Transportation Impact Study

East Falls Church Land Use and Transportation Study

Arlington County, VA

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1. INTRODUCTION AND SUMMARY

PURPOSE OF REPORT AND STUDY OBJECTIVES

This report presents the results of a transportation impact study (the study) for the increases in development proposed (proposed development) as part of the East Falls Church Area Plan (the plan). The purpose of the East Falls Church Area Plan is to generate a land use and transportation vision for the East Falls Church area. The study is an appendix to the East Falls Church Area Plan and will be used to comply with Virginia Department of Transportation (VDOT) traffic impact analysis regulations under Chapter 527 of the 2006 Code of Virginia.

The land use element of the plan includes a concept plan and policy framework that set height, density, use mix, and urban design standards for sites likely to experience redevelopment. The transportation element of the plan evaluates pedestrian, bicycle, and vehicular access to the existing Metrorail station. The plan recommends infrastructure, streetscape, and other public improvements to support an urban, walkable, and accessible mixed-use environment within this area.

The plan was guided by a Task Force comprised of representatives from Arlington County and the City of Falls Church, VDOT, the Washington Metropolitan Area Transit Authority (WMATA), and area citizens. WMATA and VDOT are major landowners in the study area and control transportation infrastructure including the Metrorail station, Interstate 66, and several state-owned arterial roadways. Setting the stage for planning and analysis, the East Falls Church Task Force drafted a vision for the future of East Falls Church:

“Our vision is for East Falls Church to evolve into a ‘Transit Town’ by combining the best of what was with the needs of a desirable 21st Century community. Transit Town will abound in locally serving uses that will re-create that lost small town feeling and advance sustainability concepts in our corner of Arlington County. A balance and mixture of uses, such as neighborhood-oriented retail, businesses and restaurants, will be within easy reach of people. New buildings will be of compatible densities and heights so as to complement and fit in with our best existing structures. East Falls Church will be a distinctive stop along the Metro Rail system, combining human scale development with a warm and inviting pedestrian-oriented, walkable streetscape. There will be a central public space used for street fairs and other gatherings featuring some symbol or artwork for community identity. The area will be the focus for the intermodal transfers that connect transit (both bus and rail), foot traffic and bicycle users, and discourage single occupancy vehicle transportation. Affordable housing opportunities will allow for economic diversity. We envision a well-connected, ‘green,’ safe and accessible community which will grow organically.”

The transportation impact study was prepared in accordance with the VDOT Chapter 527 Guidelines and a scoping discussion with Arlington County staff and VDOT planning staff.
This report describes the background information, analysis methodology, existing transportation conditions, future transportation conditions without the proposed development, travel demand generated by the proposed development, and future transportation conditions with the proposed development. This report also provides recommendations for future transportation infrastructure and policy related to the East Falls Church area.

EXECUTIVE SUMMARY

Site Location and Study Area
The East Falls Church area is in western Arlington County, Virginia adjacent to the City of Falls Church. The East Falls Church study area encompasses areas of Arlington County and the City of Falls Church as well as the East Falls Church Metrorail station. The study area is shown in a regional context in Figure 1.1.

Description of the Proposed Development
The East Falls Church Area Plan identifies sites in Arlington County that are likely to experience redevelopment. The proposed development sites are shown in Figure 1.2. The proposed development analyzed in the study may vary slightly in the type and location of development from the proposed development in the plan; however, the proposed development in the plan will be within an order of magnitude of the overall development analyzed in this study. The development analyzed in this transportation impact analysis is the following:

- 790 Residential Flats (apartments and/or condominiums)
- 42 Residential Townhomes
- 110,850 square feet of Specialty Retail
- 49,000 square feet of General Retail (includes possible 40,000 square foot grocery store)

Analysis Methodology
The study considers vehicular traffic impacts of the proposed development using several measures in order to best convey to the public how it will feel to travel by vehicle in East Falls Church in the future with the proposed development in place. The measures used to analyze vehicular traffic impacts are intersection level of service (LOS) and vehicular link volume to capacity ratio (V/C ratio). While each measure is accurate individually, the two measures present a more comprehensive summary of the impacts.

The study also considers the transportation impact on other modes of travel—walking, bicycling, and transit. The non-vehicular travel modes are assessed qualitatively.
Principal Findings, Conclusions, and Recommendations

Existing Conditions—The following summarizes existing transportation conditions in the study area.

Vehicular:
- Study area intersections operate at overall LOS D or better with the exception of the following:
  - I-66 On-Ramp and Washington Boulevard: LOS F in the AM peak hour
- Field conducted travel time surveys and observations revealed that arterials in the study area are congested during peak hours and queuing occurs through adjacent intersections
- Study area arterial links operate at V/C ratios of less than 0.80 with the exception of the following:
  - Washington Boulevard westbound from Lee Highway to I-66 West On-Ramp: V/C ratio of 1.10 in the AM peak hour

Transit:
- Transit services provided are Metrorail, Metrobus, George bus, and ART bus services
- Pedestrian access to the Metrorail station from the south and west is limited by I-66
- Bicycle access to the Metrorail station from the north is challenging due to a lack of facilities

Pedestrian and Bicycle:
- Sidewalks are in-place on most study area arterials with the exception of:
  - Both sides Washington Boulevard eastbound (bridge section) from Lee Highway to the Metro Park-and-Ride lot driveway
  - West side of Washington Boulevard northwestbound from Lee Highway to 25th Street N.
- The study area is proximate to the regional W&OD trail
- There are no striped on-street bicycle facilities in the study area

2030 Future Conditions without Development—The analysis of 2030 future conditions without development considers the combined effects of travel demand generated by general traffic growth on study streets, approved and unbuilt development, and programmed transportation improvements.

An overall growth factor of 7.0 percent was used to adjust the existing year (2010) traffic volumes to the future year 2030. Four approved and unbuilt developments were considered in this study. Programmed transportation improvements considered in this study, described in Chapter 2, are the following:
- N. Washington Street streetscape in the City of Falls Church
- Arterial traffic management (ATM) measures on N. Sycamore in the study area
- ATM measures on Washington Boulevard east of the study area
- I-66 spot improvements
- Metrorail Silver line to the Dulles Airport on which the East Falls Church Metrorail station will be the last point of transfer between the Orange line and the Silver line
- Express bus service in the I-66 corridor to include stations at or near the East Falls Church Metrorail station

The following summarizes future transportation conditions without development in the study area.

**Vehicular:**
- Study area intersections operate at overall LOS D or better with the exception of the following:
  - Washington Street and Broad Street: LOS E in the AM and PM peak hours
  - Lee Highway and Westmoreland Street: LOS F in the PM peak hour
  - I-66 On-Ramp and Washington Boulevard: LOS F in the AM peak hour
- Study area arterial links operate at V/C ratios of less than 0.80 with the exception of the following:
  - Lee Highway from the Falls Church city line to Fairfax Drive/Washington Boulevard: V/C ratio of 1.14 in the PM peak hour
  - Washington Boulevard westbound from Lee Highway to I-66 West On-Ramp: V/C ratio of 1.12 in the AM peak hour

**Transit:**
- Transit services provided are Metrorail Orange and Silver lines, I-66 Express Bus, Metrobus, George bus, and ART bus services.

**Pedestrian and Bicycle:**
- Improved streetscape on N. Washington Street in Falls Church

**Key Assumptions Regarding Travel Demand of the Proposed Development**—To understand the impact of the proposed development on the 2030 transportation network, its travel demand was quantified as follows:

1. Person trips were generated using the Institute of Traffic Engineer’s (ITE) *Trip Generation Report, 8th Edition*
2. Mode split assumptions were based on data published by WMATA and MWCOG
3. Person trips were assigned to specific transportation modes based on type of development and distance from the Metrorail station

The following were assumed with regard to mode split:

- The proposed development will have a mix of land uses
- The proposed development will be served by a number of transit services, an improved pedestrian network, and an improved bicycle network

**2030 Future Conditions with Development**—The analysis of 2030 future conditions with development considers the effect of travel demand generated by the proposed development
on the future without development transportation network (no improvements related to the proposed development or the East Falls Church Area Plan). The following summarizes future transportation conditions with development in the study area.

**Vehicular:**
- Study area intersections operate at overall LOS D or better with the exception of the following:
  - Washington Street and Broad Street: LOS E in the AM and PM peak hours (minor increases in overall intersection delay compared to future conditions without development)
  - Lee Highway and Westmoreland Street: LOS F in the PM peak hour
  - Washington Boulevard westbound and the I-66 On-Ramp: LOS F in the AM peak hour (minor increases in delay compared to future conditions without development)
  - Washington Boulevard and the site M1 driveway: LOS F in the PM peak hour
- Study area arterial links operate at V/C ratios of less than 0.80 with the exception of the following:
  - Washington Street between Broad Street and the Arlington County Line: V/C ratio of 0.90 in the PM peak hour
  - Lee Highway from the Falls Church city line to Fairfax Drive/Washington Boulevard: V/C ratio of 1.21 in the PM peak hour
  - Washington Boulevard westbound from Lee Highway to I-66 West On-Ramp: V/C ratio of 1.19 in the AM peak hour

**Transit:**
- No change from future conditions without development

**Pedestrian and Bicycle:**
- No change from future conditions without development

**Recommended Improvements**—Recommended improvements in this study are multimodal in nature and are intended to improve the transportation network for all users. The types of improvements recommended are described in the following:

- **Transportation Demand Management (TDM).** Policies, strategies, and programs consistent with County policy to promote and encourage transportation choice.
- **Corridor Recommendations.** General street recommendations to improve accommodation of all modes of transportation (walking, bicycling, transit, and vehicular).
- **Intersection Recommendations.** Intersection modifications to improve operation and safety for all modes.
- **Neighborhood Traffic Calming.** County policy that provides a methodology to address, analyze, and mitigate the effect of traffic on local streets with measures aimed at reducing vehicle speeds and increasing safety.
- **Transit.** Recommendations for the future transit services and locations of new or modified facilities to improve access to and between transit services.
- **Bicycles and Pedestrians.** Locations of new and modified facilities to improve connectivity and accommodation.
- **Parking.** Curb space management guidelines, parking requirements, and other programs and policies to manage parking demand.

**2030 Future Conditions with Development and Improvements** – The analysis of 2030 future conditions with development and improvements considers the effect of travel demand generated by the proposed development and improvements related to the proposed development contained in the plan. The following summarizes future transportation conditions with development and transportation recommendations in the study area.

**Vehicular:**
- Study area intersections operate at overall LOS D or better with the exception of the following:
  - Washington Street and Broad Street: LOS E in the AM and PM peak hours (intersection delay similar to that of future conditions without development)
  - Washington Boulevard westbound and the I-66 On-Ramp: LOS F in the AM peak hour (intersection delay reduced with altered lane designations)
- Study area arterial links operate at V/C ratios of less than 0.80 with the following notes:
  - Lee Highway from the Falls Church city line to Fairfax Drive/Washington Boulevard: V/C ratio reduced from 1.21 to 0.95 in the PM peak hour
  - Washington Boulevard westbound from Lee Highway to I-66 West On-Ramp: V/C ratio reduced from 1.19 to 1.16 in the AM peak hour

**Transit:**
- Improved access to the Metrorail station including the following:
  - Provision of proposed new western entrance with plaza, kiss-and-ride, and bus facilities
  - Provision of additional bicycle parking
  - Provision of real-time transit information

**Pedestrian and Bicycle:**
- Improved intersection safety for pedestrians and bicyclists with through the use of improved crosswalks, improved median refuges, pedestrian signalization, bicycle lanes and bicycle actuation
- Sidewalks on both sides of all arterials, pedestrian space is widened or improved through streetscaping on all arterials
- Improved access to the W&OD trail at Sycamore Street and Lee Highway
Conclusions

With the proposed multimodal transportation improvements in place, the proposed development in the East Falls Church Area Plan can be accommodated.

Two study area intersections operate at LOS E or F under future conditions with development. The intersection of Washington Street and Broad Street is forecast to operate at LOS E in the AM and PM peak hour, but the proposed development raises the intersection delay nominally when compared to future conditions without development. Improvements that include additional lanes are not feasible at this intersection due to adjacent development.

The intersection of Washington Boulevard westbound and the I-66 On-Ramp operates at LOS F in the AM peak hour. The intersection also operates at LOS F under existing conditions. Additional widening is infeasible at this intersection and signalization would not improve performance for the Washington Boulevard movement.

The study section of Washington Boulevard westbound from Lee Highway to the I-66 West On-Ramp is the only study road section that will operate with a V/C ratio of greater than 1.0 under future conditions with development. This street section is constrained by the intersections of Washington Boulevard with Lee Highway and the I-66 On-Ramp. Widening Washington Boulevard would improve link operations; however, it would create substantial impacts on property.

The vehicular network experiences some congestion under future conditions, similar to what is currently experienced it is under existing conditions. Despite the relatively congested operations of the two aforementioned intersections, vehicular mobility will be maintained in the study area. A significant increase in traffic on local streets is not anticipated due to proposed future development. In the event that traffic volumes become a concern, Arlington County has a neighborhood traffic calming program in place to reduce vehicular speed and improve safety as warranted.

Overall mobility and safety will be improved by the addition or improvement of multimodal facilities and services in the East Falls Church area. Recommendations in this study support the provision of new and improved regionally- and locally-serving transit services in the future. Metrorail station access will be increased with the proposed western entrance. A network of on-street bicycle facilities and improved trail connections will facilitate convenient and safe movement of bicyclists. Pedestrian conditions will benefit from new connections, adequate new facilities, modifications to intersections, and more moderate vehicle speeds.
2. BACKGROUND INFORMATION

STUDY AREA

The study area is bounded by Washington Boulevard and N. Sycamore Street to the north, E. Broad Street and Columbia Street to the south, N. Sycamore Street and Lee Highway to the east, and Westmoreland Street, Little Falls Road, and N. Maple Avenue to the west. There are 17 existing intersections in the study area that were included in the analysis. The study area and study intersections were agreed to by Arlington County and VDOT at the Scope of Work Meeting on January 4, 2010. The study area and study intersections are shown in Figure 2.1. A copy of the VDOT Chapter 527 Pre-Scope of Work Meeting Form and Scope of Work Form are included in Appendix A.

DESCRIPTION OF ON-SITE DEVELOPMENT

This study assesses the transportation impacts of the twelve development sites identified by the plan. The proposed development is located in the East Falls Church area of Arlington County, Virginia. The plan designates the sites A through I (including G1), M1, and M2. The study uses the same designations. Table 2.1 describes proposed development site characteristics.

<table>
<thead>
<tr>
<th>Site</th>
<th>Existing Use</th>
<th>General Land Use Plan</th>
<th>Existing Zoning*</th>
<th>Proposed Use*</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/B</td>
<td>Commercial, veterinary hospital, automobile repair shop</td>
<td>Low office-apartment-hotel</td>
<td>CM</td>
<td>Site A: 180 residential flats, 67 ksf specialty retail Site B: open space</td>
<td>Lee Highway at intersection with Westmoreland Street (proposed signal)</td>
</tr>
<tr>
<td>C</td>
<td>Restaurant and hotel</td>
<td>Low office-apartment-hotel</td>
<td>CM</td>
<td>66 residential flats, 8.5 ksf specialty retail</td>
<td>Westmoreland Street</td>
</tr>
<tr>
<td>D</td>
<td>Bank, 12-unit multi-family residential</td>
<td>Service commercial</td>
<td>C-2</td>
<td>57 residential flats</td>
<td>Washington Boulevard (right-in, right-out)</td>
</tr>
<tr>
<td>E</td>
<td>Gas station with convenience market and car wash</td>
<td>Service commercial and Low-medium residential</td>
<td>C-2</td>
<td>96 residential flats</td>
<td>Lee Highway at intersection with Van Buren Court</td>
</tr>
<tr>
<td>F</td>
<td>Bank</td>
<td>Service commercial</td>
<td>C-O</td>
<td>29 residential townhomes</td>
<td>Underwood Street</td>
</tr>
<tr>
<td>G1</td>
<td>Parking lot</td>
<td>Low residential</td>
<td>R-6</td>
<td>9 residential townhomes</td>
<td>Washington Boulevard at intersection with Metro station driveway (proposed signal)</td>
</tr>
</tbody>
</table>
Table 2.1: Proposed Development Site Characteristics

<table>
<thead>
<tr>
<th>Site</th>
<th>Existing Use</th>
<th>General Land Use Plan¹</th>
<th>Existing Zoning²</th>
<th>Proposed Use*</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Single-family residential</td>
<td>Low residential</td>
<td>R-6</td>
<td>4 residential townhomes</td>
<td>Sycamore Street north of Washington Boulevard (right-in, right-out)</td>
</tr>
<tr>
<td>I</td>
<td>Commercial</td>
<td>Low office-apartment-hotel</td>
<td>C-2</td>
<td>9 ksf general retail</td>
<td>Little Falls Road south of Lincoln Avenue</td>
</tr>
<tr>
<td>M1</td>
<td>Metrorail station parking lot</td>
<td>Government and community facilities</td>
<td>S-3A</td>
<td>50% replacement of Metrorail station parking Bus operations facility 350 residential flats 40 ksf general retail 11.35 ksf specialty retail</td>
<td>Washington Boulevard (proposed signal)</td>
</tr>
<tr>
<td>M2</td>
<td>Metrorail station kiss-and-ride lot</td>
<td>Government and community facilities</td>
<td>S-3A</td>
<td>Kiss-and-ride facility 41 residential flats</td>
<td>19th Road N. north of 19th Street N.</td>
</tr>
</tbody>
</table>

¹ksf = 1,000 square feet
²Arlington County General Land Use Plan, 2004
³Arlington County Zoning Ordinance, 2009

Proposed development in the small area plan is likely to vary slightly in the type, intensity, and use from the development analyzed in this study. The plan’s proposed development will be within an order of magnitude of the studied development. The small area plan provides additional information on existing and proposed site uses and additional information regarding land use and zoning in East Falls Church.

The small area plan discusses a grocery store of approximately 40,000 square feet in size. The location of the proposed grocery store may be site A/B or site M1. Arlington County expects that site M1 will have significantly less retail if the grocery store is not included on site M1. The study assumes that the proposed grocery store is located on site M1 to represent the worst-case scenario in terms of generating the highest number of vehicular trips.
EXISTING AREA ROADWAYS

Key roadways in the East Falls Church study area are described in the following:

**Interstate-66 (I-66)** - This east-west interstate bisects the study area. Through the study area, I-66 has a four-lane median-divided cross-section. The posted speed limit on I-66 in the study area is 55 miles per hour (mph). Exit 69 is located within the study area and has a divided diamond configuration with the following points of access:

- Eastbound Off-ramp: Fairfax Drive north of Lee Highway
- Eastbound On-ramp: N. Sycamore Street at the signalized intersection of 19th Street N.
- Westbound Off-ramp: N. Sycamore Street at the signalized intersection of the East Falls Church Metrorail station bus facility
- Westbound On-ramp: Washington Boulevard north of 25th Street N.

The average daily traffic on I-66 Eastbound was 69,000 vpd and 59,000 vpd to the west and east of Exit 69, respectively\(^1\). The average daily traffic on I-66 Westbound was 67,000 vpd and 55,000 vpd to the west and east of Exit 69, respectively\(^1\).

**Lee Highway (US Route 29)/N. Washington Street (US Route 29/VA Route 237)** - This arterial is oriented northeast-southwest through the In the City of Falls Church it is called N. Washington Street, while in Arlington County it is called Lee Highway. It generally has a four-lane undivided cross-section in the study area. The posted speed limit on N. Washington Street in the study area is 30 mph. The posted speed limit on Lee Highway in the study area is 25 mph. The average daily traffic volume on N. Washington Street between Little Falls Road and the Arlington County line was approximately 24,000 vehicles per day (vpd) in 2008\(^2\). The average daily traffic volume on Lee Highway between Washington Boulevard and Sycamore Street was approximately 23,000 vpd in 2008\(^1\). The predominant travel direction in the AM peak hour is northeastbound. The predominant travel direction in the PM peak hour is southwestbound.

**N. Sycamore Street/N. Roosevelt Street (VA Route 237)** - This north-south arterial generally has a four-lane divided cross-section in the study area. In the City of Falls Church it is called N. Roosevelt Street, while in Arlington County it is called N. Sycamore Street. The posted speed limit on N. Roosevelt Street in the study area is 25 mph. The posted speed limit on N. Sycamore Street in the study area is 35 mph to the south of Washington Boulevard and 30 mph to the north of Washington Boulevard. The average daily traffic

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volume on N. Sycamore Street between 17th Street N. and Lee Highway was approximately 22,000 vpd in 2008\(^1\). The average daily traffic volume on N. Sycamore Street between Lee Highway and 26th Street N. was approximately 12,000 vpd in 2008\(^1\). The predominant travel direction in the AM peak hour south of Washington Boulevard is northbound. The predominant travel direction south of Washington Boulevard in the PM peak hour is southbound. North of Washington Boulevard, vehicular peak hour travel is generally balanced in the northbound and southbound directions.

**Fairfax Drive** - This is an east-west arterial that becomes Lincoln Avenue at the Falls Church city line. West of Little Falls Road, Fairfax Drive has a four-lane divided cross-section. Between Little Falls Road and Lee Highway, Fairfax Drive is one-way eastbound with a three-lane cross-section. The posted speed limit on Fairfax Drive in the study area is 30 mph. The average daily traffic volume on Fairfax Drive between Little Falls Road and Lee Highway (on-way eastbound) was approximately 7,000 vpd in 2008\(^1\).

**Washington Boulevard (VA Route 237)** - This is an east-west arterial. East of Lee Highway, Washington Boulevard generally has a four-lane undivided cross-section. Between Lee Highway and the I-66 On-Ramp, Washington Boulevard is one-way westbound with a three-lane cross section. Between the I-66 On-Ramp and Westmoreland Street, Washington Boulevard is one-way westbound with a two-lane cross-section. The posted speed limit on Lee Highway in the study area is 30 mph. The average daily traffic volume on Fairfax Drive between Lee Highway and Sycamore Street was approximately 30,000 vpd in 2008\(^1\). The predominant travel direction on the two-way section of Washington Boulevard west of Sycamore Street in the AM peak hour is westbound. The predominant travel direction on the two-way section of Washington Boulevard west of Sycamore Street in the AM peak hour is eastbound.

### EXISTING TRANSIT SERVICE

The study area is currently served by the Metrorail Orange Line, Metrobus, George, and Arlington Regional Transit (ART) as described in the following:

- **Orange Line**
  - Average daily boardings and alightings at the East Falls Church Metrorail station: 4,200 passengers (May 2006)\(^3\)
  - Station access is provided along N. Sycamore Street at I-66
  - Metrorail station facilities include:

---

– Bus facility with four bus bays (access provided on Sycamore Street opposite the I-66 Off-ramp)
– Park-and-ride facility with 422 long-term spaces (access provided on Washington Boulevard west of Sycamore Street)
– Kiss-and ride facility with approximately 50 short-term metered parking spots (access provided on 19th Street N. west of Sycamore Street)
– Bicycle racks and lockers

- Metrobus
  - Route 2A, 2B, 2C, 2G, Washington Boulevard Line (weekday, Saturday, Sunday)
  - Route 3A, 3B, 3E Lee Highway Line (weekday, Saturday, Sunday)
  - Route 24T, McLean Hamlet-East Falls Church Line (weekday only)

- George Bus Service (Falls Church)
  - Route 26E, East Falls Church Loop (weekday only)

- ART Service (Arlington County)
  - Route 52, Ballston-Virginia Hospital Center-East Falls Church (weekday, Saturday, Sunday)
  - Route 53 Ballston Metro-Old Glebe-East Falls Church Metro (weekday only)

Existing transit services are shown in Figure 2.2.

EXISTING BICYCLE NETWORK

The study area is currently served by the Washington and Old Dominion (W&OD) regional trail. In addition, the following streets are designated as on-street bike routes in the study area:

- N. Sycamore Street/N. Roosevelt Street (Yorktown Boulevard to south Falls Church city line)
- N. Tuckahoe Street (19th Road N. to 18th Street N.)
- Van Buren Street (W&OD trail to Columbia Street)

The existing bicycle network is shown in Figure 2.3.

EXISTING PEDESTRIAN NETWORK

Sidewalks are provided on most streets in the study area as shown in Figure 2.4. Arlington County’s Master Transportation Plan (MTP) directs that arterials should have sidewalks on both sides of the street and residential streets should have sidewalks on at least one side of the street. Based on guidance provided in the MTP, existing sidewalk deficiencies were identified and are shown in Figure 2.4.
Legend

- Metrorail (Orange Line)
- County Line
- Study Area
- Existing Sidewalk
- Recommended Sidewalk
- Shared-use Trail

Existing Pedestrian Network

2.4

Existing Sidewalk

Recommended Sidewalk

Shared-use Trail
CURRENTLY PROGRAMMED TRANSPORTATION IMPROVEMENTS AND TRANSPORTATION IMPROVEMENT PLANS

Metrorail Silver Line - The Metropolitan Washington Airports Authority (MWAA) is constructing a 23-mile extension of the existing Metrorail system between East Falls Church and Loudoun County as shown in Figure 2.5. The extension will provide high-quality, high-capacity transit service to Tysons Corner, Reston, Herndon, the Dulles Toll Road corridor, Dulles International Airport, and parts of Loudoun County.

The overall project includes 11 new stations and will be built in two phases. Phase 1, currently under construction, will run between East Falls Church and Wiehle Avenue. Phase 1 is scheduled to be complete in 2013. Phase 2 will run between Wiehle Avenue and Loudoun County. A construction date has not been set for Phase 2. The East Falls Church Metrorail station will be the last western transfer point between the Orange Line and Silver Line.

Figure 2.5: Dulles Corridor Metrorail
Source: www.dullesmetro.com
I-66 Spot Improvements – VDOT is currently planning to construct spot improvements in three sections along westbound I-66 between Washington D.C. and I-495. The spot improvements will be constructed within existing right-of-way. The spot improvements will lengthen existing on- and off-ramps to create auxiliary lanes between several existing interchanges. VDOT forecasts that the spot improvements will increase average speed in the corridor, reduce travel times, and decrease congestion. Planning completed by VDOT indicates that the spot improvements will decrease congestion at the intersections of Lee Highway and Washington Boulevard, Lee Highway and Fairfax Drive, and Lee Highway and N. Sycamore Street. The locations of the three spot improvements are shown in Figure 2.6.

Two of the proposed spot improvement projects are within the East Falls Church study area. Section 1 extends from Fairfax Drive to Sycamore Street. As of November 2009, the design for Section 1 was nearly complete, and the construction was expected to be advertised in January 2010. Section 2 extends from Washington Boulevard to the Dulles Connector. As of November 2009, the preliminary design is the only funded portion of the project.

Figure 2.6: I-66 Spot Improvement Locations
Source: www.I-66spotimprovements.com

I-66 Transit/TDM – The Virginia Department of Rail and Public Transportation (DRPT) is managing a study to evaluate short- and medium-term transit and transportation demand management (TDM) improvements along a portion of the I-66 corridor, highlighted in Figure 2.7. Results of the study will be used to develop project-specific plans to implement
enhanced transit and TDM services over the next 5 to 15 years. The study is not complete; however, preliminary recommendations under consideration include new bus services such as Bus Rapid Transit (BRT) and additional automobile commuter options such as carpooling, vanpooling, and park-and-ride.

Preliminary recommendations identified in the study in the East Falls Church area include improvements to traveler information systems, customer comfort and productivity amenities, express bus service on US 29, more bus service to Tyson’s Corner and Washington D.C., and enhanced rideshare and transit information programs. In addition, East Falls Church is a potential express bus transfer station on the potential I-66 express bus corridor. The final report is being drafted and the study’s results will inform additional I-66 multimodal studies which are underway.

**Figure 2.7: I-66 Transit/TDM Study Area**


**N. Washington Street and Gresham Place Traffic Signal** – The City of Falls Church is planning to upgrade the existing traffic signal at the fire station driveway (offset to the north of Gresham Place) to serve both the driveway and Gresham Place.
Northgate at Falls Church Development – The traffic study for this development indicates that a traffic signal is needed at one or both of the intersections at Lee Highway and Gresham Place (Arlington County) and N. Washington Street and Jefferson Street (City of Falls Church). Further study by Falls Church found that side street traffic on Gresham Place and Jefferson Street did not meet signal warrants with the Northgate development in place and that the signals in the corridor provide for long enough gaps to allow turning movements at the two intersections.

Falls Church City Center Development – Planned improvements related to the East Falls Church study area include installation of a traffic signal at the intersection of S. Maple Avenue with W. Broad Street, a multimodal transit station at the northwest corner of Broad and Washington Streets that will serve as a hub for all forms of transportation directly serving the City Center, and pedestrian facilities, bicycle facilities, and traffic calming measures in the area of the development.

N. Washington Street Streetscape – Falls Church is developing a plan for a pedestrian-friendly streetscape for N. Washington Street between West Broad Street and the Arlington County line.

Arterial Transportation Management (ATM) Plan for N. Sycamore Street – The 2004 study recommends the following for Sycamore Street within the study area:

- Travel lanes reduced in width to allow bicycle lanes, landscaped medians, left-turn lanes, wider landscape strips, wider sidewalks, and on-street parking to be provided within existing right-of-way
- Intersection modifications to reduce vehicle speeds and improve pedestrian and bicyclist safety
- Access management through use of medians

Arterial Transportation Management Plan for Washington Boulevard – The 2004 study recommends the following for Sycamore Street to the east of the study area:

- Travel lanes reduced in width to allow wider landscape strips and wider sidewalks to be provided within existing right-of-way
- Intersection modifications to reduce vehicle speeds and improve pedestrian and bicyclist safety
3. ANALYSIS OF EXISTING CONDITIONS

TRAFFIC COUNTS

17 intersections were identified for study. Vehicle turning movement counts were performed in February 2008 during the weekday AM (6:30 a.m. to 9:30 a.m.), mid-day (11:00 a.m. to 1:00 p.m.), and PM (4:00 p.m. to 7:00 p.m.) peak periods for the following intersections:

- Washington Street (Route 237) and Broad Street
- Washington Street (Route 237) and Fairfax Drive
- Washington Boulevard and Fairfax Drive/25th Street
- Lee Highway (Route 29) and Washington Boulevard
- Lee Highway (Route 29) and Sycamore Street
- Washington Boulevard and Sycamore Street
- Sycamore Street and I-66 Westbound Ramp
- Sycamore Street and 19th Street/I-66 Eastbound Ramp

Counts were performed in the weekday AM (6:30 a.m. to 9:30 a.m.) and PM (4:00 p.m. to 7:00 p.m.) peak periods for the following intersections:

- Lee Highway (Route 29) and Westmoreland Street
- Washington Boulevard and 25th Street
- Sycamore Street and 22nd Street
- Washington Street (Route 237) and Columbia
- Washington Street (Route 237) and Jefferson Street

The intersection of Washington Boulevard and the East Falls Church Metrorail Parking Lot driveway has a different peak period due to the loading and unloading of the parking lot. Counts were performed at this intersection between 6:00 a.m. and 8:00 a.m. and between 4:00 p.m. and 6:00 p.m.

For all counted intersections, the peak traffic hour was established by identifying the peak 60 minutes of traffic during each peak period at each intersection. Appendix B of this report contains raw turning movement count data.

Peak hour traffic volumes at intersections not identified in the aforementioned were provided by Arlington County and the City of Falls Church as part of their county- and city-wide Synchro networks.

HISTORIC TRAFFIC GROWTH

VDOT’s daily traffic volume publications for 2001, 2004, and 2008 were used to assess the level of general traffic growth on study area streets. Table 3.1 summarizes VDOT daily traffic volume data studies for study area streets.
**Table 3.1: Summary of VDOT Daily Traffic Volume Data**

<table>
<thead>
<tr>
<th>Street</th>
<th>Average Daily Traffic Volume* (Year)</th>
<th>Average Daily Traffic Volume* (Year)</th>
<th>Annual Change in Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Street - Broad Street to Great Falls Road</td>
<td>30,300 (2001)</td>
<td>25,000 (2008)</td>
<td>-2.8%</td>
</tr>
<tr>
<td>Washington Street – Little Falls Road to Arlington County Line</td>
<td>30,000 (2001)</td>
<td>24,000 (2008)</td>
<td>-3.3%</td>
</tr>
<tr>
<td>Lee Highway – Falls Church City Line to Fairfax Drive</td>
<td>25,000 (2001)</td>
<td>24,000 (2008)</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Sycamore Street – 17th Street N. to Lee Highway</td>
<td>22,100 (2004)</td>
<td>22,000 (2008)</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Sycamore Street – Lee Highway to 26th Street N.</td>
<td>12,000 (2004)</td>
<td>12,000 (2008)</td>
<td>0.0%</td>
</tr>
<tr>
<td>Fairfax Drive – Little Falls Road to Lee Highway</td>
<td>6,700 (2004)</td>
<td>7,100 (2008)</td>
<td>0.9%</td>
</tr>
<tr>
<td>Washington Boulevard – Lee Highway to Sycamore Street</td>
<td>26,000 (2001)</td>
<td>30,000 (2008)</td>
<td>2.0%</td>
</tr>
<tr>
<td>E Broad Street - Lee Highway to Fairfax Dr</td>
<td>24,600 (2001)</td>
<td>22,000 (2008)</td>
<td>-1.6%</td>
</tr>
<tr>
<td>W Broad Street -West Street to Lee Highway</td>
<td>28,100 (2001)</td>
<td>29,000 (2008)</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

*Volumes shown are vehicles per day, rounded to the nearest hundred

The review of VDOT daily traffic volume data shows that daily traffic volumes on study streets have not increased or have increased nominally since 2001. The lack of growth is likely to be attributed to minimal past development activity in the study area, the presence of high-quality transit, and vehicle capacity limitations on streets.

**EXISTING TRAFFIC VOLUMES**

The analysis of daily traffic volumes shows that there has been little to no growth, in many cases a decrease in daily traffic volumes, on study area streets. Based on this analysis, existing year (2010) volumes were assumed to be equal to 2008 turning movement counts. Existing (2010) peak hour volumes at study intersections are shown in Figures 3.1 and 3.2 for AM and PM peak hours, respectively.
Existing (2010) AM Peak Hour Traffic Volumes

Legend
- Metrorail (Orange Line)
- County Line
- Study Area
- Existing AM Peak Hour Volume

1. [Map elements and numbers]
2. [Map elements and numbers]
3. [Map elements and numbers]
4. [Map elements and numbers]
5. [Map elements and numbers]
6. [Map elements and numbers]
7. [Map elements and numbers]
8. [Map elements and numbers]
9. [Map elements and numbers]
10. [Map elements and numbers]
11. [Map elements and numbers]
12. [Map elements and numbers]
13. [Map elements and numbers]
14. [Map elements and numbers]
15. [Map elements and numbers]
16. [Map elements and numbers]
17. [Map elements and numbers]
18. [Map elements and numbers]
19. [Map elements and numbers]
20. [Map elements and numbers]
Existing (2010) PM Peak Hour Traffic Volumes

Legend
- Metrorail (Orange Line)
- = County Line
- Study Area
- # Existing PM Peak Hour Volume
EXISTING AREA PEDESTRIAN MOVEMENT AND BICYCLE TRAVEL

On Wednesday, October 17 and Thursday, October 18, 2007, field observations were conducted in the area surrounding East Falls Church Metrorail station. Field observations centered on the collection of weekday AM and PM peak period pedestrian and bicycle movements and counts. In consultation with Arlington County and the City of Falls Church, key intersections were selected for observation. The following describes the locations and times when data was collected:

- Lee Highway, Westmoreland Street, Fairfax Drive, W&OD trail intersections: 6:30 a.m. to 7:00 a.m., 4:00 p.m. to 4:30 p.m.
- Metro station, staircase adjacent to short term parking lot at 19th Road North and Tuckahoe Street: 7:00 a.m. to 7:30 a.m., 4:30 p.m. to 5:00 p.m.
- Unnamed trail at border of County/Falls Church: 7:00 a.m. to 7:30 a.m., 4:30 p.m. to 5:00 p.m.
- Sycamore Street and Washington Boulevard intersection: 7:45 a.m. to 8:15 a.m., 5:15 p.m. to 5:45 p.m.
- Sycamore Street and 19th Street N. intersection: 8:15 a.m. to 8:45 a.m., 5:45 p.m. to 6:15 p.m.
- Washington Boulevard mid-block crossing west of the Metrorail Parking Lot driveway: 7:45 a.m. to 8:45 a.m., 5:15 p.m. to 6:15 p.m.

Observed pedestrian and bicycle movements are summarized in Figure 3.3.
3.3 Observed Pedestrian and Bicycle Movements

- Washington Boulevard, Lee Highway, and W&OD Trail
- Washington Boulevard and Metro Parking Lot
- Washington Boulevard and Sycamore Street
- Sycamore Street and 19th Street North
- North Tuckahoe Street and 19th Street North

Legend:
- Pedestrian
- Bicycle
- Number of movements
ANALYSIS METHODOLOGY

The analyses performed document the impact of proposed development on vehicular traffic, pedestrians, bicyclists, and transit within the study area. In this study, corridor travel time and link volume-to-capacity (V/C) ratio are measures considered in addition to intersection capacity analysis to document vehicular conditions. While each measure is accurate individually, the pair of measures presents a more comprehensive summary of traffic impacts.

The study also considers the impact of the proposed development on other modes of travel—walking, bicycling, and transit. These travel modes are assessed qualitatively.

Conditions Studied
Analyses were performed for the following conditions:

- Existing conditions (2010)
- Future conditions (2030) without the proposed development
- Future conditions (2030) with the proposed development
- Future conditions (2030) with the proposed development and multimodal transportation improvements

Vehicular Intersection Capacity Analysis
Intersection capacity analysis was conducted using Synchro Version 7, which utilizes methodologies contained in the 2000 Edition of the Highway Capacity Manual (HCM) for signalized and unsignalized intersections.

According to the HCM, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The operating conditions of streets and intersections are described by level of service (LOS). LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The HCM defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. The ranges of vehicle delay for each level of service are shown in Table 3.2.
<table>
<thead>
<tr>
<th>Level of Service (LOS)</th>
<th>Delay per Vehicle (seconds per vehicle)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Signalized Intersections</td>
<td>Unsignalized Intersections</td>
</tr>
<tr>
<td>A</td>
<td>( \leq 10 )</td>
<td>( \leq 10 )</td>
</tr>
<tr>
<td>B</td>
<td>( &gt; 10 – 20 )</td>
<td>( &gt; 10 – 15 )</td>
</tr>
<tr>
<td>C</td>
<td>( &gt; 20 – 35 )</td>
<td>( &gt; 15 – 25 )</td>
</tr>
<tr>
<td>D</td>
<td>( &gt; 35 – 55 )</td>
<td>( &gt; 25 – 35 )</td>
</tr>
<tr>
<td>E</td>
<td>( &gt; 55 – 80 )</td>
<td>( &gt; 35 – 50 )</td>
</tr>
<tr>
<td>F</td>
<td>( &gt; 80 )</td>
<td>( &gt; 50 )</td>
</tr>
</tbody>
</table>


Arlington County does not have a standard for minimum acceptable vehicular level of service. Instead, the County endeavors to balance accommodation of pedestrians, bicyclists, transit, and vehicles.

**Vehicular Link Volume-to-Capacity Ratio**

Volume-to-capacity (V/C) ratios compare the volume on a roadway link to the capacity of the link. A V/C ratio of less than 1.0 indicates that the vehicular volume on a studied link is less than the theoretic vehicular capacity for the time period. A V/C ratio of 1.0 indicates that vehicular volume equals the theoretic vehicular capacity. If the V/C ratio exceeds 1.0, the vehicular volume has exceeded the theoretic vehicular capacity.

The AM and PM peak hour V/C ratios were calculated based on the termini of each study link. The V/C ratio is an average of the V/C ratio for each intersection lane group weighted based on volumes. The V/C ratios, volumes, and capacities at each intersection were derived from the Synchro HCM reports used for the intersection capacity analysis.

**Multimodal Conditions**

Conditions related to pedestrians, bicyclists, transit, and parking were qualitatively examined using measures such as identifying facilities provided, network connectivity, and safety concerns.
ANALYSIS OF EXISTING CONDITIONS

Existing conditions analyses are based on the 2010 traffic volumes and existing intersection laneage and traffic control at the study intersections. Existing traffic signal timings were obtained from Arlington County and the City of Falls Church and were used in the existing conditions analyses.

Intersection Capacity Analysis
The results of the capacity analyses are summarized in Table 3.3. Analysis results show overall level of service and delay information for each intersection. Figure 3.4 shows level of service by lane group. The Synchro HCM reports are contained in Appendix C.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Washington Street and Broad Street</td>
<td>D (37) / C (32)</td>
</tr>
<tr>
<td>2. Washington Street and Park Avenue</td>
<td>A (8) / B (12)</td>
</tr>
<tr>
<td>3. Washington Street and Great Falls Street</td>
<td>B (10) / A (4)</td>
</tr>
<tr>
<td>4. Washington Street and Columbia Street</td>
<td>C (29) / C (22)</td>
</tr>
<tr>
<td>5. Washington Street and Jefferson Street</td>
<td>A (1) / A (1)</td>
</tr>
<tr>
<td>6. Washington Street /Lee Highway and Gresham Place</td>
<td>A (3) / A (1)</td>
</tr>
<tr>
<td>7. Lee Highway and Westmoreland Street</td>
<td>A (7) / D (50)</td>
</tr>
<tr>
<td>8. Lee Highway and Fairfax Drive</td>
<td>C (27) / C (25)</td>
</tr>
<tr>
<td>9. Fairfax Drive/25th Street N. and Washington Boulevard</td>
<td>A (2) / A (2)</td>
</tr>
<tr>
<td>9a. I-66 On-Ramp and Washington Boulevard</td>
<td>F (97) / B (12)</td>
</tr>
<tr>
<td>10. Lee Highway and Washington Boulevard</td>
<td>C (26) / C (22)</td>
</tr>
<tr>
<td>11. Lee Highway and Underwood Street</td>
<td>A (4) / A (1)</td>
</tr>
<tr>
<td>12. Lee Highway and Sycamore Street</td>
<td>C (22) / C (20)</td>
</tr>
<tr>
<td>13. 22nd Street N. and Sycamore Street</td>
<td>A (3) / A (1)</td>
</tr>
<tr>
<td>14. Washington Boulevard and Sycamore Street</td>
<td>D (41) / C (33)</td>
</tr>
<tr>
<td>15. Metro Bus facility/I-66 Off-Ramp and Sycamore Street</td>
<td>A (8) / B (12)</td>
</tr>
<tr>
<td>16. 19th Street N./I-66 On-Ramp and Sycamore Street</td>
<td>C (24) / B (12)</td>
</tr>
<tr>
<td>17. Washington Boulevard and Metro Park-and-Ride Lot</td>
<td>A (1) / A (7)</td>
</tr>
</tbody>
</table>

* LOS (seconds of delay) AM/PM Peak Hour
Source: Kimley-Horn and Associates, Inc.
The analysis shows that under existing conditions, the intersection of Washington Boulevard westbound and the I-66 On-Ramp (Intersection 9a) operates at LOS F in the AM peak hour. All other intersections operate at overall LOS D or better. Some movements operate at less than LOS D under existing conditions.

**Link Volume-to-Capacity Ratio**

The peak hour link V/C ratios are shown in Table 3.4. HCM analysis worksheets are contained in Appendix C.

<table>
<thead>
<tr>
<th>Link</th>
<th>2010 Existing Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washington Street</strong>– Broad Street to Arlington County Line</td>
<td>0.50 (0.63)</td>
</tr>
<tr>
<td><strong>Lee Highway</strong>– Falls Church City Line to Fairfax Drive/Washington Boulevard</td>
<td>0.28 (0.79)</td>
</tr>
<tr>
<td><strong>Lee Highway</strong>– Washington Boulevard to Sycamore Street</td>
<td>0.47 (0.40)</td>
</tr>
<tr>
<td><strong>Sycamore Street</strong>– Lee Highway to Washington Boulevard</td>
<td>0.41 (0.27)</td>
</tr>
<tr>
<td><strong>Sycamore Street</strong>– Washington Boulevard to 19th Street</td>
<td>0.49 (0.32)</td>
</tr>
<tr>
<td><strong>Washington Boulevard</strong>– Lee Highway to Sycamore Street</td>
<td>0.73 (0.66)</td>
</tr>
<tr>
<td><strong>Washington Boulevard Westbound</strong>– Lee Highway to I-66 West On-Ramp</td>
<td>1.10 (0.71)</td>
</tr>
</tbody>
</table>

* AM peak hour V/C ratio (PM peak hour V/C ratio)

Source: Kimley-Horn and Associates, Inc.
All study links, with the exception of Washington Boulevard westbound between Lee Highway and the I-66 West On-Ramp operate at a V/C ratio of less than 0.80 during the AM and PM peak hours.

Westbound Washington Boulevard between Lee Highway and the I-66 On-Ramp operates at a V/C ratio of 1.10 during the AM peak hour.

Other study links with V/C ratios of 0.60 or higher are Washington Street in the AM peak hour, Lee Highway between the Falls Church city line and Fairfax Drive/Washington Boulevard in the AM peak hour, and Washington Boulevard between Lee Highway and Sycamore Street in the AM and PM peak hours.

**Transit Conditions**

The Metrorail station is accessible by walking, bicycling, bus, kiss-and-ride, and park-and-ride. Issues related to these modes of access follow.

To the north and east, the Metrorail station enjoys relatively easy pedestrian access. With the exception of some major intersections, most streets have sidewalks and allow for a comfortable walk to the station. To the southwest, pedestrian access is somewhat more limited due to the station entrance location and impediments to access such as I-66, lack of sidewalk on the Washington Boulevard bridge, and the grade between the W&OD trail, 18th Road N., and the Metrorail station. The 2002 East Falls Church Metrorail Station Access Study shows that only 16 percent of responding customers who walk to the station in the AM peak period originated from the west. 11 percent of responding customers walked a distance of less than one-half mile to the station.

In 2007, over 100 bicyclists were observed at the Metrorail station and bicycle racks were full during pedestrian and bicycle field observations for this study. 2002 WMATA data shows that 64 percent of bicycle lockers and 98 percent of bicycle racks at the station were utilized. Four percent of peak hour users accessed the station via bicycle, based on 2007 WMATA data. Station access from the west is circuitous. There is no safe route to access the station from the north by bicycle.

The Metrorail station has a bus facility, providing an off-street waiting area for up to four buses. Bus feeder service is provided by Metrobus, George bus, and ART. Bus transfers account for up to 23 percent of PM peak hour station egress.

The Metrorail station has both park-and-ride and kiss-and-ride facilities. There are 422 long-term spaces for Metro riders. The parking lot was observed to be full by 7:30 a.m., and many

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spaces are observed to be available in the late afternoon for Metro riders travelling toward Washington D.C. in the evening. The Metrorail Station Access Study found that 71 percent of customers who used the park-and-ride lot originated to the south and west of the Metrorail station. 23 percent of park-and-ride customers traveled a distance of greater than 5 miles to get to the station. Only 30 percent of the park-and-ride customers originated in zip code boundaries within Arlington County or the City of Falls Church. A majority of these customers (57 percent) originated from zip code boundaries within Fairfax County.

**Bicycle Conditions**

There are some existing bicycle facilities in the study area. The W&OD trail runs through the study area, though it is disjointed at Sycamore Street. There are no on-street bicycle facilities in the study area. Issues related to bicycle travel follow.

There is no convenient way for a bicyclist to access the W&OD trail from north of I-66. Pedestrian and bicycle observations showed that few bicyclists arrived at or departed from the Metrorail station via the north.

The W&OD trail intersects with Lee Highway at grade near the intersection with Fairfax Drive. There are issues with the existing crossing configuration. The bicycle crossing on the south leg of the intersection conflicts with the heavy right-turn movement from Fairfax Drive to Lee Highway. Many bicyclists were observed to be riding down the middle of Lee Highway between Fairfax Drive and N. Westmoreland Street.

**Pedestrian Conditions**

The pedestrian conditions assessment related to intersection crosswalks, mid-block crossings, and sidewalks is summarized in this section. Most signalized intersections in the study area that have crosswalks also have pedestrian countdown heads. To address those that do not, Arlington County has a standing maintenance program that upgrades intersections without countdown heads annually. The following intersections in the study have very wide approaches that increase pedestrian crossing time and exposure:

- Lee Highway and Fairfax Drive/Washington Boulevard
- Lee Highway and Washington Boulevard
- Lee Highway and Sycamore Street
- Washington Boulevard and Sycamore Street
- Lee Highway and Metrorail station bus facility driveway/I-66 Off-Ramp
- Lee Highway and 19th Street N./I-66 On-Ramp

There are locations in the study area where pedestrians cross mid-block. A location of major concern is Washington Boulevard near the Metro Park-and-Ride lot driveway.
Arlington County has a policy that sidewalks must be provided on both sides of all arterial streets and at least one side of residential streets. With guidance from this policy, locations with missing sidewalks or sidewalks in the study area include the following:

- Washington Boulevard eastbound bridge section (both sides of the street)
- Washington Boulevard between bridge section and Metro Park-and-Ride lot driveway (south side of the street)
- Washington Boulevard Northwestbound between Lee Highway and 25th Street N. (west side of the street)

Locations in the study area with observed sidewalk deficiencies include the following:

- Lee Highway between Fairfax Drive and City of Falls Church Line – many driveway create conflicts between pedestrian and vehicles (north side of the street)
- Lee Highway between Washington Boulevard and N. Underwood Street – many driveway create conflicts between pedestrian and vehicles (south side of the street)

**On-street Parking Conditions**

On-street parking regulations in the study area vary. Residential permit-only parking regulations restrict non-residents from parking on most residential streets in the area. Curb spaces are generally not used by the residents during the day.
4. ANALYSIS OF FUTURE CONDITIONS WITHOUT DEVELOPMENT

HISTORIC AND PROJECTED TRAFFIC GROWTH

VDOT’s daily traffic volume publications as well as the MWCOG travel demand model were used to assess the future level of growth on study area streets. Table 4.1 summarizes data available from VDOT’s daily counts and MWCOG’s model forecasts for study area streets.

| Table 4.1: Summary of VDOT Daily Traffic Volumes and MWCOG Travel Forecasting Model Projections |
|---------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Lee Highway– Falls Church City Line to Washington Boulevard | 26,500 | 24,000 | -2.4% | 39,500 | 44,400 | 0.6% |
| Lee Highway– Washington Boulevard to Sycamore Street | 26,100 | 23,000 | -3.1% | 55,400 | 55,800 | 0.0% |
| Sycamore Street– 17th Street N. to Lee Highway | 22,100 | 22,000 | -0.1% | 39,700 | 43,100 | 0.4% |
| Sycamore Street– Lee Highway to 26th Street N. | 11,900 | 12,000 | 0.1% | 31,200 | 33,500 | 0.4% |
| Washington Boulevard & Fairfax Drive– Westmoreland Street to Lee Highway | 29,000 | 30,000 | 0.9% | 22,400 | 22,800 | 0.1% |
| Washington Boulevard– Lee Highway to Sycamore Street | 9,400 | 9,400 | 0.0% | 15,900 | 18,600 | 0.8% |
| Weighted Average Annual Change in Traffic | (2004 to 2008) | -0.88% | (2010 to 2030) | 0.34% |

*Volumes are shown in vehicles per day, rounded to the nearest hundred
**Average annual change in traffic weighted based on the daily traffic volume of the later year
Sources: VDOT Average Daily Traffic Volume Reports, 2004 and 2008
MWCOG Travel Forecasting Model loaded highway networks for future years 2010 and 2030

Review of VDOT daily traffic volumes shows zero or negative growth on study area arterials, with the exception of Washington Boulevard from Lee Highway to Sycamore Street and Fairfax Drive from Little Falls Road to Washington Boulevard. These two links connect the eastbound ramps of the split I-66 interchange in the study area and form a parallel route to eastbound I-66 between Westmoreland Street and Sycamore Street. Volumes on eastbound I-66 between Westmoreland Street and Sycamore Street have declined slightly over a similar time period.

MWCOG’s regional travel forecasting model projections show some that growth occurs on the study area roads of Lee Highway, Sycamore Street, and Washington Boulevard between 2010 and 2030. The average annual growth on these links, weighted based on 2030 volume projections, is 0.34 percent.
TRAFFIC VOLUMES

Future without development traffic volumes represent future traffic that would travel through the area intersections without the proposed development in East Falls Church. The future traffic volumes without development were developed by applying a growth factor to represent general traffic growth and by adding traffic generated by approved and unbuilt developments as described in the following.

**General Traffic Growth**—Based on VDOT daily traffic volumes and projected model daily traffic volumes, an annual growth rate of 0.34 percent was used to adjust Existing Year (2010) traffic volumes to the Build-out Year (2030). This results in a total growth of 7.0 percent over the 20-year period. The growth rate was not applied to local streets in the study area or to turning movements to and from local streets. The growth rate was applied to the following streets:

- Broad Street
- Fairfax Drive
- Lee Highway
- Little Falls Road
- Sycamore Street
- Washington Boulevard
- N. Washington Street
- I-66 Eastbound Ramps
- I-66 Westbound Ramps

The 2030 base traffic volumes at study intersections are shown in Figure 4.1 for the AM peak hour and Figure 4.2 for the PM peak hour.

**Approved and Unbuilt Development Vehicular Traffic**—There are developments in the East Falls Church study area that are currently approved, but are unbuilt. The traffic generated by these developments is not accounted for in the existing traffic volumes, but was assumed to be in place in the future year 2030. The approved and unbuilt developments included in this analysis are summarized in Table 4.2.

<table>
<thead>
<tr>
<th>Table 4.2: Approved and Unbuilt Developments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Development Name</strong></td>
</tr>
<tr>
<td>Rose/Westmoreland Residential</td>
</tr>
<tr>
<td>Tax Analyst Property</td>
</tr>
<tr>
<td>Falls Church City Center</td>
</tr>
<tr>
<td>Phase I</td>
</tr>
<tr>
<td>Phase II</td>
</tr>
<tr>
<td>Northgate at Falls Church</td>
</tr>
</tbody>
</table>

*ksf = 1000 square feet
PM Peak Hour Traffic Volumes

Legend

- Metrorail (Orange Line)
- County Line

Study Area

XX (XX) [XX] Existing (Growth) [2030 Base]

East Falls Church Land Use and Transportation Study
Arlington, VA

2030 Base PM Peak Hour Traffic Volumes
The locations of the developments are shown in Figure 4.3. The approved traffic impact studies for the approved and unbuilt developments were used to determine the number of vehicular trips generated by the developments. The vehicular trips generated by the approved and unbuilt developments are shown in Table 4.3. The traffic impact analysis trip generation sheets are in Appendix D.

<table>
<thead>
<tr>
<th>Development</th>
<th>AM Peak Hour</th>
<th></th>
<th></th>
<th>PM Peak Hour</th>
<th></th>
<th></th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>In</td>
<td>Out</td>
<td>Total</td>
<td>In</td>
<td>Out</td>
<td></td>
</tr>
<tr>
<td>Rose/Westmoreland Residential¹</td>
<td>44</td>
<td>10</td>
<td>34</td>
<td>72</td>
<td>43</td>
<td>29</td>
<td>790</td>
</tr>
<tr>
<td>Tax Analyst Property²</td>
<td>62</td>
<td>12</td>
<td>50</td>
<td>114</td>
<td>67</td>
<td>47</td>
<td>838</td>
</tr>
<tr>
<td>Falls Church City Center Phase I³</td>
<td>428</td>
<td>280</td>
<td>148</td>
<td>662</td>
<td>275</td>
<td>388</td>
<td>7,067</td>
</tr>
<tr>
<td>Falls Church City Center Phase II³</td>
<td>422</td>
<td>173</td>
<td>248</td>
<td>863</td>
<td>477</td>
<td>385</td>
<td>8,899</td>
</tr>
<tr>
<td>Northgate at Falls Church⁴</td>
<td>91</td>
<td>43</td>
<td>48</td>
<td>162</td>
<td>80</td>
<td>82</td>
<td>1,807</td>
</tr>
<tr>
<td>Total</td>
<td>1,047</td>
<td>518</td>
<td>528</td>
<td>1,873</td>
<td>942</td>
<td>931</td>
<td>19,401</td>
</tr>
</tbody>
</table>

¹ Assumes 40% non-auto mode split for residential, 15% non-auto mode split for retail, and 10% non-auto mode split for office
² Assumes 40% non-auto mode split for residential and 15% non-auto mode split for retail
³ Assumes 5% transit reduction for all uses, 5% pass-by reduction for retail, and internal capture as calculated using the ITE Trip Generation Manual methodology
⁴ Assumes 5% transit reduction for residential and 2% pass-by reduction for retail


The vehicular trips generated by the approved and unbuilt developments were assigned to the study area links and intersections based on the assignments in the traffic impact studies for each development. The total approved and unbuilt development trips at study intersections are shown in Figure 4.4 for the AM peak hour and Figure 4.5 for the PM peak hour. The vehicular trip assignment figures from each traffic impact study are provided in Appendix D.

**Future without Development Traffic Volumes** – Future without development traffic volumes were calculated by adding the vehicular trips generated by approved and unbuilt developments to 2030 base traffic volumes. The future without development traffic volumes at study intersections are shown in Figure 4.4 for the AM peak hour and Figure 4.5 for the PM peak hour.
ANALYSIS OF FUTURE CONDITIONS WITHOUT DEVELOPMENT

Intersection capacity and V/C ratio analyses were conducted for future traffic volumes without development at study intersections. Existing intersection laneage and traffic control at study area intersections were used in the analysis, except for the following transportation improvements:

- I-66 Spot improvements for the On-ramp to Westbound I-66 at Washington Boulevard
  - Two lanes on the ramp
  - Intersection of Washington Boulevard and the I-66 On-ramp modified to provide a left turn lane, a shared left-through lane, and a through lane
- Traffic signal at the fire station driveway modified to serve Gresham Place as described in the Northgate at Falls Church Development section of Chapter 2

**Intersection Capacity Analysis**

Intersection capacity analysis was performed using existing signalized intersection phasing and timings. The results of the capacity analyses are summarized in Table 4.4. Analysis results show overall level of service and delay information for each intersection for the existing and future without development traffic volumes. Figure 4.6 shows level of service by lane group. The Synchro HCM reports are contained in Appendix E.
<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Conditions</th>
<th>2030 Future Conditions without Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Washington Street and Broad Street</td>
<td>D (37) / C (32)</td>
<td>E (56) / E (60)</td>
</tr>
<tr>
<td>2. Washington Street and Park Avenue</td>
<td>A (8) / B (12)</td>
<td>A (9) / B (18)</td>
</tr>
<tr>
<td>3. Washington Street and Great Falls Street</td>
<td>B (10) / A (4)</td>
<td>A (8) / A (3)</td>
</tr>
<tr>
<td>5. Washington Street and Jefferson Street</td>
<td>A (1) / A (1)</td>
<td>A (3) / A (2)</td>
</tr>
<tr>
<td>6. Washington Street /Lee Highway and Gresham Place</td>
<td>A (3) / A (1)</td>
<td>A (7) / A (6)</td>
</tr>
<tr>
<td>7. Lee Highway and Westmoreland Street</td>
<td>A (7) / D (50)</td>
<td>B (12) / F (186)</td>
</tr>
<tr>
<td>9. Fairfax Drive/25th Street N. and Washington Boulevard</td>
<td>A (2) / A (2)</td>
<td>A (2) / A (3)</td>
</tr>
<tr>
<td>10. Lee Highway and Washington Boulevard</td>
<td>C (26) / C (22)</td>
<td>D (41) / C (27)</td>
</tr>
<tr>
<td>11. Lee Highway and Underwood Street</td>
<td>A (4) / A (1)</td>
<td>A (4) / A (1)</td>
</tr>
<tr>
<td>12. Lee Highway and Sycamore Street</td>
<td>C (22) / C (20)</td>
<td>C (24) / C (21)</td>
</tr>
<tr>
<td>13. 22nd Street N. and Sycamore Street</td>
<td>A (3) / A (1)</td>
<td>A (3) / A (1)</td>
</tr>
<tr>
<td>14. Washington Boulevard and Sycamore Street</td>
<td>D (41) / C (33)</td>
<td>D (42) / C (36)</td>
</tr>
<tr>
<td>16. 19th Street N./I-66 On-Ramp and Sycamore Street</td>
<td>C (24) / B (12)</td>
<td>C (28) / B (14)</td>
</tr>
<tr>
<td>17. Washington Boulevard and Metro Park-and-Ride Lot</td>
<td>A (1) / A (7)</td>
<td>A (1) / B (11)</td>
</tr>
</tbody>
</table>

* LOS (seconds of delay) AM/PM Peak Hour  
Source: Kimley-Horn and Associates, Inc.

Under Future conditions without development, the intersection of Washington Street and Broad Street (Intersection 1) operates at LOS E in the AM and PM peak hours. The intersection of Lee Highway and Westmoreland Street (Intersection 7) is forecast to operate at LOS F during the PM peak hour. The LOS can be attributed to westbound left-turn movement delays. The westbound left-turn also delays westbound through traffic because a westbound left turn lane is not provided. The intersection of Washington Boulevard westbound and the I-66 On-Ramp (Intersection 9a) continues to operate at LOS F in the AM peak hour. The intersection of Lee Highway and Washington Boulevard (Intersection 10) is affected by increased traffic volumes and will operate at LOS D in the AM peak hour. All other intersections operate at overall LOS D or better. Some movements operate at less than LOS D under future conditions without development.
**Link Volume-to-Capacity**

The results of the link v/c ratio analyses are summarized in Table 4.5.

<table>
<thead>
<tr>
<th>Link</th>
<th>2010 Existing Conditions</th>
<th>2030 Future Conditions without Development*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Street— Broad Street to Arlington County Line</td>
<td>0.50 (0.63)</td>
<td>0.61 (0.76)</td>
</tr>
<tr>
<td>Lee Highway— Falls Church City Line to Fairfax Drive/Washington Boulevard</td>
<td>0.28 (0.79)</td>
<td>0.56 (1.14)</td>
</tr>
<tr>
<td>Lee Highway— Washington Boulevard to Sycamore Street</td>
<td>0.47 (0.40)</td>
<td>0.54 (0.52)</td>
</tr>
<tr>
<td>Sycamore Street— Lee Highway to Washington Boulevard</td>
<td>0.41 (0.27)</td>
<td>0.43 (0.29)</td>
</tr>
<tr>
<td>Sycamore Street— Washington Boulevard to 19th Street</td>
<td>0.49 (0.32)</td>
<td>0.54 (0.36)</td>
</tr>
<tr>
<td>Washington Boulevard— Lee Highway to Sycamore Street</td>
<td>0.73 (0.66)</td>
<td>0.81 (0.74)</td>
</tr>
<tr>
<td>Washington Boulevard Westbound— Lee Highway to I-66 West On-Ramp</td>
<td>1.10 (0.71)</td>
<td>1.12 (0.72)</td>
</tr>
</tbody>
</table>

* AM peak hour V/C ratio (PM peak hour V/C ratio)
Source: Kimley-Horn and Associates, Inc.

Under future conditions without development, the V/C ratios on study links generally increase. Lee Highway between the Falls Church city line and Fairfax Drive/Washington Boulevard is forecast to operate at a V/C ratio of 1.14 under future conditions without development. Westbound Washington Boulevard will continue to operate at a V/C ratio of greater than 1.0.

**Multimodal Conditions**

Pedestrian, bicycle, and transit travel were not analyzed for future conditions without development.
5. SITE TRIP GENERATION

This chapter summarizes the methodology used to develop traffic forecasts for the proposed development in East Falls Church. The forecast process consisted of the following steps:

- Person trips were generated for each proposed development site contained in the plan
- Mode splits were developed
- Person trips were assigned to specific modes of travel
- Vehicular trips were assigned to study intersections

The following sections describe each part of the forecast development process.

PERSON TRIP GENERATION

Land uses for each proposed development site in the study area are provided in the plan. The land uses contained in the final East Falls Church Area Plan may vary slightly from those analyzed; however, the proposed development in the plan will be within an order of magnitude of the overall density analyzed in this study. A summary of the future land use information studied is shown in Table 5.1.

The Institute of Transportation Engineers (ITE) *Trip Generation Report, 8th Edition* (ITE report) summarizes data collected at thousands of developments of various types and sizes related to the number of trips entering and exiting the sites. Much of the data in the ITE report was collected in suburban areas and at developments with a single land use. For this study, the trips generated using the ITE report are considered to be person trips and adjustments are made to account for mixed use development and urban conditions with a consequential mode split.

Weekday daily, AM peak hour, and PM peak hour person trips are generated for each proposed development site using rates provided in the ITE Report. The following land use codes were applied:

- General Retail: ITE Land Use Code 820 (Shopping Center)
- Residential flat: ITE Land Use Code 230 (Apartment)
- Townhome: ITE Land Use Code 230 (Condo/Townhouse)
- Specialty Retail: ITE Land Use Code 814 (Specialty Retail)

Table 5.1 summarizes the peak hour and daily person trips generated by the proposed East Falls Church development.
<table>
<thead>
<tr>
<th>Site</th>
<th>Land Use</th>
<th>Daily</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>A/B</td>
<td>Residential Flat</td>
<td>1,197</td>
<td>92</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>2,969</td>
<td>45</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site A</strong></td>
<td>4,166</td>
<td>137</td>
<td>43</td>
</tr>
<tr>
<td>C</td>
<td>Residential Flat</td>
<td>439</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>377</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site C</strong></td>
<td>816</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>Residential Flat</td>
<td>379</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>399</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site D</strong></td>
<td>778</td>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>E</td>
<td>Residential Flat</td>
<td>638</td>
<td>49</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>665</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site E</strong></td>
<td>1,303</td>
<td>59</td>
<td>16</td>
</tr>
<tr>
<td>F</td>
<td>Townhouse</td>
<td>168</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site F</strong></td>
<td>168</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>G1</td>
<td>Townhouse</td>
<td>52</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site G</strong></td>
<td>52</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>H</td>
<td>Townhouse</td>
<td>23</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site H</strong></td>
<td>23</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>General Retail</td>
<td>920</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site I</strong></td>
<td>920</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>M1</td>
<td>Residential Flat</td>
<td>2,328</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>General Retail</td>
<td>4090</td>
<td>40</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>503</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site M1</strong></td>
<td>6,921</td>
<td>227</td>
<td>64</td>
</tr>
<tr>
<td>M2</td>
<td>Residential Flat</td>
<td>273</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site M2</strong></td>
<td>273</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL PROPOSED DEVELOPMENT</td>
<td>15,420</td>
<td>547</td>
<td>154</td>
<td>393</td>
</tr>
</tbody>
</table>
MODE CHOICE ASSUMPTIONS

To accurately represent the anticipated trip-making patterns associated with the proposed development in East Falls Church, assumptions were developed to assign person trips to transit, walking, bicycling, and vehicular modes. Assumptions were based on local, regional, and national experience and evidence at similar scale redevelopment projects in like contexts. Specifically, WMATA’s 2005 Development-Related Ridership Survey and the MWCOG 2008 Household Transportation Survey for the metropolitan area in general and the Rosslyn-Ballston corridor of Arlington County in particular were consulted. Generally guiding the development of travel mode choice assumptions were the following:

- The Distance to Station metric from WMATA was considered in the development of mode split assumptions since the East Falls Church study area represents an “average” location of those surveyed in the WMATA study. The WMATA study documented location typologies of central business district (CBD), Inside the Beltway, and Outside the Beltway.
- Rosslyn-Ballston corridor data from the Household Transportation Survey was used because the proposed East Falls Church Area Plan is intended to promote and create travel characteristics similar to those exhibited in the Rosslyn-Ballston corridor for development in East Falls Church.
- The majority of proposed residential development will be multi-family and will be neighborhood-scale and pedestrian-oriented.
- Retail development will be neighborhood- and pedestrian-focused and designed to generate minimal auto model share.
- County policies encourage mode choice through the TDM program.
- The proposed development is proximate to an existing Metrorail station and will have high-quality access to the station and to future transit options that will consist of two Metrorail lines, I-66 BRT, and bus transit.
- The plan includes significant recommendations to dramatically improve bicycle and pedestrian accommodation in the East Falls Church area.
- Local and regional vehicular transportation networks have a finite car-carrying capacity.

Based on the available data, factors were developed to reflect the desirability of walking, bicycling, and taking transit to make the trips generated by the proposed development. Logic and data suggest that the proposed sites closest to transit will have the highest rate of transit use. The general assumptions for mode splits are shown in Table 5.2.

The location of each development site, site access, and distance from the proposed Metrorail station is shown in Figure 5.1. The mode splits were applied to the total person trips for each development site. Table 5.3 shows the resulting vehicle trips by site.
### Table 5.2: Proposed Trip Generation Mode Split Assumptions

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Transit – Metrorail*</th>
<th>Transit – Bus</th>
<th>Pedestrian and Bicycle</th>
<th>Auto</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (adjacent to transit station)</td>
<td>54%</td>
<td>1%</td>
<td>16%</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>Residential (within 1/4 mile of transit station)</td>
<td>48%</td>
<td>1%</td>
<td>15%</td>
<td>41%</td>
<td>100%</td>
</tr>
<tr>
<td>Residential (within 1/4 to 1/2 mile of transit station)</td>
<td>31%</td>
<td>5%</td>
<td>10%</td>
<td>54%</td>
<td>100%</td>
</tr>
<tr>
<td>Retail (specialty)</td>
<td>29%</td>
<td>8%</td>
<td>45%</td>
<td>18%</td>
<td>100%</td>
</tr>
<tr>
<td>Retail (mid-box format)</td>
<td>29%</td>
<td>8%</td>
<td>27%</td>
<td>36%</td>
<td>100%</td>
</tr>
</tbody>
</table>


### Table 5.3: Vehicle Trips Generated by Proposed Development

<table>
<thead>
<tr>
<th>Site (Distance to Metro)</th>
<th>Land Use</th>
<th>Percent of Person Trips</th>
<th>Daily</th>
<th>AM Peak Hour</th>
<th>Total</th>
<th>In</th>
<th>Out</th>
<th>PM Peak Hour</th>
<th>Total</th>
<th>In</th>
<th>Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/B (1/4 mile)</td>
<td>Residential Flat</td>
<td>41%</td>
<td>491</td>
<td>38</td>
<td>7</td>
<td>31</td>
<td>46</td>
<td>30</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>18%</td>
<td>534</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>33</td>
<td>14</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site A</strong></td>
<td><strong>1,025</strong></td>
<td></td>
<td><strong>46</strong></td>
<td><strong>12</strong></td>
<td><strong>34</strong></td>
<td><strong>79</strong></td>
<td><strong>44</strong></td>
<td><strong>35</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C (1/4 mile)</td>
<td>Residential Flat</td>
<td>41%</td>
<td>180</td>
<td>14</td>
<td>3</td>
<td>11</td>
<td>17</td>
<td>11</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>18%</td>
<td>68</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site C</strong></td>
<td><strong>248</strong></td>
<td></td>
<td><strong>15</strong></td>
<td><strong>4</strong></td>
<td><strong>11</strong></td>
<td><strong>21</strong></td>
<td><strong>13</strong></td>
<td><strong>8</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D (1/4 mile)</td>
<td>Residential Flat</td>
<td>41%</td>
<td>155</td>
<td>12</td>
<td>2</td>
<td>10</td>
<td>14</td>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>18%</td>
<td>72</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site D</strong></td>
<td><strong>227</strong></td>
<td></td>
<td><strong>13</strong></td>
<td><strong>3</strong></td>
<td><strong>10</strong></td>
<td><strong>18</strong></td>
<td><strong>11</strong></td>
<td><strong>7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E (1/4 mile)</td>
<td>Residential Flat</td>
<td>41%</td>
<td>262</td>
<td>20</td>
<td>4</td>
<td>16</td>
<td>25</td>
<td>16</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>18%</td>
<td>120</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>4</td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site E</strong></td>
<td><strong>382</strong></td>
<td></td>
<td><strong>22</strong></td>
<td><strong>5</strong></td>
<td><strong>17</strong></td>
<td><strong>32</strong></td>
<td><strong>19</strong></td>
<td><strong>13</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F (1/4 mile)</td>
<td>Townhouse</td>
<td>41%</td>
<td>69</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site F</strong></td>
<td><strong>69</strong></td>
<td></td>
<td><strong>5</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>6</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1 (1/4 mile)</td>
<td>Townhouse</td>
<td>41%</td>
<td>21</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site G</strong></td>
<td><strong>21</strong></td>
<td></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H (1/4 mile)</td>
<td>Townhouse</td>
<td>41%</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site H</strong></td>
<td><strong>9</strong></td>
<td></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I (1/2 mile)</td>
<td>General Retail</td>
<td>36%</td>
<td>331</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site I</strong></td>
<td><strong>331</strong></td>
<td></td>
<td><strong>3</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td><strong>12</strong></td>
<td><strong>6</strong></td>
<td><strong>6</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1 (0 miles)</td>
<td>Residential Flat</td>
<td>25%</td>
<td>582</td>
<td>44</td>
<td>10</td>
<td>34</td>
<td>55</td>
<td>36</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Retail</td>
<td>36%</td>
<td>1472</td>
<td>14</td>
<td>9</td>
<td>5</td>
<td>54</td>
<td>26</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specialty Retail</td>
<td>18%</td>
<td>91</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site M1</strong></td>
<td><strong>2,145</strong></td>
<td></td>
<td><strong>60</strong></td>
<td><strong>19</strong></td>
<td><strong>41</strong></td>
<td><strong>114</strong></td>
<td><strong>64</strong></td>
<td><strong>50</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 (0 miles)</td>
<td>Residential Flat</td>
<td>25%</td>
<td>68</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal Site M2</strong></td>
<td><strong>68</strong></td>
<td></td>
<td><strong>5</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>6</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL PROPOSED DEVELOPMENT</strong></td>
<td></td>
<td></td>
<td>4,525</td>
<td>172</td>
<td>47</td>
<td>125</td>
<td>291</td>
<td>166</td>
<td>125</td>
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<td></td>
</tr>
</tbody>
</table>
6. SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Vehicle trips were assigned to the study area street network based on existing traffic patterns in the area for residential and commercial trips. The distributions are summarized in Table 6.1 and are shown on the area road network in Figure 6.1 and Figure 6.2 for residential and retail respectively.

<table>
<thead>
<tr>
<th>Direction To/From</th>
<th>Residential Percentage</th>
<th>Retail Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>To/From North on Sycamore Street</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>To/From Northeast on Lee Highway</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>To/From East on Washington Boulevard</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>To/From East on I-66</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>To/From South on Sycamore Street/Roosevelt Street</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>To/From South on E. Broad Street</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>To/From Southwest on N. Washington Street</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>To/From West on W. Broad Street</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>To/From Northwest on Great Falls Street</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>To/From West on Fairfax Drive/Lincoln Avenue</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>To/From West on I-66</td>
<td>20%</td>
<td>4%</td>
</tr>
<tr>
<td>To/From North on Westmoreland Street</td>
<td>1%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Vehicle trips were assigned to study area streets and intersections based on the most likely route(s) a vehicle would use to travel from a site access point to an external (to the study area) destination. The assignment of the peak hour site generated traffic volumes at study intersections is shown on Figure 7.1 for the AM peak hour and Figure 7.2 for the PM peak hour.
7. ANALYSIS OF FUTURE CONDITIONS WITH DEVELOPMENT

FUTURE WITH DEVELOPMENT TRAFFIC VOLUMES

Future traffic volumes with development represent future traffic volumes with the proposed East Falls Church development in place. Future traffic volumes with development were calculated by adding the site generated traffic volumes to the future traffic volumes without development. The resulting future traffic volumes with development at study intersections are shown on Figure 7.1 for the AM peak hour and Figure 7.2 for the PM peak hour.

No reductions in traffic volumes were taken to account for the existing development that will be removed from the proposed development sites when the proposed redevelopment occurs.

ANALYSIS OF FUTURE CONDITIONS WITH DEVELOPMENT

Intersection capacity and V/C ratio analyses were conducted for future traffic volumes without development at study intersections. Intersection laneage and traffic control used for the analysis are the same as those used in the future condition without development. Recommended improvements are analyzed as a part of Chapter 8 of this study.

Intersection Capacity Analysis

The results of the capacity analyses are summarized in Table 7.1. Analysis results show overall level of service and delay information for each intersection. Figure 7.3 shows level of service by lane group. The Synchro HCM reports are contained in Appendix F.
<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Conditions</th>
<th>2030 Future Conditions without Development</th>
<th>2030 Future Conditions with Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Washington Street and Broad Street</td>
<td>D (37) / C (32)</td>
<td>E (56) / E (60)</td>
<td>E (57) / E (63)</td>
</tr>
<tr>
<td>2. Washington Street and Park Avenue</td>
<td>A (8) / B (12)</td>
<td>A (9) / B (18)</td>
<td>A (9) / B (19)</td>
</tr>
<tr>
<td>3. Washington Street and Great Falls Street</td>
<td>B (10) / A (4)</td>
<td>A (8) / A (3)</td>
<td>A (8) / A (3)</td>
</tr>
<tr>
<td>5. Washington Street and Jefferson Street</td>
<td>A (1) / A (1)</td>
<td>A (3) / A (2)</td>
<td>A (3) / A (2)</td>
</tr>
<tr>
<td>6. Washington Street /Lee Highway and Gresham Place</td>
<td>A (3) / A (1)</td>
<td>A (7) / A (6)</td>
<td>A (7) / A (6)</td>
</tr>
<tr>
<td>7. Lee Highway and Westmoreland Street</td>
<td>A (7) / D (50)</td>
<td>B (12) / F (186)</td>
<td>B (14) / F (216)</td>
</tr>
<tr>
<td>9. Fairfax Drive/25th Street N. and Washington Boulevard</td>
<td>A (2) / A (2)</td>
<td>A (2) / A (3)</td>
<td>A (2) / A (3)</td>
</tr>
<tr>
<td>11. Lee Highway and Underwood Street</td>
<td>A (4) / A (1)</td>
<td>A (4) / A (1)</td>
<td>A (5) / A (2)</td>
</tr>
<tr>
<td>12. Lee Highway and Sycamore Street</td>
<td>C (22) / C (20)</td>
<td>C (24) / C (21)</td>
<td>C (24) / C (22)</td>
</tr>
<tr>
<td>13. 22nd Street N. and Sycamore Street</td>
<td>A (3) / A (1)</td>
<td>A (3) / A (1)</td>
<td>A (3) / A (1)</td>
</tr>
<tr>
<td>17. Washington Boulevard and Metro Park-and-Ride Lot</td>
<td>A (1) / A (7)</td>
<td>A (1) / B (11)</td>
<td>A (8) / F (257)</td>
</tr>
</tbody>
</table>

* LOS (seconds of delay) AM/PM Peak Hour
Source: Kimley-Horn and Associates, Inc.

Under future conditions with development the intersection of Washington Street and Broad Street (Intersection 1) is forecast to continue to operate at LOS E in the AM and PM peak hours, with minor increases in overall intersection delay. The intersection of Lee Highway and Westmoreland Street (Intersection 7) is forecast to continue to operate at LOS F in the PM peak hour. This LOS can be attributed to the lack of a westbound left-turn lane at the intersection. The intersection of Washington Boulevard and the I-66 On-Ramp (Intersection 9a) also is forecast to continue to operate at LOS F in the AM peak hour. With the proposed development complete, the intersection of Washington Boulevard and the Metro Park-and-Ride lot (future M1 site driveway, Intersection 17) is forecast to operate at LOS F in the PM peak hour. All other intersections operate at overall LOS D or better. Some movements operate at less than LOS D under future conditions with development.
**Link V/C Ratio**

Table 7.2 shows the peak hour link V/C ratios for future conditions with development.

<table>
<thead>
<tr>
<th>Link</th>
<th>2010 Existing Conditions</th>
<th>2030 Future Conditions without Development</th>
<th>2030 Future Conditions with Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Street— Broad Street to Arlington County Line</td>
<td>0.50 (0.63)</td>
<td>0.61 (0.76)</td>
<td>0.64 (0.90)</td>
</tr>
<tr>
<td>Lee Highway— Falls Church City Line to Fairfax Drive/Washington Boulevard</td>
<td>0.28 (0.79)</td>
<td>0.56 (1.14)</td>
<td>0.60 (1.21)</td>
</tr>
<tr>
<td>Lee Highway— Washington Boulevard to Sycamore Street</td>
<td>0.47 (0.40)</td>
<td>0.54 (0.52)</td>
<td>0.57 (0.54)</td>
</tr>
<tr>
<td>Sycamore Street— Lee Highway to Washington Boulevard</td>
<td>0.41 (0.27)</td>
<td>0.43 (0.29)</td>
<td>0.43 (0.29)</td>
</tr>
<tr>
<td>Sycamore Street— Washington Boulevard to 19th Street</td>
<td>0.49 (0.32)</td>
<td>0.54 (0.36)</td>
<td>0.54 (0.54)</td>
</tr>
<tr>
<td>Washington Boulevard— Lee Highway to Sycamore Street</td>
<td>0.73 (0.66)</td>
<td>0.81 (0.74)</td>
<td>0.83 (0.77)</td>
</tr>
<tr>
<td>Washington Boulevard Westbound— Lee Highway to I-66 West On-Ramp</td>
<td>1.10 (0.71)</td>
<td>1.12 (0.72)</td>
<td>1.19 (0.77)</td>
</tr>
</tbody>
</table>

* AM peak hour V/C ratio (PM peak hour V/C ratio)

Source: Kimley-Horn and Associates, Inc.

Under future conditions with development the study link of Washington Street between Broad Street and the Arlington County Line is forecast to operate at a V/C ratio of 0.90. The study link of Lee Highway between the Falls Church city line and Fairfax Drive/ Washington Boulevard is forecast to operate at a V/C ratio of 1.21.

**Multimodal Conditions**

Pedestrian, bicycle, and transit travel were not analyzed for future conditions with development.
8. RECOMMENDED IMPROVEMENTS

This chapter presents multimodal transportation recommendations in support of proposed East Falls Church development. Future multimodal transportation improvements coupled with existing Arlington County transportation policy are anticipated to allow the proposed development to meet goals for mode split that were used in forecasting traffic generated by the proposed development. Transportation recommendations in this chapter are organized in the following sections:

- **Transportation Demand Management (TDM).** Policies, strategies, and programs consistent with County policy to promote and encourage transportation choice.
- **Corridor Recommendations.** General street recommendations to improve accommodation of all modes of transportation (pedestrians, bicyclists, transit, and vehicles).
- **Intersection Recommendations.** Intersection modifications to improve operation and safety for all modes.
- **Neighborhood Traffic Calming.** County policy that provides a methodology to address, analyze, and mitigate the effect of traffic on local streets with measures aimed at reducing vehicle speeds and increasing safety.
- **Transit.** Recommendations for the future transit services and locations of new or modified facilities to improve access to, and between transit services.
- **Bicycles and Pedestrians.** Locations of new and modified facilities to improve connectivity and accommodation.
- **Parking.** Curb space management guidelines, parking requirements, and other programs and policies to manage parking demand.

Following the discussion on proposed transportation recommendations, analyses of traffic impacts with the proposed recommendations are presented.

**TRANSPORTATION DEMAND MANAGEMENT**

TDM can provide significant benefit in the support of existing and proposed development in East Falls Church. With strategic implementation, TDM can help to reduce the attractiveness of making single-occupant vehicle trips, within, to, and from East Falls Church.

In Arlington, TDM is a set of guiding principles underlying Arlington’s development policy and a set of services provided by Arlington County Commuter Services (ACCS). Together the principles and services encourage less dependence on the automobile. TDM in Arlington includes the promotion of mass transit, walking, bicycling, carpooling, car sharing, and telecommuting to reduce demand for vehicular travel, lessen congestion and air pollution, and improve travel choice and accessibility. ACCS influences travel demand by supporting a wide array of convenient alternatives to single-occupant vehicle (SOV) and peak-hour travel, as well as providing information and incentives for their use. Collectively ACCS services
reinforce Arlington’s commitment to reducing traffic congestion by planning for people rather than vehicles.

This study recommends that TDM policies for East Falls Church be consistent with countywide TDM policies outlined in the most recent version of the Arlington County Master Transportation Plan (MTP). Relevant 2009 MTP TDM recommendations for the proposed development in East Falls Church are the following:

- **Policy 1:** Incorporate comprehensive TDM plans for all site plans and use-permit developments to minimize vehicular trips and maximize the use of other travel options.
- **Policy 2:** Incorporate TDM measures with respect to all existing public buildings and facilities, irrespective of redevelopment status. Explore strategies and incentives to achieve TDM measures in existing private buildings.
- **Policy 3:** Require regular travel surveys of new development with TDM plans and link to performance measures to enable follow-up actions. Undertake biennial evaluations of the effectiveness of the County’s TDM policies and private-sector compliance with TDM commitments, and implement revisions as warranted.
- **Policy 5:** Apply TDM programs to non-work travel, as well as commuting, for resident, visitor and employee trips through informational displays, website, promotional campaigns and mailings of materials.

Recommended TDM measures coinciding with the policies listed above may include the following:

- **Enhanced Arlington SmarTrip (Universal Transit Pass).** Passes that typically provide unlimited rides on all local or regional transit services for low monthly fees, which are often absorbed entirely by the employer, school, or developer. Universal transit passes reduce the cost of transit for the user and may increase transit ridership.
- **Ride Sharing.** Ride matching services help motorists identify potential driving companions and encompasses carpooling and vanpooling. Providing parking in a preferred location or at a reduced price encourages ride sharing and may reduce single-occupant vehicle use.
- **Car Sharing.** Hourly car rental for members, car sharing cars are dispersed throughout an urban area at convenient centralized locations. In East Falls Church, car sharing cars could be located at the Metrorail station and near proposed retail or multifamily residential development. Shared cars allow residents to forego car ownership and allow employees to have access to a vehicle without commuting in one.

**CORRIDOR RECOMMENDATIONS**

All arterial streets are recommended to generally accommodate some or all of the following elements:
- Sidewalks on both sides of arterials, 6-foot wide minimum (clear width for sidewalks, exclusive of 2-foot building shy zone)
- Sidewalk on at least one side of local streets, 5-foot wide minimum
- Sidewalk buffers (clear zone or tree/furniture zone)
- 5-foot minimum width utility/landscape zone
- 6-foot wide bicycle lanes (may include 1–1/2 feet of gutter pan)
- 11-foot wide outer travel lanes for Arlington County-maintained streets (may include 1–1/2 feet of gutter pan)
- 10- to 11-foot wide additional travel lanes for Arlington County-maintained streets
- 11-foot wide lanes on VDOT-maintained roads
- 7-foot wide parallel parking lanes (includes 1–1/2 feet of gutter pan)
- Left-turn lanes at major intersections

Recommendations for specific corridors in the study area are illustrated and explained in further detail in the East Falls Church Area Plan. Summaries of specific elements recommended for arterials are as follows:

**Lee Highway from the Falls Church City Line to Fairfax Drive/Washington Boulevard**
- Raised-curb median or left-turn lane at intersections
- Striped bicycle lane in each direction
- Streetscape to provide increased or improved pedestrian space
- Recommended modifications will require additional right-of-way that is planned to be provided with the redevelopment of sites A, B and C

**Lee Highway from Washington Boulevard to Sycamore Street**
- Existing striped median replaced with a raised-curb median or left-turn lane at intersections (southwest of Underwood Street)
- Reconfiguration of existing striped median (northeast of Underwood Street)
- Striped bicycle lane in each direction
- Streetscape to provide increased or improved pedestrian space
- On Recommended modifications will require additional right-of-way in some locations southwest of Underwood Street that is planned to be provided with the redevelopment of sites D, E, and F

**Sycamore Street between Washington Boulevard and 19th Street**
- Striped bicycle lane in each direction (excluding section under I-66 bridge)
- On-street parking between Washington Boulevard on and the bus facility driveway in the southbound direction
- Streetscape to provide increased or improved pedestrian space

**Sycamore Street between Lee Highway and Washington Boulevard**
- Removal of one vehicular travel lane in the northbound direction
- Removal of one vehicular travel lane in the southbound direction (north of 22nd Street N.)
- Striped bicycle lane in each direction
- Streetscape to provide increased or improved pedestrian space
**Washington Boulevard west of Sycamore Street (two-way)**
- Striped bicycle lane in each direction
- On-street parking between the Washington Boulevard Bridge and Sycamore Street in the eastbound direction
- Left-turn lane in each direction at the Metro Park-and-Ride lot driveway (future Site M1 driveway)
- Streetscape to provide increased or improved pedestrian space
- Recommended modifications will require additional right-of-way that is planned to be provided with the redevelopment of site M1

**Washington Boulevard Eastbound, east of Lee Highway**
- Minimum of 30-feet of space on the south side of the street adjacent to the future second Metrorail station entrance to be used as needed for the Metro Plaza (pedestrian zone), bus layover lane, and kiss-and-ride function
- Striped bicycle lane in the eastbound direction, east of the Metro Plaza
- Sidewalk in the eastbound direction

**Washington Boulevard Westbound east of Lee Highway**
- Striped bicycle lane in the westbound direction
- Streetscape to provide increased or improved pedestrian space
- Recommended modifications will require additional right-of-way that is planned to be provided with the redevelopment of site E

**Washington Boulevard Northwestbound between Lee Highway and Westmoreland Street**
- Striped bicycle lane in the northwestbound direction
- Removal of one vehicular travel lane in the northwestbound direction north of the I-66 On-Ramp
- Streetscape to provide increased or improved pedestrian space
- Recommended modifications may require additional right-of-way. The property owner on the west side of Washington Boulevard is VDOT (I-66 right-of-way)

**INTERSECTION RECOMMENDATIONS**

Intersection recommendations are generally intended to improve pedestrian and bicycle access at intersections, improve vehicular capacity without adding additional lanes, and to improve safety for all modes of transportation. All signalized intersections are generally recommended to include the following:

- Pedestrian count-down heads and push-buttons
- Bicycle detectors where bicycle lanes are provided
- High-visibility crosswalk markings
- Appropriate curb radii and ADA-compliant curb ramps
- Curb extensions where appropriate to shadow on-street parking and reduce crosswalk distances at intersections
- Median pedestrian refuges on streets generally wider than 60 feet, curb to curb
Recommendations for study intersections are illustrated and explained in further detail in the East Falls Church Area Plan. Summaries of recommendations for selected intersections are as follows:

**N. Sycamore Street/19th Street N./I-66 On-Ramp**
- Removal of the southbound (N. Sycamore Street) right-turn lane
- Modification of the existing trail terminus to intersect at the southeast corner of the intersection

**N. Sycamore Street/Metro Bus facility/I-66 Off-Ramp**
- Reconfigured westbound (I-66 Off-Ramp) right-turn lane (remove free right-turn)
- Improved refuge median on the north (N. Sycamore Street) leg of the intersection
- Reconfigured Metrobus facility driveway to reduce pedestrian conflicts

**N. Sycamore Street/Washington Boulevard**
- Removal of the southbound (N. Sycamore Street) and eastbound (Washington Boulevard) right-turn lanes
- Reassignment of the laneage on the northbound (N. Sycamore Street) approach to provide dual left-turn lanes, a single through lane, and a right-turn lane
- Concurrent signal phasing for the northbound and southbound (N. Sycamore Street) directions
- Improved refuge medians on the north and south (N. Sycamore Street) legs of the intersection

**N. Sycamore Street/Lee Highway**
- Removal of one through lane in the northbound (N. Sycamore Street) and southbound (N. Sycamore Street) directions
- Removal of merge lanes on N. Sycamore Street
- Improved refuge islands on the northeast and southwest corners of the intersection to create curbless pedestrian crossings

**Lee Highway/Gresham Place**
- Trail crossing between the fire station driveway and Gresham Place

**Lee Highway/Westmoreland Street**
- Left-turn lanes in the both directions of Lee Highway

**Lee Highway/Fairfax Drive/Washington Boulevard Eastbound**
- Closure of Old Fairfax Drive driveway on the southeast corner of the intersection
- Enhanced landscaped median on the south (Lee Highway) leg of the intersection
- Realignment of W&OD trail at the southwest and southeast corners of the intersection
- Trail crossing (for new trail along Four Mile Run) on south (Lee Highway) leg of the intersection
Lee Highway/Washington Boulevard Westbound
- Raised-curb median refuge island on the north leg (Lee Highway) of the intersection

Washington Boulevard Westbound/25th Street N./I-66 On-Ramp
- Removal of the northbound (Washington Boulevard) left-turn lane at 25th Street N. intersection
- Two northbound (Washington Boulevard) left-turn lanes to the I-66 On-Ramp intersection and two lanes on the ramp
- One northbound through lane (Washington Boulevard toward Westmoreland Street) at the I-66 On-Ramp intersection
- Coordination of improvement with VDOT’s Spot Improvement project

Washington Boulevard Westbound/Westmoreland Street
- Realignment of Washington Boulevard’s terminus
- Left- and right-turn lanes on Washington Boulevard in westbound direction

Washington Boulevard and Future Site M1 Driveway (Existing Metrorail Park and Ride Lot Driveway)
- New traffic signal at the intersection after consideration of the following:
  - Appropriate traffic signal warrants as described in the Manual on Uniform Traffic Control Devices
  - Results of an engineering study demonstrating the need for the signal and studying its overall impacts to traffic flow on Washington Boulevard and intersecting roadways
- Left-turn lanes on Washington Boulevard
- Note: The traffic signal proposed for this location would not meet minimum spacing standards identified in VDOT’s Road Design Manual for Arterial Streets; however, it does meet minimum spacing criteria for Collector Streets. The installation of a signal at this intersection would require an exception to access management regulations.

NEIGHBORHOOD TRAFFIC CALMING
The accommodation of pedestrians, bicycles, transit, and vehicles was considered in the corridor and intersection recommendation section of the East Falls Church Area Plan. Recommendations do not specifically address local streets in the study area that are not adjacent to proposed development sites. Arlington County’s Neighborhood Traffic Calming Plan sets the stage for accommodating all modes of transportation and promoting safety on local streets in the County. As development is completed in the East Falls Church area, the County’s Neighborhood Traffic Calming program should be utilized as needed to manage traffic on local streets.
TRANSIT NETWORK

Figure 8.1 shows the existing and recommended transit network. The following are specifically recommended:

- Provision of a new western entrance to the existing Metrorail station including a plaza with kiss-and-ride and bus drop-off facilities
- Accommodation of Metrobus, George, and ART services through the provision of appropriate facilities at the existing and future Metrorail entrances
- Support of the proposed I-66 Express Bus service by providing station and transfer facilities at the East Falls Church Metrorail station
- Provision of additional bicycle parking and a bicycle station proximate to the Metrorail station
- Provision of real-time transit information for passengers at Metrorail station entrance areas and bus stops
- Enhancement of bus stops to provide shelters, benches, lighting, and real-time transit information

PEDESTRIAN AND BICYCLE NETWORK

Providing safe and efficient pedestrian and bicycle facilities will be essential in accommodating proposed development in East Falls Church. The future transportation network has been planned so that walking and bicycling can represent a sizable proportion of all future trips. Recommendations to support the existing and future needs of pedestrian and bicyclists include the following:

Shared-Use Trails. Figure 8.2 shows the existing and recommended shared-use trail network. The following are specifically recommended:

- Trail connection from the W&OD trail to the new Metrorail plaza on the Washington Boulevard Bridge
- Direct connection from the proposed development in Site M1 to the proposed new western Metrorail Station entrance
- Trail connecting Lee Highway (across from N. Underwood Street) with Washington Boulevard through the existing Verizon property
- Improved connections to the W&OD trail at Sycamore Street
- W&OD trail spur from the existing alignment (south of Little Falls Road) to Lee Highway (north of Gresham Place intersection)
- Study of trail connection from Lee Highway (north of Gresham Place intersection) to Van Buren Street

Bicycle Network. Figure 8.2 shows the existing and recommended bicycle network. The following are specifically recommended:
Bicycle lane in each direction of Lee Highway from the Falls Church city line to N. Sycamore Street
Bicycle lane in each direction of N. Sycamore Street from Lee Highway to 19th Street N.
Bicycle lane in each direction of Washington Boulevard from Lee Highway to Sycamore Street (excluding eastbound Washington Boulevard west of the proposed Metro Plaza)
Bicycle lane in the northwestbound direction of Washington Boulevard from Lee Highway to Westmoreland Street
Designation the following new bicycle routes:
\[\begin{align*}
&\text{N. Westmoreland Street (Lee Highway to 19th Street N.)} \\
&\text{N. Westmoreland Street (Little Falls Road to Washington Boulevard)} \\
&\text{N. Van Buren Street (19th Road N. to 16th Street N.)} \\
&\text{15th Street N. (Sycamore Street to cul-de-sac)} \\
&\text{16th Street N. (N. Van Buren Street to Sycamore Street)} \\
&\text{18th Street N. (N. Van Buren Street to N. Tuckahoe Street)} \\
&\text{19th Road N. (west of N. Van Buren Street to N. Tuckahoe Street)} \\
&\text{19th Street N. (N. Westmoreland Street to Sycamore Street)}
\end{align*}\]

Pedestrian Network. Figure 8.3 shows existing and recommended pedestrian facilities and streetscapes. The following are specifically recommended:

- Sidewalk along the south side of the bridge section of Washington Boulevard between Lee Highway and the Metro Park-and-Ride lot driveway (future Site M1 driveway)
- Improved streetscape on Lee Highway from the Falls Church city line to N. Sycamore Street
- Improved streetscape on Sycamore Street from Lee Highway to 19th Street N.
- Improved streetscape on Washington Boulevard from 25th Street N. to Sycamore Street
- Improved streetscapes along development frontages

PARKING

On-street parking and curb space management should be consistent with the latest version of Arlington County’s MTP. Consistent with the MTP, the following are recommended with regard to parking and curb space in the East Falls Church study area:

- Re-evaluation and reconfiguration of curb space as sites develop or redevelop
- Allocation of curb space dependent on the specific land uses and businesses served in the adjacent block. To ensure that curb space maximizes its potential to support the transportation infrastructure, advance the economic well-being of the County, and serve the greatest number of users, the following hierarchy of accommodation is recommended in the planning of curb space in East Falls Church:
1. Safety features like fire hydrants, curb nubs for pedestrians, and sight lines for drivers
2. Public multi-user vehicles (e.g. bus stops, taxi-stands, and carsharing)
3. Periodic/temporary uses (e.g. shuttles and private buses, vending, loading and deliveries)
4. Dedicated short-term parking (e.g. paratransit drop-off and short-term meters)
5. Long-term parking of vehicles (e.g. tour buses, valet parking, and all-day meters)

- Time restrictions and designation of spaces to optimize the use of curb space and to give priority to the appropriate users at appropriate times
- Dedication of remnant areas in parking lanes or garages for the exclusive use of small vehicles such as microcars, scooters, bicycles, and motorcycles
- Appropriate location of features such as curb nubs, fire hydrants, and bus stops to maximize available curb length and versatility
- Minimized number and width of driveways to achieve longer lengths of available curb space
- Use of multi-space parking meters where street-level retail and business increase demand for short-term parking

On-street parking is recommended at the following locations:

- N. Sycamore Street (west side) between Lee Highway and 22nd Street N.
- N. Sycamore Street (west side) between Washington Boulevard and the Metrorail station bus facility
- N. Sycamore Street (both sides) between the I-66 bridge and 19th Street N./I-66 On-Ramp
- Washington Boulevard (east side) adjacent to Site M1
- Washington Boulevard Northwestbound (east side) between the I-66 On-Ramp and Westmoreland Street
ANALYSIS OF FUTURE CONDITIONS WITH DEVELOPMENT WITH IMPROVEMENTS

Intersection capacity and V/C ratio analyses were conducted for the future with development traffic volumes for the improved study area intersections. The intersection laneage and traffic control reflect the recommended improvements discussed in this chapter and are shown in Figure 8.4. The existing signalized intersection phasing and timings for Falls Church intersections were not altered. Signalized intersections in Arlington County are controlled by the county and were adjusted according to the proposed recommendations. The intersection cycle lengths in Arlington County were reduced to 110 seconds in the AM peak hour and 100 seconds in the PM peak hour.

Intersection Capacity Analysis

The results of the capacity analyses are summarized in Table 8.1. Analysis results show overall level of service and delay information for each intersection. Figure 8.5 shows analysis results by lane group. The Synchro HCM reports are contained in Appendix G.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Conditions</th>
<th>2030 Future Conditions without Development</th>
<th>2030 Future Conditions with Development</th>
<th>2030 Future Conditions with Development, Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Washington Street and Broad Street</td>
<td>D (37) / C (32)</td>
<td>E (56) / E (60)</td>
<td>E (57) / E (63)</td>
<td>E (57) / E (60)</td>
</tr>
<tr>
<td>3. Washington Street and Great Falls Street</td>
<td>B (10) / A (4)</td>
<td>A (8) / A (3)</td>
<td>A (8) / A (3)</td>
<td>A (8) / A (3)</td>
</tr>
<tr>
<td>5. Washington Street and Jefferson Street</td>
<td>A (1) / A (1)</td>
<td>A (3) / A (2)</td>
<td>A (3) / A (2)</td>
<td>A (5) / A (2)</td>
</tr>
<tr>
<td>6. Washington Street /Lee Highway and Gresham Place</td>
<td>A (3) / A (1)</td>
<td>A (7) / A (6)</td>
<td>A (7) / A (6)</td>
<td>A (5) / A (3)</td>
</tr>
<tr>
<td>7. Lee Highway and Westmoreland Street</td>
<td>A (7) / D (50)</td>
<td>B (12) / F (186)</td>
<td>B (14) / F (216)</td>
<td>B (12) / C (31)</td>
</tr>
<tr>
<td>9. Fairfax Drive/25th Street N. and Washington Boulevard</td>
<td>A (2) / A (2)</td>
<td>A (2) / A (3)</td>
<td>A (2) / A (3)</td>
<td>A (2) / A (3)</td>
</tr>
<tr>
<td>9a. I-66 On-Ramp and Washington Boulevard</td>
<td>F (97) / B (12)</td>
<td>F (145) / C (17)</td>
<td>F (161) / C (23)</td>
<td>F (130) / C (20)</td>
</tr>
<tr>
<td>Intersection</td>
<td>Existing Conditions</td>
<td>2030 Future Conditions without Development</td>
<td>2030 Future Conditions with Development</td>
<td>2030 Future Conditions with Development, Improvements</td>
</tr>
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<td>--------------------------------------------------</td>
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<td>----------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>11. Lee Highway and Underwood Street</td>
<td>A (4) / A (1)</td>
<td>A (4) / A (1)</td>
<td>A (5) / A (2)</td>
<td>A (2) / A (1)</td>
</tr>
<tr>
<td>12. Lee Highway and Sycamore Street</td>
<td>C (22) / C (20)</td>
<td>C (24) / C (21)</td>
<td>C (24) / C (22)</td>
<td>C (37) / C (26)</td>
</tr>
<tr>
<td>13. 22nd Street N. and Sycamore Street</td>
<td>A (3) / A (1)</td>
<td>A (3) / A (1)</td>
<td>A (3) / A (1)</td>
<td>A (2) / A (1)</td>
</tr>
</tbody>
</table>

* LOS (seconds of delay) AM/PM Peak Hour
Source: Kimley-Horn and Associates, Inc.

Under future conditions with development and improvements, the intersection of Washington Street and Broad Street (Intersection 1) is forecast to continue to operate at LOS E in the AM and PM peak hours. The overall delay will be similar to that experienced under future conditions without development. The intersection of Washington Boulevard westbound and the I-66 On-ramp (intersection 9a) will continue to operate at LOS F in the AM peak hour. The overall delay will be reduced from existing conditions with the altered lane designations to provide dual northwestbound left-turn lanes to the I-66 On-Ramp. All other intersections are forecast to operate with an overall LOS D or better. Some movements will operate at LOS E or F.
Recommended Laneage and Traffic Control

Legend:
- Metrorail
  - (Orange and Silver Lines)
- County Line
- Study Area
- Approved and Unbuilt Development Location
- Proposed Development Site
- Proposed Signal
- Existing Signal
- Unsignalized
- Site Access
- Travel Lane

8.4
The intersection of Lee Highway and Westmoreland Street (Intersection 7) is forecast to improve to LOS C in the PM peak hour with eastbound and westbound left-turn lanes in place. At the intersection of Lee Highway and Sycamore Street (Intersection 12), LOS is forecast to remain C in the AM and PM peak hours despite the removal of a through lane and right-turn lanes in the northbound and southbound directions. Similarly, the intersection of 22nd Street N. and Sycamore Street (Intersection 13) is forecast to remain LOS A despite the removal of a through lane on Sycamore Street. At the intersection of Washington Boulevard and Sycamore Street (Intersection 14), the removal of southbound and eastbound right-turn lanes does not have a negative impact on the overall LOS of intersection. The removal of the split phasing for the northbound/southbound direction, combined with the redesignation of the existing lane uses reduce the overall intersection delay. With a traffic signal and turn-lanes in place, the intersection of Washington Boulevard and the Metro Park-and-Ride lot driveway (future Site M1 driveway, Intersection 17) is forecast to operate at LOS B in the PM peak hour.

Under future conditions with development and improvements, all driveways for proposed development sites will operate at overall LOS D or better in the AM and PM peak hours. The Synchro HCM reports for site driveways with access to arterial roads are contained in Appendix H.

**Link V/C Ratio**

Table 8.2 shows the results of the link V/C analyses for future conditions with development and the proposed improvements.
<table>
<thead>
<tr>
<th>Link</th>
<th>2010 Existing Conditions</th>
<th>2030 Future Conditions without Development</th>
<th>2030 Future Conditions with Development</th>
<th>2030 Future Conditions with Development, Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Street– Broad Street to Arlington County Line</td>
<td>0.50 (0.63)</td>
<td>0.61 (0.76)</td>
<td>0.64 (0.90)</td>
<td>0.60 (0.78)</td>
</tr>
<tr>
<td>Lee Highway– Falls Church City Line to Fairfax Drive/Washington Boulevard</td>
<td>0.28 (0.79)</td>
<td>0.56 (1.14)</td>
<td>0.60 (1.21)</td>
<td>0.52 (0.95)</td>
</tr>
<tr>
<td>Lee Highway– Washington Boulevard to Sycamore Street</td>
<td>0.47 (0.40)</td>
<td>0.54 (0.52)</td>
<td>0.57 (0.54)</td>
<td>0.62 (0.68)</td>
</tr>
<tr>
<td>Sycamore Street– Lee Highway to Washington Boulevard</td>
<td>0.41 (0.27)</td>
<td>0.43 (0.29)</td>
<td>0.43 (0.29)</td>
<td>0.76 (0.56)</td>
</tr>
<tr>
<td>Sycamore Street– Washington Boulevard to 19th Street</td>
<td>0.49 (0.32)</td>
<td>0.54 (0.36)</td>
<td>0.54 (0.54)</td>
<td>0.62 (0.52)</td>
</tr>
<tr>
<td>Washington Boulevard– Lee Highway to Sycamore Street</td>
<td>0.73 (0.66)</td>
<td>0.81 (0.74)</td>
<td>0.83 (0.77)</td>
<td>0.98 (0.86)</td>
</tr>
<tr>
<td>Washington Boulevard Westbound– Lee Highway to I-66 West On-Ramp</td>
<td>1.10 (0.71)</td>
<td>1.12 (0.72)</td>
<td>1.19 (0.77)</td>
<td>1.16 (0.74)</td>
</tr>
</tbody>
</table>

* AM peak hour V/C ratio (PM peak hour V/C ratio)

Source: Kimley-Horn and Associates, Inc.

Under future conditions with development and improvements, the study link of Washington Street between Broad Street and the Arlington County Line is forecast to operate at a V/C ratio of 0.78 in the PM peak hour, reduced from 0.90 under the future conditions without improvements. The study link of Lee Highway from the Falls Church city line to Fairfax Drive/Washington Boulevard is forecast to operate at a V/C ratio of 0.95 in the PM peak hour. The study link of Washington Boulevard between Lee Highway and Sycamore Street is forecast to operate at a V/C ratio of 0.98 in the AM peak hour.

**Multimodal Conditions**

Pedestrian, bicycle, and transit travel were not specifically analyzed for future conditions with development and the proposed improvements. Pedestrian, bicycle, and transit conditions will benefit from the proposed improvements.
9. CONCLUSIONS

This study finds that the area transportation system with recommended improvements will accommodate the proposed East Falls Church development. The recommended additional or improved multimodal facilities will provide a greater level of overall accommodation and safety to all modes of transportation within the study area. Recommendations in this study include the provision of new and improved regionally- and locally-serving transit services in the future. Metrorail station access will be increased with the proposed western entrance. A network of on-street bicycle facilities and improved trail connections will facilitate convenient and safe movement of bicyclists. Pedestrian conditions will benefit from new connections, adequate new facilities, modifications to intersections, and more moderate vehicle speeds.

The vehicular network will experience some congestion under future conditions; however, it will not be dissimilar to what is currently experienced under existing conditions. Under future conditions with development and improvements, all driveways for proposed development sites will operate at overall LOS D or better in the AM and PM peak hours. Two study area intersections are anticipated to operate at LOS E or F under future conditions with development.

The intersection of Washington Street and Broad Street is forecast to operate at LOS E in the AM and PM peak hour; however, the proposed development only increases intersection delay nominally when compared to future conditions without development. Improvements that include additional lanes are not feasible at this intersection due to existing adjacent development.

The intersection of Washington Boulevard westbound and the I-66 On-Ramp is forecast to operate at LOS F in the AM peak hour. It is worth noting that the intersection currently operates at LOS F. Additional widening is not feasible or useful at this intersection and signalization would not improve performance for the Washington Boulevard movement.

The study section of Washington Boulevard westbound from Lee Highway to the I-66 West On-Ramp is the only study road section that will operate with a V/C ratio of greater than 1.0 under future conditions with development. This street section is constrained by the intersections of Washington Boulevard with Lee Highway and the I-66 On-Ramp. Widening Washington Boulevard would improve link operations; however, the physical constraints of the intersections at either end of the section prevent widening from being an effective approach to improving operations.

Even with the relatively congested operations of the two aforementioned intersections and one road section, vehicular mobility will be maintained in the study area. Traffic is not forecast to increase substantially on local streets as a result of plan proposed future development.