# FINAL REPORT

*PART 1*

## Transportation and Land Use Evaluation

*Submitted to*

Fairfax County

*Submitted by*

Cambridge Systematics, Inc.
HNTB Corporation
SmithGroup/JJR

August 2008

# SPRINGFIELD CONNECTIVITY STUDY

This study was prepared under contract with the County of Fairfax, Virginia, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the County of Fairfax and does not necessarily reflect the views of the Office of Economic Adjustment.

## Table of Contents

# List of Tables



# List of Figures

# Introduction

The Springfield Connectivity Study was initiated by Fairfax County, Virginia to address several challenges and opportunities facing the Springfield area. The project study area is located close to Washington, D.C., south of the interchange of three major interstates: I-95, I-395, and I-495. The study area boundaries include the commercial land area within the Franconia-Springfield Metrorail station area and the Springfield Community Business Center (CBC). Developers are moving forward with real estate proposals for the Springfield area and the U.S. Department of Defense (DOD) has considered relocating up to 18,000 employees to the greater Springfield area as a result of the Base Realignment and Closure (BRAC) Commission[1] proceedings of 2005. There is tremendous opportunity to revitalize the commercial area and enhance the livability of the greater Springfield area. Given the momentum underway, Fairfax County wanted to find a proactive and comprehensive approach to handling these changes.

The primary goal of the Springfield Connectivity Study has been to review a series of possible land use and transportation changes, and to develop recommendations that will improve the area's multimodal accessibility and mobility and transform Springfield into a more walkable, active, and vibrant community. A secondary goal of the study has been to test and develop conceptual engineering and service plans for a series of recommendations made by a panel of experts from the Urban Land Institute (ULI), convened by the County in May of 2006 to study the Springfield area.

The study proceeded in three stages: existing conditions compilation, land use and transportation evaluation, and preferred alternative selection. A final set of framework plans and streetscape guidance were developed to support the preferred alternative. Three reports were produced from this analysis: *Existing Conditions and Plans*, *Transportation and Land Use Evaluation* (Part 1 of the Final Report), and *Framework Plans and Street Typology* (Part 2 of the Final Report).

In the course of the study, seven combined transportation and land use scenarios were developed, analyzed, and evaluated. These scenarios evaluated both existing and future conditions in the study area. Included were two alternative scenarios, Alternatives 1 and 2, each with a short-term time horizon (2015) and a long-term time horizon (2030). Evaluation of the scenarios measured: how well the scenarios work from an urban design perspective; how well the scenarios result in connectivity; and how well the scenarios promote integration of the entire study area. Based on these findings, a preferred alternative was created. The preferred alternative met the goals put forth by Fairfax County staff for the Springfield study area: promoting revitalization, encouraging a mix of land uses, and creating a multimodal transportation network.

This *Transportation and Land Use Evaluation* report describes each of the land use and transportation scenarios in detail, providing floor-to-area ratios (FAR), jobs-to-households ratios, and depictions of the various transportation networks. This document also describes the preferred scenario and its included elements. This report provides the basis for Fairfax County to move forward with developing detailed plans for the revitalization of Springfield and lays the framework from which the County may begin to take proactive steps to transform the community.

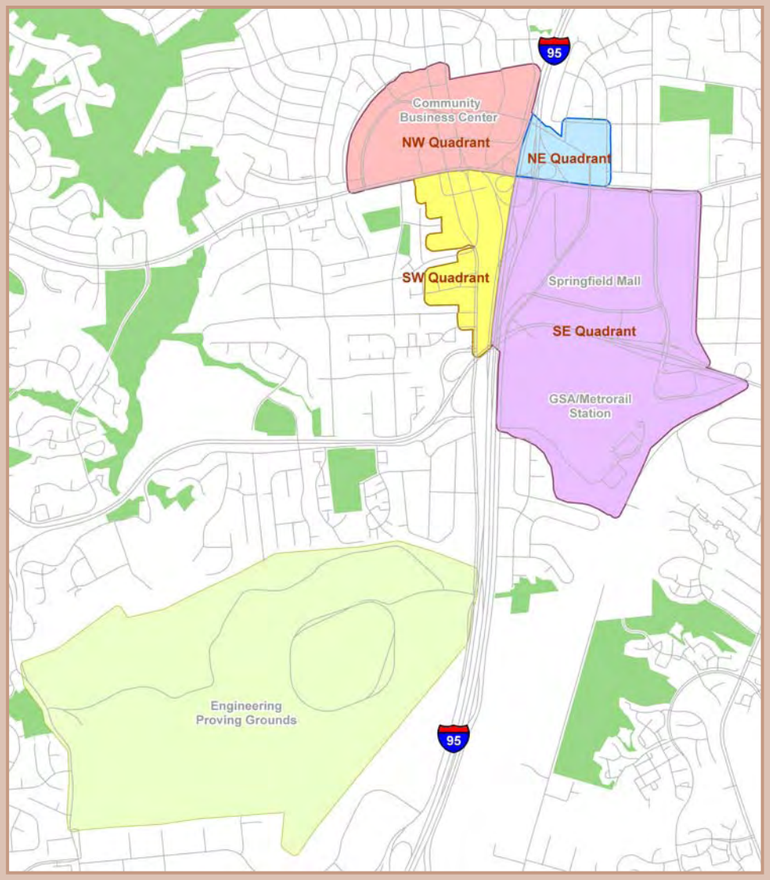
# Study Area

For comparison and analysis purposes, the Springfield Study Area was broken into sub-areas or "quadrants." Figure 1 displays the Springfield Study area.

- **GSA/Metrorail Station –** The GSA/Metrorail Station area is comprised of the Joe Alexander Transportation Center, a multimodal facility consisting of commuter rail, regional bus, intercity bus, local bus, and other commuter services; the Franconia-Springfield Metrorail station; a 70-acre tract with a General Services Administration (GSA) warehouse; and, on land south and east of the GSA, the Northern Virginia Community College, Medical Education Center, and various industrial/flexible uses. The 70-acre GSA site is being considered for various redevelopment alternatives. The quadrant is east of I-95 and south of the Franconia-Springfield Parkway, with access to the Metrorail station provided from Frontier Drive at Franconia-Springfield Parkway, and access to the GSA warehouse area from Loisdale Road, located to the west. Access to the GSA area from Frontier Drive is currently limited to a recently constructed shuttle bus road.
- **Community Business Center** – Springfield's CBC is located along Old Keene Mill Road, east of Commerce Drive, west of I-95. This quadrant contains the Springfield Plaza development, other uses such as hotels and smaller retail centers, and extends southward along Backlick Road towards Franconia-Springfield Parkway.
- **Springfield Mall Area –** The Springfield Mall area is located between Interstate 95 (I-95) to the west, Elder Avenue to the east, Franconia-Springfield Parkway to the south, and Franconia Road to the north. The primary use in the area is the Springfield Mall, a regional mall. Surrounding the mall to the east and west are several hotels, big box shopping centers, and multi-family residential. As of August 2008 the owner of the Springfield Mall, Vornado Corporation, was working with the County to redevelop the existing mall into a Town Center.

A major influence in the Springfield area is the Engineering Proving Ground (EPG) site, an 800-acre tract of federally-owned land located west of I-95 and south of the Franconia-Springfield Parkway. In 2005, the BRAC Commission recommended that the Department of Defense relocate employees from Arlington County and other locations to Fort Belvoir, which includes the EPG site. Currently, it is anticipated that the BRAC recommendations will result in 8,500 employees being located in the Springfield area, with the possibility of 6,200 additional BRAC employees being located at the GSA warehouse site.

***Figure 1. Study Area***




[1] The Base Realignment and Closure (BRAC) Commission was established by the United States Congress to study and review the DOD's list of proposed military based closures and realignments.

## Overview

Following gaining an understanding of existing conditions, the second stage of the Springfield Connectivity Study began with a discussion of goals and objectives for future development in the study area. Promoting revitalization, encouraging a mix of land uses, and creating a multimodal transportation network were established as overarching goals for alternative future scenarios. Sets of objectives to measure success were developed around three key themes: placemaking and design; connectivity; and integration. The team then set out to craft a pair of alternative future scenarios that would help to identify a preferred scenario for the area. Land use and transportation considerations were closely tied together in developing the scenarios, but for ease of presentation they are discussed separately here.

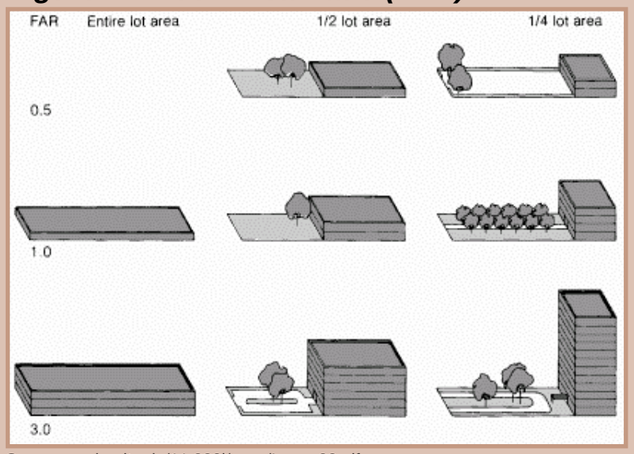
## Intensity and Mix of Uses

Two key measures are used to describe land use in terms of intensity and mixture of use: Floor-to-Area Ratios (FAR) and Jobs-to-Household Ratios (J/H). FAR describes the development intensity at a single site. It is a measurement typically used to describe how intensively a land area is used, and is calculated as the total floor area of a building divided by the lot area. For example, a three story building that covers half its lot will have an FAR of 1.5. A three-story building covering the entire lot would correspondingly have an FAR of 3.0. See Figure 2 for an illustration of typical low-mid-density FAR ratios.

J/H ratios look at the number of jobs in a geographic area compared to the number of housing units. Lower J/H ratios are associated with activity beyond the hours of the working day and promote greater use of non-motorized travel throughout the day. The County's policy is to improve this balance in most activity centers in order to reduce traffic congestion and be consistent with other goals.

Jobs-to-households ratios were primary measures applied to determine the appropriate land use intensity and mix of uses in the 2030 alternative scenarios. A J/H ratio near 3.0 is considered the optimum level within an activity center within Fairfax County in order to receive its fair share of growth. Such a balance would bring about an increase in non-motorized travel, promote greater use of transit, and reduce the volume and extent of vehicle traffic within and around the center. The County's policy is to improve the ratio of jobs-to-housing within regional centers such as Springfield in order to create vibrant, mixed-use, walkable communities in addition to reducing traffic congestion.

***Figure 2. Floor-Area Ratio (FAR)***




Source: web.mit.edu/11.328j/www/Image33.gif.

## Scenarios Tested

A total of seven scenarios were tested in order to evaluate two land use alternatives and associated transportation networks. These were:

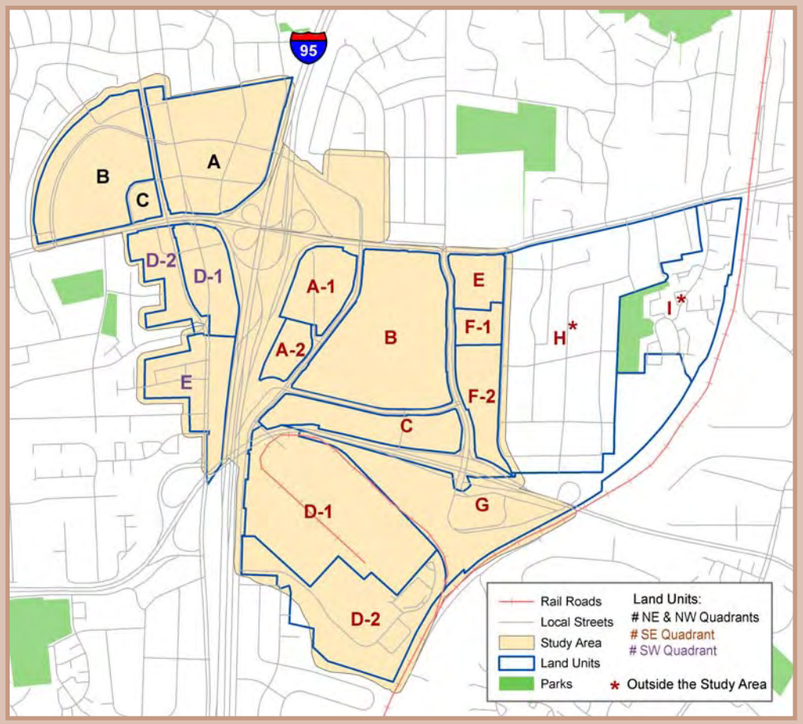
- **2005 Existing Conditions Scenario –** This scenario tested land use and transportation conditions as existed in the Springfield study area in 2005 to identify existing conditions and deficiencies. The separate *Existing Conditions and Plans* report volume provides additional detail on the existing transportation, land use, and site design conditions in the study area. As Table 1 shows, the 2005 J/H ratio in the Springfield study area was estimated at 6.0 (i.e., 6.0 jobs for every household).
- **2015 Baseline Scenario –** This scenario paired existing and approved and/or anticipated 2015 land use development in Springfield with anticipated land use proposals and transportation improvements that are included in the Metropolitan Washington Council of Governments Constrained Long-Range Plan (CLRP) for 2015. The CLRP is the regional adopted consensus plan for long-range transportation improvements. The J/H ratio associated with this scenario is 4.0.
- **2015 Alternatives Scenarios 1 and 2 –** These scenarios paired different levels of land use development and transportation investment to evaluate growth potential and infrastructure needs in the short term, after the BRAC move is completed. As 2015 was an interim stage of development, the J/H ratio associated with these scenarios were not measured.
- **2030 Comprehensive Plan Scenario –** This scenario applied the land use and transportation elements of the County's current adopted Plan for the Springfield area with some consideration for the limited rate of growth by 2030. This scenario was used as a basis for comparison with the 2030 alternatives. With near-buildout of the Comprehensive Plan, the J/H ratio for Springfield is estimated to improve to 4.8.
- **2030 Alternative Scenarios 1 and 2 –** These scenarios paired different levels of land use development and transportation investment to evaluate growth potential and infrastructure needs in the long term, as potential replacements to the current Comprehensive Plan for the Springfield area. The goal in developing the 2030 alternatives was to reduce the J/H ratio to approximately 3.2. To achieve this goal, planned dwelling units were increased in Springfield by several thousand above current Comprehensive Plan totals (primarily northern portion of the CBC and future Town Center, current Springfield Mall, areas).

The next pages provide more detail on the land use and transportation components of the scenarios used in the analyses performed during this stage of the project. Figures 3 shows the relevant land unit areas from the Comprehensive Plan to assist in relating recommendations to the geography referenced.

***Table 1. Jobs-to-Households Ratios***

| Land Use Scenario | J/H Ratio |
|---|---|
| 2005 Existing | 6.0 |
| 2015 Baseline | 4.0 |
| 2030 Comprehensive Plan | 4.8 |
| 2030 Alternative 1 | 3.2 |
| 2030 Alternative 2 | 3.2 |

***Figure 3. Franconia-Springfield Land Unit Locations***



## 2005 Existing Land Use

The existing conditions scenario depicts land use conditions for Springfield in 2005 and provides a baseline for comparison to future scenarios. Fairfax County maintains detailed land use databases for the area which provided source data for this study. To support the transportation analysis, detailed parcel level data were aggregated into traffic analysis zones (TAZs) on which the summaries in this report are based.

Table 2 summarizes the 2005 employment by land use type. The most dominant land use in Springfield was retail use. The Community Business Center contains approximately 2,800 retail jobs and the Franconia Springfield TSA contains approximately 4,800 retail jobs.

In 2005, there were approximately 16,000 dwelling units in the greater Springfield area, which includes neighborhoods surrounding the commercial portion of Springfield. In this report, one dwelling unit is assumed to be the equivalent of one household. Table 3 illustrates the distribution of these households within Springfield and with respect to the number of jobs within the same areas.

### *Table 2. Land Use and Employment*

| Land Use | GSA/ Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | 880 | – | – |
| Retail | – | 2,790 | 4,800 |
| Office | 400 | 1,120 | 1,250 |
| Other | 50 | 200 | 210 |
| **Total** | **1,330** | **4,110** | **6,260** |

### *Table 3. Households and Jobs*

| Area | Households | Jobs |
|---|---|---|
| GSA/Metrorail Station Area | 350 | 1,330 |
| Community Business Center | 220 | 4,110 |
| Springfield Mall Area | 630 | 6,260 |
| **Total** | **1,200** | **11,700** |

## 2005 Existing Transportation Network

The Springfield area is connected to the regional transportation network by access controlled highways such as: I-95/I-495. Springfield is also served by major arterials such as Franconia- Springfield Parkway, Franconia Road/Old Keene Mill Road and minor arterials such as Amherst Avenue, Backlick Road, Commerce Street, Frontier Drive and Loisdale Road. Local streets such as Bland Street, Loisdale Court, Brandon Avenue, Pioneer Drive, Springfield Center Drive and Elder Avenue complete the street network. The Existing Conditions and Plans report discusses these roadways in greater detail.

**Transit Services**

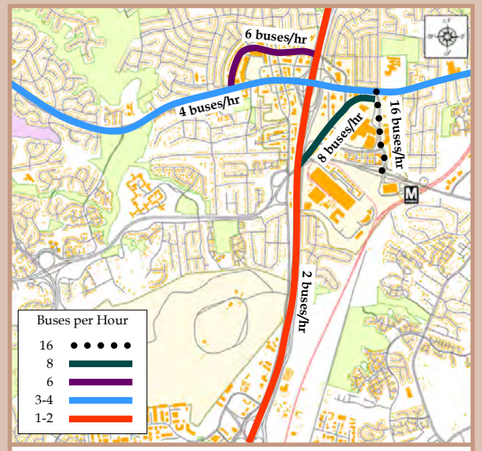
The Springfield area is served by several Fairfax Connector Routes – FC321, FC322, FC331, FC332, and FC401 and TAGS shuttle routes – S80 and S91. Figure 4 and Figure 5 show the frequency of service at key locations in the study area. Figure 4 shows the peak-period bus frequencies and Figure 5 shows the frequency in the off-peak-period. The majority of the current transit service, especially serving the local area, is provided by Fairfax Connector. All of the Fairfax Connector routes in this area stop at the Metro Station. There are three types of service in the area: service going north and south through the area; service going east and west; and finally, circulator service through the entire area.

The Fairfax Connector routes have headways of 30 minutes in the peak hour and 60 minutes in the off-peak. FC321 and FC322 are essentially the same route in counter-clockwise and clockwise directions, respectively. They connect the Franconia-Springfield Metro station with the Kingstowne Towne Center, Van Dorn Street Metro Station and Springfield Plaza. FC331 and FC332 also are a counter-clockwise/clockwise pair that operate only during weekdays and connect Springfield Plaza, Gateway 95 Business Park, DLA, Medical Education Center, and Franconia-Springfield Metro Station. FC401 connects the Franconia-Springfield Metro Station with sites in the northwestern quadrant of the study area and then continues northward to Tysons Corner.

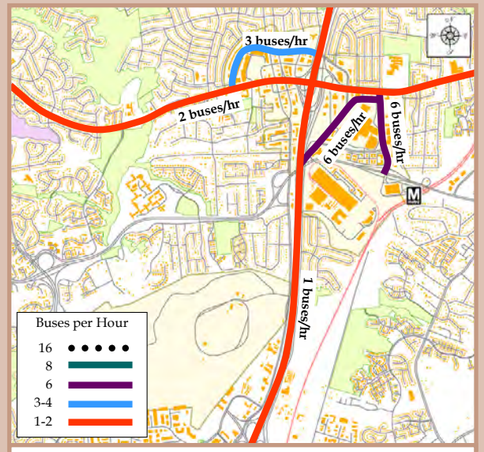
This service is supplemented by the S80 and S91 operated by the Transportation Association of Greater Springfield (TAGS). S91 is a shortened derivative of S80 and connects the Metro Station with the Springfield Mall while the main route connects the Springfield Metro Station with local office buildings, hotels, and the mall. The S91 service only runs in the peak-periods. Both routes have 15-minute headways. The current daily ridership is around 570 passengers per day. These routes connect to sites in the northeastern quadrant of the study area.

The lack of service to the EPG site is evident in Figure 4 and Figure 5 and is attributed to the few number of jobs currently located there. The southwestern quadrant lacks transit service in both connectivity and service frequency. The objective of the recommended new shuttle and circulator services is to provide additional connections to underserved areas in the study cordon and improve coverage and service levels to support redevelopment and new development.

### *Figures 4 & 5. Frequency of Service During Peak Period and Off-Peak Period*




*Frequency of Service During Peak-Period*




*Frequency of Service During Off-Peak-Period*

## Overview

This section details the future land use assumptions employed in the scenario testing. Tables 4 and 5 summarize the employment under the 2015 Baseline and 2030 Comprehensive Plan land use scenarios.

The 2015 baseline land use assumes all known development in the planning and approval "pipeline" stages is built out by that time. It assumes incremental adjustments are made to the existing conditions scenario and that a few new significant developments occur to thereby represent the "existing trends" option. Specifically, development levels described in the Metropolitan Washington Council of Governments (MWCOG) Round 7 Cooperative Land Use Forecast and the County's projections are in place. The baseline includes the original recommendations of the BRAC Commission which placed 18,000 jobs at EPG. Industrial and retail land uses continue to dominate, with approximately two million square feet of retail space at the Springfield Mall.

For 2030, the baseline is the Fairfax County Comprehensive Plan. Under the Comprehensive Plan, there will be more than double the jobs in the Springfield study area as in 2005. The majority of jobs will be retail jobs, fairly evenly split between the CBC and the Springfield Mall area. The Comprehensive Plan recommends approximately 21,500 dwelling units in the greater Springfield area, with about 4,200 in the study area, generally split between the CBC and Springfield Mall.

Tables 6, 7, 9, and 10 (next page) summarize employment under the 2015 Alternative 1, 2015 Alternative 2, 2030 Alternative 1, and 2030 Alternative 2 land use scenarios, respectively. Table 8 (next page) summarizes the tested scenario household assumptions. Table 11 (following page) presents a summary of the land use assumptions across the alternatives. More detail on the assumptions by geographic area is presented herein for each horizon year.

Generally speaking, for 2015, Alternative 1 has a relatively modest increment of growth over the baseline. Alternative 2 is more aggressive than Alternative 1 in its mix of land uses and overall density, assuming more mixed-use development of the Springfield Mall and faster redevelopment of the GSA property spurred by BRAC. For 2030, Alternative 1 assumes that the BRAC employment locates at the EPG. Alternative 2 has higher overall levels of growth than Alternative 1, and significantly so in the CBC and the Metrorail station area.

### *Table 4. Employment Summary – 2015 Baseline*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | 880 | – | – |
| Retail | – | 2,940 | 5,880 |
| Office | 400 | 1,250 | 1,170 |
| Other | 50 | 280 | 210 |
| **Total** | **1,330** | **4,470** | **7,260** |

### *Table 5. Employment Summary – 2030 Comprehensive Plan*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | 5,200 | – | – |
| Retail | 140 | 5,640 | 6,010 |
| Office | 1,340 | 5,760 | 600 |
| Other | 200 | 350 | 470 |
| **Total** | **6,880** | **11,750** | **7,080** |

## Discussion by Planning Area

***Community Business Center (CBC)***

The Northwest Quadrant and the Southwest Quadrant make up the northern and southern halves, respectively, of the CBC. The Northwest Quadrant is situated generally to the south of Commerce Street and to the north of Old Keene Mill Road, with Amherst Avenue running through the middle (see Figure 1). Currently, these parcels contain low-density strip mall and big box retail uses.

In terms of redevelopment timing and mix of uses, the area west of Amherst Avenue within the Northwest Quadrant represents perhaps the biggest unknown for the Springfield study area. By 2015, under the baseline, no redevelopment is shown in this area. Under Alternative 1, this area retains its existing retail uses, but adds additional office space up to 0.7 FAR. Under Alternative 2, the area is composed of a mix of 70 percent residential use and 30 percent retail use, up to 1.0 FAR. By 2030, it is anticipated that this area will intensify in its mix and magnitude of development. 2030 Alternative 1 is the same as 2015 Alternative 2 for the area. Under 2030 Alternative 2, the area transitions to a more balanced mix of 75 percent residential use, 17 percent office use, and eight percent retail use at a higher density of 2.0 FAR.

Between Amherst Avenue and Backlick Road, all tested scenarios include the 108,000 square-foot Marriott development built at 1.97 FAR. By 2030, under Alternative 1 the area east of Amherst Avenue transitions from its existing land uses to an overall 2.0 FAR with a mix of uses, including 700,000 square feet of retail use; 800,000 square feet of office use; 440,000 square feet of hotel use; and 3,235 dwelling units (including the Marriott development). Under Alternative 2, the area adds the Midtown Springfield development by 2015, and by 2030 the area is planned up to 2.0 FAR with essentially the same land use mix as Alternative 1.

The Southwest Quadrant is situated to the west of I-95 and to the south of Old Keene Mill Road. Amherst Avenue and Backlick Road run through the middle and join together in this area. The intersection of Backlick Road and Franconia-Springfield Parkway is the southern-most point of the Quadrant. For the 2015 Baseline and Alternative 1 scenarios, no redevelopment in the Southwest Quadrant is proposed. Under 2015 Alternative 2, the area east of Amherst Avenue would be redeveloped at the Comprehensive Plan option level of 1.5 FAR and 1.0 FAR, with 90 percent office use and 10 percent retail use.

By 2030, the Comprehensive Plan, Alternative 1, and Alternative 2 show a portion of the Southwest Quadrant as community-serving retail at 0.35 FAR. Alternative 1 has the remainder of the area as a mix of 90 percent office use and 10 percent retail use at 0.5 FAR. Alternative 2 has the same land use mix (90 percent office use and 10 percent retail use) but at 1.0 or 1.5 FAR in some parcels.

***GSA/Metrorail Station Area***

The GSA/Metrorail Station area is located east of Loisdale Drive and south of Franconia-Springfield Parkway. 2015 Baseline and Alternative 1 show no change on the GSA site. 2015 Alternative 2 assumes 5,000 jobs relocated to the GSA site due to BRAC proceedings and other land uses consistent with the 2030 Comprehensive Plan, including office, light industrial, and supporting retail uses. In 2030, both Alternatives 1 and 2 show redevelopment of the GSA site. 2030 Alternative 1 shows Option levels in the Comprehensive Plan, which include a mix of land uses: office, light industrial, research and development, and support retail. Alternative 2 shows the same, but substitutes 9,000 BRAC jobs for a portion of the light industrial and research and development uses.

## Discussion by Planning Area (continued)

***Southeast Quadrant/Springfield Mall Area***

The Springfield Mall area is located east of I-95, south of Franconia Road, north of Franconia-Springfield Parkway, and west of Elder Avenue. Under 2015 Baseline and Alternative 1, only Phase I of the Springfield Mall redevelopment project (retail portion) was assumed to be complete. This resulted in a total of two million square feet of retail space in the area. Alternative 2 had a larger portion of the Springfield Mall redevelopment project complete by 2015, with 1.4 million square feet of residential use (961 multifamily units and 19 townhouse units), 500,000 square feet of office space, and additional retail use.

2030 Alternative 1 assumed the same partial redevelopment of the mall as with 2015 Alternative 2, and also assumed redevelopment of the area west of Loisdale Road. The 2030 Alternative 2 land use anticipated the Springfield Mall development would be 100 percent complete, with two million square feet of retail use, one million square feet of office use, and 1,960 residential units, all at an overall FAR of 2.0. In 2030, both Alternative 1 and Alternative 2 showed the area between Spring Mall Road and Franconia-Springfield Parkway developed at 1.0 FAR, with 20 percent retail use and 80 percent multifamily residential use.

***Engineering Proving Ground (EPG)***

Under the 2015 Baseline, 2015 Alternative 1, and 2030 Alternative 1 scenarios, EPG was expected to have approximately 18,000 new BRAC jobs. Under the 2015 Alternative 2 scenario, only 13,000 of the jobs were expected at EPG, with the remaining 5,000 jobs located on the GSA site. Under 2030 Alternative 2 scenario, EPG was expected to receive 9,000 of the new jobs, with the remaining 9,000 jobs would be located on the GSA site. No other redevelopment proposals outside of the BRAC recommendations were anticipated for EPG.

### *Table 6. Employment Summary – 2015 Alternative 1*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | 880 | – | – |
| Retail | – | 2,780 | 5,880 |
| Office | 400 | 5,130 | 1,170 |
| Other | 50 | 280 | 210 |
| **Total** | **1,330** | **8,190** | **7,260** |

### *Table 7. Employment Summary – 2030 Alternative 1*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | 5,200 | – | – |
| Retail | 140 | 4,210 | 5,620 |
| Office | 1,340 | 4,390 | 4,550 |
| Other | 200 | 340 | 470 |
| **Total** | **6,880** | **8,940** | **10,640** |

### *Table 8. Household Summary*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| 2015 Baseline | 350 | 1,570 | 630 |
| 2015 Alternative 1 | 350 | 220 | 630 |
| 2015 Alternative 2 | 350 | 1,800 | 2,090 |
| 2030 Comp. Plan | 380 | 2,100 | 1,680 |
| 2030 Alternative 1 | 380 | 5,010 | 2,070 |
| 2030 Alternative 2 | 380 | 7,030 | 3,050 |

### *Table 9. Employment Summary – 2015 Alternative 2*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | – | – | – |
| Retail | – | 4,020 | 5,880 |
| Office | 9,310 | 3,380 | 2,840 |
| Other | 50 | 230 | 360 |
| **Total** | **9,360** | **7,630** | **9,080** |

### *Table 10. Employment Summary – 2030 Alternative 2*

| Land Use | GSA/Metrorail Station Area | Community Business Center | Springfield Mall Area |
|---|---|---|---|
| Industrial | – | – | – |
| Retail | – | 3,840 | 5,620 |
| Office | 14,890 | 8,400 | 4,800 |
| Other | 90 | 340 | 1,450 |
| **Total** | **14,980** | **12,580** | **11,870** |

## *Table 11. Land Use Assumptions by Scenario*

| Quadrant | Land Unit* | Comprehensive Plan | Baseline | Alternative 1 | | Alternative 2 | |
|---|---|---|---|---|---|---|---|
| | | | 2015 | 2015 | 2030 | 2015 | 2030 |
| **Northwest and Northeast Quadrants** | A | 360,000 square foot (SF) retail; 205,000 SF office; and 165,000 SF hotel uses (existing); plus 600,000 SF office; 350,000 SF retail; and 280,000 SF hotel uses to total 2 million SF nonresidential uses and 800 residential units for overall intensity of approximately 1.1 FAR | Existing: 220,000 SF retail; 208,000 SF office; and 186,000 SF hotel uses; plus Midtown Springfield: 2.97 FAR; 1.15 million SF (79% residential (860 units); 3% office, 9% retail; and 9% hotel uses); and Marriott development: 1.97 FAR; 108,000 SF | Existing, plus Marriott development | 2.0 FAR overall (700,000 SF retail; 800,000 SF office; 440,000 SF hotel uses; 3,235 multifamily units), to include Marriott development | Existing plus Midtown Springfield and Marriott developments | 2.0 FAR overall (700,000 SF retail; 800,000 SF office; 440,000 SF hotel uses; 3,235 multifamily units), to include Midtown Springfield and Marriott developments |
| | B | 0.50 FAR retail and office uses; 30 dwelling units/acre (du/ac) residential | Existing | 0.7 FAR existing retail and additional office uses | 1.0 FAR (90% residential and 10% community serving retail) | 1.0 FAR (70% residential and 30% retail) | 2.0 FAR (75% residential, 17% office, 8% retail) |
| | C | 0.50 FAR office and support retail uses | Existing | | | | |
| **Southwest Quadrant** | D-1 | With substantial consolidation, potential of: 1.5 FAR office and retail uses for part; 1.5 FAR office, hotel, and/or residential uses for part; 1.0 FAR office and support retail uses for part | Existing | Existing | 0.50 FAR (90% office and 10% retail) | Option plan level of 1.0 FAR and 1.5 FAR (90% office and 10% retail) for applicable portions | Option plan level of 1.0 FAR and 1.5 FAR (90% office and 10% retail) for applicable portions |
| | D-2 | 0.50 FAR retail and office use | Existing | Existing | | Existing | 0.50 FAR (90% office, 10% retail) |
| | E | 0.35 FAR community-serving retail; 16-20 du/ac residential | Existing | Existing | 0.35 FAR community serving retail | Existing | 0.35 FAR community serving retail |
| **Southeast Quadrant** | A-1 | 0.50 FAR office and hotel use | Existing | Existing | 1.0 FAR (office and hotel) | Existing | 2.0 FAR hotel and conference center |
| | A-2 | Option for 45 du/ac residential use | Existing | Existing | | Existing | 1.0 FAR office use |
| | B | 0.50 and 0.35 FAR retail use | Springfield Mall Phase I – retail portion (approximately 2 million SF) | Springfield Mall Phase I – retail portion (approximately 2 million SF) | Springfield Mall 50% fully built out: approximately 1.4 million SF residential (980 units: 961 multifamily and 19 townhomes); 500,000 SF office; 1 million SF retail uses | Springfield Mall 50% fully built out: approximately 1.4 million SF residential (980 units: 961 multifamily and 19 townhomes); 500,000 SF office; 1 million SF retail uses | Springfield Mall fully built out with Phase 2 (approximately 2.0 FAR): approximately 2.8 million SF residential (1,960 units: 1,922 multifamily; and 38 townhomes) 1 million SF office, 2 million SF retail uses |
| | C | 45 du/ac residential use or 1.0 FAR residential (<66%) and retail use (<33%) | Existing | Existing | 1.0 FAR (20% retail; 80% multifamily residential) | Existing | 1.0 FAR (20% retail; 80% multifamily residential) |
| | D-1 (GSA) | 377 multifamily units; 115,000 SF hotel; 475,000 SF office use (offices substitutes for 360,000 SF office; 160,000 SF hotel; support retail uses) and GSA as 1,090,000 SF light industrial/research and development; 160,000 SF conference center; 40,000 SF office; support retail use; additional office substitutes for industrial/research and development | Existing | Existing | Option 1 in Comprehensive Plan as research and development, office, supporting retail, conference center | 5,000 jobs (BRAC) with additional Comprehensive Plan | 9,000 jobs (BRAC) with additional Comprehensive Plan |
| | D-2 | 0.50 FAR research and development | Existing | Existing | 0.50 FAR office use | 0.50 FAR office use | 0.50 FAR office use |
| | E | 0.30 FAR public facilities and institutional uses | Existing | Existing | Existing | Existing | Existing |
| | F-1 | 0.30 FAR retail use | Existing | Existing | Existing | Existing | Existing |
| | F-2 | 0.30 FAR office and retail use or 20 du/ac multifamily residential use | Existing | Existing | Existing | Existing | Existing |
| | G | WMATA station | Existing | Existing | WMATA will provide information | Existing | WMATA will provide information |
| | H | Single family residential | Existing | Existing | Existing | Existing | Existing |
| | I | Park and 5-8 du/ac single family residential | Existing | Existing | Existing | Existing | Existing |
| **Engineering Proving Ground** | EPG scenarios included to illustrate assumptions on background traffic, but not included in study area | | 18,000 jobs BRAC | 18,000 jobs BRAC | 18,000 jobs BRAC | 13,000 jobs BRAC | 9,000 jobs BRAC |

* Refers to land unit reference map (Figure 3)

## Overview

The future transportation scenarios incorporated regional transportation improvements, identified in the 2015 MWCOG Financially Constrained Long-Range Plan (CLRP). A significant element of the CLRP affecting the Springfield area is the completion of the HOT lane system on I-95, I-395, and I-495. Please see the Scenario Definitions section.

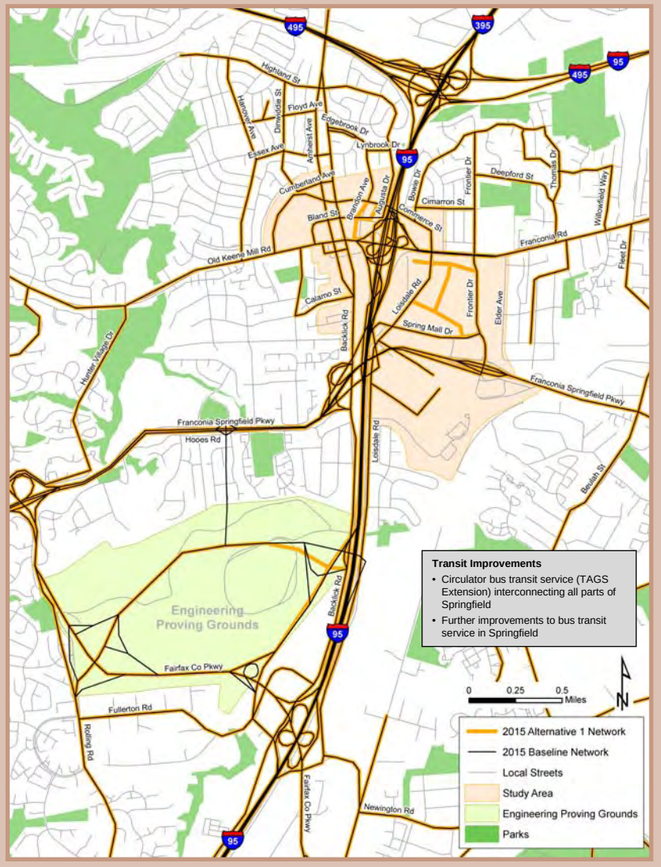
## 2015 Baseline Scenario

The 2015 Baseline Alternative assumed all CLRP projects identified for completion by 2015. The Baseline also assumed the completion of transportation improvements identified as needed to support BRAC in the Draft EIS, published in March 2007. Figure 6 shows the BRAC network.

***Figure 6. BRAC Network Elements***


## 2015 Alternative 1 Scenario

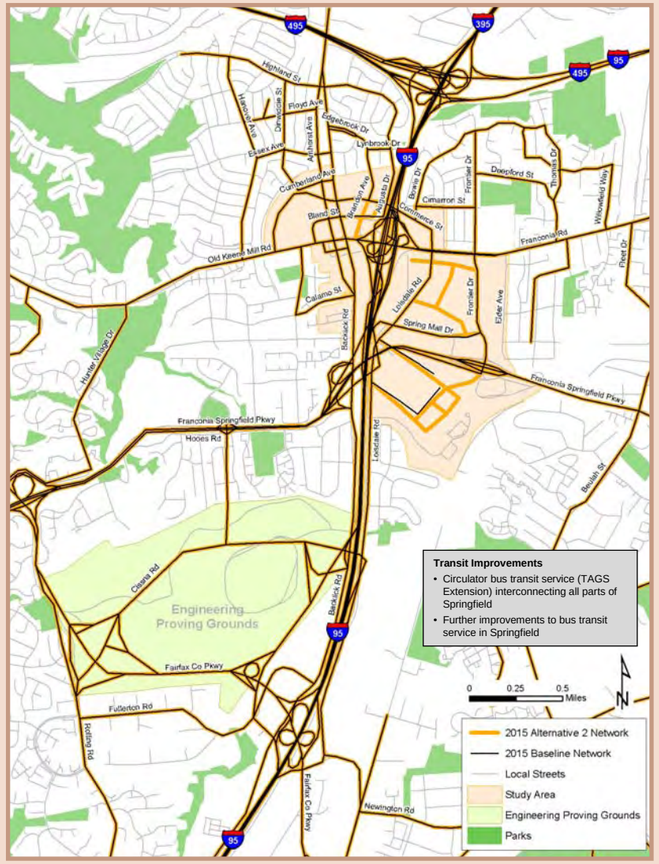
***Figure 7. 2015 Alternative 1 Network***




2015 Alternative 1 assumed the baseline network but with only a minimal BRAC network. A circulator transit service and two shuttles would operate in the Springfield Study Area under this alternative, interconnecting the Springfield Study Area's quadrants. This proposed transit service would provide supplemental connectivity and transit links to Springfield Mall and the CBC through an improved circulator and shuttle service between the Franconia-Springfield Metrorail Station and the GSA site and Franconia-Springfield Metrorail Station and the EPG site. A modified grid of local streets would be developed in the Town Center with redevelopment of the Mall.

## 2015 Alternative 2 Scenario

***Figure 8. 2015 Alternative 2 Network***

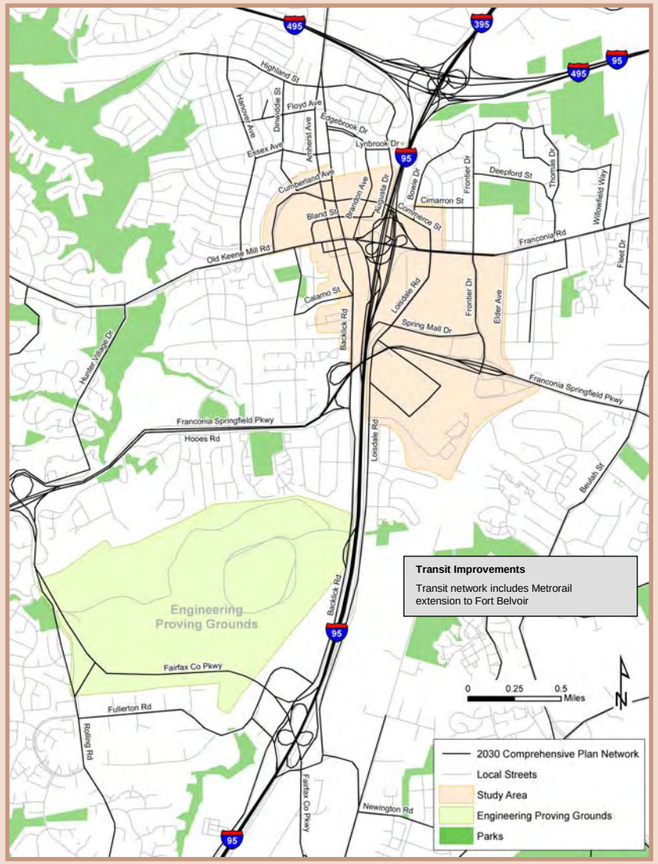



2015 Alternative 2 assumed the baseline scenario, with additional improvements. Additional improvements included:

- Up to 1,000 commuter spaces at the Circuit City site, plus attendant transit access and service improvements;
- Improved access to the GSA site, in conjunction with the BRAC redevelopment;
- A link road between Spring Mall Road and the GSA site, under Fairfax Parkway;
- A link road between Loisdale Court and Loisdale Road, between the Hilton Hotel and Kaiser Permanente;
- Redesign of Loisdale Road as an urban boulevard, with streetscaping, bicycle lanes, pedestrian enhancements, etc. This would be done in conjunction with the more robust Springfield Mall redevelopment;
- Widen Loisdale Road, south of the GSA site, to Newington;
- Widen Bland Street, in the town center, to four lanes; and
- Circulator and shuttle bus service as described in Alternative 1.

## 2030 Comprehensive Plan

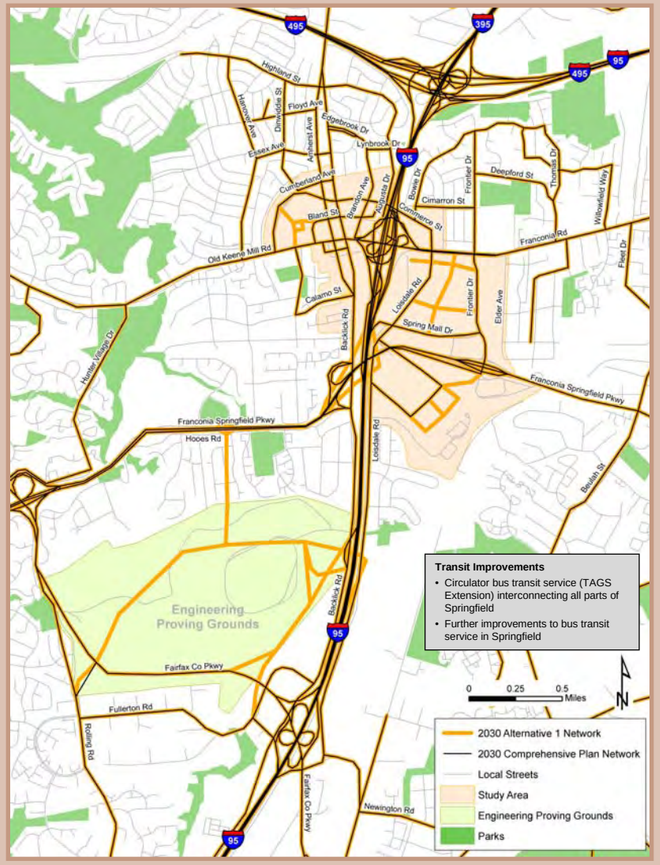
***Figure 9. 2030 Comprehensive Plan Network***




The Comprehensive Plan Network assumed that the roadway and transit elements of the County's Comprehensive Long-Range Plan are in place, as do the other 2030 transportation alternatives. These elements include the completion of the regional HOT lane system on I-95, I-395, and I-495 and the completion of the Fairfax County and Franconia-Springfield Parkways. An additional element of interest to this study included in the Comprehensive Plan was an extension of the Metrorail system to Fort Belvoir.

## 2030 Alternative 1 Scenario

***Figure 10. 2030 Alternative 1 Network***

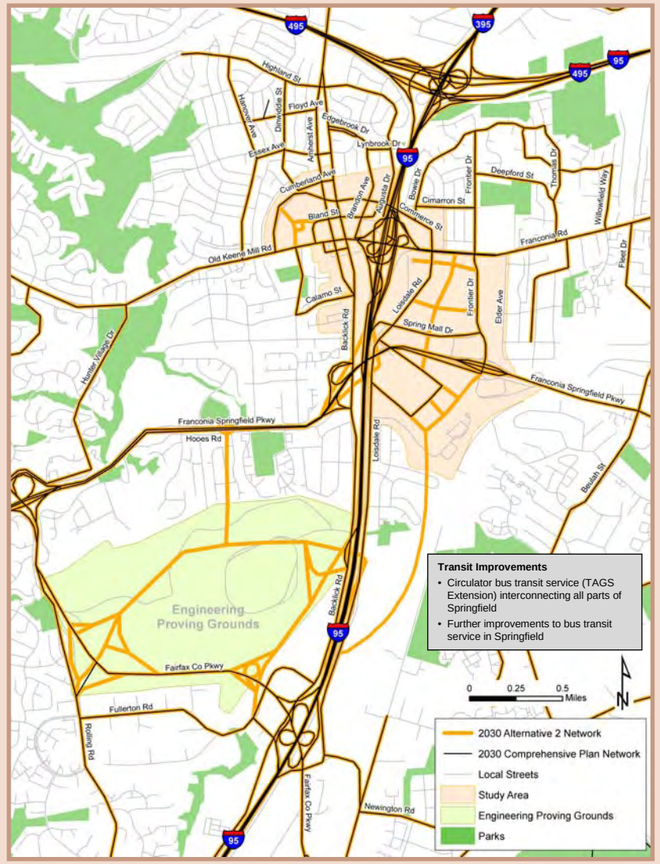



The 2030 Alternative 1 transportation network included all 2015 Alternative 1 improvements, in addition to:

- Build out of the Countywide Transportation Plan elements;
- Commuter parking lot at Circuit City site; and
- Development of an urban street grid in the town center area, in conjunction with redevelopment.

## 2030 Alternative 2 Scenario

***Figure 11. 2030 Alternative 2 Network***




The 2030 Alternative 2 transportation network included all 2030 Alternative 1 improvements plus:

- Four-lane extension of Frontier Drive south, along Metro property and following the east side of the GSA/Loisdale Estates property, and connecting to Loisdale Road;
- Development of one-way, Amherst-Backlick couplets (one-way pair streets), crossing Old Keene Mill Road;
- Extension of Metro service south to Fort Belvoir area;
- Link road between Loisdale Road and Loisdale Court; and
- Urban street grid in the CBC.

## *Table 12. Transportation Assumptions by Scenario*

| Baseline | Alternative 1 | | Alternative 2 | |
|---|---|---|---|---|
| **2015** | **2015** | **2030** | **2015** | **2030** |
| 2015 CLRP Improvements[a] | 2015 CLRP Improvements[a] | Improvements identified in 2015 Alternative 1 | 2015 CLRP Improvements[a] | Improvements identified in 2015 Alternative 2 |
| Full BRAC network.[b] (per DEIS released 3/2/07):<br>- Fairfax County Parkway from Franconia-Springfield Parkway to I-95 with six lanes and diamond interchange;<br>- Franconia-Springfield Parkway diamond interchange with Neuman Street connector;<br>- Ramp off SB I-95 general purpose lanes to EPG Perimeter Road and Barta Road;<br>- Ramp from NB I-95 HOV lanes to bridge connecting to EPG;<br>- Barta Road access from Backlick;<br>- Fairfax County Parkway/Rolling Road main access to EPG;<br>- Hooes Road access;<br>- Newington interchange improvement; and<br>- Transit service to EPG from Newington/I-95 area and Franconia-Springfield Metro Station. | Minimal BRAC network (elements which can be reasonably constructed by 2015):<br>- Fairfax County Parkway four lanes and provides access to EPG;<br>- Ramp off SB I-95 general purpose lanes to EPG; and<br>- Barta Road access to EPG. | Build out of the County Transportation Plan elements:<br>- HOT lanes (I-95 and Fairfax County Parkway;<br>- Neuman Street and Franconia-Springfield Parkway, Fairfax County Parkway and Fullerton Road; Fairfax County Parkway and Hooes Road);<br>- Partial interchange (Franconia-Springfield Parkway and I-95);<br>- Franconia-Springfield Parkway eight lanes;<br>- Fairfax County Parkway six lanes;<br>- Loisdale Road four lanes;<br>- Bland Street four lanes; and<br>- Franconia Road six lanes. | Full BRAC network.[b] (per DEIS released 3/2/07):<br>- Fairfax County Parkway from Franconia-Springfield Parkway to I-95 with six lanes and diamond interchange;<br>- Franconia-Springfield Parkway diamond interchange with Neuman Street connector;<br>- Ramp off SB I-95 general purpose lanes to EPG Perimeter Road and Barta Road;<br>- Ramp from NB I-95 HOV lanes to bridge connecting to EPG;<br>- Barta Road access from Backlick;<br>- Fairfax County Parkway/Rolling Road main access to EPG;<br>- Hooes Road access;<br>- Newington interchange improvement; and<br>- Transit service to EPG from Newington/I-95 area and Franconia-Springfield Metro Station. | Frontier Drive extension four lanes south along Metro property and east side of GSA/Loisdale Estates to connect to Loisdale Road. (Interim option) |
| Improvements associated with Midtown Springfield and Marriot. | Urban street grid at Springfield Mall (TBD). | Loisdale Road south of GSA to Newington widened to four lanes. | Urban street grid at Springfield Mall (TBD). | Urban street grid in CBC. |
| | Circulator bus transit service (TAGS extension) interconnecting all parts of Springfield. Shuttles to GSA and EPG. | Up to 1,000 commuter spaces plus attendant transit access and service improvements at Circuit City site. | Up to 1,000 commuter spaces plus attendant transit access and service improvements at Circuit City site. | Urban street grid at Springfield Mall (TBD). |
| | | Urban street grid in CBC. | Improved access to GSA (may include connection to Spring Mall Road through KSI development; completion of loop road; bus shuttle to Metro). | One way Amherst-Backlick couplets crossing Old Keene Mill Road (TBD). |
| | | | Link road between Loisdale Road (between Hilton Hotel and Kaiser Permanente). | Further improvements to bus transit service in Springfield. |
| | | | Redesigned Loisdale Road north of Franconia-Springfield Parkway as an urban boulevard (with streetscaping, bicycle lanes, pedestrian enhancements, etc.). | |
| | | | Loisdale Road south of GSA to Newington widened to four lanes. | |
| | | | Bland Street in town center widened to four lanes. | |
| | | | Circulator bus transit service (TAGS extension) interconnecting all parts of Springfield. Shuttles to GSA and EPG. | |

[a] The 2015 COG Financially Constrained Long-Range Plan (CLRP) network for the Washington Metropolitan Region includes the following improvements near Springfield.

**Highway Improvements**
- I-495 HOT lanes
- I-95/I-395/I-495 interchange reconstruction with HOV/HOT access ramps to/from I-495
- I-95 construct interchange at VA 7900 for LOV access to/from north and west
- I-95 widen to eight lanes south of Newington
- Fairfax County Parkway construct six lanes VA 7900 to Fullerton Road
- To be added soon: I-95/I-395 HOT lanes Eads Street to Stafford County line

**Transit and HOV Improvements**
- I-395 HOV restripe to three lanes
- I-95 HOV extend to Stafford County Line and restripe to three lanes from I-95/I-395/I-495 interchange to Quantico Creek
- Fairfax County Parkway construct two HOV lanes Sydenstricker to VA 7900
- Franconia-Springfield Parkway construct two HOV lanes VA 7100 to Frontier Drive
- I-495 HOT lanes transit service
- To be added soon I-95/I-395 HOT lanes transit service

[b] Improvements subject to change; GP = General Purpose; NB = Northbound; SB = Southbound.

[c] These will be absorbed into I-95/I-395 HOT lanes project.

## Overview

The future transportation networks incorporate a number of major transportation elements which are important highlights in the vision for a revitalized and better-connected Springfield. This section of the report walks through these elements, providing further explanation and description of the purpose and intended benefits.

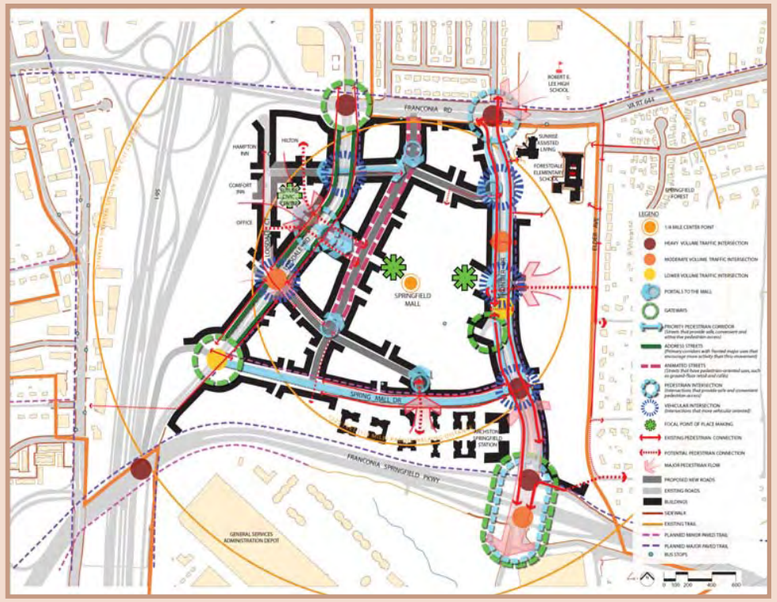
## Local Street Grids

One of the challenges to connectivity in the Springfield area is the lack of a robust grid of local streets to spread vehicle demand and facilitate access. New local street connections would:

- Better distribute traffic from arterial streets to local streets to reach new homes, shops, and offices, helping to separate through traffic from local traffic;
- Create enhanced pedestrian circulation;
- Support mixed-use development by creating more-accessible vehicular and pedestrian routes; and
- Enhance transit access by giving shuttle/circulator buses greater proximity to the sources of demand in homes and offices.

The focal points for introduction of new local street connections are the Springfield Mall area in the Southeast Quadrant and the Town Square area in the Northwest Quadrant. In both cases, the additional street connections would reinforce the placemaking.

***Figure 12. Springfield Mall Framework***




## Backlick Road Bridge and One-Way Pair

Related to the enhancement of local street connectivity in the Northwest and Southeast Quadrants is the introduction of a new bridge over Old Keene Mill Road on Backlick Road and the conversion of Amherst Avenue and Backlick Road to function as a one-way "couplet."

Conceptual engineering work was performed as part of the Springfield Connectivity Study to enable a review of the potential feasibility of such a bridge while maintaining appropriate access.

***Figure 13. Backlick Road Bridge***


The second bridge over Old Keene Mill Road facilitates circulation in the Northwest Quadrant and provides enhanced connectivity between the areas north and south of Old Keene Mill Road, supporting additional development.

The recommended "couplet" of one-way bridges and approach roadways also serves the following purposes:

- Adds needed roadway capacity to support redevelopment without having to widen existing streets;
- Increases continuity on Amherst and Backlick, which are already one-way streets north of the study area, eliminating the forced turns at Cumberland Ave;
- Reduces turning conflicts and simplifies signal timing—this in turn potentially reduces wait time for pedestrians (e.g., pedestrians often wait more than two minutes to cross Amherst today);
- Provides an opportunity to create a new bike and pedestrian thoroughfare on the west side of Springfield and to promote walkability over Old Keene Mill Road (i.e., offers two bike lanes connecting north and south); and
- Provides a dividing line between an urban environment (Midtown) and a village environment (Town Square in Springfield Plaza).

The new bridge and one-way pair introduce some challenges which must be considerations in implementation to ensure the best possible realization of the potential for enhancement of the area. Excellent lighting, pedestrian access, and aesthetic treatments would be necessary to avoid having the bridge potentially work against creating an active pedestrian environment and harsh backdrop.

Creative approaches to parcel access are required to realize the full development potential of parcels located adjacent to the structure. As conceived, adjacent properties would access Amherst Avenue or Backlick Road at bridge vertical grade through frontage roads on the properties. Access from I-95 to Brandon Avenue would remain.

The estimated cost of this project is $19 million in 2007 dollars based on conceptual engineering. This includes higher-than-average maintenance of traffic and construction cost due to the many constraints present.

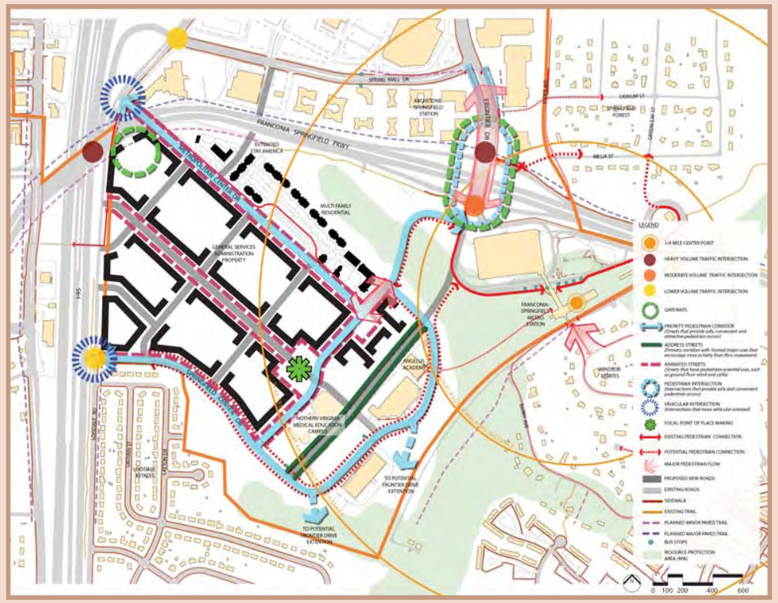
## Access to Metrorail Station

Enhanced multimodal access to the Metrorail Station area is critical to developing a sense of connectivity and integration in the study area. Although many pedestrians currently make their way from the Metrorail Station area to surrounding points on foot, it is not an easy trek. The current access is highly vehicle-oriented and hostile towards pedestrians.

New pedestrian infrastructure and street connections will be helpful to improving the access to the station. Although a focal point of the pedestrian enhancements would be in the area of the present Franconia-Springfield Parkway underpass (i.e., clear pedestrian pathways and enhanced lighting), the Frontier Drive extension and transformation of the GSA area which includes the GSA site and additional surrounding uses, with a grid of streets would be other elements to change the character of the adjacent "neighborhood" towards encouragement of non-motorized access to the station. The framework plan for the GSA/Metrorail Station area shows a grid of streets at the GSA site, with new buildings fronting Metropolitan Center Drive and Springfield Center Drive, creating a street edge. These streets, as well as a new "spine" road that parallels these drives, are to be animated with pedestrian-supportive uses. Achievement of this design would be dependent on the security requirements of the eventual users.

An enhanced transit circulator and new transit shuttles (described in a separate panel) will also better connect the Metrorail Station to the entire study area. WMATA has conducted in parallel a separate study of the immediate station area which considers improved wayfinding, expanded bus bay facilities, and an improved station environment.

***Figure 14. GSA/ Metrorail Station Area Framework***




## Frontier Drive Extension

The extension of Frontier Drive beyond the Franconia-Springfield Metrorail Station to interconnect with the roadway network within the GSA area and ultimately be extended to Loisdale Road north of the Newington Area, is one of the major facilities incorporated in the future transportation networks. Some of the key principles that were considered in the design of the Frontier Drive extension were:

- Separation of eastbound/northbound and westbound/northbound exiting traffic to eliminate the potential weave problem exiting the station;
- Need to match up with receiving lanes under the Franconia-Springfield Parkway bridge (revised cross-section needs to accommodate 4 or 5 foot wide bike lanes in each direction plus any other modifications);
- Directing most or all of the traffic exiting the station to westbound Franconia-Springfield Parkway via the easternmost station exit (partial interchange);
- Addressing the weave problem created by the short distance between that exit and westbound entrance ramps to Frontier Drive;
- Accommodating the return movement from the parking garage exits to station (particularly important for buses laying over but a relatively low volume otherwise);
- Addressing traffic exiting the metro station to southbound Frontier Drive;
- Minimizing the footprint, particularly intrusion into the sloped and wetlands areas west and south of the existing Metrorail station entrance road; and
- Maintaining existing and projected WMATA station traffic operations.

Several interim options were developed for how such an extension might be implemented to interconnect to the GSA area road network. A few elements are common to each design, as follows:

- Allows for two-way traffic along the Metrorail station perimeter road and redirects exiting traffic to either westbound or eastbound Franconia-Springfield Parkway. Access to Frontier Drive via westbound Franconia-Springfield exit (see Braided Ramps Option, next column);
- Frontier Drive is bridged over depressed terrain to minimize wetland impacts and reduce fill quantities;
- Utilizes retaining walls to minimize impacts to wetlands;
- Frontier Drive curves slightly left to allow for both garage entrances to remain open;
- Median opening allows vehicle/buses to cross northbound Frontier Drive and return to station or continue south on Frontier Drive. (May want to limit this movement to returning buses only); and
- Revised circulation of garage traffic utilizes existing loop ramp to westbound Franconia-Springfield Parkway. Existing short deceleration and acceleration on westbound Franconia-Springfield Parkway may require improvements.

***Standard Intersection Design***

The standardized intersection design utilizes an at-grade signalized intersection for the left-turning movement into the Metrorail station access road from southbound Frontier Drive.

***Standard Roundabout Design***

The standard roundabout design provides a single main access point for the Metrorail station. Features of the design, include:

- Allows for continuous traffic flow along Frontier Drive and left-turning movement into the Metrorail station from southbound Frontier Drive;
- The roundabout inscribes a circle with approximately a 200' diameter; and
- Depressed terrain will need to be build up to allow for a moderately level terrain for roundabout.

***Roundabout with Direct Garage Entrance Design***

The second roundabout design provides direct access to the Metrorail station garage as well as to the Metrorail access road. Features of the design, include:

- Allows for continuous traffic flow along Frontier Drive and left-turning movement into the Metrorail station from southbound Frontier Drive;
- The roundabout inscribes a circle with approximately a 200' diameter;
- The roundabout is shifted left of center to allow direct access from the roundabout to the Metrorail parking garage entrances;
- Depressed terrain will need to be build up to allow for a moderately level terrain for the roundabout.

***Braided Ramps Option***

The existing loop ramp to the westbound Franconia-Springfield Parkway from the eastern end of the Metrorail station enters the Parkway close to the exit point for westbound Parkway traffic bound for Frontier Drive. The additional traffic anticipated to use the loop ramp under these Frontier Drive Extension designs could lead to serious merging and weaving issues on this stretch of the Parkway. A set of braided ramps would provide for longer and non-conflicting acceleration and deceleration lanes and correct this problem. In summary, this option:

- Utilizes a braided ramp design to correct existing weave problem;
- Provides exiting metro traffic with access to Frontier Drive and westbound Franconia-Springfield Parkway;
- Allows westbound Franconia-Springfield Parkway access to Frontier Drive;
- May require Franconia-Springfield Parkway westbound bridge over Frontier Drive to be widened to the outside to accommodate the acceleration lane from the Metro loop entrance ramps.

***Cost Estimates***

Table 13 shows the preliminary construction cost estimates for several of the interim options.

***Extension to Loisdale Road***

While the ultimate extension of Frontier Drive to Loisdale Road north of the Newington area was not included in the conceptual engineering for the improvement, it was incorporated in the 2030 modeled scenarios. Further analysis is required to determine options for extending the facility south to Loisdale Road. This would include consideration of land use development and redevelopment on properties located south of the GSA warehouse industrial park area.

***Table 13. Preliminary Construction Cost Estimate for Frontier Drive Extension (Interim Options)***

| Option | Cost Estimate[1] |
|---|---|
| Standard Intersection | $23.6 |
| Standard Roundabout | $22.7 |
| Roundabout with Direct Garage Entrance | $23.1 |
| Braided Ramps on Franconia-Springfield Parkway | $8.1 |

[1] Project costs are in millions and are preliminary construction estimates only and do not include cost of land acquisition.

## Enhanced Transit Services

Although the Springfield study area is currently served by several bus transit routes and the Metrorail line, the opportunity exists to enhance transit connectivity through improved service frequency and service concepts.

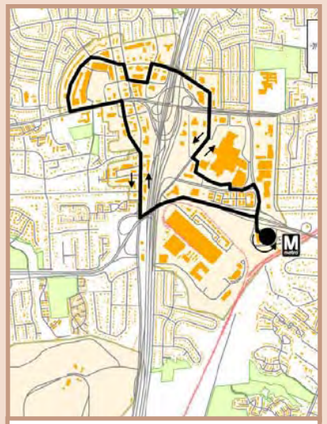
Three Springfield-specific routes were developed with the goal of enhancing service and connectivity to underserved areas. The recommended routes include two shuttle routes and a greatly expanded circulator route. The recommended circulator route is displayed in Figure 15. This route is designed to provide a connection between the Metrorail system and the commercial centers in the quadrants, is about 5.4-miles long, and has an estimated run time of 21 minutes. This service is designed to operate at 12-minute headways from 6:00 a.m. to 8:00 p.m. and 20 minute headways from 8:00 p.m. to 12:00 p.m. everyday. Buses would operate in both directions on the circulator route, interconnecting and providing feeder service to the Metro Station.

The first of the recommended shuttle routes is a direct link from the Metro Station to the EPG site (see Figure 16). This route serves the developing EPG site and provides a fast and simple connection to Metrorail. The route is 4.6-miles long and the estimated runtime is 15 minutes. This service is designed to operate at 12-minute headways during peak periods on weekdays only (from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m.) and provides a linkage for work trips between the Metrorail station and the BRAC employment at the EPG.

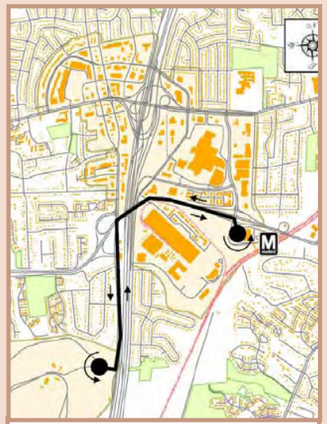
The second shuttle route serves the GSA site with a quick connection to Metrorail (see Figure 17). The route is 2.6-miles long and the estimated runtime is 11 minutes. This service is designed to operate at 12-minute headways during peak periods on weekdays only (from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m.) and provides a linkage for work trips. This route could serve both existing development within the GSA warehouse area, including the expanding medical campus, as well as future BRAC and BRAC-related uses as redevelopment occurs in the area.

It is estimated that a fleet of nine smaller size buses would be required to operate the proposed services. The associated capital costs were estimated at $1.8 million and the annual operating and maintenance costs were estimated to be about $1.95 million in 2007 dollars. Table 14 shows a detailed breakdown of how these costs were estimated.

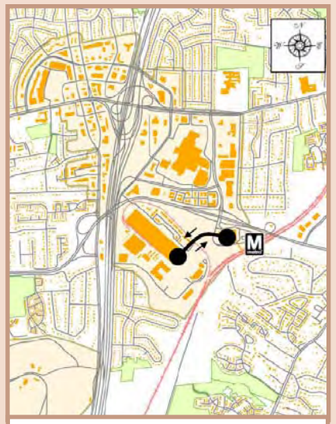
***Figures 15, 16, and 17. Proposed Transit Services***




*Circulator Route*




*EPG Shuttle*




*GSA Shuttle*

***Table 14. Cost Estimate for Proposed Transit Services***

| | Circulator Route – Clockwise | Circulator Route – Counter-Clockwise | EPG Site Access – Shuttle | GSA Site Access – Shuttle |
|---|---|---|---|---|
| **Headways** | | | | |
| Weekday – 6 a.m. to 10 a.m. | 12 | 12 | 12 | 12 |
| Weekday – 10 a.m. to 3 p.m. | 12 | 12 | | |
| Weekday – 3 p.m. to 7 p.m. | 12 | 12 | 12 | 12 |
| Weekday – 7 p.m. to 8 p.m. | 12 | 12 | | |
| Weekday – 8 p.m. to 12 p.m. | 20 | 20 | | |
| Weekend – 6 a.m. to 8 p.m. | 12 | 12 | | |
| Weekend – 8 p.m. to 12 p.m. | 20 | 20 | | |
| **Service Hours** | | | | |
| Weekday – 6 a.m. to 10 a.m. | 4 | 4 | 4 | 4 |
| Weekday – 10 a.m. to 3 p.m. | 5 | 5 | | |
| Weekday – 3 p.m. to 7 p.m. | 4 | 4 | 4 | 4 |
| Weekday – 7 p.m. to 8 p.m. | 1 | 1 | | |
| Weekday – 8 p.m. to 12 p.m. | 4 | 4 | | |
| Weekend – 6 a.m. to 8 p.m. | 14 | 14 | | |
| Weekend – 8 p.m. to 12 p.m. | 4 | 4 | | |
| Annual Total | 6,390 | 6,390 | 2,024 | 2,024 |
| **Trips** | | | | |
| Weekday – 6 a.m. to 10 a.m. | 20 | 20 | 20 | 20 |
| Weekday – 10 a.m. to 3 p.m. | 25 | 25 | | |
| Weekday – 3 p.m. to 7 p.m. | 20 | 20 | 20 | 20 |
| Weekday – 7 p.m. to 8 p.m. | 5 | 5 | | |
| Weekday – 8 p.m. to 12 p.m. | 12 | 12 | | |
| Weekend – 6 a.m. to 8 p.m. | 70 | 70 | | |
| Weekend – 8 p.m. to 12 p.m. | 12 | 12 | | |
| Annual Total | 29,110 | 29,110 | 10,120 | 10,120 |
| **Bus Cycle Time (minutes)** | | | | |
| Cycle Time | 20 | 21 | 15 | 11 |
| **Bus Cycle Distance (miles)** | | | | |
| Cycle Distance | 5.3 | 5.4 | 4.6 | 2.6 |
| **Bus Requirements** | | | | |
| Buses | 2 | 2 | 2 | 1 |
| **Operating and Maintenance (O&M) Cost per Vehicle Revenue Hour @ $80.47** | | | | |
| Annual O&M Cost | $780,827 | $819,869 | $203,589 | $149,299 |
| **Capital Costs @ $200,000 per Bus** | | | | |
| Total Capital Cost | $400,000 | $400,000 | $400,000 | $200,000 |

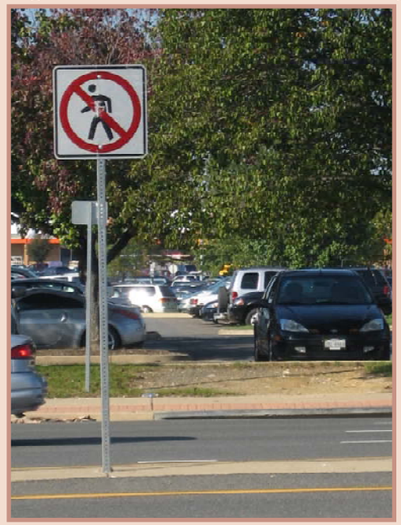
Service levels would also require two spare vehicles at $200,000 per vehicle or $400,000 in total

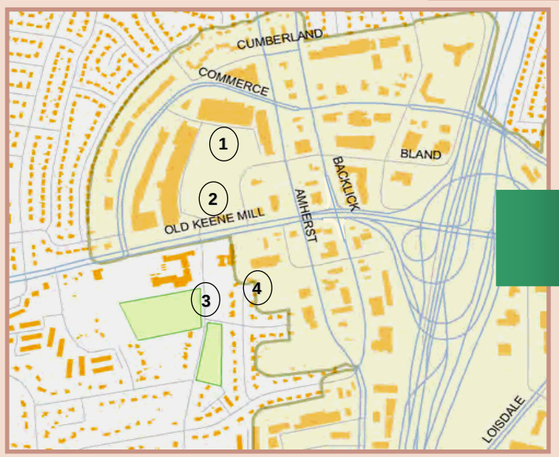
## Commuter Parking

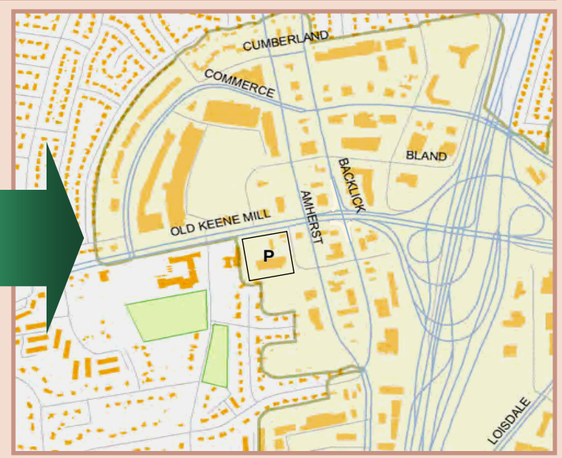
Bus park-and-ride activity and casual carpooling, or “slugging,” takes place in the Springfield area as a means for taking advantage of the HOV facility on I-95/I-395 to Washington, D.C. Slugging has been operating successfully in Springfield for more than 30 years. Although the slug concept is well accepted and effective in encouraging HOV use within Springfield, the lack of control of pedestrian movements across arterial streets between official park-and-ride facilities and unofficial slug pickup sites creates a major safety issue. Perhaps the most dangerous location is found at the Springfield Plaza. Participants park at the Springfield Plaza but then frequently cross Old Keene Mill Road directly rather than using the designated crossing points.

As noted in the *Existing Conditions and Plans* report volume, approximately 485 commuter parking spaces are present in this vicinity spread among four parking lots. Under the preferred alternative, a structured parking facility (up to 1,000 spaces) is proposed to be constructed on the south side of Old Keene Mill Road on the site of the abandoned Circuit City store. The resulting facility could accommodate both carpool and transit users in an orderly and safer fashion. The facility can be developed as a stand-alone commuter facility, or combined with other public and private uses as part of a redevelopment plan for the property. Transit and pedestrian connectivity to the site should be integrated into the project once funding for the improvement is secured.

### *Figure 18. Commuter Parking Lot*






## Pedestrian Friendly Connections

High-quality pedestrian accommodations need to be provided or enhanced throughout the study area. In the *Framework Plans and Street Typology* report volume the concept of pedestrian-priority intersections was introduced and several candidate intersections were identified. In addition, guidance and information on appropriate treatments to consider is contained in the volume. Pedestrian signals, adequately marked crosswalks, and pedestrian refuges are among the treatments that can help to maximize pedestrian safety and connectivity. Curb extensions and bump outs can shorten the distance (and time) required for pedestrians to cross. Crosswalks can additionally serve as visual and physical connecting elements that reinforce the notion that a pedestrian system exists.

In the vision for Springfield, sidewalk provisions are in place along virtually all roads and streets and marked bicycle lanes provide further non-motorized connectivity. New connections between the Southeast Quadrant, Metro Station, and the GSA site are provided. Attention is paid to the pedestrian experience so walking can be reasonably pleasant – street trees, benches, good lighting, and other amenities can be provided to encourage walking longer distances than typical for suburban settings.

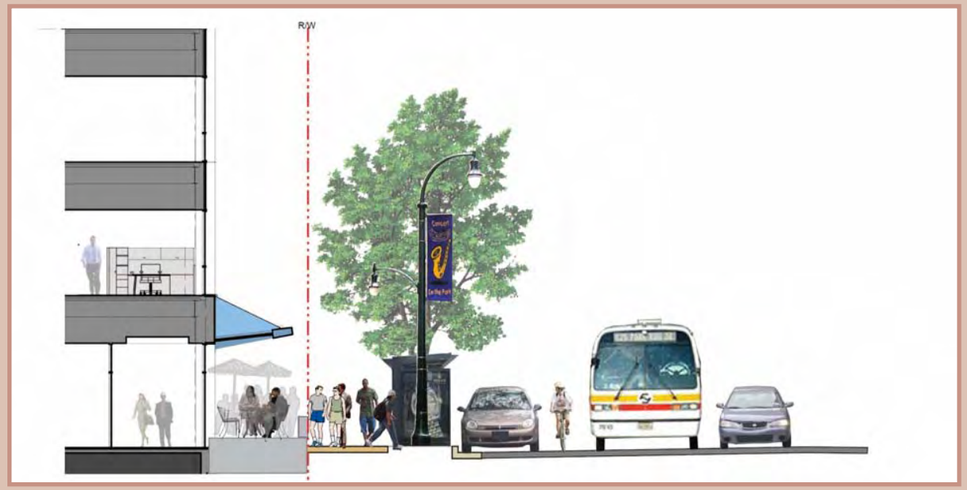
## Context Sensitive Design

Context sensitive solutions are roadway standards and development practices that are flexible and sensitive to community values. Specific recommendations for revised street cross-sections are offered in the separate *Framework Plans and Street Typology* report volume. There are many treatments that may occur under a context sensitive design regime including:

- Number of lanes provided may be reduced;
- On-street parking may be provided;
- Widths of lanes, median, and sidewalks may be adapted to the more urban context of the facility; and
- Dedicated turning lanes may be skipped to narrow intersection approaches and improve pedestrian safety.

For the Springfield Connectivity Study, a custom typology of streets was developed to create a pattern of context sensitive road designs for Springfield. The proposed roadway cross-sections establish a framework that can be used to improve roads and facilitate active streetscapes. Four different street types were defined: Major Arterial, Minor Arterial, Collector Street, and Local Street. Each street type has particular characteristics in terms of traffic capacity, lane width, sidewalks, setbacks, building zone, landscape buffers and other elements and these are illustrated in the report volume as a series of roadway cross-sections showing how Springfield’s identity and sense of place can be enhanced as streets are rebuilt and adjacent uses are developed. The preferred alternative incorporates these recommendations for context-sensitive redesign of streets in Springfield.

### *Figure 19. Illustration of Context-Sensitive Collector Street Design*



# Placemaking Improvements

A variety of placemaking improvements crossover into the transportation realm. Interesting pedestrian environments are more inviting for walkers and it has been seen that often longer walking distances are traveled in such areas. High-quality bus shelters may encourage so-called choice riders to use the bus. Branding and identity elements can help people on foot to navigate the area as well as serve to highlight connections between areas. Improvements are identified in Part 2 of the Final Report, *Framework Plans and Street Typology*. This section highlights a menu of these options and presents potential cost information for implementation in the Springfield study area.

***Wayfinding and Branding Treatments***

A variety of public art pieces such as sculpture or fountains could be used to help develop a brand for the entire study area or for specific quadrants. Branding can aid in wayfinding and make pedestrian and transit travel easier to navigate. Branding treatments are costed as special projects, not as unit costs. Physical treatments can range from under $100K to over $1M per piece. Advertising programs can be tailored to funds available.

Specific wayfinding elements include the proposed gateways to the area, district identity signs, lamp-post banners, trailblazer and directional signs, information kiosks, and parking signs. Unit cost estimates and approximate quantities are provided in Table 15.

***Streetscape Elements***

Streetscape elements enhance the pedestrian and transit experiences and provide for a more attractive traveling environment. The costed streetscape elements also include provisions for implementation of revised street cross-sections and additional local streets recommended in the future transportation networks. Table 16 presents a cost estimate. The Franconia-Springfield Parkway pedestrian underpass improvement costs are incorporated as an allowance in the estimate for the Frontier Drive Extension and not repeated in this table.

## *Table 15. Wayfinding Item Cost Estimate*

| Item | | Cost Estimate |
|---|---|---|
| **Gateway Improvement** | Quantity | 5 |
| | Unit Cost* | $ 200,000 |
| | Total | $ 1,050,000 |
| **District Identity Signs** | Quantity | 6 |
| | Unit Cost | $ 25,000 |
| | Total | $ 150,000 |
| **Identify banners/Banner-like Signs** | Quantity** | 1,150 |
| | Unit Cost | $ 4,000 |
| | Total | $ 4,600,000 |
| **Trailblazer/Directional Signs** | Quantity | 30 |
| | Unit Cost*** | $ 5,000 |
| | Total | $ 150,000 |
| **Pedestrian Kiosk** | Quantity | 10 |
| | Unit Cost | $ 25,000 |
| | Total | $ 250,000 |
| **Parking Signs** | Quantity | 20 |
| | Unit Cost | $ 2,000 |
| | Total | $ 40,000 |


* The unit cost is based on a gateway design that includes a signage wall and its surrounding landscape.
** Assume two banners for each light pole within the project area. Banner material is Pyrotonecotton polyester blend.
*** Cost varies upon number of blades and quantity of signs and mounting conditions.

***Open Space Improvements***

Open Space improvements help to create a sense of place and also enhance the pedestrian and bicycling experience to encourage the usage of these modes of travel. Table 17 presents unit cost estimates and quantities for applying these treatments to the Springfield study area in accordance with the framework plans.

## *Table 16. Streetscape Elements Cost Estimate*

| Streetscape Elements | Quantity | Unit Cost | Total |
|---|---|---|---|
| **Sidewalk Paving - Special Paving** | 1,000,000 SF | $ 18 per SF | $ 18,000,000 |
| **Sidewalk Paving - Concrete** | 350,000 SF | $ 5 per SF | $ 1,750,000 |
| **Roadway Pavement** | 3,700,000 SF | $ 15 per SF | $ 55,500,000 |
| **Curb and Gutter** | 200,000 LF | $ 15 per LF | $ 3,000,000 |
| **Crosswalk** | 6,200 SF | $ 15 per SF | $ 93,000 |
| **Street Trees** | 4,000 | $ 1,000 ea | $ 4,000,000 |
| **Ornamental Trees** | 600 | $ 600 ea | $ 360,000 |
| **Ground Cover/Perennials** | 390,000 SF | $ 7 per SF | $ 2,730,000 |
| **Lawn** | 460,000 SF | $ 1 per SF | $ 460,000 |
| **Tree Grates** | 1,400 | $ 2,500 ea | $ 3,500,000 |
| **Street Lighting** | 1,150 | $ 4,000 ea | $ 4,600,000 |
| **Pedestrian Lighting** | 800 | $ 3,000 ea | $ 2,400,000 |
| **Trash Receptacle** | 300 | $ 1,200 ea | $ 360,000 |
| **Benches** | 800 | $ 1,600 ea | $ 1,280,000 |
| **Bike Rack** | 250 | $ 500 ea | $ 125,000 |
| **Bus Shelter** | 61 | $ 25,000 ea | $ 1,525,000 |

## *Table 17. Open Space Improvements Cost Estimate*

| Open Space Improvements | Quantity | Unit Cost | Total |
|---|---|---|---|
| **Center Green** | 7 | $ 2,000,000 | $ 14,000,000 |
| **Urban Plaza** | 7 | $ 900,000 | $ 6,300,000 |
| **Pocket Park** | 15 | $ 300,000 | $ 4,500,000 |

## Overview

All of the scenarios were reviewed and assessed in a variety of ways (both qualitative and quantitative) to help arrive at a preferred alternative. Travel demand forecasting was performed to help assess the relative performance of the combinations of land use and transportation networks represented in each scenario. In addition, a broader urban planning and design perspective was applied to each scenario. The resulting preferred alternative is to be used by Fairfax County to create a comprehensive program of short- (8 to 10 years) and long-term improvements to be incorporated into a realistic and implementable financial program. The preferred alternative will be used as a guide to amend the Comprehensive Plan recommendations for the area. Adoption of a new plan for Springfield will require public review and hearings and approval by the County Board of Supervisors.

Three key concepts were tested across the scenarios: the ability to support placemaking and urban design improvements; connectivity and mobility in and around Springfield; and integration of the mobility and placemaking goals. Within each of these concepts, a variety of measures of effectiveness were used to evaluate the scenarios.

## Placemaking and Design

Placemaking and urban design considerations are at the core of the Springfield Connectivity Project. They are primarily addressed in the Springfield Framework Plans. The specific objectives are as follows:

- Establish an attractive and unified identity for Springfield through an appropriate mix of land uses, densities, and urban design;
- Develop a sense of place within Springfield through signage, gateway treatments, branding, public art and architecture, while recognizing the unique qualities in each of the quadrant areas; and
- Strengthen visual connections through incorporating complementary physical elements, such as landscaping, streetscaping, and architectural styles in defined areas.

The Springfield urban design guidelines strive to make certain that the Study Area's streets are designed for activity at all times of the day, buildings abut the street in a way that is conducive to encouraging pedestrian activity on the street, and, overall, a clear sense of place is created through branding, creating gateways, and more open, civic spaces. The guidelines apply to all land use and transportation alternatives.

## Connectivity

The connectivity and mobility objectives gauge the ease of travel in and around Springfield:

- Improve the capacity and effectiveness of the multimodal transportation system in the Greater Springfield area;
- Strengthen regional and local transit connections to improve future accessibility;
- Develop safe and convenient pedestrian and bicycle connections;
- Enhance the connectedness and accessibility of the Metrorail station to surrounding communities and commercial areas through transit and pedestrian improvements; and
- Optimize use and accommodation of transportation demand management strategies to reduce the use of single occupancy vehicles in and around the Springfield area.

Automobile, transit, bicycle, and pedestrian mobility were all considered when evaluating the scenarios. This assessment shows there may be tradeoffs necessary to meet all mobility needs. For example, when considering streets and intersections, where there is a high automobile LOS, there may be a low pedestrian LOS. Likewise, where there is a high pedestrian LOS, there may be a low automobile LOS. Using this assessment, decision-makers can evaluate the balance they needed to accommodate all modes.

A number of transportation measures of effectiveness were used to assess the scenarios. They are discussed in detail on the next page.

## Integration

The integration objectives evaluate the effective integration of the mobility and place-making goals. Essentially, they assess how easily and efficiently people are able to move from one place to another, and under what conditions:

- Address the transportation deficiencies within each area in balance with the need to create vibrant, walkable places and centers;
- Facilitate the development of a variety of outdoor and indoor public gathering places that are integrated within a comprehensive pedestrian network;
- Preserve the integrity of adjacent residential neighborhoods, while enhancing transportation and pedestrian connectivity to them; and
- Accommodate new residential growth in keeping with county and regional goal to locate growth in activity centers.

# Measures of Effectiveness

## Modal Level of Service

***Automobile Level of Service***

The Highway Capacity Manual (HCM) Automobile Level of Service (LOS) is one indicator of delay and congestion on roadways. Automobile LOS was evaluated from a link and intersection perspective. A summary of automobile intersection LOS results can be found in Table 18.

For the purpose of this study and in conformance with County Comprehensive Plan guidance, a LOS score of "D" or better is considered acceptable. A total of twelve intersections were analyzed for the purpose of transportation analysis.

To test sensitivity to extended pedestrian walk periods as part of signal cycles, LOS was calculated based on the occurrence of a pedestrian call button being activated on each cycle, but with otherwise similar signal phasing and timing. Another test was to consider intersection improvements as a means to mitigate added delay from such pedestrian cycle treatments. Although these tests showed a detrimental effect on intersection LOS resulting from introducing pedestrian time in this manner and the potential to mitigate this effect through lane additions, these tests were of a sketch-planning nature. Signal optimization implementation would be undertaken to explore specific timing and interconnect requirements to meet the needs of both automobiles and pedestrians at signalized intersections in the study area.

***Bus Quality/Level of Service***

While transit Quality/Level of Service (QLOS) was not explicitly measured for this study, under all scenarios a high bus level of service will be achieved. Attributes which determine transit QLOS for bus service include the bus stop frequency and the number of hours the service operates. Bus services which make frequent stops and have longer hours of service receive the best QLOS score. All future alternative scenarios have enhanced bus service.

***Bicycle and Pedestrian Quality/Level of Service***

Bicycle and pedestrian QLOS were analyzed on a link level in the study area. A description of this analysis can be found in the *Framework Plans and Street Typology* volume. Future year bicycle and pedestrian QLOS scores are dependant on a number of factors, including future street design, traffic volumes, and assumptions about perceptions about different street treatments. For the purpose of this analysis, the future streets were assumed to be designed to the standards in the urban design guidelines. Overall, an improvement in QLOS scores results in the study area.

### *Table 18. Automobile Intersection LOS Summary*

| Scenario | Number of Intersections (LOS D/E/F) |
|---|---|
| Existing Conditions 2005 | 5 |
| Baseline 2015 | 7 |
| Alternative 1 2015 | 7 |
| Alternative 1 2030 | 7 |
| Alternative 2 2015 | 6 |
| Alternative 2 2030 | 8 |
| Comprehensive Plan 2030 | 6 |

## Mode Share of Work Trips

The mode share of work trips indicates which modes people are using to come to and from work in the study area. Table 19 shows the mode share for each scenario. Percent drive alone decreases and percent transit increases with 2030 Alternative scenario, with Alternative 2 performing the best.

### *Table 19. Mode Share of Work Trips*

| | Existing Conditions | Baseline | Alternative 1 | | Alternative 2 | | Comprehensive Plan |
|---|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2015 | 2030 | 2015 | 2030 | 2030 |
| Total Trips | 17,000 | 19,000 | 19,000 | 32,000 | 32,000 | 41,000 | 21,000 |
| Percent Drive Alone | 85% | 84% | 85% | 79% | 83% | 78% | 81% |
| Percent Rideshare | 5% | 5% | 5% | 6% | 6% | 6% | 6% |
| Percent Transit | 10% | 11% | 10% | 15% | 11% | 16% | 13% |

## Average Vehicle-Miles and Vehicle-Hours Traveled

The average vehicle-miles traveled for a Springfield resident is an indicator of the distance Springfield residents are having to travel to their destinations. The fewer miles traveled is an indicator that transportation needs are being met closer to home. Table 20 shows the average home-based vehicle-miles traveled (VMT) across the tested scenarios and shows that Alternative 2 performs similarly to the other scenarios. The travel model does not produce a calibrated real-time figure for vehicle-hours of travel (VHT), but the raw model output shows no significant difference in this metric among the alternatives tested.

### *Table 20. Average Morning Peak VMT*

| | Existing Conditions | Baseline | Alternative 1 | | Alternative 2 | | Comprehensive Plan |
|---|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2015 | 2030 | 2015 | 2030 | 2030 |
| Vehicle-Miles Traveled | 9.1 | 8.4 | 8.7 | 8.5 | 8.3 | 8.7 | 8.3 |

## Transit Accessibility

The adjacency of housing and jobs to transit services indicates its accessibility. Table 21 shows the number of jobs and dwelling units within 500 feet of planned or existing bus routes under each scenario. Table 22 shows the number of jobs and dwelling units within close proximity to the Metrorail station. Dwelling units within 2,500 feet and jobs within 1,600 feet of the Metrorail station were calculated for each scenario. The numbers vary due to the composition of the various land use scenarios. Transit accessibility increases under the Alternative 2 scenarios for 2015 and 2030.

### *Table 21. Bus Route Buffer Analysis*

| | Existing Conditions | Baseline | Alternative 1 | | Alternative 2 | | Comprehensive Plan |
|---|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2015 | 2030 | 2015 | 2030 | 2030 |
| Dwelling Units within 500 feet | 1,900 | 3,300 | 3,300 | 7,900 | 3,300 | 10,600 | 3,100 |
| Jobs within 500 feet | 9,400 | 12,000 | 15,000 | 22,000 | 24,300 | 28,000 | 15,500 |

### *Table 22. Metrorail Station Buffer Analysis*

| | Existing Conditions | Baseline | Alternative 1 | | Alternative 2 | | Comprehensive Plan |
|---|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2015 | 2030 | 2015 | 2030 | 2030 |
| Dwelling Units within 2,500 feet | 200 | 200 | 200 | 300 | 200 | 300 | 300 |
| Jobs within 1,600 feet | 700 | 700 | 700 | 1,200 | 1,300 | 1,500 | 800 |

## Average Roadway Density

Like a connectivity index, the average roadway density is an indicator of the connectedness of the street grid; the connectivity of the transportation network. Table 23 shows the number of feet of roadway per acre in the study area for each of the scenarios. The difference in density is a direct result of the transportation assumptions for each scenario.

### *Table 23. Roadway Density*

| | Existing Conditions | Baseline | Alternative 1 | | Alternative 2 | | Comprehensive Plan |
|---|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2015 | 2030 | 2015 | 2030 | 2030 |
| Total Roadway Network (Feet) | 173,000 | 173,000 | 193,000 | 215,000 | 205,000 | 220,000 | 177,000 |
| Roadway Density (Feet/Acre) | 210 | 210 | 240 | 270 | 250 | 270 | 220 |

# GSA BRAC Sensitivity Analysis

As of August 2008, the GSA property in Springfield was a candidate for redevelopment by DOD to provide BRAC-related administrative office space and other support functions. A decision on this will not be reached until late summer/fall 2008. Specific analysis was performed to analyze the impact of this BRAC-related redevelopment by 2015. Several intersections were reported to be failing in the Adaptive Re-use Study for the GSA Warehouse Area published in April 2007.

The land use for this analysis was provided by Fairfax County Department of Transportation and Department of Planning and Zoning. The transportation assumptions included:

- Three points of access to the GSA site: Franconia-Springfield Parkway (via the Frontier Drive extension), Metropolitan Center Drive, and Springfield Center Drive.
- Improvements to the Metropolitan Center Drive/Loisdale Road intersection to accommodate dual turn lanes in each direction and Metropolitan Center Drive widening to four lanes.
- 20 percent of all commuters accessing the GSA site from the south would use transit and 15 percent of all commuters accessing the site from the north would use transit.

The analysis consisted of converting the development into morning peak hour trips, using the ITE (7th edition) Trip Generation Manual, and distributing the trips to the local roadway system, in addition to the background traffic obtained from the Springfield subarea model, and assessing the morning peak level of service using Synchro analysis software.

Due to heavy inbound volumes, left and right turn lanes experienced significant delays, resulting in poor levels of service at the affected intersections. Additional analysis might consider additional turn lanes or traffic mitigation measures.

As a result of this study, some of the needs that were confirmed included:

- The Frontier Drive extension is needed to support redevelopment of the GSA warehouse area above Comprehensive Plan levels;
- Adding a fourth access point to the GSA site would mitigate poor levels of service at intersections;
- Introducing inbound and outbound ramps connecting the GSA site directly to the Franconia-Springfield Parkway would be desirable (but require further engineering analysis); and
- Providing stacking space for security purposes would be a critical need.

## Scenario Definition

The third stage of the project saw the development of the preferred alternative, developed by evaluating the performance of the seven scenarios tested in the second stage of the project.

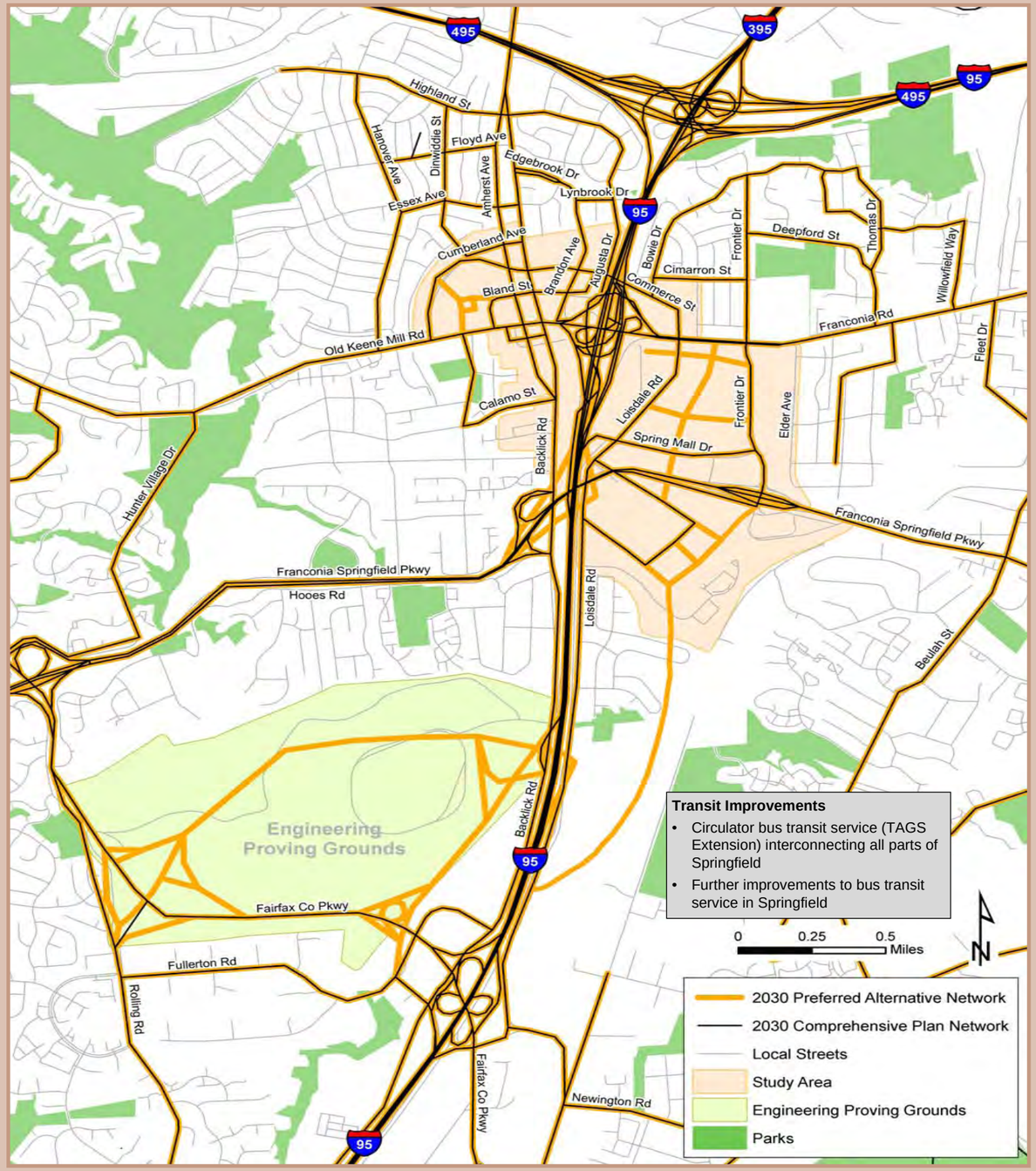
The 2030 Alternative 2 scenario offered the best combination of outcomes and was chosen as the preferred alternative. The land use assumptions for the preferred alternative remained the same as for the 2030 Alternative 2 scenario. The 2030 preferred alternative transportation network remained identical to the Alternative 2 transportation network, except that a connection from the EPG Perimeter Road and Neuman Street, north of the EPG, was not included. The 2030 preferred alternative transportation network is shown in Figure 20. Please see page 19 for more details.

Ultimately, the preferred alternative had the most balanced and extensive mix of proposed land use and density for the study area. The jobs to housing (J/H) ratio for the preferred alternative was 3.2 — an improvement over the Comprehensive Plan which has a J/H ratio of 4.8. For the preferred alternative, the intersection Level of Service analysis was extended to 22 intersections. For these 22 intersections a more detailed and operationally constrained analysis was performed than during the stage one scenario testing for 2015 and 2030. Figure 22 shows the automobile Level of Service findings for the preferred alternative.

As a result of the land use assumptions and enhanced transit network, the preferred alternative results in a significantly higher number of jobs and dwelling units located near transit in the Study Area as compared with the 2030 Comprehensive Plan scenario. The result is higher transit mode share for work trips either originating or ending in Springfield as compared with the Comprehensive Plan. Furthermore, the road network for the preferred alternative is 25 percent more dense than under the 2030 Comprehensive Plan scenario, indicating improved capacity and connectivity. Finally, the 2030 Alternative 2 scenario was also the most compatible with the recommended urban design guidelines.

Table 24 and Table 25 summarize the land use and transportation network recommendations, respectively, that comprise the preferred alternative. Following the appropriate level of public review, these land use and transportation elements should be incorporated into an updated Comprehensive Plan for the Springfield area designed to create a new long-term vision for the community.

***Figure 20. 2030 Preferred Alternative Network***



## *Table 24. Preferred Alternative Land Use Assumptions*

| Redevelopment | Land Unit* | 2030 |
|---|---|---|
| **Northeast Quadrant** | | Existing use |
| **Northwest Quadrant** Springfield Community Business Center (CBC) | A | 2.0 FAR overall, (700,000 square-foot (SF) retail; 800,000 SF office; 440,000 SF hotel uses; 3,235 multifamily units), to include Midtown Springfield and Marriott developments |
| | B | 2.0 FAR (75% residential, 17% office, 8% retail use) |
| | C | |
| **Southwest Quadrant** Springfield Community Business Center (CBC) | D-1 | Option plan level of 1.0 FAR and 1.5 FAR (90% office; 10% retail use) for applicable portions |
| | D-2 | 0.50 FAR (90% office; 10% retail use) |
| | E | 0.35 FAR community serving retail |
| **Southeast Quadrant** Franconia-Springfield Transit Station Area | A-1 | 2.0 FAR hotel and conference center use |
| | A-2 | 1.0 FAR office use |
| | B | Springfield Mall: fully built out with Phase 2 (~2.0 FAR): approximately 2.8 million SF residential (1,960 units: 1,922 multifamily and 38 townhomes); 1 million SF office uses; 2 million SF retail uses |
| | C | 1.0 FAR (20% retail; 80% multifamily residential) |
| | D-1 (GSA) | 9,000 jobs (BRAC) with additional Comprehensive Plan |
| | D-2 | 0.50 FAR office use |
| | E | 0.30 FAR public facilities and institutional uses |
| | F-1 | 0.30 FAR retail use |
| | F-2 | 0.30 FAR retail use |
| | G | WMATA will provide information |
| | H | Single family residential use (existing) |
| | I | Park and 5-8 dwelling units/acre single family residential use (existing) |
| **Engineer Proving Ground** | | 9,000 jobs (BRAC) |

* See Figure 3 for map of land units

## *Table 25. Preferred Alternative Transportation Assumptions*

- CLRP 2015[a];
- BRAC supporting network[b];
- One way Amherst-Backlick couplets crossing Old Keene Mill Road
- Bland Street in town center widened to four lanes;
- Up to 1,000 commuter spaces at Circuit City site plus attendant transit access and service improvements;
- Urban street grid in town center area/CBC;
- Urban street grid at Springfield Mall;
- Link road between Hilton and Kaiser buildings;
- Redesigned Loisdale Road north of Franconia-Springfield Parkway; as an urban boulevard (with streetscaping, bicycle lanes, pedestrian enhancements, etc.);
- Loisdale Road south of GSA to Newington widened to four lanes;
- Frontier Drive extension four lanes south along Metro property and east side of GSA/Loisdale Estates to connect to Loisdale Road;
- Improved access to GSA (road from Spring Mall Road through KSI development; completion of loop road; bus shuttle to Metro);
- Expanded circulator bus service (TAGS extension); and
- Further improvements to bus transit service in Springfield (such as shorter headways).

[a] The 2015 MWCOG Financially Constrained Long Range Plan (CLRP) includes the following improvements in and around Springfield:
Highway Improvements
I-495 HOT lanes;
I-95/395/495 interchange reconstruction with HOV/HOT access ramps to/from I-495;
I-95 construct interchange at VA 7900 for LOV access to/from north and west;
I-95 widen to eight lanes south of Newington;
Fairfax County Parkway construct six lanes VA 7900 to Fullerton Road; and
I-95/I-395 HOT lanes Eads Street to Stafford County line (pending);
Transit Improvements
I-395 HOV restripe to three lanes;
I-95 HOV extend to Stafford County line and restripe to three lanes from I-95/395/495 interchange to Quantico Creek;
Fairfax County Parkway construct two HOV lanes Sydenstricker to VA 7900;
I-495 HOT lanes transit service; and
I-95/395 HOT lanes transit service (pending).

[b] BRAC network:
Fairfax County Parkway from Franconia-Springfield to I-95 with six lanes and diamond interchange;
Ramp off SB I-95 general purpose lanes to EPG perimeter road and Barta Road;
Ramp from NB I-95 HOV lanes to bridge connecting to EPG;
Barta Road access from Backlick; Fairfax Parkway/Rolling Road main access to EPG;
I-95/Newington interchange improvement; and
Transit service to EPG from Newington/I-95 area and Franconia-Springfield station.
Improvements subject to change. NB= Northbound; SB=Southbound.

## Automobile Intersection Level of Service

***Figure 21. 2005 Existing Conditions***

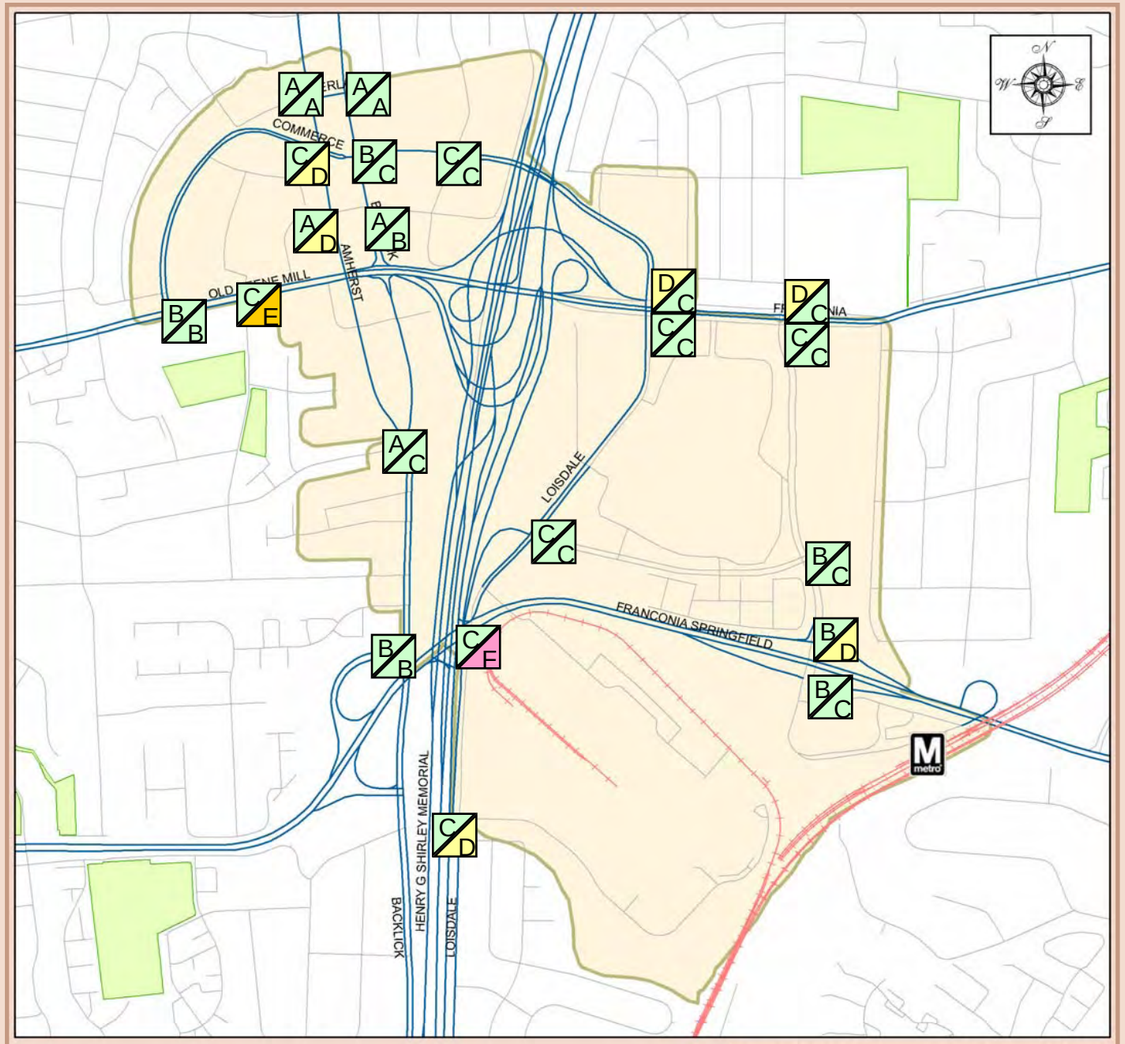
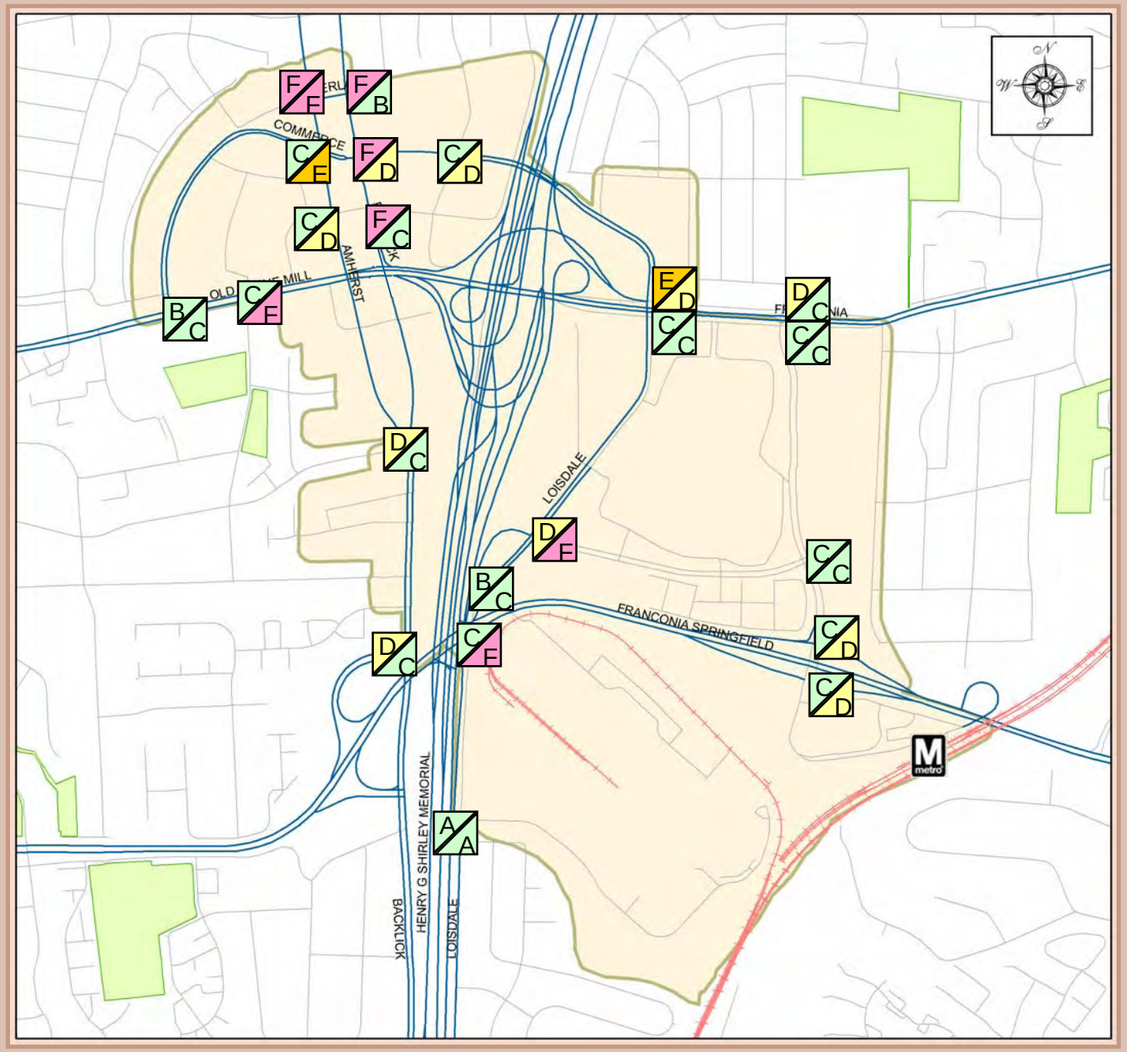



***Figure 22. 2030 Preferred Alternative***




The HCM Automobile LOS for intersections is based on the delay expected to be experienced by vehicles using the intersection and for the overall "grade" considers all intersection approaches, not just the primary approach. This is important to consider when viewing the results in the Northwest Quadrant, where performance on the primary approaches of Backlick Road and Amherst Avenue is good, but cross-street delay (in part, due to the signal cycle lengths) is responsible for the overall downgrades. As noted elsewhere in this report, signal optimization implementation could be undertaken to explore specific timing and interconnect requirements to meet the needs of both automobiles and pedestrians at signalized intersections in the study area and potentially improve the intersection LOS by one letter grade or more. For the results presented here, signal cycle lengths were not changed from the existing conditions and signal timing was not fully optimized. Overall, the results are quite good, especially when viewed with respect to the increased intensity of development in the area under the preferred alternative.

## Regional Effects of the Preferred Alternative

During the study, an analysis was undertaken to review the regional traffic impacts of the Preferred Alternative on surrounding major roadways as compared with the Comprehensive Plan scenario. Modest increases in traffic over the Comprehensive Plan land use (as tested) are forecast for the major facilities providing regional connections to the study area, as follows:

- I-95 shows an approximately 4 percent increase in daily traffic;
- The Franconia-Springfield Parkway shows an approximately 9 percent increase in traffic; and
- Old Keene Mill Road and Franconia Road show an approximately 14 percent increase in daily traffic.

Several factors are present in this specific analysis which may serve to overstate the potential difference in the impacts between the current Comprehensive Plan and the Preferred Alternative scenario (i.e., this presentation is worst-case). First, this analysis incorporated lower levels of employment at the GSA site (from MWCOG Round 7.0) rather than the higher levels of employment now reflected in the Plan. Second, this analysis incorporates an extension of Metrorail service southward beyond the Franconia-Springfield station in the Comprehensive Plan scenario, but the Preferred Alternative does not include this extension. Third, the traffic volume forecasts for the Preferred Alternative do not include adjustments to vehicle trip generation levels to account for enhanced travel demand management (TDM) programs or other possible factors beyond those already contained in the regional forecasting model.

The Preferred Alternative represents an increase in land use intensity and mix as compared with the accepted Comprehensive Plan. It includes 9,000 proposed jobs as a result of BRAC at the GSA site. There is a resulting increase in traffic, but it is proportionally less than the increase in land use intensity. This can be attributed to the fact that the Preferred Alternative features increased density, better balancing of households and jobs, the introduction of more mixed land use, and an expansion of the local transportation options available. Increases in non-motorized trips are observed in the Preferred Alternative as compared with the tested Comprehensive Plan. The increased land use and increased congestion on the regional network outside of the study area results in less pass-through trips in the study area and generally shorter trip lengths (in terms of distance) in the future. Overall, the Preferred Alternative results in modest regional traffic impacts when compared against the tested Comprehensive Plan.

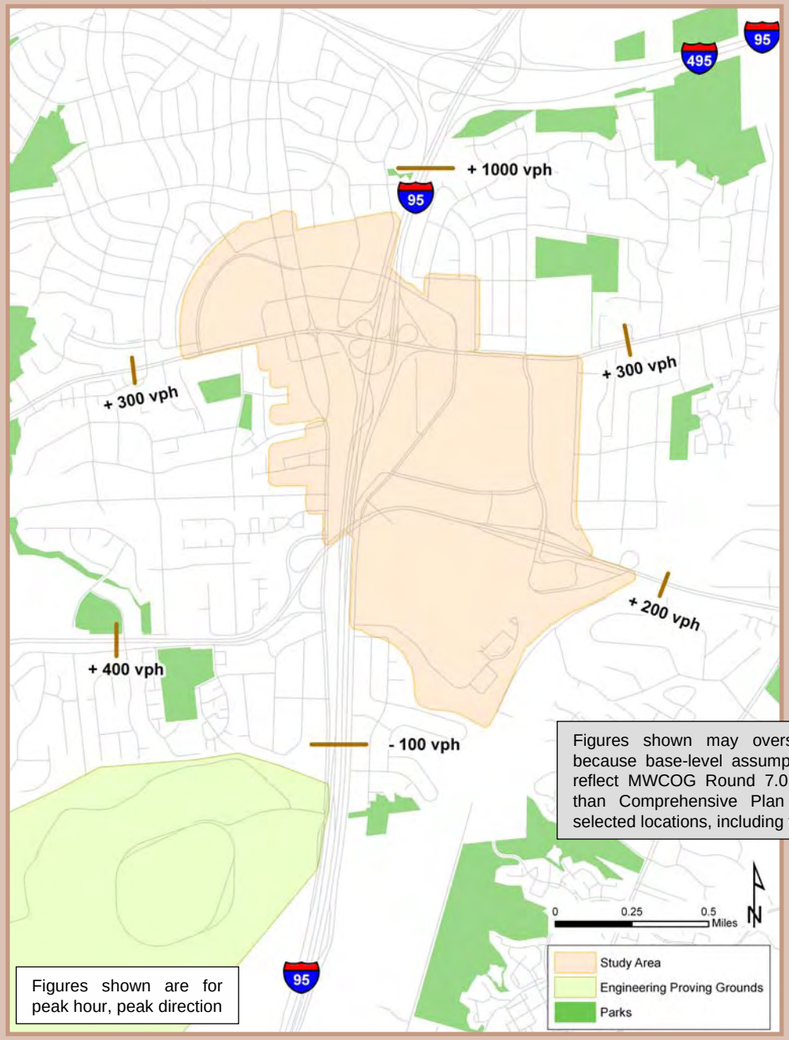
Reviewing the results, for the Preferred Alternative, overall access volumes to the Springfield study area remain balanced for trips arriving and departing from and to points to the east and west. Access volumes from the south are higher than access volumes from the north. Key intersections around the study cordon would be expected to operate with comparable automobile Level of Service under the Preferred Alternative as experienced under the tested Comprehensive Plan.

As illustrated in Figure 23, the estimated peak hour, peak direction increase in traffic as compared with the tested Comprehensive Plan on Old Keene Mill Road and Franconia Road is 300 vehicles at each cut location shown. This represents less than a third of a lane of added traffic given the standard estimated capacity for a major arterial. On Franconia Road, this represents around a quarter of a lane (although Franconia Road is also a major arterial, given the flyover and roadway geometry, its capacity is greater than that of Old Keene Mill Road). This level of traffic increase is such that it could likely be mitigated with small spot improvements to intersections and coordinated signal timing.

Figure 23 also shows the estimated peak hour, peak direction increase in traffic on Franconia-Springfield Parkway over that experienced with the tested Comprehensive Plan. There is an increase of 400 eastbound vehicles to the west of the study area and 200 westbound vehicles to the east of the study area. Given the capacity of this expressway, this increase represents about a quarter of a lane of added traffic. For I-95, the increase in peak hour, peak direction traffic over the tested Comprehensive Plan forecast shows a decrease of 100 northbound vehicles south of the study area and an increase of 1,000 southbound vehicles north of the study area. The decrease in northbound I-95 traffic appears to be due to diversions made possible by the expanded roadway network.

In conclusion, even though this analysis may overstate the potential change in traffic to be expected from adopting the Preferred Alternative rather than retaining the current Comprehensive Plan, the basic finding was that modest increases in traffic would be expected despite the significantly increased land use intensity.

***Figure 23. Regional Effects of the Preferred Alternative***




## Conclusions and Next Steps

Together, the *Existing Conditions and Plans, Transportation and Land Use Evaluation*, and *Framework Plans and Street Typology* reports paint a picture of the present challenges and potential future opportunities to revitalize the commercial area and enhance the livability of the greater Springfield area. The impact of BRAC changes and the relevant potential mitigation strategies specific to the study area have been considered. The Preferred Alternative emerges as a vision for Springfield which can meet the goals put forth by Fairfax County staff of promoting revitalization, encouraging a mix of land uses, and creating a multimodal transportation network. These reports provide the basis for Fairfax County to move forward with developing detailed plans for the revitalization of Springfield and lay the framework from which the County may begin to take proactive steps to transform the community.