4. Transit and Feeder Bus

The area surrounding the future Wiehle Avenue and Reston Parkway Metrorail stations is currently served by several bus routes. The purpose of these routes varies. FAIRFAX CONNECTOR operates both circulator routes that provide service in and around Reston and Herndon, as well as feeder routes that connect with the West Falls Church, Pentagon and Crystal City Metrorail stations. The Connector currently operates 54 bus routes throughout Fairfax County, providing connections to Arlington County; the cities of Alexandria, Falls Church, Vienna and Fairfax; and the Herndon area. Of the 54 Connector routes, 25 operate within the area of the Wiehle Avenue and Reston Parkway stations. These routes are divided into Reston-based routes and Herndon-based routes. Routes serving Reston are numbered in the 500s, routes serving Herndon are in the 900s, while four RIBS routes circulate throughout the Reston-Herndon area. The standard fare is $1.00 for local routes and $3.00 for express routes, though discounts or complimentary service are provided for passengers with rail-to-bus transfers, seniors, persons with disabilities, MetroAccess customers and young children. In addition to the FAIRFAX CONNECTOR, both the Washington Metropolitan Area Transit Authority (WMATA) and Loudoun County provide a limited number of express regional routes that travel from points in Loudoun and Fairfax counties to Washington, DC.

With the planned completion of Phase I of the Dulles Corridor Rapid Transit Project in 2013, which will terminate at the Wiehle Avenue Metrorail station and of Phase II in 2015, which terminates at Route 772 in Loudoun County, existing regional routes, feeder rail services and other bus routes will need to be modified. An existing bus conditions report has been developed by VHB[17]. In addition, VHB staff closely coordinated with FAIRFAX CONNECTOR staff and the Reston Metrorail Access Group (RMAG) to review and modify the proposed feeder bus routes developed in the Final Environmental Impact Statement (FEIS). This draft report describes the preliminary bus system proposed by VHB to serve the Wiehle Avenue and Reston Parkway station areas for the design year of 2030. It is important to note that feeder buses serving the additional future stations, such as the Herndon-Monroe, Route 28 and the four Tysons Corner stations are not included in this study.

A. Operating Plan

FAIRFAX CONNECTOR will continue to provide both feeder and circulator bus services throughout the Reston Area. Currently routes serving Reston are numbered in the 500s, while routes serving Herndon are in the 900s. (Some do serve both, and often have a number in the 900s.) A subset of the Reston routes that serve as internal circulators are called the Reston Internal Bus System (RIBS) routes and are designated by small numbers (1 through 4.) Routes that primarily serve areas north of the DIAAH are given even route numbers, while routes that serve areas primarily south of the DIAAH are given odd route numbers. The numbers shown below can be altered if necessary to better conform to the CONNECTOR's numbering conventions. The following sections detail the proposed routes, the estimated costs for operating them, staff increases for the FAIRFAX CONNECTOR system and ridership estimates.

[17] See "Wiehle Avenue/Reston Parkway Station Access Management Plans: Profile of Existing Conditions" submitted to Fairfax County and finalized in June, 2007.

a. Current Operations

The routing, frequency and service span recommendations presented in this report are based on the existing service and the impending need for additional transit service as Metrorail begins to operate in the Reston community. In fiscal year 2007, the FAIRFAX CONNECTOR delivered over 7.1 million revenue miles of service between its two divisions: the Reston-Herndon Division provided 54% of that service and the Huntington Division provided the remaining 46%. The routes serving the two station areas around Wiehle Avenue and Reston Parkway comprise approximately 45% of the service provided by the Reston-Herndon division. This percentage is expected to increase slightly in the future once all three of the local Metrorail stations (Wiehle Ave, Reston Pkwy and Herndon-Monroe) are operational.

Table 4-1 provides an overview of the current weekday FAIRFAX CONNECTOR operation in the Reston area by route. The 15 bus routes in the area operate just over 6,000 revenue miles and 275 revenue hours of service on an average weekday. A revenue mile and hour are the distance and time a bus is in operation on a scheduled route and accepting passengers. In a year, these routes operate service for over 1.77 million revenue miles and 82,500 revenue hours. The number of vehicles required to operate the system varies by route length and service frequency, although most are able to operate with only two buses. The 15 routes that currently operate in the service area require a total of 32 vehicles. Overall, the FAIRFAX CONNECTOR system operates with a spare ratio of 19.7%, indicating that 6 vehicles would be available for service during the peak periods in case of mechanical failure or other issues.

Table 4-1: Estimated Current FAIRFAX CONNECTOR Operating Statistics by Route

Route	Description			Estimated Daily Service		Estimated Annual Service		Estimated Vehicle Requirements	
	Frequency (min)	First Run Time	Last Run Time	Revenue Miles	Revenue Hours	Revenue Miles	Revenue Hours	Vehicles	Type
505	30	5:00 AM	midnight	1330	35	423,700	11,805	4*	40-foot
551	30	4:45 AM	9:00 PM	520	19	132,300	4,904	3	40-foot
552	30	5:45 AM	8:15 PM	270	10	68,100	2,520	2	40-foot
553	30	5:45 AM	8:45 PM	300	10	75,400	2,609	2	40-foot
554	30	5:30 AM	7:30 PM	220	7	56,200	1,867	2	40-foot
556	30	5:15 AM	8:45 PM	110	13	28,600	3,392	0*	40-foot
557	30	5:45 AM	8:30 PM	310	11	79,200	2,780	3	40-foot
585	20	5:30 AM	8:15 PM	320	9	81,200	2,418	3	40-foot
595	30	5:30 AM	7:30 PM	270	9	69,400	2,226	4	
597	30	6:00 AM	6:45 PM	320	9	81,200	2,232	3	
605	60	6:00 AM	10:15 PM	630	27	195,300	8,568	2	SLF‡
RIBS1	30	5:00 AM	1:00 AM	350	30	114,700	9,550	2	SLF‡
RIBS2	30	5:00 AM	1:00 AM	320	29	105,800	9,313	2	SLF‡
RIBS3	30	5:00 AM	1:00 AM	360	29	119,200	9,213	2	SLF‡
RIBS4	30	6:00 AM	11:00 PM	420	28	140,200	9,288	2	SLF‡
Total				**6050**	**275**	**1,770,500**	**82,685**	**32**	

* Routes 505 and 556 combined require 4 buses

‡ SLF is Super Low Floor Vehicle

b. Proposed Operations

The proposed routes are based on the existing FAIRFAX CONNECTOR routes that operate around the two stations, including the RIBS routes. Based on the FEIS, VHB's experience in the community, detailed discussions with FAIRFAX CONNECTOR staff and input from the RMAG advisory group and members of the public, the proposed routes provide service to Reston's neighborhoods, office parks, medical facilities and Metro Stations. These routes function both as commuter routes between neighborhoods and the Metro Station and as shuttle routes between major destinations in the service area. A significant increase in service delivered will be necessary to serve the two Metrorail stations. An increased service span (until 3 am on some nights), increased frequency to account for projected ridership and new routes providing service to underserved areas all contribute to the increase in service. The recommended frequencies were based on projected ridership, perceived demand for transit service and operational considerations. All frequencies are in 7-minute intervals to allow the buses to meet the arriving Metrorail trains. If ridership in the future proves to be significantly higher or lower than projected in this report, the frequencies should be adjusted accordingly.

i. Route Structure

The essential structure of service in Reston has been maintained, however each individual route has been modified to better serve the neighborhoods. Some new routes have been added to augment the existing service and provide service to important destinations in the area. Below, each route is described and includes its major destinations, service span and frequency. Table 4-2 presents the full system and complete route maps can be found in Appendix E and Appendix F. The service spans were determined in order to meet the Metrorail trains and to match, whenever possible, the Metrorail span of service. The service frequencies for each route were determined by the neighborhood land use characteristics and the ridership projections[18]. Changes in the ridership projections could result in different frequency recommendations, and therefore different vehicle and staffing requirements.

FXC 552

Proposed: Route provides service to and from the Wiehle Avenue station and the high-density residential neighborhoods along North Shore Drive.

- Service days: Monday – Friday
- Service hours: Peak only – Meet first inbound Metrorail train
- Service frequency: 14-minutes
- Direction: peak

FXC 553

Proposed: Route operates between Reston Parkway station and Wiehle Avenue station with a stop at the Reston South Park-and-Ride. Service is provided from Edmund Halley Dr, along Reston Parkway, Lawyers Rd, Soapstone Rd, Glade Dr, Twin Branches Pkwy, South Lakes Dr and Sunrise Valley Dr.

- Service days: Monday – Friday
- Service hours: Peak only – Meet first inbound Metrorail train
- Service frequency: 14-minutes (peak)
- Direction: both directions

[18] AECOM Consult developed mode split and bus ridership estimates for the Phase I FEIS for the areas around the Wiehle Ave station and Reston Town Center Transit Station.

FXC 556a

Proposed: Route provides service between the Reston Parkway station and residential neighborhoods north of the Reston Town Center via Town Center Parkway, Walnut Branch Rd, Fairfax County Pkwy, Lake Newport Rd, N Village Rd and Bennington Woods Rd.

- Service days: Monday-Friday
- Service hours: Peak only – Meet first inbound Metrorail train
- Service frequency: 21-minutes
- Direction: peak

FXC 556b

Proposed: Route provides service between the Reston Parkway station and residential neighborhoods north of the Reston Town Center. Service is provided on Town Center Pkwy/Bennington Woods Rd, Reston Parkway, Wiehle Ave, Center Harbor Rd, North Village Rd and Lake Newport Rd.

- Service days: Monday-Friday
- Service hours: Peak only – Meet first inbound Metrorail train
- Service frequency: 28-minutes
- Direction: peak

FXC 557

Proposed: Service is operated between the south side of the Reston Parkway station and the Wiehle Avenue station. Service is provided to neighborhoods along Sunrise Valley Dr, Glade Drive, Soapstone Rd and Sunrise Valley Dr.

- Service days: Monday-Friday
- Service hours: Peak only – Meet first inbound Metrorail train
- Service frequency: 14-minutes
- Direction: both directions

FXC 585

Proposed: Route provides service primarily between the Reston South Park-and-Ride and the Reston Parkway station. Provides stops along Franklin Farm Rd, Reston Parkway, Viking Dr, Pinecrest Rd and Fox Mill Rd and terminates at the south side facility of the Reston Parkway station at Edmund Halley Dr. During the midday period, this route will travel only between the Reston Parkway Metrorail Station and the Reston South Park-and-Ride lot.

- Service days: Monday – Friday
- Service hours: Peak/midday – Meet first inbound Metrorail train
- Service frequency: 21-minutes (peak); 56-minutes (midday)
- Direction: peak

FXC 605

Proposed: FXC 605 provides service from Reston Town Center to the Fairfax Government Center, making stops at the Reston Parkway station, the Reston South Park-and-Ride, Fair Oaks Hospital, Fair Lakes Shopping Center and Fair Oaks Mall.

- Service days: 7 days
- Service hours: Meet first and last Metrorail train
- Service frequency: 21-minutes (peak); 42-minutes (off-peak)
- Direction: both directions

RIBS 1

Proposed: RIBS 1 provides circulator service in a loop around Reston in the clockwise direction, from the Reston Parkway station and the Reston Town Center Transit Station, along North Shore Dr, Wiehle Ave, Sunrise Valley Dr, Colts Neck Rd, Glad Dr and Reston Parkway. Stops are made at Reston Town Center, Wiehle Ave station, Reston Parkway station and Tall Oaks Village Center.

- Service days: 7 days
- Service hours: Meets first and last Metrorail trains
- Service frequency:
  - Weekdays: 28-minutes (peak and midday); 56-minutes (evening)
  - Saturday: 28-minutes (peak and midday); 56-minutes (evening)
  - Sunday: 56-minutes
- Direction: clockwise

RIBS 2

Proposed: RIBS 2 provides circulator service around Reston seven days a week, connecting the Reston Town Center and new Metrorail stations with the single-family residential neighborhoods south of the DIAAH, along New Dominion Pkwy, Sunrise Valley Drive, South Lakes Drive and Reston Parkway. This route makes stops at the Reston Town Center Transit Station, Reston Parkway station, Wiehle Avenue station and Kaiser Permanente and Target on Sunset Hills Rd.

- Service days: 7 days
- Service hours: Meets first and last Metrorail trains
- Service frequency:
  - Weekdays: 28-minutes (peak and midday); 56-minutes (evening)
  - Saturday: 28-minutes (peak and midday); 56-minutes (midday)
  - Sunday: 56-minutes
- Direction: both directions

RIBS 3

Existing: RIBS 3 provides circulator service in a loop around Reston along the same route as RIBS 1. However, while RIBS 1 travels in the clockwise direction, RIBS 3 travels in the counterclockwise direction to the Reston Town Center Transit Station and the Reston Parkway rail stations, along Reston Parkway, Glade Dr, Colts Neck Rd, Sunrise Valley Drive, Wiehle Avenue, North Shore Drive and Bowman Town Dr. Stops are made at Reston Town Center, Reston Parkway station, Wiehle Avenue station and Tall Oaks Village Center.

- Service days: 7 days
- Service hours: Meets first and last Metrorail trains
- Service frequency:
  - Weekdays: 28-minutes (peak and midday); 56-minutes (evening)
  - Saturday: 28-minutes (peak and midday); 56-minutes (evening)
  - Sunday: 56-minutes
- Direction: counterclockwise

RIBS 4

Proposed: RIBS 4 provides circulator service from the Reston Town Center to neighborhoods along Sunset Hills Rd, Herndon Parkway, Baron Cameron Ave, Bracknell Dr and Bennington Woods Rd. Stops at the Reston Town Center Transit Station and the Reston Parkway station.

- Service days: 7 days
- Service hours:
- Weekdays: Meets first and last Metrorail trains
- Service frequency:
    - Weekdays: 28-minutes (peak and midday); 56-minutes (evening)
    - Saturday: 28-minutes (peak and midday); 56-minutes (evening)
    - Sunday: 56-minutes
- Direction: both

FXC 950

Proposed: Route operates between the Herndon-Monroe and Reston Parkway stations with a stop at the Reston Town Center Transit Station. The route serves neighborhoods along Sunrise Valley Dr, Monroe St, Baron Cameron Ave and Town Center Parkway.

- Service days: 7 days
- Service hours: Meets first and last Metrorail trains
- Service frequency: 28-minutes
- Direction: both directions

FXC 959

Proposed: Route provides circulator and feeder service in a loop along Sunset Hills Road and Sunrise Valley Drive. The route stops at the Herndon-Monroe, Reston Parkway and Wiehle Avenue stations.

- Service days: 7 days
- Service hours: Meets first and last Metrorail trains
- Service frequency: 14-minutes (peak, lunchtime); 28-minutes (off-peak)
- Direction: both directions

Table 4-2: Proposed Route Summary

Number	Route	Headway (peak/off-peak)	Direction	Service Span (days/time)
FXC552	Wiehle Ave Station - North Shore Dr	14	Peak	Weekdays Peak Hours
FXC553	Wiehle Ave Station - Glade Rd - Lawyers Rd - Reston South Park-&-Ride - Reston Pkwy Station	14	Both	Weekdays Peak Hours
FXC556a	Reston Pkwy Station - Town Center Pkwy - Bennington Woods Rd – Fairfax County Pkwy - Lake Newport Rd – N Village Rd	21	Peak	Weekdays Peak Hours
FXC556b	Reston Pkwy Station – Town Center Pkwy – Bennington Woods Rd – Reston Pkwy – Wiehle Ave – Center Harbor Rd – N Village Rd	28	Peak	Weekdays Peak Hours
FXC557	Reston Pkwy Station - Glade Rd - Soapstone Rd - Wiehle Ave Station	14	Both	Weekdays Peak Hours
FXC585	Franklin Farm Rd - Viking Dr - Reston Pkwy - Reston Pkwy Station	21/56	Peak/Both	Weekdays Peak/ mid- day
FXC605	Reston Town Center - Reston Pkwy Station - Reston Pkwy - Fair Oaks Mall (shortened during the midday)	21/42	Both	7 days All day
RIBS1	Reston Pkwy Station - Reston Town Center - North Shore Dr - Wiehle Ave Station - Sunrise Valley Dr - Colts Neck Rd - Reston Pkwy	28/56	Clockwise	7 days All day
RIBS2	Reston Town Center - Reston Pkwy Station – New Dominion Pkwy - Reston Pkwy - South Lakes Dr - Wiehle Ave Station - Sunset Hills Rd	28/56	Both	7days All day
RIBS3	Reston Pkwy Station - Reston Town Center - North Shore Dr - Wiehle Ave Station - Sunrise Valley Dr - Colts Neck Rd - Reston Pkwy	28/56	Counter-clockwise	7days All day
RIBS4	Reston Pkwy Station - Sunset Hills Rd - Herndon Pkwy - Baron Cameron Ave - Bennington Woods Rd	28/56	Both	7days All day
FXC950	Herndon-Monroe Station - Sunrise Valley Dr - Baron Cameron Ave - Town Center Pkwy	28	Both	7 days All day
FXC959	Loop along Sunset Hills Rd & Sunrise Valley Dr - Stops at Herndon-Monroe Station, Reston Pkwy Station & Wiehle Ave Station	14/28	Both	7 days All day

ii. Operating Costs

The thirteen proposed routes continue to provide service to all locations that were previously served, in addition to providing new service and increased frequency. Some routes have been eliminated, although with the proposed route modifications and the start of Metrorail service all of the locations that currently have transit service will still be served in 2030. Routes 505, 595 and 597 provide express service to non-Reston Metrorail stations and will no longer be needed after Metrorail stations open locally. Service from the existing routes 551 and 554 will be shifted to other routes in order to improve operational efficiency. The recommendations listed in Table 4-2 will require significant increases in both revenue miles and revenue hours and will have a large impact on the operating costs of the system.

Table 4-3 below shows the operating requirements for the routes recommended in the previous section. These service estimates were developed based on the estimated roadway speeds developed as part of the traffic modeling and simulation for this project. Service characteristics were estimated without the implementation of the exclusive bus lanes recommended in Chapter 2. Significantly worse or better traffic conditions (as would be possible with this exclusive facility) could have a drastic impact on the number of vehicles and the number of revenue hours that would be required to operate the proposed service.

Table 4-3: 2030 Operating Characteristics

Route	Description			Projected Daily Service		Projected Annual Service		Estimated Vehicle Requirements
	Frequency (min)	Start Time	Last Run Time	Revenue Miles	Revenue Hours	Revenue Miles	Revenue Hours	
552	14	5:00 AM	7:30 PM	290	23	73,500	5,880	3
553	14	5:00 AM	7:30 PM	530	65	134,400	16,560	4
556a	21	5:00 AM	7:30 PM	140	12	36,000	2,990	2
556b	28	5:00 AM	7:30 PM	130	10	34,200	2,470	2
557	14	5:00 AM	7:30 PM	430	47	109,800	11,960	3
585	21	5:00 AM	7:30 PM	310	39	79,800	9,940	3
605	21	5:00 AM	Midnight	1030	157	324,000	48,220	7
950	28	5:00 AM	Midnight	570	83	205,400	29,830	3
959	14	5:00 AM	Midnight	1940	155	648,500	49,800	6
RIBS1	28	5:00 AM	Midnight	580	39	195,400	12,570	3
RIBS2	28	5:00 AM	Midnight	740	63	250,100	20,850	2
RIBS3	28	5:00 AM	Midnight	580	39	195,400	12,440	3
RIBS4	28	5:00 AM	Midnight	410	31	137,900	10,110	3
Total				7680	763	2,424,400	233,620	44

The proposed bus system will operate almost 7,700 revenue miles and over 760 revenue hours of service on an average weekday as shown in Table 4-3. That translates into more than 2.4 million annual revenue miles and 233,000 revenue hours each year. This represents a 36.9% increase in daily revenue miles and a 182.6% increase in revenue hours. These seemingly incongruous increases are explained by replacing routes with long express portions (i.e. Along the DIAAH to the West Falls Church Metro station) which operate only during peak periods with shorter, local routes with much more frequent service and a longer span of service to meet the Metrorail trains. The lengthened span of service, the improved service frequency and the slower traffic speeds predicted for the Reston area in 2030 require an expanded fleet of vehicles during the peak periods, a 37.5% increase from 32 vehicles to 44 vehicles.

Based on the available data regarding both on street traffic speeds and projected bus ridership, a fleet of 44 buses plus two additional spare vehicles will be required to meet the demand for transit in the year 2030.

Operations of the FAIRFAX CONNECTOR are currently contracted out to a private company. Under this contract service the FAIRFAX CONNECTOR pays the service provider for each revenue hour of service provided. In 2007, the contract rate is $65.27 per revenue hour.[19] Based on the 182.6% increase in revenue hours required in the proposed system, a proportional increase in operational costs is expected. Operational costs for the new system at the current contract rates would be over $15.2 million per year, as shown in Table 4-4. All costs are in 2007 dollars.

Table 4-4: Estimated Annual Costs by Route

Route	Annual Costs – Existing System				Estimated Annual Costs for Proposed System		
	Revenue Miles	Revenue Hours	Cost		Revenue Miles	Revenue Hours	Cost
505	423,700	11,805	$770,496		0	0	$0
551	132,300	4,904	$320,077		0	0	$0
552	68,100	2,520	$164,477		73,500	5,885	$384,114
553	75,400	2,609	$170,286		134,400	16,561	$1,080,936
554	56,200	1,867	$121,856		0	0	$0
556	28,600	3,392	$221,391		0	0	$0
556a	0	0	$0		36,000	2,994	$195,418
556b	0	0	$0		34,200	2,474	$161,478
557	79,200	2,780	$181,447		109,800	11,955	$780,303
585	81,200	2,418	$157,819		79,800	9,942	$648,914
595	69,400	2,226	$145,288		0	0	$0
597	81,200	2,232	$145,680		0	0	$0
605	195,300	8,568	$559,221		324,000	48,222	$3,147,450
950	0	0	$0		205,400	29,830	$1,947,004
959	0	0	$0		648,500	49,798	$3,250,315
RIBS1	114,700	9,550	$623,315		195,400	12,568	$820,313
RIBS2	105,800	9,313	$607,847		250,100	20,849	$1,360,814
RIBS3	119,200	9,213	$601,320		195,400	12,442	$812,089
RIBS4	140,200	9,288	$606,215		137,900	10,108	$659,749
Total	**1,770,500**	**82,685**	**$5,396,735**		**2,424,400**	**233,628**	**$15,248,900**

Note: All costs are in 2007 dollars.

Also of interest is the average cost per revenue mile, which is $3.05 in 2007. As has already been noted, the proposed system requires a very large increase in revenue hours without a correspondingly large increase in revenue miles due to the increase in service span and the removal of the express portions of most routes. This results in a significant increase in cost per revenue mile. In 2007 dollars, the cost to operate the proposed system is $6.29 per revenue mile, a 106% increase over the current cost per mile.

[19] Based on $63.46 per revenue hour cost in 2006 as reported by Fairfax County staff and a 2.85% inflation rate reported by the CPI calculator at http://www.bls.gov/data/.

iii. Staffing Needs

Improving the level and quality of service in addition to accommodating the expected growth in ridership associated with the availability of Metrorail service in Reston will require increasing FAIRFAX CONNECTOR's operational and administrative staff. The vast majority of the operational and administrative staff for the system is currently contracted out to private companies; this arrangement is expected to continue through 2030. However, as the contracts are re-negotiated to accommodate the necessary increase in service recommended in this plan, the staffing levels in many areas will need to be increased. Expanding the CONNECTOR's current staff will provide the agency with the capacity to operate more service and properly support the system.

Table 4-5 shows the 2007 staffing for the Reston-Herndon division of the FAIRFAX CONNECTOR, which operates all of the routes in the Reston area. As previously noted, the routes serving the Wiehle Avenue and Reston Parkway Metrorail station areas account for approximately 45% of the service operated by the Reston-Herndon division. It is therefore assumed that 45% of each staffing category is devoted to the operations serving the two stations of interest. The table below also indicates the staffing levels for just the routes serving the Reston area.

In 2006, six part-time employees and 186.5 full-time employees are devoted to the operation of the Reston-Herndon division of the FAIRFAX CONNECTOR employed. Several of the high-level positions are shared between the two divisions, and only ½ of their time is devoted to either division. (As is the case for the Regional General Manager, who oversees the whole system.) The vast majority of employees are drivers (almost 75%) while only a small portion (only 5%) are dedicated administrative staff. Just over 84 employees are devoted to bus operations in Reston, including 3 part-time employees.

1) Operational Staffing Recommendations

Based on the increases in service recommended for 2030, FAIRFAX CONNECTOR will need to substantially increase some portions of its staff. Primarily, additional bus operators to accommodate the increased service and mechanical staff to service the expanded vehicle fleet will be needed. The service currently operates approximately 83,000 revenue hours per year. These recommendations call for service to increase to over 233,000 annual revenue hours in 2030, a 183% increase over 24 years. Based on the current ratio of revenue hours to drivers, a total of 175 full-time drivers and 8 part-time drivers will be necessary to operate the Reston routes.

Table 4-5: Existing and Recommended Staffing Levels

Positions	2006 Staffing Levels[20]		Estimated 2030 Staffing Levels	
	Reston-Herndon Division	Reston Area Only	Reston-Herndon Division	Reston Area Only
Regional General Manager	0.5	0.25	0.5	0.25
Operations Manager	1	0.50	1	0.50
Regional Maintenance Manger	0.5	0.25	0.5	0.25
Assistant Maintenance Manager	1	0.50	1	0.50
Transit Analyst	0.5	0.25	0.5	0.25
Regional Safety Manager	0.5	0.25	0.5	0.25
Regional HR Manager	0.5	0.25	0.5	0.25

[20] Fiscal Year 2007 data provided by Fairfax County staff (Working TNB Statistics).

Positions	2006 Staffing Levels[20]		Estimated 2030 Staffing Levels	
	Reston-Herndon Division	Reston Area Only	Reston-Herndon Division	Reston Area Only
Trainer	2	1	6	2.50
Payroll Specialist	1	0.50	1	0.50
Safety Manager	1	0.50	1	0.50
Customers Count/Marketing Mgr	1	0.50	1	0.50
Drivers - FT	138	62	390	175
Drivers - PT	6	2.75	17	8
Chief Supervisor	1	0.50	1	0.50
Supervisors	19	8.5	54	24
Shop Foreman	3	1.25	5	2
Mechanics	13	5.75	18	8
Parts Clerk	1	0.50	1	0.50
Maintenance Clerk	1	0.50	1	0.50
Utility Workers	1	0.50	1	0.50
Total	192.5	87.00	501.5	225.5

With the increase in driver staff, FAIRFAX CONNECTOR will need to increase its capacity to support and supervise a larger and more robust driver workforce by increasing its supervisory staff and driver trainers. Currently, there is one supervisor for every 7.6 drivers. Keeping this ratio constant will require 24 supervisors in 2030. Currently there are two trainers assigned to the Reston-Herndon division, one of whom is likely sufficient to oversee the routes in the Reston area. Based on the 182% increase in the number of drivers and the re-designing of most of the routes, additional training will be necessary for both new and existing staff members. A corresponding increase in the training staff would require two or three trainers for the Reston routes. Additional trainers may be necessary during the transition when drivers are learning new routes and procedures.

Table 4-5 shows the necessary operating staffing levels for 2030 based on the recommendations in this report. Access management planning for the Herndon-Monroe station has not yet begun, and therefore the full amount of bus service that will be operated in the Reston-Herndon division remains unknown. However, if we continue to assume that the Reston routes make up 45% of the service provided by the Reston-Herndon division, estimates for division-wide staffing can be developed. The staffing estimates for the Reston-Herndon division may be high if the amount of service in Herndon does not increase at the same rate as the Reston area service.

2) Maintenance Staffing Recommendations

The size of the bus fleet is expected to increase by 12 vehicles by 2030, to a total of 44 buses. The required 37.5% increase in the size of the vehicle fleet will require a corresponding increase in

maintenance staff to ensure that the vehicles remain in good working order. Currently, there is one mechanic for every 5.3 buses in the peak operating fleet. Keeping this ratio constant will require approximately eight mechanics in 2030. In addition, there is currently one shop foreman for every 4.3 mechanics. In order to maintain this level of supervision, the Reston-Herndon division will need to increase its staff of shop foremen from three to five, with two of them devoted to the Reston routes.

3) Transit Planning and Administrative Recommendations

The size of the administrative and managerial staff in contract with the FAIRFAX CONNECTOR should not need to increase to accommodate the recommended 2030 service levels. The tasks required of most of the high level managers will not have changed substantially, and new staff in these areas will not be necessary.

4) Marketing and Customer Service Recommendations

With the reorganization of most of the bus routes serving the Reston area and the introduction of Metrorail service into the area, a large-scale marketing effort will be necessary. Existing customers will need to be made aware of the routing changes, when they will occur and what routes they will need to use in the future. Residents and employees in the area, even those who do not currently use FAIRFAX CONNECTOR service should be made aware of the new transit opportunities in the area and should be provided with maps, schedules and help using the system if necessary. This marketing effort should resemble in scale and quality the marketing campaign used by FAIRFAX CONNECTOR to promote the Dulles Corridor service expansion. This effort can be managed in house with existing Fairfax County marketing resources. However, if the county decides to have the contractor develop and distribute the materials, the efforts of an additional full-time marketing person will be required for the Reston-Herndon division. This would increase the marketing staff from one full-time employee for the division to two full-time employees.

The FAIRFAX CONNECTOR call center, which is also operated under a private contract, provides information and help to current and potential Connector riders. The service changes recommended in this report are substantial, and a substantial increase in the number of calls received by the call center should be anticipated during the period of the changeover. (This period may last for up to a year on either side of the change.) Additional staff may be necessary during this time in order to provide the best customer service possible. In addition, the bus system's hours of operations will be extended to match Metrorail hours, which may amount to a 5-hour extension on some routes. The call center should be open at all times when the bus system is operational, and additional shifts and staff will be necessary to accommodate the new hours.

c. Projected Ridership

The service improvements planned for the Reston area and the advent of Metrorail service will substantially improve FAIRFAX CONNECTOR's service and offer increased opportunities for Reston residents and employees to use transit. By providing more and better transit service the system will attract new and more frequent riders. In addition, increased regional congestion and costs of driving may also contribute to a significant increase in bus riders over the next several decades. Based on the service recommendations and the employment and residential levels projected for the station areas, ridership estimates have been developed that demonstrate how these changes will affect ridership for the 2030 planning year.

i. Existing Ridership and Growth

The current FAIRFAX CONNECTOR ridership for the routes serving the Reston station areas is shown in Table 4-6 below. The average daily and weekly ridership show which of the routes are heavily used and which routes are not. Route 554 is the best performing route on the weekdays, and also on average during the whole week with an average of 33.8 passengers per trip. The best weekend performance is on the RIBS 2, which averages 17 passengers per trip on Saturday, 21.8 passengers per trip on Sundays and 22.7 passengers per trip over the whole week. Route 556 and 505, which are operated together, have the poorest ridership with 5.8 and 9.7 average passengers per trip respectively. Route 505 also has the worst weekend ridership, with only 4.5 average passengers per trip on both weekend days.

Table 4-6: 2006 FAIRFAX CONNECTOR Ridership by Route

Route	Weekday		Saturday		Sunday		Weekly	
	Avg. Daily Ridership	Avg. Riders per Trip	Avg. Daily Ridership	Avg. Riders per Trip	Avg. Daily Ridership	Avg. Riders per Trip	Avg. Weekly Ridership	Avg. Riders per Trip
505	973	9.7	318	4.5	272	4.5	5,454	8.7
551	792	26.4					3,959	26.4
552	425	25.0					2,124	25.0
553	206	12.9					1,029	12.9
554	473	33.8					2,364	33.8
556	117	5.8					585	5.8
557	379	25.3					1,897	25.3
585	353	14.7					1,765	14.7
595	333	25.6					1,666	25.6
597	289	28.9					1,446	28.9
605	366	12.2	266	10.2	204	9.3	2,299	11.6
RIBS1	664	19.5	302	9.7	211	14.0	3,833	17.7
RIBS2	808	23.8	528	17.0	327	21.8	4,896	22.7
RIBS3	616	18.1	387	12.5	256	17.0	3,724	17.2
RIBS4	320	10.3	293	9.8	151	10.1	2,043	10.2
Total	**7,114**	**16.91**	**2,094**	**9.6**	**1,421**	**10.0**	**39,086**	**15.8**

Bus ridership in Reston has been growing since 2000. Ridership on all of the FAIRFAX CONNECTOR routes serving Reston has increased over the over the past 6 years, with only one exception. Table 4-7 shows the growth in average weekday ridership since 2000. As a system, these 15 routes have experienced more than 125% in ridership growth, only partially due to the introduction of new routes. Many of the local routes have experienced the most substantial growth, especially Route 605 and RIBS 1, 2 & 3 which each more than doubled their ridership. Only Route 585 has lost riders over the last 6 years, with a decrease of more than 7% since 2000. Only one other route in the area, Route 552, had a ridership growth rate of less than 10%. This strong growth is likely to continue into the future, and will be used in the next section to estimate the ridership in 2030.

Table 4-7: FAIRFAX CONNECTOR Ridership Growth by Route

Route	Average Weekday Ridership							Percentage Change
	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	
505/556			700	796	795	1051	1092	56.0%
551	541	689	623	603	651	754	797	47.2%
552	384	457	386	361	458	498	420	9.43%
553	181	197	179	223	178	182	206	13.7%
554	334	394	358	335	406	479	470	40.8%
557	282	370	342	358	343	357	381	35.2%
585	387	380	290	385	366	365	357	-7.72%
595*							333	NA
597*							289	NA
605			99	192	253	309	370	274%
RIBS1	228	303	390	472	443	490	674	196%
RIBS2	296	326	481	832	790	713	810	174%
RIBS3	293	312	481	603	551	546	617	111%
RIBS4	222	193	289	208	221	312	323	45.4%
Total	3148	3621	4618	5368	5455	6056	7140	127%

* Routes 595 and 597 only have data for one year, as they began operation in October 2006.

ii. Estimated Future Ridership

The service improvements recommended in this report will substantially improve the transit service offered in the Reston area and offer increased opportunities for area residents and employees to use transit. In addition, the advent of Metrorail service in Reston is expected to significantly increase bus usage in the communities near the stations. Finally, almost all of the routes have experienced growth over the past six years, and the system as a whole has seen a substantial ridership increase as well. All three of these factors lead to the conclusion that ridership on FAIRFAX CONNECTOR bus routes in the Reston area will be significantly higher in 2030 than they are in 2007. Projections of the number of people accessing the Reston area Metrorail stations by bus in 2030 were developed by a consultant as part of the FEIS process[21].

Many of the existing bus routes are commuter routes that primarily transport people to and from the closest Metrorail station at West Falls Church. With the opening of the Reston Parkway and Wiehle Avenue Metrorail stations, these long routes will no longer be necessary and commuters will be able to travel to a closer station in Reston. The number of commuters using a bus to access each of the stations was developed during the completion of the FEIS for each Traffic Analysis Zone (TAZ). The riders in each TAZ were divided between the appropriate bus routes to estimate ridership on those routes during the peak hour. For those routes with off-peak (midday and evening) service, a small additional percentage (20%) was added to account for local traffic not accessing the Metrorail stations and off-peak trips. Where appropriate for local routes with minimal recommended routing changes, the growth rates prevalent between 2000 and 2006 were extrapolated forward to estimate the ridership in 2030.

[21] AECOM Consult developed mode split and bus ridership estimates for the Phase I FEIS for bus ridership around the Wiehle Ave station and in the area of the Reston Town Center Transit Station.

Table 4-8 shows the ridership estimated for each of the routes in the year 2030, after the opening of both the Reston Parkway and Wiehle Avenue stations based on the data developed for the FEIS. In 2006, the 15 routes that served the station areas had a total average weekday ridership of 7,114. In 2030, the 13 routes that will serve the station areas are projected to have a total average weekday ridership of 15,084, a 112% increase over a 24-year period. The average number of riders per trip is also projected to increase by almost 90% to approximately 32 riders per trip. The highest ridership is expected on Route 959 which operates all day as a shuttle service primarily serving destinations along Sunrise Valley Dr and Sunset Hills Rd. As a shuttle service, shorter trips are expected as passengers will likely not ride the whole length of the route, allowing the route to serve more passengers per trip than a typical commuter route. However, if ridership on Route 959 is greater than the projections estimate, increased frequency along the route may be necessary in order to avoid overcrowding. Ridership on route 605 is also projected to be quite high as residents and employees in the southern portions of Fairfax County access the Metrorail system in Reston. Route 605 also offers local service along Reston Parkway and in the Fair Oaks area, and as such may accommodate more passengers than a typical commuter route. However, if ridership on this route does prove to be higher than estimated, another route that provides access from the southern portion of the county may need to be developed in order to avoid overcrowding.

Table 4-8: Projected 2030 Ridership by Route

Route	Avg. Weekday Ridership	Avg. Riders per Trip
552	1364	37.9
553	968	26.9
556a	865	36.0
556b	600	31.6
557	1064	29. 6
585	944	31.5
605*	1988	51.0
950	515	12.3
959	3030	45.2
RIBS1	1040	28.1
RIBS2	1005	27.2
RIBS3	1028	27.8
RIBS4*	674	18.2
Total	15,084	31.6

An asterisk (*) indicates that the 2030 ridership was projected using the 2000-2006 growth rates.

The two routes with the lowest projected ridership are routes 950 and RIBS4 with 12.3 and 18.2 average riders per trip respectively. Route 950 mostly serves areas west of Reston Town Center in the area of the Herndon-Monroe station. Access planning for the Herndon-Monroe station has not yet begun, and therefore the structure of the bus routes in the area remains unknown. Ridership on this route may be higher or lower depending on the level of bus ridership expected to Herndon-Monroe and the number of bus routes serving the immediate area. The estimate in this report should serve as a baseline, and the projections should be revisited as planning for the Herndon-Monroe Metrorail station commences.

Likewise, the number of local, non-commuter and off-peak trips in the Reston area could affect the ridership level on the RIBS4.

B. Proposed Capital Plan

The proposed Capital Plan presents recommendations on the facilities and equipment required to operate the recommended services described in the Operating Plan. This plan details the specific requirements for effectively implementing the recommendations in the Operations Plan and provides cost estimates for the capital equipment identified.

Equipment and facilities related to the provision of transit require substantial and continuous investment from a transit agency. For the FAIRFAX CONNECTOR, the majority of current capital expenses are related to its bus fleet. Buses are expensive to purchase and need periodic replacing as they reach the end of their useful lives. In addition the increase in the vehicle fleet required by the proposed operating plan may require the construction of a new and expanded bus service garage to accommodate the additional vehicles. There are a number of other capital costs on the horizon for the system including new technology and improved bus stops.

a. Vehicle Requirements

The majority of FAIRFAX CONNECTOR's capital costs are related to its bus fleet. The many recommendations to increase service frequency and extend the span of service will require FAIRFAX CONNECTOR to expand its fleet. The current service requires a maximum of 32 buses to operate during the peak periods. However, due to the increased service proposed for 2030 a maximum of 44 vehicles will be required to operate the new system during the peak periods and an additional 2 spare buses will be necessary. This results in a total increase of fourteen buses. In addition to this increase necessary by 2030, as the vehicles in the existing fleet continue to age they will need to be replaced to ensure that they are safe and reliable. No specific acquisition schedule is presented in this report, as it is difficult to determine the exact dates until construction schedules are finalized on the Metrorail project. Determining the buses required to operate the recommended system requires examining the appropriate type of bus for each route and the number of buses required by each route.

i. Current Vehicle Fleet

Currently, the bus service in the Reston area requires 32 buses to operate 15 routes during the peak periods. In 2006, the Reston-Herndon division of the FAIRFAX CONNECTOR utilized a mix of buses that includes traditional forty-foot buses and super low floor (SLF) vehicles. Forty-foot buses generally have a seated capacity of approximately 40 passengers, with additional capacity for approximately 40 standing passengers. Low floor vehicles generally provide fewer seats than a comparably sized traditional bus (typically just 10% less.) FAIRFAX CONNECTOR's low floor buses are approximately the same length as their other vehicles and have a capacity around 37 seated passengers and an additional 35 standees. The low floor vehicles have several added benefits when compared with traditional vehicles including easier and quicker boardings for passengers. This amenity serves not only those with mobility impairments, but can significantly increase the average speed of a transit vehicle by shortening the time spent loading passengers at every stop. Most of the current SLF vehicles are distinctly branded as RIBS buses, with different paint jobs and a clearly identifiable image.

The vehicle assignments and the average weekday riders per trip for each route are shown in Table 4-9. All of the express routes that provide service to the West Falls Church Metrorail station via the DIAAH

are assigned traditional 40-foot buses. All of the local routes, which includes the four RIBS circulator routes and route 605 (which travels between Reston and Fair Oaks) are assigned the SLF vehicles.

Table 4-9: 2006 Vehicle Assignments[22]

Route	Assigned Vehicle	Avg. Riders per Trip
505	40'	9.7
551	40'	26.4
552	40'	25.0
553	40'	12.9
554	40'	33.8
556	40'	5.8
557	40'	25.3
585	40'	14.7
595		25.6
597		28.9
605	SLF	12.2
RIBS1	SLF	19.5
RIBS2	SLF	23.8
RIBS3	SLF	18.1
RIBS4	SLF	10.3

Because the ridership measure is an average, routes should generally be assigned a vehicle with a seating capacity above the stated riders per trip to accommodate all passengers during busier periods. However, on shorter shuttle-type routes, standing passengers can be accommodated for shorter trips without a significant inconvenience. Standing passengers on the longer express routes that use the DIAAH should be avoided as speeds on the highway can be much higher. None of the routes approach the seated capacity of their assigned vehicle type; Route 554 is the closest with 33.8 riders per trip on a vehicle accommodating approximately 40 people. There are many routes that have been assigned a vehicle that is excessively large for the existing ridership levels. Of particular note are the 505 and 556, which operate together and have 9.7 and 5.8 average passengers per trip respectively. It may be more efficient to operate these and several other routes using vehicles with capacities of 10, 20 or 30 passengers.

ii. Future Vehicle Fleet

The routes recommended in this study require 44 buses to operate 13 routes during the peak period. This increase of 12 buses must be accompanied by an appropriate increase in the number of spare buses maintained in the fleet. In order to be eligible to receive federal grants for capital costs, the system must maintain a spare ratio (ratio of spare buses to peak service buses) of less than 20%. Therefore, in addition to the 12 new vehicles needed to operate peak service, an additional two buses will be needed to add to the pool of spare buses. This results in a total of 14 new buses in order to accommodate the recommended service.

[22] Fiscal Year 2007 data provided by Fairfax County staff (Working TNB Statistics).

The current bus fleet is fairly uniform; all buses are approximately the same length and seat approximately the same number of passengers (+/- 10). By 2030, it is recommended that the whole vehicle fleet incorporate low floor technology in order to speed operations and make the vehicles more accessible. Based on the high levels of ridership projected for 2030 (see Table 4-8) it will be necessary to operate most routes in the Reston area with high capacity vehicles in order to provide most passengers with a seated ride on all trips. As previously noted, routes 959 and 605 are projected to have on average more riders per trip than seats per vehicle. However, on local routes where passengers typically make short trips, it will still be possible to provide seats for most passengers.

Many of the bus routes will be operating on neighborhood streets with a residential character. In this context, it may be appropriate to use smaller buses to provide service in these areas when possible. Depending on the actual ridership levels and the length of the average trip, it may be possible to operate several routes with 30-foot bus with a seated capacity of approximately 30 passengers. These vehicles can be cheaper to purchase and operate and may be more in sync with the residential streets which they will be serving. Potential candidates for a 30-foot vehicle include RIBS 1-4 and route 553. (If all five routes are assigned 30-foot vehicles, then a total of 15 of the 44 buses could be of this type.) Additionally, route 950 is projected to have low ridership, with only 12 riders per trip, although these estimates do not include the full demand for transit service along the portion of the route west of Fairfax County Parkway or the other routes that will be serving that area. However, if ridership on this route remains low through the access planning process for the Herndon-Monroe station, then three more small vehicles (possibly as small as 20-person capacity) would be appropriate for this route. Table 4-10 shows the potential fleet mix indicated by the 2030 ridership projections that includes smaller vehicles where possible for the fleet of 46 vehicles (including 2 spares).

Table 4-10: Estimated Vehicle Requirements by Route

Route	20-foot	30-foot	40-foot
552			3
553		4	
556a			2
556b			2
557			3
585			3
605			7
950	3		
959			6
RIBS1		3	
RIBS2		2	
RIBS3		3	
RIBS4		3	
Spare		1	1
Total	3	16	27

Many of the routes may be operated more efficiently with smaller buses that are more appropriately sized for the residential communities of Reston. Many types of buses can be purchased, and each of the options should be considered carefully to ensure that the best and most appropriate fleet mix is selected based on the following factors:

- Capacity
- Purchase Cost

- Operational Costs
- Ease of maintenance
- Expected vehicle life
- Appearance
- Passenger Comfort
- Safety
- Wheelchair Accessibility

While smaller buses are generally less expensive to purchase and operate than traditional forty-foot buses, they may not be the ideal solution when all of the relevant characteristics are considered. The operations, maintenance and scheduling capabilities of the whole Reston-Herndon Division (if not the whole FAIRFAX CONNECTOR system) should be considered when deciding whether to introduce smaller vehicles to the fleet.

The purchase of these new vehicles represents one of the major capital expenses for the FAIRFAX CONNECTOR in Reston as Metrorail service comes to the area. By 2030 all of the vehicles currently in the fleet will have been replaced at least once (if not twice) by new vehicles and the fleet may be comprised of a different mix of vehicle types than in 2006. It is therefore uncertain which types of buses will need to be purchased in order to provide the desired fleet mix for 2030, or in what year they will need to be purchased. Table 4-11 shows the prices recently paid by FAIRFAX CONNECTOR to purchase a range of different vehicles, in addition to recently ascertained costs for smaller vehicles.

Table 4-11: Approximate Vehicle Purchase Costs

Size	Unit Cost[23]
45-foot	$ 440,453
40-foot	$ 325,975
35-foot	$ 321,344
30-foot	$ 334,500
20-foot	$ 140,000[24]

The total cost for providing the necessary fleet will depend on the individual types of vehicles that must be purchased. If only the least expensive 14 vehicles must be acquired, then capital costs may be as low as $4 million for three 20-foot vehicles and eleven 40-foot vehicles. If the 14 most expensive vehicles must be purchased, then the cost may reach as high as $4.7 million for fourteen 30-foot vehicles. In all likelihood, the cost for these buses will fall somewhere between these two values, in 2007 dollars. The total cost to purchase the full fleet recommended in Table 4-10 would be $14.6 million.

b. Facility Requirements

Although the majority of the FAIRFAX CONNECTOR's capital needs for this plan relate to the acquisition of new buses, the implementation of the recommendations in this plan will require other capital improvements as well. One major expense will be the construction of new garage space to accommodate the larger fleet required to operate the recommended level of service. In addition, the realignment and addition of routes will require new bus stops and associated amenities to be located

[23] Cost in 2007 dollars.
[24] Price shown is the average of several 20-foot vehicles available in 2006.

throughout the service area. Additionally, the FAIRFAX CONNECTOR should consider what types of technology the system would like to have implemented by 2030. For example, the FAIRFAX CONNECTOR system is currently in the process of acquiring Automatic Vehicle Locator (AVL) technology, and further advances should be planned for before 2030.

i. Vehicle Garage

Fairfax County currently operates transit service out of several garages located throughout the county. A new garage, to be shared by FAIRFAX CONNECTOR and WMATA, is currently under construction and planned to open soon. Upon completion, the West Ox Garage will have no excess capacity and will be completely filled by existing operations, although an expansion at this site would be possible. Any additions to the fleet in Reston or elsewhere in the county will require additional garage facilities. The operational plan developed in this report requires the addition of fourteen additional vehicles to the fleet that serves the Reston area. In addition, as Fairfax County continues to develop, the FAIRFAX CONNECTOR is likely to continue to improve operations, expand service and implement other improvements that will increase the required fleet for the county as a whole. Further, the state of the existing garages in 2030 is impossible to ascertain, but replacement of some existing facilities will likely be necessary. Certainly, additional garage space for both storage and maintenance of transit vehicles will be necessary in Fairfax County by 2030.

Access planning for all of the new Metrorail stations has not yet been completed and it is therefore impossible to know how many additional vehicles the FAIRFAX CONNECTOR will require to operate service in the northern portion of the county. Other service improvements that may occur throughout the county are also unknown. Since the size of the garage that will be necessary cannot be determined, it is difficult to ascertain what the cost of such a facility would be. It is estimated[25] that a garage designed to serve 50 or more vehicles will cost approximately $250,000 per bus to construct (in 2007 dollars). Smaller garages will have a higher cost per bus. Therefore, despite the fact that the ultimate size of the new garage facility is unknown, we can estimate that the portion of the construction costs that will be directly related to the improved service in the Reston area at $3.5 million. The rest of the costs to construct new garage space will be associated with other service areas and improvements.

After the Metrorail extension opens, much of the transit service in the county will be focused on bringing passengers to and from Metrorail stations in the northern part of the county. The intensity of transit service in the Dulles Corridor highlights the need for a garage in this area. Finding a suitable garage site in the Dulles Corridor would have the benefit of improving operational efficiency by removing deadhead trips and concentrating vehicles close to their service area.

ii. Bus Stops

The new route structure will change and increase the total number of bus stops in addition to increasing the number of boardings at almost all stops in the area. Each bus stop must be marked with a bus stop sign, and other information as necessary which may include a route schedule and a system map. By 2030, real time information is likely to be standard at all FAIRFAX CONNECTOR bus stops and should be included at stops in the Reston area as well. In addition, to comply with the requirements of the Americans with Disabilities Act (ADA), all bus stops should have a 5-foot by 8-foot concrete pad for bus boardings. Accessible connections to the bus stops from the sidewalk system will also be necessary to

[25] Estimation based on several recent VHB projects in Maryland and Virginia.

comply with ADA. Lighting at bus stops will also be necessary as the service span is extended further into the nighttime hours.

Along with the increase in ridership expected in the Reston area, boardings and alightings at bus stops throughout the area are expected to increase as well. All stops throughout the service area should continue to meet FAIRFAX CONNECTOR's service standards with regards to the amenities installed at each stop, including benches and shelters. The most recent standards[26] available indicate that shelters and benches are required at stops with more than 100 daily boardings (or 50 daily boardings on residential streets.) Of course, these standards may have changed by 2030, but these new amenities should be considered capital costs associated with the improved service.

iii. Dedicated Facilities

Dedicated bus lanes have been recommended for implementation in Reston in Chapter 2 to provide better bus service. These facilities were recommended in two locations: on the proposed Soapstone Connector providing a connection across the DIAAH directly into the Wiehle Avenue station and along Sunset Hills Rd. These recommended facilities will allow transit vehicles to bypass some of the roadways with the worst congestion, increasing travel speeds and improving the level of service provided to customers. These lanes could be used only during peak hours and would have the dual benefits of increasing bus speeds (and in turn significantly decreasing the operational costs and the number of new vehicles required) and attracting more passengers to the transit system and away from their cars, thus alleviating traffic congestion.

The implementation of the recommended dedicated bus lanes will have an effect on the estimated system costs and requirements. Faster road speeds for transit vehicles may decrease the number of vehicles needed to operate the recommended frequency levels. This could decrease both the capital costs (number of total vehicles needed) and the operating costs (number of vehicle-hours operated) of the system. Of course, slower traffic speeds due to increased congestion would have the opposite effect.

The construction of these facilities is highly recommended; without some dedicated facilities, the transit system will have difficulty attracting new passengers away from their automobiles. In fact, any available opportunities to construct additional bus lanes on congested facilities should be pursued. The reconstruction of the Reston Parkway bridge over the DIAAH may present just such an opportunity. A careful study of the implications of bus lanes on these roads should be undertaken to determine if this solution would benefit the residents of Reston. Implementation of bus lanes in the immediate vicinity of either of the stations along these roadways would present many challenges in right-of-way acquisition, operations and enforcement.

C. Conclusion

The opening of the two Metrorail stations in Reston will have a profound impact on bus service in the area. Each of the existing routes will need to be modified so that they better connect the neighborhoods with the Metrorail stations. In addition, new routes are recommended that will provide service to local shopping, medical and recreational destinations around the service area. The

[26] DRAFT Service Design Standards for the FAIRFAX CONNECTOR, May 2007

recommended routing for each of the thirteen routes in Reston is included in Appendix E. In order to serve passengers transferring to and from the Metrorail system, service frequencies should all be improved to seven-minute intervals that coordinate bus and train arrivals, in addition to extending service hours to match Metrorail hours of operation.

All of these improvements will result in an overall increase of 183% increase in the number of revenue hours offered to customers from under 83,000 per year to over 233,000 per year. Due to the restructuring of the routes so that they no longer contain an express segment on the DIAAH, the amount of revenue miles will increase approximately 37%, from 1.8 million per year to 2.4 million per year. The cost of providing this additional service is significant. At the 2007 contract rates, the cost to operate the system would still almost triple to over $15.2 million annually. The increase in service will require an increase in operations and maintenance staffing levels. 139 new employees will be necessary to operate the new service, most of them drivers.

The increase in service frequency and slower average bus speeds in 2030 will require an expanded vehicle fleet to operate the peak period service. An additional fourteen vehicles will be needed to bring the total fleet size up to 46. Ridership projections for each of the routes were established based on the future land use and employment characteristics. Bus ridership in the Reston area is expected to more than double, from 7,000 riders on an average weekday to over 15,000. Based on the ridership levels and the proposed frequencies, an appropriate mix of vehicle types is recommended that includes primarily thirty- and forty-foot vehicles. The new vehicles will have an estimated cost of approximately $4.5 million.

By 2030 the system area will require several new capital investments. A new garage will be needed to store and maintain vehicles serving many areas in the northern portion of the county, including the fleet expansion needed to serve Reston. The total size of the required facility is unknown at this time, but the 14 garage spaces that will be required by the recommendations in this report will cost approximately $3.5 million[27]. New bus stops, signage, lighting and amenities will be needed at all new stops and at many stops where ridership is expected to increase. Additionally, dedicated bus facilities are recommended for Sunset Hills Rd between Old Reston Avenue and Wiehle Avenue and for the proposed Soapstone Connector.

Overall, a very significant increase in the amount of service provided is recommended for 2030 to serve the new Metrorail stations. Service and costs are expected to almost triple in magnitude as frequencies are improved, service span is lengthened and the number of riders more than doubles. After the initial implementation of these recommendations, ridership and operations should be monitored closely so that changes can be made where necessary. The transit improvements recommended in this report, when coupled with the vehicular and pedestrian recommendations made in other reports will provide a full understanding of the improvements necessary to allow residents, employees and visitors will be able to easily access Reston.

[27] In 2007 dollars.