Analysis of Priority Bus/BRT Scenario

Chapter Four establishes the market for the Priority Bus/BRT Scenario within the I-95/I-395 corridor. In this chapter this service is further defined and the infrastructure concepts developed for the system are explained. Operating and capital cost estimates are presented.

5.1 Priority Bus/BRT Service Recommendations

In order to determine recommendations for Priority Bus/BRT service, the first step was to determine actual route requirements and the number of buses required to meet projected demand at the stations in the corridor. Table 5-1 shows the AM boardings at each of the stops and stations modeled in the Priority Bus/BRT operating scenario.

As shown in Table 5-1, the peak loads in the corridor are projected to occur at the RT 123/Lake Ridge area station and the Seminary Road station. The model data included in the appendices indicate that the boardings at RT 123 alight at either Franconia-Springfield or Tysons Corner and the total demand for boardings exceeds the number of buses (6 buses in the three hour peak period) planned in the BRT service modeled (the Lake Ridge to Tysons BRT route on 30 minute headways). At Seminary Road, two BRT routes access the station, the Massaponax to Washington D.C. route and the Lorton to EPG to Washington D.C. route and the boardings significantly exceed the number of buses provided in the BRT route using 30 minutes headway (12 buses in the three hour peak period).

In order to meet demand for additional service to Washington D.C. and Tysons Corner, it is recommended that additional routes be added to these stations and funded as part of the Priority Bus/BRT system. Table 5-2 indicates the recommended bus operating package based on bus demand and service loading requirements at the peak loading stations.

The two new routes included in Table 5-2 are tailored to meet the market area. All of the modeling conducted for the studies indicates demand for service between Seminary Road into Washington D.C., and as originally coded this demand would be met using two longer distance routes originating out of Fredericksburg. By adding a shorter distance route between Seminary Road and Washington D.C. the Priority Bus/BRT service would better meet the market characteristics. In addition, it is possible that service could be provided in the less congested southbound direction as well for this route. It should be noted that this route has not been modeled and further testing of travel demand characteristics influenced by additional service may be needed.

As mentioned previously, the recommendations contained in this report are a refinement of the Transit/TDM Study. The proposed Priority Bus/BRT System would alter the Refined Alternative and Fiscally Constrained Alternative recommendations as documented in Table 4-2 and Table 9-1 of the Transit/TDM study in the following ways: 1) the three New Express Bus/BRT routes identified as originating in the FAMPO region on Page 4-18 and in Table 9-1...
of the Transit/TDM Study would be refined into the seven routes shown in Table 5-2 and 2) the four in-line stations referred to on Page 4-19 and in Table 9-1 of the Transit/TDM Study have been refined into the stations identified in Table 5-1. This analysis does not alter any of the other conclusions of the previous work.

### Table 5-2. Recommended Priority Bus/BRT Routes

<table>
<thead>
<tr>
<th>Route</th>
<th>Implementation Year</th>
<th>Revenue Hours</th>
<th>Vehicle Hours</th>
<th>Vehicle Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorton PNR to Ft Belvoir to EPG to DC</td>
<td>2015</td>
<td>3600</td>
<td>4320</td>
<td>5</td>
</tr>
<tr>
<td>Lake Ridge/RT 123 to Tysons Corner</td>
<td>2015</td>
<td>1900</td>
<td>3800</td>
<td>3</td>
</tr>
<tr>
<td>Seminary - Pentagon - DC</td>
<td>2015</td>
<td>3100</td>
<td>3410</td>
<td>5</td>
</tr>
<tr>
<td>Dale City (or Lake Ridge) - Seminary - DC</td>
<td>2015</td>
<td>3800</td>
<td>7600</td>
<td>6</td>
</tr>
<tr>
<td>Fredericksburg to Franconia-Springfield Metrorail Station</td>
<td>2020</td>
<td>1100</td>
<td>2200</td>
<td>4</td>
</tr>
<tr>
<td>Massaponax to DC</td>
<td>2020</td>
<td>2700</td>
<td>5400</td>
<td>3</td>
</tr>
<tr>
<td>Tysons Corner to Franconia-Springfield (two directions)</td>
<td>2020</td>
<td>900</td>
<td>990</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table 5-3. Summary of Proposed Priority Bus/BRT Related Facilities

<table>
<thead>
<tr>
<th>Location</th>
<th>Basis of Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Massaponax</td>
<td>New station with 2 BRT bays and 100 dedicated BRT parking spaces</td>
</tr>
<tr>
<td>2. Celebrate Virginia!</td>
<td>New station with 2 BRT bays and 100 dedicated BRT parking spaces</td>
</tr>
<tr>
<td>3. RT 610/RT 1</td>
<td>New station with 2 BRT bays and 100 dedicated BRT parking spaces</td>
</tr>
<tr>
<td>4. Prince William PRTC</td>
<td>New BRT station adjacent to PRTC with 200 dedicated spaces</td>
</tr>
<tr>
<td>5. Lake Ridge Park and Ride</td>
<td>2 BRT bays at adjacent Park and Ride</td>
</tr>
<tr>
<td>6. Lorton Park and Ride</td>
<td>2 BRT bays at adjacent Park and Ride</td>
</tr>
<tr>
<td>7. Fredericksburg Vic RT 17/RT 1</td>
<td>New station with 100 dedicated BRT spaces</td>
</tr>
<tr>
<td>8. Fort Belvoir Pence Gate</td>
<td>2 BRT bays and BRT features at existing stop</td>
</tr>
<tr>
<td>9. Engineer Proving Grounds</td>
<td>2 BRT bays and BRT features at future bus transfer area</td>
</tr>
<tr>
<td>10. Franconia-Springfield Metro Station</td>
<td>2 BRT bays and features added to Metro/VRE station</td>
</tr>
<tr>
<td>11. Tysons Corner</td>
<td>BRT features at future bus transfer area</td>
</tr>
<tr>
<td>12. Seminary and Mark Center Transit Center</td>
<td>BRT features at future bus transfer area</td>
</tr>
</tbody>
</table>
5.2 Station Infrastructure Requirements
The five Priority Bus/BRT Routes consist of 12 stations that will have distinct BRT features. These features include canopies, bus decking bays, real time information displays, smart card systems and information kiosks. All of the stops will support other bus service, as such these features will be in addition to traditional amenities already provided for existing services.

The proposed stations are generally located off arterials with signalized intersections. Signal priority and minor roadway improvements were assumed in the analysis to minimize the time the buses are on local roadways and subject to traffic congestion. The general layout of the stations is shown at the end of this chapter and the routes of the buses on local, general purpose lanes and within managed lanes are identified. Additional studies are recommended for each station area to refine these concepts.

The 12 proposed stations and the assumed Priority Bus/BRT improvements are in the Table 5-3.

5.3 Cost Estimates
This section explains the assumptions and methodology to estimates costs for transit services, TDM initiatives, and fixed facilities. The cost estimates are for both operating and capital costs and generally follow the Transit/TDM Study assumptions and unit prices.

Operating Costs
The vehicle costs per hour incorporate cost components such as employee salary, benefits, maintenance, and insurance costs. The relevant vehicle cost per hour figures (in 2010 dollars) are as follows:

- WMATA $95.24
- PRTC $86.77
- FAMPO express routes $86.77
- ART $82.67

Vehicle costs per hour for new BRT services were assumed to be equivalent with existing PRTC and FAMPO costs. In calculating vehicle costs based on modified or newly planned routes, long distance commuter routes were assumed to require twice the amount of service hours to account for deadhead movements. Routes that can serve passengers in both directions and are primarily local are estimated to have only a 10% increase from service hours to account for deadheading.

This study recognizes that cost per hour figures fluctuate over time and more recent data could alter the results of this cost estimate.

Capital Costs: Buses
The following life expectancy and costs were used:

- Express Bus 12-year life 40-foot Low Floor $500,000
- Circulator Bus 12-year life 30-foot Low Floor $325,000
- Articulated Bus 12-year life 60-foot Low Floor $750,000

2Ibid.
**Capital Costs: Fixed Facilities**
Station capital costs were estimated for new BRT stations, modifications to existing Metrorail and multimodal transit centers, and for the addition of BRT features at existing park and ride locations. These costs capture BRT features, bus platforms, passenger amenities, roadway modifications and priority treatments to accelerate vehicles on their approach or departure from off-line stations.

To estimate the costs for at each station, quantities of 12 separate cost elements were estimated. The unit costs for each cost element was based developed using a wide range of sources. Roadway improvements used unit costs developed by VDOT.

The total parking needed for transit was re-evaluated based on the market demand results of this study, and the overall parking at BRT stations and throughout the corridor was adjusted to match the demand estimated and constraints at each location.

**Results: Operating Costs and Bus Capital Costs**
Operating costs are shown in Table 5-4 and are calculated for the five Priority Bus/BRT routes modeled and the service enhancements that would be needed to meet projected demand. The following services are included in the cost estimate:

- In addition to five Priority Bus/BRT routes detailed in the scenario section of this report, an additional route was added to accommodate anticipated high ridership demand for BRT services in the northern-most segment of the corridor. This service would provide additional service from Seminary Road to the Pentagon and into Washington D.C.

- PRTC Dale City (or Lake Ridge) to Seminary Road service was incorporated into the BRT category of services, with increased runs and a service extension into Washington D.C. Rather than schedule numerous services along the entirety of the proposed BRT route, a shorter service on the heaviest load segment favored better vehicle utilization. This route is included in the Refined Alternative of the Transit/TDM Study.

- Due to forecast ridership demand, initial headways of 30 minutes for a BRT route from Lake Ridge to Tysons Corner would be supplemented by two additional runs.

<table>
<thead>
<tr>
<th>Route</th>
<th>Year Initiated</th>
<th>Revenue Hours</th>
<th>Vehicle Hours</th>
<th>Operating Cost / Vehicle Hour</th>
<th>Total Annual Operating Cost</th>
<th>Lifetime O&amp;M Cost (to 2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorton-EPG-Seminary-DC</td>
<td>2015</td>
<td>3600</td>
<td>4320</td>
<td>$86.77</td>
<td>$374,846</td>
<td>$5,622,696</td>
</tr>
<tr>
<td>Lake Ridge-Tysons</td>
<td>2015</td>
<td>1900</td>
<td>3800</td>
<td>$86.77</td>
<td>$329,726</td>
<td>$4,945,890</td>
</tr>
<tr>
<td>Seminary-Pentagon-DC Route</td>
<td>2015</td>
<td>3100</td>
<td>3410</td>
<td>$86.77</td>
<td>$295,886</td>
<td>$4,438,286</td>
</tr>
<tr>
<td>Dale City to Seminary Rd (+DC)</td>
<td>2015</td>
<td>3800</td>
<td>7600</td>
<td>$86.77</td>
<td>$659,452</td>
<td>$9,891,780</td>
</tr>
<tr>
<td>Fredericksburg-Franconia</td>
<td>2020</td>
<td>1100</td>
<td>2200</td>
<td>$86.77</td>
<td>$190,894</td>
<td>$1,908,940</td>
</tr>
<tr>
<td>Springfield</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massaponax-DC</td>
<td>2020</td>
<td>2700</td>
<td>5400</td>
<td>$86.77</td>
<td>$468,558</td>
<td>$4,685,580</td>
</tr>
<tr>
<td>Tysons-Franconia Springfield</td>
<td>2020</td>
<td>900</td>
<td>990</td>
<td>$86.77</td>
<td>$85,902</td>
<td>$859,023</td>
</tr>
</tbody>
</table>

Table 5-4. Operating Costs by Proposed Route
### Analysis of Priority Bus/BRT Scenario

Table 5-5 shows the total operating costs when adding in vehicle needs and operating costs for Priority Bus/BRT routes. Estimated operating and bus capital costs are $51 million for the proposed services. In comparison with the costs for the BRT services in the Fiscally Constrained Alternative in the Transit/TDM Study (chapter 9-1 summary table) three routes from Fredericksburg were estimated at $48 million, featuring a higher level in-line system. By targeting the market for proposed Priority Bus/BRT routes more coverage can be provided at lower costs.

**Results: Capital Costs for Fixed Facilities**

The new stations or BRT features vary by location in overall cost, ranging from $500,000 to nearly $5 million. The costs shown below are for the improvements described in Tables 5-3 and 5-6.

#### 5.4 Station Area Plans

BRT Stations vary from simple stop locations, to fully developed intermodal stations with bays for both BRT and local vehicles. The size and station function is determined by the projected ridership, the surrounding land-use and future development plans. Some station locations will serve large park and ride facilities while other stations are intended to facilitate transfers, and are not intended to induce additional drive access to the location. The station descriptions outline the context for each facility, principal features, and how buses will access the station and I-95/I-395 Corridor.

---

**Table 5-5. Total Operating Costs for Proposed Priority Bus/BRT Routes**

<table>
<thead>
<tr>
<th>Route</th>
<th>Lifetime O&amp;M Cost (to 2030)</th>
<th>Vehicle Needs</th>
<th>Cost Per Vehicle</th>
<th>Annualized Capital Cost (to 2030)</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorton- EPG- Seminary- DC</td>
<td>$5,622,696</td>
<td>5</td>
<td>500,000</td>
<td>$3,437,500</td>
<td>$9,060,196</td>
</tr>
<tr>
<td>Lake Ridge- Tysons</td>
<td>$4,945,890</td>
<td>3</td>
<td>500,000</td>
<td>$2,062,500</td>
<td>$7,008,390</td>
</tr>
<tr>
<td>Seminary-Pentagon-DC Route</td>
<td>$4,438,286</td>
<td>4</td>
<td>750,000</td>
<td>$4,125,000</td>
<td>$8,563,286</td>
</tr>
<tr>
<td>Dale City to Seminary Rd (+ DC)</td>
<td>$9,891,780</td>
<td>6</td>
<td>500,000</td>
<td>$4,125,000</td>
<td>$14,016,780</td>
</tr>
<tr>
<td>Fredericksburg-Franconia Springfield</td>
<td>$1,908,940</td>
<td>4</td>
<td>750,000</td>
<td>$2,750,000</td>
<td>$4,658,940</td>
</tr>
<tr>
<td>Massaponax-DC</td>
<td>$4,685,580</td>
<td>3</td>
<td>750,000</td>
<td>$2,062,500</td>
<td>$6,748,080</td>
</tr>
<tr>
<td>Tysons- Franconia Springfield</td>
<td>$859,023</td>
<td>2</td>
<td>500,000</td>
<td>$916,667</td>
<td>$1,775,690</td>
</tr>
</tbody>
</table>

**Table 5-6. Proposed Priority Bus/BRT Facility Costs**

<table>
<thead>
<tr>
<th>Location</th>
<th>Cost Estimate ($ Thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Massaponax</td>
<td>$2,516</td>
</tr>
<tr>
<td>2. Celebrate</td>
<td>$2,273</td>
</tr>
<tr>
<td>3. VA 610/Rt 1</td>
<td>$3,273</td>
</tr>
<tr>
<td>4. Prince William PRTC</td>
<td>$4,998</td>
</tr>
<tr>
<td>5. Route 123 Park and Ride</td>
<td>$500</td>
</tr>
<tr>
<td>6. Lorton Park and Ride</td>
<td>$1,823</td>
</tr>
<tr>
<td>7. Fredericksburg Vic US 17 and US 1</td>
<td>$2,273</td>
</tr>
<tr>
<td>8. Fort Belvoir Pence Gate</td>
<td>$530</td>
</tr>
<tr>
<td>9. Engineer Proving Grounds</td>
<td>$650</td>
</tr>
<tr>
<td>10. Franconia Springfield Metro Station</td>
<td>$500</td>
</tr>
<tr>
<td>11. Tysons Corner</td>
<td>$1,010</td>
</tr>
<tr>
<td>12. Seminary and Mark Center Transit Center</td>
<td>$500</td>
</tr>
</tbody>
</table>

**TOTAL FIXED FACILITY COSTS** $20,846
Conceptual drawings for each of the stations described in this section are illustrated.

1. **Massaponax**: This station area would represent a park and ride location in the proximity of the Spotsylvania Parkway Extension overpass, currently under construction. The project was initiated through a corridor study that presented recommendations in the “Massaponax/Jackson Gateway” subarea. Pedestrian features, such as sidewalks and crosswalks will be incorporated with this project, improvements that are part of a proffer from the Spotsylvania Hospital construction. It is recommended that the location of this station stop take advantage of the pedestrian improvements and be located on the eastern side of I-95 (the same side as the hospital). Access to I-95 would be provided through a new interchange at the Spotsylvania Parkway into the general purpose lanes. Travel northbound on I-95 for just over 2 miles would be required prior to gain access to proposed HOT lanes.

2. **Celebrate Virginia**: A station at this planned development was requested by FAMPO, as part of their long-term planning process. An Interchange Justification Report (IJR) is currently being funded by FAMPO, VDOT and the developer to study direct access to/from I-95, with a new interchange on I-95 to be located between the Rappahannock River and the existing interchange at Plank Road (RT 3). The access road would extend into the Celebrate development for approximately one mile, where a transit transfer facility and adjoining parking would be located. The access road is anticipated to provide direct access into the HOT Lanes that are proposed. There are minimum boardings anticipated in the initial market assessment, and the station location would function primarily as a destination for local transit (FRED). Additional transit-oriented development in the vicinity of this station would increase demand in the future.

3. **RT 610/RT 1**: Several station locations were tested in the vicinity of the Aquia Town Center, a mixed-use development being constructed in the southeast quadrant of the Garrisonville Road and RT 1 intersection. This development is located adjacent to I-95, however, the development was not planned to incorporate a transit component. The demand for future parking at this location led to an investigation of potentially available land along RT 1, less than one mile south of the Town Center. Access to this location, from I-95 general purpose lanes, includes various options. Exiting at RT 630 from I-95 would result in up to 3 miles of running on surface roads, incurring delays to travel time. Other options include a new ramp from I-95 Northbound to RT 1, directly across from the Town Center. Return to I-95 general purpose lanes would be through the Garrisonville Road Interchange. As much as one-mile of travel would still be required on surface roads. The travel demand market at this location, and potential consolidation of other nearby park and rides (RT 630), may justify the future provision of direct access and call for a more robust station and parking facility at this location.

4. **PRTC Transit Center**: The existing PRTC Transit Center in Dale City presents an opportunity for future BRT routes to serve both originating trips and as an intermediate stop for routes originating/termination further south. Prince William County has expressed a desire for an in-line location at this Transit Center, which could continue to be a consideration for future phases of BRT service implementation.

   For the PRTC Transit Center Station concept access will be from I-95 ramps and Telegraph Road. The ramp access (see concept drawing following this section) would be for the exclusive use of transit vehicles. Signals at the southbound to westbound ramp and Telegraph Road at Optiz Boulevard are recommended for bus priority treatments. From the general purpose lanes, access to managed lanes is 1.5 miles both north and south of this location.

   The proximity to the existing Transit Center and the potential for direct ramp access are advantages to this location, however the engineering details and ultimate feasibility have not been determined.

5. **RT 123 Park and Ride**: An under-utilized park and ride was requested for inclusion as a BRT station in the Woodbridge area. Current access is oriented for in the northbound direction, as southbound access to the location requires travel past the station location on RT 123 until a left turn into the facility can be made at Annapolis Way.
This movement requires nearly 1 mile of travel on surface roads once vehicles have exited from the managed lanes.

6. **Lorton Park and Ride**: The originating station for the Lorton/EPG route is an existing VDOT park and ride located at the intersection of Lorton Road and Gunston Cove Road. Vehicles would depart this transit stop location proceed to Lorton Station Boulevard. The existing lot features approximately 160 spaces.

7. **Fredericksburg Vic RT 17 and RT1**: No concept for a station has been developed at the time of this report.

8. **Ft. Belvoir**: The BRT station stop for Ft. Belvoir is located just outside of the Pence Gate, adjacent to RT 1. Vehicles proceeding into Ft. Belvoir would utilize a turning area outside the gate and proceed to a curbside stop located in the northbound lane of Belvoir Road. This station would serve as a transfer point for on base shuttle services, thus freeing vehicles on the BRT route from extensive delay in circulating within the base (low speed limits) and the delay incurred by traveling through gate security. Upon departure, vehicles would exit the station and proceed left onto RT 1.

9. **Engineer Proving Grounds**: The National Geospatial-Intelligence Agency (NGA) is constructing a loop road, parking area and bus area in the vicinity of Heller Road and Backlick Road. The BRT station stop is located at the main gate parking facility. The loop road will have direct access to and from managed lanes on I-95 to the south from the existing HOV flyover. The flyover will need to be widened to accommodate AM northbound turns onto the new ramp, and this widening is a programmed improvement.

Buses from Fort Belvoir Main Post will access the loop road from a new connection from the Fairfax County Parkway.

10. **Franconia-Springfield**: Access to the Franconia-Springfield Metrorail/VRE station will be provided by existing HOV ramps connecting I-95 with the Franconia-Springfield Parkway. A total of 2 1/4 miles are traveled on surface roads to proceed to/from the station. This is already an extensive transit station, and the cost estimate included two additional bus bays with enhanced BRT amenities.

11. **Tysons Corner**: BRT routes to Tysons Corner will serve the Tysons 123 Central Metrorail Station to be developed at Tysons Boulevard and RT 123. Bus bays at the Tysons 123 East station are also planned, and service to Tysons Corner could easily serve both stations.

The concept is to use the bus station on southside of RT 123, opposite the Metro station platform. Vehicles will access the Tysons Corner area from the direct access HOT ramp from I-495 to Westpark Drive, and then travel on roadways parallel to RT 123. This concept includes a new, bus only, left turn from Galleria Drive to International Drive. Buses departing the station will head eastbound on Ring Road; this will require a modification to the planned traffic circulation.

12. **Seminary Road**: The planned south facing bus-only ramp to/from the I-395 managed lanes at the Seminary Road rotary will provide into a transit station proposed for the Mark Center. Rotary traffic will access the Mark Center from Beauregard Road; the BRT concept is for a bus only left turn to allow quick access to the Mark Center.

**Pentagon Transit Center Issues**: The Regional Bus Subcommittee of the Transportation Policy Board has reviewed the access issues to the Pentagon Transit Center, as a requested regional priority bus project from transit operators. PRTC typifies the need, based on a current restriction that limits their operations to two bus bays at the facility. They have cited increased ridership demand and their planned improvements to service frequency driving a need for more platform space. The current congestion at the station, especially from vehicles waiting to dock, is a
reason for these limitations. Over 1,570 daily runs utilize the Pentagon Transit Center, resulting in operational and safety concerns for all carriers. A proposed, reversible bus-only ramp directly into the I-395 managed lanes has been proposed to mitigate future congestion due to these transit movements, and additional bus bays would also be required.

Two concerns from this study’s perspective involve the desire of the Pentagon to receive additional bus traffic (security concerns, etc.) and the congestion on South Eads Street approaching the station. As South Eads Street is the northern terminus of the I-395 managed lanes, additional congestion studies at this location and along the 14th Street Bridge into Washington D.C. have been requested.

The I-95/I-395 HOV/Bus Lanes Interchange Justification Report (IJR) in January 2009 presented current traffic and congestion issues for this location and tested 2030 build alternatives to rectify issues. Currently, existing bus volumes coming from I-395 into the Pentagon Transit Center amount to 938 daily runs, with a peak of 83 buses arriving per hour. If all CLRP transit service improvements were implemented, an approximate increase to 1,379 daily runs and 122 buses per hour could ultimately be realized. The projected future CLRP transit volume includes potential movements that would be attributed to the proposed BRT routes from this study.

In a No-Build scenario, the IJR Study concluded a maximum impact of less than three minutes on round-trip bus access in the PM only. This priority Bus/BRT routes proposed through this market analysis, this would amount to 54 daily trips, with a peak volume of 10 buses per hour. This represents a small fraction of total transit volume anticipated at this station location in the future. However, absent a definitive plan for new infrastructure at this location, and in discussions with the Transit Operators Committee, it was determined that all tested BRT routes will bypass the Pentagon Transit Center (transfers would be utilized to reach this location) in order to reduce pressure on the facility itself, and also on South Eads Street from additional transit movements.

Additional station access studies, specific to the capacity of the local road network and the station itself should be undertaken to determine necessary improvements for the volume of planned CLRP routes (and possibly proposed BRT routes as well) to actually be accommodated at this transit station.
Approximately 2 1/4 miles south of I-95/US-1 Interchange

- Freeway access to general purpose lanes
- Entry into HOT/HOV lanes at I-95/US-1 interchange

1. Massaponax

Notes/Key Map

Infrastructure Summary:
1. Two additional BRT Bays (in addition to local and express bays).
2. Signal priority at two intersections.
3. New signals at one intersection.
4. Minor roadway improvements.
5. 100 Parking Spaces.
6. $2.5 Million in improvements.

Ridership Summary:
- BRT AM Boardings: less than 50
- Principle modes of arrival: SOV %, non motorized %
(This page left intentionally blank)
2. Celebrate Virginia

Notes/Key Map
Infrastructure Summary:
1. Two additional BRT Bays (in addition to local and express bays).
2. Signal priority at two intersections.
3. New signals at one intersection.
4. Minor roadway improvements.
5. 100 parking spaces.
6. $2.3 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 25.
• Principle modes of arrival: SOV %, non motorized %,

Legend
Route TO Station
Route FROM Station
BRT on HOT Lane*
BRT on General Purpose Lane
BRT on Local Streets
Station Facility
Pedestrian Connection
Traffic Signal Priority
AM Peak Direction
(*Arrows indicate traffic flow)
3. VA 610/US 1 (Traffic Flow)

Notes/Key Map

New two bay station with 200 parking spaces and signal priority.
New signal and short access roadway.

Legend

- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
3. VA 610/US 1

Notes/Key Map
Infrastructure Summary:
1. Signal priority at three intersections
2. Two additional BRT Bays (in addition to local and express bays)
3. 200 Parking Spaces
4. Future direct access to NB I-95 general purpose lanes possible
5. $3.3 Million in improvements.

Ridership Summary:
• BRT Boardings: 50
• Principle modes of arrival: SOV %, non motorized %

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
(*Arrows indicate traffic flow)
Chapter 5 • Analysis of Priority Bus/BRT Scenario

4. Prince William PRTC Transit Center (Traffic Flow)

Notes/Key Map

Four bay station adjacent to PRTC Transit Center with new I-95 ramp access, signal priority and 200 parking spaces.

Legend

- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
4. Prince William PRTC Transit Center

**Notes/Key Map**

**Infrastructure Summary:**
1. Access to Telegraph Road via Dale Blvd / I-95 loop ramp
2. Assess from WB Dale Blvd ramp
3. Access to Telegraph Road
4. Signal priority at two intersections.
5. Dedicated parallel ramp
6. Two additional BRT Bays (in addition to local and express bays)
7. 200 Parking Spaces (in addition to local and express bays)
8. $ 5.0 Million in improvements.

**Ridership Summary:**
- BRT Boardings: 212
- Principle modes of arrival: SOV %, non motorized %

**Legend**
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
5. Route 123 / Lake Ridge (Traffic Flow)

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
5. Route 123 / Lake Ridge Park and Ride

Notes/Key Map
Infrastructure Summary:
1. Two additional BRT Bays (in addition to local and express bays)
2. Use existing Parking Spaces
3. $ .5 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 400
• Principle modes of arrival: SOV %, non motorized %,

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
(*Arrows indicate traffic flow)
6. Lorton Park and Ride

Notes/Key Map
Infrastructure Summary:
1. Signal priority at two intersections
2. Two additional BRT Bays (in addition to local and express bays)
3. 100 Parking Spaces
4. $1.8 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 88
• Principle modes of arrival: SOV %, non motorized %,

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
(*Arrows indicate traffic flow)
Chapter 5 • Analysis of Priority Bus/BRT Scenario

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Chapter 5 • Analysis of Priority Bus/BRT Scenario

8. Fort Belvoir Pence Gate

Notes/Key Map

Infrastructure Summary:
1. Two additional BRT Bays (in addition to local and express bays).
2. Minor roadway improvements.
3. $.5 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 163.
• Principle modes of arrival: SOV %, non motorized %.

Legend

Route TO Station
Route FROM Station
BRT on HOT Lane*
BRT on General Purpose Lane
BRT on Local Streets
Station Facility
Pedestrian Connection
Traffic Signal Priority
AM Peak Direction
(*Arrows indicate traffic flow)
9. Engineer Proving Grounds (EPG) (Traffic Flow)

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
9. Engineer Proving Grounds (EPG)

**Notes/Key Map**

**Infrastructure Summary:**
1. Two additional BRT Bays (in addition to local and express bays)
2. Parking provided by others.
3. Minor roadway enhancements
4. $.7 Million in improvements.

**Ridership Summary:**
- BRT AM Boardings: 100
- Principle modes of arrival: SOV %, non motorized %

**Legend**
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction

(*Arrows indicate traffic flow)
10. Franconia Springfield Metro Station

Notes/Key Map

Infrastructure Summary:
1. Signal priority at one intersection.
2. Two additional BRT Bays (in addition to local and express bays)
3. $.5 Million in improvements.

Ridership Summary:
• BRT Boardings: 388
• Principle modes of arrival: SOV %, non motorized %,

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
(*Arrows indicate traffic flow)
11. Tysons Corner (Traffic Flow)

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
 (*Arrows indicate traffic flow)
11. Tysons Corner

Notes/Key Map

Infrastructure Summary:
1. Signal priority at two intersections.
2. New signal
3. Two additional BRT Bays (in addition to local and express bays)
4. Minor roadway improvements.
5. $ 1.0 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 12.
• Principle modes of arrival: SOV %, non motorized %,

Legend

Route TO Station
Route FROM Station
BRT on HOT Lane*
BRT on General Purpose Lane
BRT on Local Streets
Station Facility
Pedestrian Connection
Traffic Signal Priority
AM Peak Direction
(*Arrows indicate traffic flow)
12. Seminay Rd / Mark Center

Notes/Key Map

Infrastructure Summary:
1. Two additional BRT Bays (in addition to local and express bays).
2. HOT lane access included in HOT lane project
3. $.5 Million in improvements.

Ridership Summary:
• BRT AM Boardings: 1,350
• Principle modes of arrival: SOV %, non motorized %,

Legend
- Route TO Station
- Route FROM Station
- BRT on HOT Lane*
- BRT on General Purpose Lane
- BRT on Local Streets
- Station Facility
- Pedestrian Connection
- Traffic Signal Priority
- AM Peak Direction
(*Arrows indicate traffic flow)