0.55	0.77	0.82	0.56	0.78
<i>Annual Passengers</i>	22,985	2,783	25,768	26,896	3,256	30,152	26,432	3,200	29,633	30,930	3,745	34,675
Cost												
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$128,586	\$17,011	\$145,597	\$135,275	\$18,187	\$153,462	\$142,641	\$19,494	\$162,135	\$150,331	\$20,847	\$171,178
Revenue												
<i>Average Fare</i>	\$1.53	\$1.53	\$1.53	\$1.51	\$1.51	\$1.51	\$1.53	\$1.53	\$1.53	\$1.51	\$1.51	\$1.51
<i>Annual Revenue</i>	\$35,121	\$4,252	\$39,373	\$40,613	\$4,917	\$45,530	\$40,389	\$4,890	\$45,279	\$46,705	\$5,655	\$52,360
Financial												
<i>Cost</i>	\$128,586	\$17,011	\$145,597	\$135,275	\$18,187	\$153,462	\$142,641	\$19,494	\$162,135	\$150,331	\$20,847	\$171,178
<i>Revenue</i>	\$35,121	\$4,252	\$39,373	\$40,613	\$4,917	\$45,530	\$40,389	\$4,890	\$45,279	\$46,705	\$5,655	\$52,360
<i>Deficit</i>	\$93,465	\$12,758	\$106,224	\$94,662	\$13,270	\$107,932	\$102,252	\$14,604	\$116,856	\$103,626	\$15,192	\$118,818
<i>Farebox Recovery (%)</i>	27.31%	25.00%	27.04%	30.02%	27.04%		28.31%	25.08%		31.07%	27.13%	
STOA												
<i>40.5 c/ Passenger</i>	\$9,308.79	\$1,127.07	\$10,435.87	\$10,892.87	\$1,318.87	\$12,211.73	\$10,705.11	\$1,296.13	\$12,001.25	\$12,526.80	\$1,516.70	\$14,043.49
<i>69.0c/ Revenue Mile</i>	\$19,623.00	\$3,467.42	\$23,090.42	\$22,668.86	\$4,004.44	\$26,673.30	\$22,566.45	\$3,987.53	\$26,553.98	\$26,069.19	\$4,605.11	\$30,674.30
<i>Total</i>	\$28,931.80	\$4,594.49	\$33,526.29	\$33,561.73	\$5,323.31	\$38,885.04	\$33,271.57	\$5,283.66	\$38,555.23	\$38,595.99	\$6,121.80	\$44,717.79

Day	Existing Span of Service									Extended Span of Service								
	Broadway			Northside			Southside			Broadway			Northside			Southside		
	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-7P	8:30A-7P		7A-7P	8:30A-7P		7A-7P	8:30A-7P	
Time (minutes)																		
<i>Running Time</i>	55	55		55	55		55	55		55	55		55	55		55	55	
<i>Layover Time</i>	5	5		5	5		5	5		5	5		5	5		5	5	
<i>Cycle Time</i>	60	60		60	60		60	60		60	60		60	60		60	60	
<i>Percent Layover</i>	9%	9%		9%	9%		9%	9%		9%	9%		9%	9%		9%	9%	
Distance (miles)	15.0	15.0	15.0	16.7	16.7	16.7	18.6	18.6	18.6	15.0	15.0	15.0	16.7	16.7	16.7	18.6	18.6	18.6
Operating Speed (mph)	15.0	15.0	15.0	16.7	16.7	16.7	18.6	18.6	18.6	15.0	15.0	15.0	16.7	16.7	16.7	18.6	18.6	18.6
Headway (minutes)	30	30	30	60	60	60	60	60	60	30	30	30	60	60	60	60	60	60
Operating Statistics																		
<i>Annual Revenue Hours</i>	5,355	936	6,291	2,678	468	3,146	2,678	468	3,146	6,120	1,092	7,212	3,060	546	3,606	3,060	546	3,606
<i>Annual Revenue Miles</i>	80,325	14,040	94,365	44,714	7,816	52,530	49,802	8,705	58,506	91,800	16,380	108,180	51,102	9,118	60,220	56,916	10,156	67,072
<i>Buses Required</i>	2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1
Ridership																		
<i>Passengers/Mile</i>	0.93	0.64	0.89	0.68	0.47	0.65	0.61	0.43	0.59	0.93	0.63	0.89	0.68	0.46	0.65	0.62	0.42	0.59
<i>Annual Passengers</i>	74,502	9,020	83,522	30,476	3,690	34,165	30,561	3,700	34,261	85,409	10,341	95,750	34,937	4,230	39,167	35,035	4,242	39,277
Cost																		
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$309,681	\$42,831	\$352,513	\$161,441	\$22,569	\$184,010	\$168,817	\$23,859	\$192,676	\$344,688	\$49,970	\$394,658	\$179,887	\$26,331	\$206,218	\$188,317	\$27,835	\$216,152
Revenue																		
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$113,094	\$13,693	\$126,787	\$46,262	\$5,601	\$51,863	\$46,392	\$5,617	\$52,009	\$129,651	\$15,698	\$145,349	\$53,035	\$6,421	\$59,456	\$53,183	\$6,439	\$59,623
Financial																		
<i>Cost</i>	\$309,681	\$42,831	\$352,513	\$161,441	\$22,569	\$184,010	\$168,817	\$23,859	\$192,676	\$344,688	\$49,970	\$394,658	\$179,887	\$26,331	\$206,218	\$188,317	\$27,835	\$216,152
<i>Revenue</i>	\$113,094	\$13,693	\$126,787	\$46,262	\$5,601	\$51,863	\$46,392	\$5,617	\$52,009	\$129,651	\$15,698	\$145,349	\$53,035	\$6,421	\$59,456	\$53,183	\$6,439	\$59,623
<i>Deficit</i>	\$196,587	\$29,138	\$225,726	\$115,179	\$16,968	\$132,147	\$122,425	\$18,242	\$140,667	\$215,037	\$34,272	\$249,309	\$126,852	\$19,910	\$146,762	\$135,134	\$21,396	\$156,529
<i>Farebox Recovery (%)</i>	36.52%	31.97%	35.97%	28.66%	24.82%	28.18%	27.48%	23.54%	26.99%	37.61%	31.41%	36.83%	29.48%	24.39%	28.83%	28.24%	23.13%	27.58%
STOA																		
<i>40.5 c/ Passenger</i>	\$30,173.32	\$3,653.27	\$33,826.60	\$12,342.60	\$1,494.40	\$13,836.99	\$12,377.23	\$1,498.59	\$13,875.82	\$34,590.69	\$4,188.11	\$38,778.80	\$14,149.55	\$1,713.17	\$15,862.72	\$14,189.26	\$1,717.98	\$15,907.24
<i>69.0c / Revenue Mile</i>	\$55,424.25	\$9,687.60	\$65,111.85	\$30,852.83	\$5,392.76	\$36,245.60	\$34,363.04	\$6,006.31	\$40,369.35	\$63,342.00	\$11,302.20	\$74,644.20	\$35,260.38	\$6,291.56	\$41,551.94	\$39,272.04	\$7,007.36	\$46,279.40
<i>Total</i>	\$85,597.57	\$13,340.87	\$98,938.45	\$43,195.43	\$6,887.16	\$50,082.59	\$46,740.27	\$7,504.90	\$54,245.17	\$97,932.69	\$15,490.31	\$113,423.00	\$49,409.93	\$8,004.73	\$57,414.66	\$53,461.30	\$8,725.35	\$62,186.64

Alternative 2 - Two Bus System

	Existing Span of Service						Extended Span of Service					
	North			South			North			South		
Day	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-7P	8:30A-7P		7A-7P	8:30A-7P	
Time (minutes)												
<i>Running Time</i>	55	55		55	55		55	55		55	55	
<i>Layover Time</i>	5	5		5	5		5	5		5	5	
<i>Cycle Time</i>	60	60		60	60		60	60		60	60	
<i>Percent Layover</i>	9%	9%		9%	9%		9%	9%		9%	9%	
<b>Distance (miles)</b>	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1
<b>Operating Speed (mph)</b>	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1
<b>Headway (minutes)</b>	60	60	60	60	60	60	60	60	60	60	60	60
<b>Operating Statistics</b>												
<i>Annual Revenue Hours</i>	2,678	468	3,146	2,678	468	3,146	3,060	546	3,606	3,060	546	3,606
<i>Annual Revenue Miles</i>	43,108	7,535	50,643	43,108	7,535	50,643	49,266	8,791	58,057	49,266	8,791	58,057
<i>Buses Required</i>	1	1	1	1	1	1	1	1	1	1	1	1
<b>Ridership</b>												
<i>Passengers/Mile</i>	1.01	0.70	0.96	1.01	0.70	0.96	1.01	0.68	0.96	1.01	0.68	0.96
<i>Annual Passengers</i>	43,366	5,251	48,617	43,366	5,251	48,617	49,715	6,019	55,734	49,715	6,019	55,734
<b>Cost</b>												
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$159,111	\$22,162	\$181,273	\$159,111	\$22,162	\$181,273	\$177,225	\$25,856	\$203,080	\$177,225	\$25,856	\$203,080
<b>Revenue</b>												
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$65,917	\$7,981	\$73,898	\$65,917	\$7,981	\$73,898	\$75,567	\$9,149	\$84,716	\$75,567	\$9,149	\$84,716
<b>Financial</b>												
<i>Cost</i>	\$159,111	\$22,162	\$181,273	\$159,111	\$22,162	\$181,273	\$177,225	\$25,856	\$203,080	\$177,225	\$25,856	\$203,080
<i>Revenue</i>	\$65,917	\$7,981	\$73,898	\$65,917	\$7,981	\$73,898	\$75,567	\$9,149	\$84,716	\$75,567	\$9,149	\$84,716
<i>Deficit</i>	\$93,195	\$14,181	\$107,376	\$93,195	\$14,181	\$107,376	\$101,658	\$16,706	\$118,364	\$101,658	\$16,706	\$118,364
<i>Farebox Recovery (%)</i>	41.43%	36.01%	40.77%	41.43%	36.01%	40.77%	42.64%	35.39%	41.72%	42.64%	35.39%	41.72%
<b>STOA</b>												
<i>40.5 ¢/ Passenger</i>	\$17,563.32	\$2,126.50	\$19,689.82	\$17,563.32	\$2,126.50	\$19,689.82	\$20,134.59	\$2,437.82	\$22,572.41	\$20,134.59	\$2,437.82	\$22,572.41
<i>69.0¢/ Revenue Mile</i>	\$29,744.35	\$5,199.01	\$34,943.36	\$29,744.35	\$5,199.01	\$34,943.36	\$33,993.54	\$6,065.51	\$40,059.05	\$33,993.54	\$6,065.51	\$40,059.05
<i>Total</i>	\$47,307.67	\$7,325.51	\$54,633.18	\$47,307.67	\$7,325.51	\$54,633.18	\$54,128.13	\$8,503.33	\$62,631.46	\$54,128.13	\$8,503.33	\$62,631.46

Alternative 3A - Three Bus System

	Existing Span of Service						Extended Span of Service					
	Broadway			North-South			Broadway			North-South		
Day	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-7P	8:30A-7P		7A-7P	8:30A-7P	
Time (minutes)												
<i>Running Time</i>	55	55		55	55		55	55		55	55	
<i>Layover Time</i>	5	5		5	5		5	5		5	5	
<i>Cycle Time</i>	60	60		60	60		60	60		60	60	
<i>Percent Layover</i>	9%	9%		9%	9%		9%	9%		9%	9%	
<b>Distance (miles)</b>	13.8	13.8	13.8	13.7	13.7	13.7	13.8	13.8	13.8	13.7	13.7	13.7
<b>Operating Speed (mph)</b>	13.8	13.8	13.8	13.7	13.7	13.7	13.8	13.8	13.8	13.7	13.7	13.7
<b>Headway (minutes)</b>	30	30	30	60	60	60	30	30	30	60	60	60
<b>Operating Statistics</b>												
<i>Annual Revenue Hours</i>	5,355	936	6,291	2,678	468	3,146	6,120	1,092	7,212	3,060	546	3,606
<i>Annual Revenue Miles</i>	73,899	12,917	86,816	36,682	6,412	43,093	84,456	15,070	99,526	41,922	7,480	49,402
<i>Buses Required</i>	2	2	2	1	1	1	2	2	2	1	1	1
<b>Ridership</b>												
<i>Passengers/Mile</i>	0.94	0.65	0.90	0.78	0.54	0.74	0.95	0.64	0.90	0.78	0.53	0.74
<i>Annual Passengers</i>	69,773	8,448	78,221	28,512	3,452	31,964	79,988	9,685	89,673	32,686	3,958	36,644
<b>Cost</b>												
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	1.45	1.45	1.45	\$1.45	\$1.45	\$1.45	1.45	1.45	1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	32,318.25	0.00	32,318.25	\$32,318.25	\$0.00	\$32,318.25	32,318.25	0.00	32,318.25
<i>Annual Cost</i>	\$300,364	\$41,203	\$341,566	\$149,794	\$20,534	\$170,327	\$334,039	\$48,070	\$382,109	\$166,576	\$23,956	\$190,532
<b>Revenue</b>												
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$106,055	\$12,841	\$118,896	\$43,338	\$5,247	\$48,586	\$121,582	\$14,721	\$136,302	\$49,683	\$6,015	\$55,699
<b>Financial</b>												
<i>Cost</i>	\$300,364	\$41,203	\$341,566	\$149,794	\$20,534	\$170,327	\$334,039	\$48,070	\$382,109	\$166,576	\$23,956	\$190,532
<i>Revenue</i>	\$106,055	\$12,841	\$118,896	\$43,338	\$5,247	\$48,586	\$121,582	\$14,721	\$136,302	\$49,683	\$6,015	\$55,699
<i>Deficit</i>	\$194,308	\$28,362	\$222,670	\$106,455	\$15,286	\$121,741	\$212,457	\$33,349	\$245,806	\$116,893	\$17,940	\$134,833
<i>Farebox Recovery (%)</i>	35.31%	31.16%	34.81%	28.93%	25.55%	28.52%	36.40%	30.62%	35.67%	29.83%	25.11%	29.23%
<b>STOA</b>												
<i>40.5 ¢/ Passenger</i>	\$28,258.13	\$3,421.39	\$31,679.52	\$11,547.40	\$1,398.12	\$12,945.51	\$32,395.11	\$3,922.28	\$36,317.39	\$13,237.93	\$1,602.80	\$14,840.73
<i>69.0¢ / Revenue Mile</i>	\$50,990.31	\$8,912.59	\$59,902.90	\$25,310.41	\$4,424.00	\$29,734.41	\$58,274.64	\$10,398.02	\$68,672.66	\$28,926.18	\$5,161.34	\$34,087.52
<i>Total</i>	\$79,248.44	\$12,333.98	\$91,582.42	\$36,857.81	\$5,822.12	\$42,679.93	\$90,669.75	\$14,320.30	\$104,990.05	\$42,164.11	\$6,764.14	\$48,928.25

Alternative 3B - Three Bus System

	Existing Span of Service						Extended Span of Service					
	Broadway-North			Broadway-South			Broadway-North			Broadway-South		
Day	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-7P	8:30A-7P		7A-7P	8:30A-7P	
Time (minutes)												
<i>Running Time</i>	80	80		80	80		80	80		80	80	
<i>Layover Time</i>	10	10		10	10		10	10		10	10	
<i>Cycle Time</i>	90	90		90	90		90	90		90	90	
<i>Percent Layover</i>	13%	13%		13%	13%		13%	13%		13%	13%	
<b>Distance (miles)</b>	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7
<b>Operating Speed (mph)</b>	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
<b>Headway (minutes)</b>	60	60	60	60	60	60	60	60	60	60	60	60
<b>Operating Statistics</b>												
<i>Annual Revenue Hours</i>	4,016	702	4,718	4,016	702	4,718	4,590	819	5,409	4,590	819	5,409
<i>Annual Revenue Miles</i>	52,747	9,220	61,966	52,747	9,220	61,966	60,282	10,756	71,038	60,282	10,756	71,038
<i>Buses Required</i>	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
<b>Ridership</b>												
<i>Passengers/Mile</i>	1.01	0.70	0.96	0.95	0.66	0.91	1.01	0.68	0.96	0.96	0.65	0.91
<i>Annual Passengers</i>	53,063	6,425	59,488	50,277	6,087	56,365	60,831	7,365	68,197	57,638	6,979	64,616
<b>Cost</b>												
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$221,390	\$30,223	\$251,614	\$221,390	\$30,223	\$251,614	\$246,092	\$35,261	\$281,353	\$246,092	\$35,261	\$281,353
<b>Revenue</b>												
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$80,656	\$9,766	\$90,421	\$76,421	\$9,253	\$85,674	\$92,464	\$11,195	\$103,659	\$87,609	\$10,607	\$98,217
<b>Financial</b>												
<i>Cost</i>	\$221,390	\$30,223	\$251,614	\$221,390	\$30,223	\$251,614	\$246,092	\$35,261	\$281,353	\$246,092	\$35,261	\$281,353
<i>Revenue</i>	\$80,656	\$9,766	\$90,421	\$76,421	\$9,253	\$85,674	\$92,464	\$11,195	\$103,659	\$87,609	\$10,607	\$98,217
<i>Deficit</i>	\$140,735	\$20,458	\$161,192	\$144,969	\$20,971	\$165,940	\$153,628	\$24,066	\$177,694	\$158,483	\$24,653	\$183,136
<i>Farebox Recovery (%)</i>	36.43%	32.31%	35.94%	34.52%	30.61%	34.05%	37.57%	31.75%	36.84%	35.60%	30.08%	34.91%
<b>STOA</b>												
<i>40.5 ¢/ Passenger</i>	\$21,490.53	\$2,601.99	\$24,092.52	\$20,362.27	\$2,465.39	\$22,827.66	\$24,636.73	\$2,982.92	\$27,619.65	\$23,343.30	\$2,826.32	\$26,169.62
<i>69.0¢/ Revenue Mile</i>	\$36,395.26	\$6,361.52	\$42,756.78	\$36,395.26	\$6,361.52	\$42,756.78	\$41,594.58	\$7,421.78	\$49,016.36	\$41,594.58	\$7,421.78	\$49,016.36
<i>Total</i>	\$57,885.78	\$8,963.52	\$66,849.30	\$56,757.53	\$8,826.91	\$65,584.44	\$66,231.31	\$10,404.70	\$76,636.01	\$64,937.88	\$10,248.10	\$75,185.98

Day	Existing Span of Service									Extended Span of Service								
	Broadway			Mid-Valley to Vails Gate			Community Shuttle			Broadway			Mid-Valley to Vails Gate			Community Shuttle		
	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		6A-9P	7A-7P		6A-9P	7A-7P		7A-7P	7A-7P	
Time (minutes)																		
<i>Running Time</i>	70	70		73	73		30	30		70	70		73	73		30	30	
<i>Layover Time</i>	10	10		7	7		10	10		10	10		7	7		10	10	
<i>Cycle Time</i>	80	80		80	80		40	40		80	80		80	80		40	40	
<i>Percent Layover</i>	14%	14%		10%	10%		33%	33%		14%	14%		10%	10%		33%	33%	
Distance (miles)	15.2	15.2	15.2	19.0	19.0	19.0	7.5	7.5	7.5	15.2	15.2	15.2	19.0	19.0	19.0	7.5	7.5	7.5
Operating Speed (mph)	11.4	11.4	11.4	14.3	14.3	14.3	11.3	11.3	11.3	11.4	11.4	11.4	14.3	14.3	14.3	11.3	11.3	11.3
Headway (minutes)	40	40	40	80	80	80	40	40	40	40	40	40	80	80	80	40	40	40
Operating Statistics																		
<i>Annual Revenue Hours</i>	5,355	936	6,291	2,678	468	3,146	2,678	468	3,146	6,120	1,092	7,212	3,060	546	3,606	3,060	546	3,606
<i>Annual Revenue Miles</i>	61,047	10,670	71,717	38,154	6,669	44,823	30,122	5,265	35,387	69,768	12,449	82,217	43,605	7,781	51,386	34,425	6,143	40,568
<i>Buses Required</i>	2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1
Ridership																		
<i>Passengers/Mile</i>	0.93	0.64	0.88	0.54	0.37	0.51	0.80	0.56	0.77	0.92	0.62	0.88	0.54	0.37	0.51	0.80	0.55	0.77
<i>Annual Passengers</i>	56,470	6,837	63,307	20,524	2,485	23,009	24,147	2,924	27,071	64,207	7,774	71,981	23,528	2,849	26,377	27,682	3,352	31,034
Cost																		
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$281,728	\$37,945	\$319,674	\$151,929	\$20,907	\$172,836	\$140,282	\$18,871	\$159,153	\$312,741	\$44,270	\$357,011	\$169,016	\$24,391	\$193,407	\$155,705	\$22,016	\$177,721
Revenue																		
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$85,834	\$10,392	\$96,226	\$31,196	\$3,777	\$34,973	\$36,704	\$4,444	\$41,148	\$97,594	\$11,816	\$109,411	\$35,763	\$4,330	\$40,093	\$42,077	\$5,095	\$47,172
Financial																		
<i>Cost</i>	\$281,728	\$37,945	\$319,674	\$151,929	\$20,907	\$172,836	\$140,282	\$18,871	\$159,153	\$312,741	\$44,270	\$357,011	\$169,016	\$24,391	\$193,407	\$155,705	\$22,016	\$177,721
<i>Revenue</i>	\$85,834	\$10,392	\$96,226	\$31,196	\$3,777	\$34,973	\$36,704	\$4,444	\$41,148	\$97,594	\$11,816	\$109,411	\$35,763	\$4,330	\$40,093	\$42,077	\$5,095	\$47,172
<i>Deficit</i>	\$195,894	\$27,553	\$223,447	\$120,733	\$17,130	\$137,863	\$103,578	\$14,427	\$118,005	\$215,147	\$32,453	\$247,600	\$133,253	\$20,061	\$153,314	\$113,628	\$16,922	\$130,549
<i>Farebox Recovery (%)</i>	30.47%	27.39%	30.10%	20.53%	18.07%	20.23%	26.16%	23.55%	25.85%	31.21%	26.69%	30.65%	21.16%	17.75%	20.73%	27.02%	23.14%	26.54%
STOA																		
<i>40.5 c/ Passenger</i>	\$22,870.19	\$2,769.04	\$25,639.23	\$8,312.05	\$1,006.39	\$9,318.45	\$9,779.65	\$1,184.08	\$10,963.74	\$26,003.79	\$3,148.44	\$29,152.23	\$9,528.94	\$1,153.73	\$10,682.66	\$11,211.39	\$1,357.43	\$12,568.83
<i>69.0c/ Revenue Mile</i>	\$42,122.43	\$7,362.58	\$49,485.01	\$26,326.52	\$4,601.61	\$30,928.13	\$20,784.09	\$3,632.85	\$24,416.94	\$48,139.92	\$8,589.67	\$56,729.59	\$30,087.45	\$5,368.55	\$35,456.00	\$23,753.25	\$4,238.33	\$27,991.58
<i>Total</i>	\$64,992.62	\$10,131.61	\$75,124.24	\$34,638.57	\$5,608.00	\$40,246.58	\$30,563.75	\$4,816.93	\$35,380.68	\$74,143.71	\$11,738.11	\$85,881.82	\$39,616.39	\$6,522.27	\$46,138.66	\$34,964.64	\$5,595.76	\$40,560.40

Alternative 4B - Four Bus System

Day	Existing Span of Service									Extended Span of Service								
	Broadway-North			Broadway-South			Mid-Valley to Vails Gate			Broadway-North			Broadway-South			Mid-Valley to Vails Gate		
	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total	M-F	Sat	Total
Span	7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		7A-5:30P	8:30A-5:30P		6A-7P	7A-7P		6A-7P	7A-7P		6A-7P	7A-7P	
Time (minutes)																		
<i>Running Time</i>	80	80		80	80		82	82		80	80		80	80		82	82	
<i>Layover Time</i>	10	10		10	10		8	8		10	10		10	10		8	8	
<i>Cycle Time</i>	90	90		90	90		90	90		90	90		90	90		90	90	
<i>Percent Layover</i>	13%	13%		13%	13%		10%	10%		13%	13%		13%	13%		10%	10%	
Distance (miles)	19.7	19.7	19.7	19.7	19.7	19.7	21.70	21.70	21.70	19.7	19.7	19.7	19.7	19.7	19.7	21.70	21.70	21.70
Operating Speed (mph)	13.1	13.1	13.1	13.1	13.1	13.1	14.47	14.47	14.47	13.1	13.1	13.1	13.1	13.1	13.1	14.47	14.47	14.47
Headway (minutes)	60	60	60	60	60	60	90	90	90	60	60	60	60	60	60	90	90	90
Operating Statistics																		
<i>Annual Revenue Hours</i>	4,016	702	4,718	4,016	702	4,718	2,678	468	3,146	4,973	936	5,909	4,973	936	5,909	3,315	624	3,939
<i>Annual Revenue Miles</i>	52,747	9,220	61,966	52,747	9,220	61,966	38,735	6,770	45,505	65,306	12,293	77,598	65,306	12,293	77,598	47,957	9,027	56,984
<i>Buses Required</i>	1.5	1.5	1.5	1.5	1.5	1.5	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	1	1	1
Ridership																		
<i>Passengers/Mile</i>	1.01	0.70	0.96	0.95	0.66	0.91	0.65	0.45	0.62	1.02	0.65	0.96	0.96	0.62	0.91	0.66	0.42	0.62
<i>Annual Passengers</i>	53,063	6,425	59,488	50,277	6,087	56,365	25,143	3,044	28,188	66,449	8,045	74,494	62,960	7,623	70,583	31,486	3,812	35,298
Cost																		
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$221,390	\$30,223	\$251,614	\$221,390	\$30,223	\$251,614	\$152,770	\$21,054	\$173,824	\$262,560	\$40,298	\$302,858	\$262,560	\$40,298	\$302,858	\$181,449	\$28,072	\$209,521
Revenue																		
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52
<i>Annual Revenue</i>	\$80,656	\$9,766	\$90,421	\$76,421	\$9,253	\$85,674	\$38,218	\$4,627	\$42,845	\$101,002	\$12,229	\$113,231	\$95,700	\$11,587	\$107,287	\$47,859	\$5,795	\$53,653
Financial																		
<i>Cost</i>	\$221,390	\$30,223	\$251,614	\$221,390	\$30,223	\$251,614	\$152,770	\$21,054	\$173,824	\$262,560	\$40,298	\$302,858	\$262,560	\$40,298	\$302,858	\$181,449	\$28,072	\$209,521
<i>Revenue</i>	\$80,656	\$9,766	\$90,421	\$76,421	\$9,253	\$85,674	\$38,218	\$4,627	\$42,845	\$101,002	\$12,229	\$113,231	\$95,700	\$11,587	\$107,287	\$47,859	\$5,795	\$53,653
<i>Deficit</i>	\$140,735	\$20,458	\$161,192	\$144,969	\$20,971	\$165,940	\$114,552	\$16,426	\$130,979	\$161,558	\$28,069	\$189,627	\$166,860	\$28,711	\$195,571	\$133,590	\$22,277	\$155,867
<i>Farebox Recovery (%)</i>	36.43%	32.31%	35.94%	34.52%	30.61%	34.05%	25.02%	21.98%	24.65%	38.47%	30.35%	37.39%	36.45%	28.75%	35.42%	26.38%	20.64%	25.61%
STOA																		
<i>40.5 ¢ / Passenger</i>	\$21,490.53	\$2,601.99	\$24,092.52	\$20,362.27	\$2,465.39	\$22,827.66	\$10,183.04	\$1,232.92	\$11,415.96	\$26,911.84	\$3,258.38	\$30,170.22	\$25,498.96	\$3,087.32	\$28,586.28	\$12,751.86	\$1,543.95	\$14,295.81
<i>69.0¢ / Revenue Mile</i>	\$36,395.26	\$6,361.52	\$42,756.78	\$36,395.26	\$6,361.52	\$42,756.78	\$26,726.81	\$4,671.58	\$31,398.38	\$45,060.80	\$8,482.03	\$53,542.83	\$45,060.80	\$8,482.03	\$53,542.83	\$33,090.33	\$6,228.77	\$39,319.10
<i>Total</i>	\$57,885.78	\$8,963.52	\$66,849.30	\$56,757.53	\$8,826.91	\$65,584.44	\$36,909.84	\$5,904.50	\$42,814.34	\$71,972.63	\$11,740.42	\$83,713.05	\$70,559.76	\$11,569.35	\$82,129.11	\$45,842.19	\$7,772.72	\$53,614.91

Local Service Alternatives Summary

	Existing Span of Service							Extended Span of Service						
	Alternative 1A	Alternative 1B	Alternative 2	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B	Alternative 1A	Alternative 1B	Alternative 2	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B
<b>Operating Statistics</b>														
<i>Annual Revenue Hours</i>	5,408	12,582	6,291	9,437	9,437	12,582	12,582	6,181	14,424	7,212	10,818	10,818	14,424	15,756
<i>Annual Revenue Miles</i>	72,121	205,401	101,285	129,909	123,933	151,928	169,438	82,940	235,472	116,113	148,928	142,076	174,170	212,181
<i>Buses Required</i>	2	4	2	3	3	4	4	2	4	2	3	3	4	4
<b>Ridership</b>														
<i>Passengers/Mile</i>	0.78	0.74	0.96	0.85	0.93	0.75	0.85	0.78	0.74	0.96	0.85	0.93	0.74	0.85
<i>Annual Passengers</i>	55,920	151,949	97,234	110,185	115,852	113,386	144,040	64,308	174,194	111,469	126,316	132,813	129,392	180,376
<b>Cost</b>														
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25
<i>Annual Cost</i>	\$299,058.52	\$729,198.49	\$362,546.81	\$511,893.38	\$503,227.53	\$677,051.34	\$677,051.34	\$333,312.90	\$817,027.35	\$406,160.76	\$572,640.24	\$562,705.71	\$728,139.45	\$815,236.72
<b>Revenue</b>														
<i>Average Fare</i>	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.52	\$1.51	\$1.52
<i>Annual Revenue</i>	\$84,903.02	\$230,658.83	\$147,795.22	\$167,481.61	\$176,095.48	\$172,347.04	\$218,940.56	\$97,638.47	\$264,427.20	\$169,432.38	\$192,000.85	\$201,875.79	\$196,675.68	\$274,171.63
<b>Financial</b>														
<i>Cost</i>	\$299,058.52	\$729,198.49	\$362,546.81	\$511,893.38	\$503,227.53	\$677,051.34	\$677,051.34	\$333,312.90	\$817,027.35	\$406,160.76	\$572,640.24	\$562,705.71	\$728,139.45	\$815,236.72
<i>Revenue</i>	\$84,903.02	\$230,658.83	\$147,795.22	\$167,481.61	\$176,095.48	\$172,347.04	\$218,940.56	\$97,638.47	\$264,427.20	\$169,432.38	\$192,000.85	\$201,875.79	\$196,675.68	\$274,171.63
<i>Deficit</i>	\$214,155.50	\$498,539.65	\$214,751.59	\$344,411.77	\$327,132.05	\$504,704.30	\$458,110.78	\$235,674.43	\$552,600.15	\$236,728.38	\$380,639.39	\$360,829.92	\$531,463.77	\$541,065.09
<i>Farebox Recovery (%)</i>	28.39%	31.63%	40.77%	32.72%	34.99%	25.46%	32.34%	29.29%	32.36%	41.72%	33.53%	35.88%	27.01%	33.63%
<b>STOA</b>														
<i>40.5 c/ Passenger</i>	\$22,647.60	\$61,539.41	\$39,379.65	\$44,625.03	\$46,920.18	\$45,921.42	\$58,336.14	\$26,044.74	\$70,548.76	\$45,144.81	\$51,158.12	\$53,789.27	\$52,403.72	\$73,052.31
<i>69.0c/ Revenue Mile</i>	\$49,763.72	\$141,726.79	\$69,886.72	\$89,637.31	\$85,513.56	\$104,830.08	\$116,911.94	\$57,228.28	\$162,475.54	\$80,118.11	\$102,760.18	\$98,032.72	\$120,177.16	\$146,404.75
<i>Total</i>	\$72,411.32	\$203,266.21	\$109,266.37	\$134,262.35	\$132,433.74	\$150,751.49	\$175,248.08	\$83,273.02	\$233,024.30	\$125,262.92	\$153,918.30	\$151,821.99	\$172,580.88	\$219,457.06

Alternative 5A - Existing Newburgh-Beacon Shuttle

Day	Newburgh-Beacon Shuttle		
	M-F	Sat/Sun	Total
Span	5A-11P	8:10A-12:40P; 3:30P-10:30P	
Time (minutes)			
<i>Average Running Time</i>	65	55	
<i>Average Layover Time</i>	35	5	
<i>Cycle Time</i>	100	60	
<i>Percent Layover</i>	54%	9%	
Average Distance (miles)	19.64	10.75	
Operating Speed	17.02	17.02	17.02
Average Headway (minutes)	51	60	
Operating Statistics			
<i>Revenue Hours</i>	6,727	1,680	8,407
<i>Revenue Miles</i>	114,493	28,593	143,086
<i>Buses Required</i>	2	1	
Ridership			
<i>Passengers/Mile</i>	0.32	0.29	0.31
<i>Annual Passengers</i>	36,638	8,235	44,873
Cost			
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$390,899	\$81,797	\$472,696
Revenue			
<i>Average Fare</i>	\$1.03	\$1.03	1.03
<i>Annual Revenue</i>	\$37,737	\$8,482	\$46,219
Financial			
<i>Cost</i>	\$390,899	\$81,797	\$472,696
<i>Revenue</i>	\$37,737	\$8,482	\$46,219
<i>Deficit</i>	\$353,162	\$73,315	\$426,478
<i>Farebox Recovery (%)</i>	9.65%	10.37%	9.78%
STOA			
<i>40.5 ¢ / Passenger</i>	\$14,838.28	\$3,335.14	\$18,173.41
<i>69.0¢ / Revenue Mile</i>	\$79,000.08	\$19,729.47	\$98,729.55
<i>Total</i>	\$93,838.35	\$23,064.61	\$116,902.96

Alternative 5B - Newburgh-Beacon Shuttle, with without Stewart

Day	N-B Shuttle W/ Stewart			N-B Shuttle W/O Stewart		
	M-F	Sat/Sun	Total	M-F	Sat/Sun	Total
<b>Span</b>	<b>5A-11P</b>	<b>8:10A-12:40P; 3:30P-10:30P</b>		<b>5A-11P</b>	<b>8:10A-12:40P; 3:30P-10:30P</b>	
<b>Time (minutes)</b>						
<i>Average Running Time</i>	75	75		50	50	
<i>Average Layover Time</i>	15	15		10	10	
<i>Cycle Time</i>	90	90		60	60	
<i>Percent Layover</i>	20%	20%		20%	20%	
<b>Average Distance (miles)</b>	24.0	24.0	24.0	15.8	15.8	15.8
<b>Operating Speed</b>	16.0	16.0	16.0	15.8	15.8	15.8
<b>Average Headway (minutes)</b>	45	90		30	60	
<b>Operating Statistics</b>						
<i>Revenue Hours</i>	6,727	1,680	8,407	6,727	1,680	8,407
<i>Revenue Miles</i>	107,632	26,880	134,512	106,287	26,544	132,831
<i>Buses Required</i>	2	1		2	1	
<b>Ridership</b>						
<i>Passengers/Mile</i>	0.34	0.19	0.31	0.38	0.29	0.36
<i>Annual Passengers</i>	36,164	5,161	41,325	40,814	7,645	48,459
<b>Cost</b>						
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$382,218	\$79,313	\$461,531	\$380,267	\$78,826	\$459,093
<b>Revenue</b>						
<i>Average Fare</i>	\$1.03	\$1.03	1.03	\$1.03	\$1.03	1.03
<i>Annual Revenue</i>	\$37,249	\$5,316	\$42,565	\$42,038	\$7,874	\$49,912
<b>Financial</b>						
<i>Cost</i>	\$382,218	\$79,313	\$461,531	\$380,267	\$78,826	\$459,093
<i>Revenue</i>	\$37,249	\$5,316	\$42,565	\$42,038	\$7,874	\$49,912
<i>Deficit</i>	\$344,969	\$73,997	\$418,966	\$338,229	\$70,952	\$409,180
<i>Farebox Recovery (%)</i>	9.75%	6.70%	9.22%	11.05%	9.99%	10.87%
<b>STOA</b>						
<i>40.5 ¢ / Passenger</i>	\$14,646.56	\$2,090.19	\$16,736.75	\$16,529.69	\$3,096.09	\$19,625.78
<i>69.0¢ / Revenue Mile</i>	\$74,266.08	\$18,547.20	\$92,813.28	\$73,337.75	\$18,315.36	\$91,653.11
<i>Total</i>	\$88,912.64	\$20,637.39	\$109,550.03	\$89,867.45	\$21,411.45	\$111,278.90

Alternative 5C - Newburgh-Beacon Shuttle

Day	Newburgh-Beacon Shuttle		
	M-F	Sat/Sun	Total
Span	5A-1P	8:10A-12:40P; 3:30P-10:30P	
Time (minutes)			
<i>Average Running Time</i>	50	50	50
<i>Average Layover Time</i>	10	10	10
<i>Cycle Time</i>	60	60	60
<i>Percent Layover</i>	20%	20%	20%
<b>Average Distance (miles)</b>	23.00	23.00	23.00
<b>Operating Speed (mph)</b>	23.00	23.00	23.00
<b>Average Headway (minutes)</b>	30	60	
<b>Operating Statistics</b>			
<i>Revenue Hours</i>	9,180	1,196	10,376
<i>Revenue Miles</i>	211,140	27,508	238,648
<i>Buses Required</i>	2	1	
<b>Ridership</b>			
<i>Passengers/Mile</i>	0.38	0.29	0.37
<i>Annual Passengers</i>	81,078	7,922	89,000
<b>Cost</b>			
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$0.00	\$32,318.25
<i>Annual Cost</i>	\$591,201	\$68,603	\$659,804
<b>Revenue</b>			
<i>Average Fare</i>	\$1.03	\$1.03	\$1.03
<i>Annual Revenue</i>	\$83,510	\$8,160	\$91,670
<b>Financial</b>			
<i>Cost</i>	\$591,201	\$68,603	\$659,804
<i>Revenue</i>	\$83,510	\$8,160	\$91,670
<i>Deficit</i>	\$507,691	\$60,443	\$568,134
<i>Farebox Recovery (%)</i>	14.13%	11.89%	13.89%
<b>STOA</b>			
<i>40.5 ¢ / Passenger</i>	\$32,836.49	\$3,208.53	\$36,045.03
<i>69.0¢ / Revenue Mile</i>	\$145,686.60	\$18,980.52	\$164,667.12
<i>Total</i>	\$178,523.09	\$22,189.05	\$200,712.15

Shuttle Alternatives Summary

	<i>Alternative 5A</i>	<i>Alternative 5B W/ Stewart</i>	<i>Alternative 5B W/O Stewart</i>	<i>Alternative 5C</i>
<b>Operating Statistics</b>				
<i>Annual Revenue Hours</i>	8,407	8,407	8,407	10,376
<i>Annual Revenue Miles</i>	143,086	134,512	132,831	238,648
<i>Buses Required(M-F/S-S)</i>	2/1	2/1	2/1'	2/1
<b>Ridership</b>				
<i>Passengers/Mile</i>	0.31	0.31	0.36	0.37
<i>Annual Passengers</i>	44,873	41,325	48,459	89,000
<b>Cost</b>				
<i>Unit Cost per Revenue Hour</i>	\$24.01	\$24.01	\$24.01	\$24.01
<i>Unit Cost per Revenue Mile</i>	\$1.45	\$1.45	\$1.45	\$1.45
<i>Unit Cost per Peak Vehicle</i>	\$32,318.25	\$32,318.25	\$32,318.25	\$32,318.25
<i>Annual Cost</i>	\$472,696.32	\$461,530.97	\$459,092.94	\$659,803.86
<b>Revenue</b>				
<i>Average Fare</i>	\$1.03	\$1.03	\$1.03	\$1.03
<i>Annual Revenue</i>	\$46,218.80	\$42,565.07	\$49,912.49	\$91,670.07
<b>Financial</b>				
<i>Cost</i>	\$472,696.32	\$461,530.97	\$459,092.94	\$659,803.86
<i>Revenue</i>	\$46,218.80	\$42,565.07	\$49,912.49	\$91,670.07
<i>Deficit</i>	\$426,477.52	\$418,965.90	\$409,180.45	\$568,133.79
<i>Farebox Recovery (%)</i>	9.78%	9.22%	10.87%	13.89%
<b>STOA</b>				
<i>40.5 ¢/ Passenger</i>	\$18,173.41	\$16,736.75	\$19,625.78	\$36,045.03
<i>69.0¢ / Revenue Mile</i>	\$98,729.55	\$92,813.28	\$91,653.11	\$164,667.12
<i>Total</i>	\$116,902.96	\$109,550.03	\$111,278.90	\$200,712.15

### **Appendix C: October 20, 2010 Public Meeting Notes**

As part of the outreach effort of the Newburgh Area Transportation and Land Use Study, the project team held a public meeting to solicit comments on the short term transit improvement proposals. The meeting, held on October 20, 2010 at the City of Newburgh Activity Center, presented the transit improvement plan for the Newburgh area local bus services. Approximately 20 community members attended the session.

The initial part of the meeting was a presentation which provided a synopsis of the three documents that have been produced by the transit consulting team: Baseline and Existing Conditions; Service Alternatives; and Recommended Plan. The presentation included information on the study process, the socioeconomic trends of the study area, commuter mode split, a review of the current systems and alternatives for the future and a description of the recommended services in terms of the new routes service, the financial and funding responsibilities, the capital needs and a marketing plan.

After the presentation, the floor was opened for discussion. Attendees were also encouraged to fill out a comment card to share their thoughts. The following questions and comments were posed and answers provided:

*Was more frequent service explored? 60-minute service might not generate an increase in ridership.*

The currently operated local service in Newburgh provides 120 minute frequencies on each of the two routes. The proposed 60 minute frequency will provide twice the level of service that is currently offered. Also, there is nothing to preclude increased service levels after the implementation of the study recommendations.

*A fare of \$1.50 might be too similar to the cost of sharing a taxi, would a cheaper fare influence potential riders?*

While no proposal has been made in regards to changing the fare of the service (either increase or decrease), the current fare of \$1.50 is reasonable. The cost of a taxi trip inside of the City of Newburgh is a flat \$5.00 fee; however, once the taxi leaves the confines of the City, the fare increases incrementally in relation to the distance traveled. The focus on the transit improvement proposals should be on convenience and travel time, rather than cost.

*Does the proposed Southside route serve the Newburgh-Beacon Ferry dock?*

Yes.

***Is it possible to increase service to the ferry dock and the waterfront area when the ferry service is not running? There is a need to get people from the waterfront to Beacon without going through the 17K Park-and-Ride Lot.***

There is no proposed route that would provide direct service from the Newburgh waterfront/ferry dock to Beacon; however, the trip can be made by taking the proposed Southside route to the 17K Park-and-Ride Lot and transferring to the Newburgh-Beacon Shuttle, which provides service into Beacon. While this forced transfer may be seen as an inconvenience to some potential passengers, the trip can be made within a reasonable time frame. Additionally, having the commuter shuttle rerouted to provide service along the waterfront will take away from the main purpose of the route – providing commuters a quick trip from the 17K Park-and-Ride Lot to Beacon Station. The shuttle currently meets most, if not all, inbound and outbound trains at the Beacon station, as required by its contract. Rerouting the commuter service in any major way would create a situation where this requirement could not be met.

***Why does the Newburgh-Beacon Shuttle not serve the downtown area first, prior to operating to the 17K Park-and-Ride Lot?***

A clear majority of the commuter shuttle passengers start their trip at the 17K Park-and-Ride Lot, which suggests that this stop should receive priority.

***Fixed income seniors need access to the senior center and to both hospitals.***

The proposed service between the Mid-Valley Mall and Vails Gate will provide service between both hospitals, a movement that is not currently possible.

***Maps should show major destinations and generators.***

One suggestion of the Recommended Plan is to provide an easier to understand route brochure/timetable that would include a route map and which would be compatible with the materials prepared by Orange County through their Transit Orange program. It has not yet been determined what details will be provided on the map; however, it is helpful to passenger to see major destinations and generators to help them further understand the service map.

***Will buses accommodate bicycles?***

Once delivered, the new buses that will operate the proposed bus routes will be equipped with bicycle racks.

***Were hybrid vehicles considered for these routes?***

Hybrid vehicles are being purchased for use on these routes. Orange County will be ordering 17 hybrid vehicles for countywide use, four of which will be dedicated to these proposed routes.

***Where will the stops be located?***

Specific stop locations have not yet been determined and would be undertaken as part of the detailed implementation steps.

*The Southside route should be extended to Cerone Place and ensure service to the hospital.*

The Southside route, as it is proposed, does not go to Cerone Place; however, the initial proposal is a relatively short distance to this location. This situation could possibly be improved by extending the route to provide direct service to Cedrone Place. One concern is that running times and layover are sufficient to permit this extension. Whether this can be accomplished should be decided as part of the detailed implementation phase. The Southside route does not serve either hospital, but passengers can transfer to the Mid-Valley Mall/Vails Gate route to access either hospital. Conversely, any patron with a dire medical need should use the paratransit service.

*The Northside Route should be rerouted to serve the front door of the St. Lukes-Cornwall Hospital's Newburgh Campus.*

In order to serve a larger portion of the City of Newburgh's population, the Northside route is proposed to operate on South Street and Powell Avenue heading towards the Mid-Valley Mall, and then on 1<sup>st</sup> Street when operating towards Broadway from the Mall. The route would serve the hospital via 1<sup>st</sup> Street, where passengers would be dropped off a quarter of a block away from the hospitals front door. Any passenger not able to make this walk should consider the paratransit service to meet their transportation needs.

*Could there be more direct service from Beacon to the Newburgh waterfront?*

If demand for this direct movement increases, a more direct service could be explored. That being said, the Newburgh-Beacon Ferry does provide the most direct service from Beacon to the Newburgh waterfront.

*Where Broadway narrows at West Street, would it be possible to have the vehicle travel via DuPont Avenue/South Plank Road/Route 52 to the Newburgh Mall/Route 300 and then return to the downtown area via Little Britain Road/Route 207?*

This movement was previously proposed by the current fixed route service provider (Leprechaun) several years ago when the discussion on revising the bus routes first got underway. However, by operating the routes on Route 52, Route 300 and Route 207, service would be removed from Broadway/Route 17K, the main thoroughfare through the City of Newburgh.

*Will there be monthly and/or weekly passes available for purchase?*

Additional fare media have not been proposed at this time; however, multi-trip, weekly or monthly passes could be considered in the future.

*How full do the current routes operate? If a smaller vehicle were to be purchased, would a cost savings be realized?*

While a smaller vehicle would recognize a modest savings in terms of its cost versus a larger vehicle, the most expensive part of any bus service is the driver's wages and benefits, which are the same regardless of the size of the vehicle. The plan assumes the purchase of smaller, heavy duty buses which are appropriate for the service.

***Did the study investigate the possibility of more frequent ferry service as a cost saving measure?***

The study did not focus on the cost of the Newburgh-Beacon Ferry service, which operates only during peak travel times and is also affected by weather conditions. The service, which is paid for by the New York State Department of Transportation (NYSDOT), is costly for the level of service that it provides.

***What are the demographics of transit users?***

Transit services usually attract passengers who are unable to drive a vehicle due to any number of reasons. In terms of demographic populations, transit attracts senior citizens and youths, the disabled, persons living at or below the poverty line, and people who do not have a vehicle available for their needs. It is hoped that improvements to the bus system will attract others who do drive and chose to use the bus.

***What time will the service begin?***

The local routes are proposed to operate Monday through Friday between the hours of 6:00 AM and 7:00 PM and on Saturdays between 7:00 AM and 7:00 PM. This represents an increased level of service, as the currently offered local routes operate between 7:00 AM and 6:00 PM on the weekdays and between 8:30 AM and 6:00 PM on Saturdays. The Newburgh-Beacon Shuttle will continue to operate with its current level of service, Monday through Friday, 5:00 AM to midnight, and on the weekends between 8:00 AM and 10:30 PM.

***Were current commuters' travel patterns analyzed? There is a need for transit service between Newburgh and West Point, do the local routes connect to the Shortline service in time for passengers to get to work?***

Commuter travel patterns were analyzed as part of the Baseline and Existing Conditions report. Commuters who travel to West Point for employment are served by CoachUSA's Shortline service. Transfers to this service can be made at several locations along Broadway/17K, including the 17K Park-and-Ride Lot and at Broadway and Liberty Avenue.

***Is the timing such that ferry passengers would have direct access to the bus?***

No, the timing of the proposed local routes is not solely based on the needs of the ferry passengers. Each trip takes 90 minutes to complete. Each vehicle first operates either the Northside or the Southside route, and then operates the other route. There are three buses operating on these two routes, which creates the desired 60 minute frequencies on each route. The timing of the routes is based more on this desired frequency and the ability to facilitate transfers between the Northside, Southside and Mid-Valley Mall to Vails Gate routes. Also, the service is oriented primarily to better serve Newburgh residents.

***Could the frequency of service be increased during rush hour?***

More frequent service would require additional rolling stock and more drivers, which can become costly. At this point, the service should operate as it is proposed

throughout the day; however, if the services are successful, increasing the frequency is certainly an option in the future.

***Will all buses be standard size?***

The buses will each be 30 feet long.

***There should be a one-seat ride from the waterfront to Stewart International Airport and to all employment around the airport.***

While there is no direct route from the waterfront area to Stewart International Airport, the Newburgh-Beacon Shuttle does operate from Broadway and Liberty directly to the airport before operating between the 17K Park-and-Ride Lot and Beacon Station. This movement is done on every trip and in reverse in the afternoon/evening..

***Is the funding long-term or one-time?***

The funding provided to purchase the vehicles was through the America Recovery and Re-Investment Act and will only be provided this one time. Funding to help cover the operating expenses of the proposed services is provided through the Federal Transit Administration, New York State Department of Transportation and Orange County (for the ADA service). This funding will need to continue annually or the service would not be able to operate. It is reasonable to expect these funding sources to continue.

Overall, the recommended plan received a favorable response from the attendees. Also worth noting is that the representatives of Leprachaun Lines endorsed the plan and responded to some comments and questions of the audience.