



Final Report - September 2021

Fairfax County and Franconia Springfield Parkways  
**Alternatives Analysis & Long-Term Planning Study**

Prepared for:



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## Executive Summary

Fairfax County is a strong and vibrant community. By design, the landscape of the County includes an urban and suburban form, served by a diverse transportation network. Fairfax County Parkway and Franconia-Springfield Parkway (the Parkways) are at the heart of the County's transportation network. Stretching nearly 35 miles, from Route 7 to Richmond Highway and the Franconia-Springfield Metrorail Station, the Parkways support quality neighborhoods and thriving commercial areas.

Completed in 2017, the Fairfax County Parkway & Franconia-Springfield Parkway Corridor Study (Corridor Study) was co-administered by the Fairfax County Department of Transportation (FCDOT) and the Virginia Department of Transportation (VDOT). This study provided an operational and safety assessment of the existing Parkways and set the foundation for FCDOT to continue evaluating the roadways that provide a critical role within the Fairfax County transportation network. The Corridor Study identified challenges of the existing Parkways and multimodal opportunities for improvement, ultimately resulting in the identification of over 350 safety and operational improvements, but did not consider the long-term conditions for the corridors.

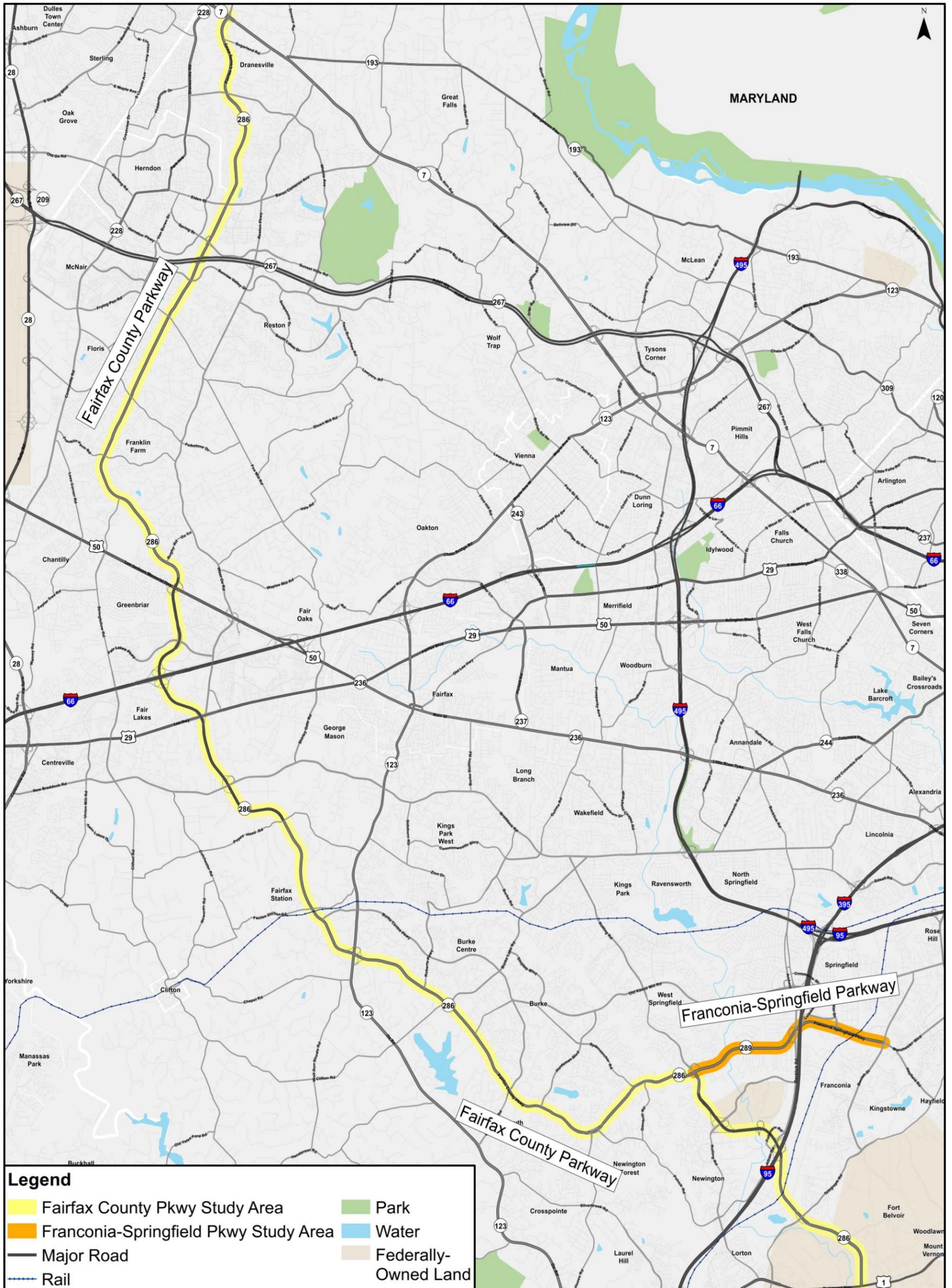
This study, the Fairfax County and Franconia-Springfield Parkways Alternatives Analysis & Long-Term Study (Long-Term Study), was a follow-on planning study, administered by FCDOT, in partnership with VDOT, to identify and mitigate long-term conditions for the Parkways. Specifically, the purpose of the Long-Term Study was to:

- evaluate future conditions of the Parkways based on currently planned transportation network modifications and regional land use forecasts;
- identify deficiencies or shortcomings with the future operations associated with the planned network modifications;
- collect public input on preferred elements to be incorporated into the future conditions of the Parkways;
- develop a preferred configuration of the Parkways (i.e. number of lanes, grade separation, high-occupancy lanes); and
- prioritize the newly developed transportation network recommendations.

A location map of the Parkways study corridors is shown in **Figure E-1**.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure E1: Study Location Map



The intended outcome of the Long-Term Study was to provide an updated set of recommendations for the Fairfax County Comprehensive Plan Transportation Plan Map that better fit with current data, trends, and public sentiment, as they pertain to the Parkways. These recommendations primarily consisted of the following:

- number of travel lanes (maintain, increase, or decrease the number of lanes in the current Comprehensive Plan);
- designation of high occupancy vehicle (HOV) travel segments (HOV is currently recommended for a majority of the Parkways);
- addition or removal of proposed grade-separated interchanges at existing at-grade intersections or planned network connections; and
- additional interchange modifications to already built interchanges along the corridors.

As outlined in this report, multimodal improvements were considered as part of the suite of recommendations for the future configuration of the Parkways. While the current Transportation Plan Map is generally centered around vehicular modes and considers how the configuration of the countywide transportation network directly affects travel and access for these modes, this study addressed all other modes at a high level. However, location-specific recommendations were not intended to be included in an update to the Transportation Plan Map. Such improvements are best suited for, and are being addressed in, the recently commenced ActiveFairfax Transportation Plan (will include updates to the existing Countywide Trails Plan and Bicycle Master Plan).

## **Public Outreach**

Three rounds of public outreach were conducted throughout the project, with each round serving a specific purpose to inform continued project development. Following each meeting, an online survey, relevant to the content of the meeting, was made available for a period of at least one month.

The following is a brief summary of each round of public outreach, including meeting dates and attendance.

### **Fall 2018 Public Outreach**

In October 2018, three different in-person meetings were hosted along the study corridors as the first stage of public outreach for the Long-Term Study:

- **October 9, 2018** - Navy Elementary School (*located near the Route 50 interchange with FCP*), 23 meeting attendees signed in
- **October 11, 2018** - Sangster Elementary School (*located near the Lee Chapel Road intersection with FCP*), 31 meeting attendees signed in
- **October 16, 2018** - Armstrong Elementary School (*located near the Lake Newport Road intersection with FCP*), 23 meeting attendees signed in

## Spring 2019 Public Outreach

In late March and early April 2019, three different in-person meetings were hosted along the study corridors as the second stage of public outreach for the Long-Term Study:

- **March 27, 2019** – Willow Springs Elementary School (*located near the Braddock Road interchange with FCP*), 11 meeting attendees signed in
- **March 28, 2019** – Armstrong Elementary School (*located near the Lake Newport Road intersection with FCP*), 31 meeting attendees signed in
- **April 4, 2019** – Sangster Elementary School (*located near the Lee Chapel Road intersection with FCP*), 67 meeting attendees signed in

## Summer 2020 Public Outreach

In late July and early August 2020, three virtual public meetings were hosted via WebEx, due to the COVID-19 pandemic as the third stage of public outreach for the Long-Term Study:

- **July 29, 2020** – 11:45 AM – 1:15 PM
- **July 30, 2020** – 7:00 PM – 8:30 PM
- **August 4, 2020** – 7:00 PM – 8:30 PM

## Online Survey Participation

Each round of public outreach was accompanied by an online survey. The Fall 2018 online survey captured a total of **15,150** responses, which represented the highest participation among the public outreach efforts. The Spring 2019 online survey had 1,391 responses recorded and the Summer 2020 online survey had 156 responses recorded. The zip codes with the highest recorded number of survey responses as part of the Fall 2018 online survey were in close proximity to the FCP and FSP corridors and included:

- **20171** – Herndon area of Fairfax County (**830** total recorded responses)
- **22153** – Springfield (**792** total recorded responses)
- **22015** – Springfield (**769** total recorded responses)
- **22039** – Fairfax Station (**542** total recorded responses)
- **22033** – Fairfax (**499** total recorded responses)

## Board Transportation Committee Input

FCDOT staff delivered a brief presentation to the Board of Supervisors at the Board Transportation Committee (BTC) meeting prior to the Spring 2019 and Summer 2020 rounds of public outreach. The presentation outlined at the BTC meeting was intended to provide an overview to the Board of Supervisors regarding the information planned to be shared with the public and the format for soliciting feedback from the public. Commentary provided at each BTC meeting was used by FCDOT staff to adjust the public outreach materials and presentation ultimately shared at each round of public outreach.

A final BTC meeting presentation was made on May 25, 2021 to present the final recommendations from the Long-Term Study. The purpose of the presentation was to provide one final briefing of Study progress in

preparation of seeking endorsement from the Board of Supervisors of the final recommendations and authorization of a Comprehensive Plan Amendment to incorporate the recommendations and any necessary notes and/or plan text into the Transportation Plan and associated Area Plan transportation plan maps.

## **Existing Conditions Summary**

The Corridor Study was completed in 2017 as a precursor to this long-term study. As part of the Long-Term Study, the traffic operational analyses completed as part of the Corridor Study were updated to account for intersections, interchanges, and freeway mainlines and ramps adjacent to the Parkways. The goal of expanding the study network was to capture the impacts to key regional corridors that access the Parkways. Incorporating the expanded study network ensured that future-year analyses could be considered viable, having been developed from the calibrated existing conditions model. A microscopic traffic simulation tool called VISSIM (PTV Group) was used to perform the operational analysis of existing conditions at both an intersection turning movement level, as well as at a corridor segment level.

The primary operational issues identified consisted of mainline congestion and queue spillback at the following Fairfax County Parkway locations/intersections:

- Sunrise Valley Drive to north of the Dulles Toll Road interchange
- Popes Head Road to Route 29
- Sydenstricker Road interchange through Huntsman Boulevard
- I-95 and Loisdale Road
- Richmond Highway

In addition to mainline operational issues, side-street movements were determined to experience congestion and queue spillback at the following Fairfax County Parkway intersections:

- Sunrise Valley Drive
- West Ox Road
- Franklin Farm Road
- Rugby Road
- Popes Head Road

## **Future Conditions Methodology**

After completing the expanded existing conditions analyses, a qualitative and quantitative assessment of future conditions was performed as part of the Long-Term Study. This included the following:

- **Multimodal Review** – a qualitative review of pedestrian and bicycle accommodations throughout the study corridors was completed. Concept development included new crosswalks for at-grade intersection approaches, adjusting signal timings to accommodate crossings, and the addition of a second Fairfax County Parkway trail. A transit analysis was performed as a quantitative evaluation of corridor travel times as well as qualitative considerations for access to transit stops.

- **Traffic Volumes** – traffic volumes were developed to feed into concept development and traffic analyses. Existing conditions traffic volumes (including traffic counts and origin-destination data) in combination with the Fairfax County Travel Demand Model (TDM) were used to forecast peak hour traffic volumes throughout the study area network for general purpose, HOV-2, and HOV-3 vehicles. Traffic volumes were forecasted to year 2040.
- **Traffic Analyses** – VISSIM was used to determine intersection movement-level operational outputs as well as arterial segment operations at grade-separated interchanges. Key metrics for arterial operations included travel time, vehicle density, and queuing. These were evaluated at a corridor level as well as a segment level or grouping of intersections that have a high interaction with one another. Analyses were completed for the following future scenarios, with unique traffic volumes considered for each:
  - Constrained Long-Range Plan (CLRP)
  - Comprehensive Plan
  - Concept 1 – Expanded Corridor Capacity
  - Concept 2 – Limited Impact Improvements with Transit Priority
  - Concept 3 – HOV Priority/Regional Facility Connectivity
  - Preliminary Recommendations
- **Right-of-Way and Estimate of Probable Cost** – a high-level, planning assessment of right-of-way impacts was performed using geographic information systems (GIS) mapping software in combination with concept sketches. This assessment allowed for an order-of-magnitude assessment of property and environmental impacts for each of the different concepts for comparison purposes. Estimates of Probable Cost were also prepared for each concept using the concept sketches and planning level cost estimating tools, again for the purposes of comparing concepts Scenarios Evaluated

As part of the future conditions traffic analyses, the following scenarios were evaluated using VISSIM microsimulation software. A brief overview of each scenario is provided, below, with high-level results from the operational analyses presented.

## **Existing County Scenarios**

### ***Constrained Long-Range Plan (CLRP)***

The CLRP analysis was performed consistent with Fairfax County’s approved and funded long-range transportation improvements, at the time of the analysis in Spring 2018. The CLRP includes widening of Fairfax County Parkway to 6 general-purpose lanes from Fox Mill Road in the north to Route 123 in the south (including the Popes Head Road interchange), and widening of Franconia-Springfield Parkway to 8 general purpose lanes from Fairfax County Parkway in the west to the Metro Loop Ramp at the Franconia-Springfield Metro Station in the east. The CLRP scenario also assumed the implementation of the short-term improvements identified in the 2017 Corridor Study by VDOT.

Overall, the CLRP results indicate significant growth in demand throughout the study corridors, with locations of significant delay and congestion. These locations create bottlenecks which inhibit flow along

the mainline and throughout the region. Intersections or interchanges within the study corridors that result in bottlenecks along the mainline include the following:

- Sunrise Valley Drive and the Dulles Toll Road
- Route 123
- Huntsman Boulevard
- Hooes Road
- Pohick Road
- Loisdale Road/northbound I-95
- John J. Kingman Road
- Richmond Highway
- Backlick Road at Franconia-Springfield Parkway
- Beulah Street

These locations of increased delay (and demand) result in increased queue lengths and travel time throughout the study corridors when compared to existing conditions. Improvements in operations are primarily isolated to locations where intersection capacity is increased under the CLRP.

### ***Comprehensive Plan***

The Comprehensive Plan analysis was performed consistent with Fairfax County's most recently approved Comprehensive Plan amendment for the Transportation Plan Map, dated September 2, 2015. Compared to the CLRP scenario, the Comprehensive Plan scenario provides accommodations for HOV operations throughout the study corridors, extending from the existing Franconia-Springfield Parkway and I-95 Express Lanes interchange in the south, continuing along Fairfax County Parkway to Route 7 in the north. The scenario also includes widening of Fairfax County Parkway to 6 lanes (including one HOV lane in each direction) from Route 7 in the north to Sydenstricker Road/Shady Palm Drive in the south, and widening to 8 lanes (including one HOV lane in each direction) from Sydenstricker Road/Shady Palm Drive in the west to the Metro Loop Ramp at the Franconia-Springfield Metrorail Station in the east. HOV lanes were assumed to be HOV 3+, requiring at least 3 vehicle occupants for use.

The Comprehensive Plan scenario indicates some improvements over the Existing Conditions and CLRP scenarios, most notably at new or reconfigured interchange locations. However, additional capacity along the study corridors attracts additional demand, resulting in some degradation of conditions at intersections or interchanges within the study corridors that result in bottlenecks along the mainline, as noted below:

- Sunrise Valley Drive and the Dulles Toll Road
- Rugby Road
- Route 123
- Loisdale Road
- Backlick Road at Franconia Springfield Parkway

With the provision of HOV lanes within the study corridors, general purpose traffic experiences additional delay and congestion, particularly in the northern portion of the network, where existing 3-

lane directional capacity is reduced to 2 general purpose lanes and one HOV lane. HOV vehicles experience travel time and delay benefits as a result of the configuration, but are still inhibited at certain bottleneck locations where these vehicles re-enter general purpose lanes.

## **Assessment of Concepts**

### ***Concept Development***

The CLRP and Comprehensive Plan analyses, which represent how the Parkways corridors may operate in the future under current plans, were used to identify challenges and potential new directions for improvement opportunities within the study corridors. These results were supplemented by input from three public meetings and an online survey in the Spring of 2019, as described in the Community Engagement section of this report. As a result of public comment, concepts were developed to potentially modify the current Comprehensive Plan. These are described in further detail in the following sections and are reflective of the public priorities.

### ***Concept 1***

Concept 1 was developed with the intent to maximize vehicular capacity, including improvements at locations which were identified as congested in the Comprehensive Plan analysis. It also assumed no HOV improvements would be added to the corridors. As a result of the increased capacity along the mainline, along with improved interchange locations, Concept 1 generally resulted in higher vehicular traffic volumes than the other concepts considered in this study. This pattern was supported by a reduction in traffic along parallel routes, including Route 28 and I-495. Specific configuration elements included:

- Removal of all HOV designations
- Corridor widening
- Modification of 17 total intersections/interchanges

The increase in the Parkways' mainline capacity promotes overall improved throughput and traffic flow along the majority of the corridors, while also drawing additional traffic demand away from other regional facilities. The increase in demand along the Parkways is mostly accommodated with intersection/interchange capacity improvements, but some intersections or interchanges with bottlenecking remain, as a result of poorly performing innovative intersections or higher traffic demand, including:

- Franklin Farm Road
- I-66 interchange
- Route 123
- I-95 and Fairfax County Parkway
- John J. Kingman Drive
- Backlick Road at Franconia-Springfield Parkway
- Beulah Street

## **Concept 2**

Concept 2 was developed with the intent to limit, or minimize, right-of-way and other impacts to the corridor and surrounding communities. Some vehicular capacity improvements were included for locations that were identified in the Comprehensive Plan analysis with conditions that impacted the corridor negatively. Concept 2 also included prioritization of transit vehicles through at-grade intersections using right-lane queue jumps. Vehicular traffic volumes in Concept 2 were reduced as compared to the Comprehensive Plan due to a reduction in mainline capacity. As a result, vehicular traffic was pushed to other parallel routes, or bypassed portions of Fairfax County Parkway using alternative routes with excess capacity. Specific configuration elements included:

- Removal of all HOV designations
- Limited corridor widening (modified from the CLRP)
- Modification of 21 total intersections/interchanges

The prioritization of transit in Concept 2 negatively impacts conditions for general purpose vehicles throughout the corridor since bus queue jumps reduce available green time at intersections and block right-turn movements when present. Reduced mainline capacity (as compared to Comprehensive Plan and Concept 1) also diverts some traffic volume to parallel facilities which were not studied as part of this analysis. Some minor improvements occur at locations of increased roadway capacity, but overall network operations are worse than previous scenarios. Transit operations improve as a result of the configuration but are limited in some places as a result of poor mainline operations blocking transit queue jumps or deviations off the study corridor to access stops. Intersections or interchanges that experience mainline bottlenecks which impact corridor operations are:

- Sunrise Valley Drive and the Dulles Toll Road
- McLearen Road
- I-66 interchange
- Route 123
- Huntsman Boulevard
- John J. Kingman Road
- Backlick Road at Franconia-Springfield Parkway

Since Concept 2 was focused on minimizing impacts and transit-focused improvements, the project team also specifically measured and observed impacts to corridor transit operations and the Fairfax Connector's planned Parkway Express Route #496. Along the full corridor (Fairfax County Parkway at Route 7 to Franconia-Springfield Parkway at Beulah Street), transit travel time is nearly the same under the Comprehensive Plan and Concept 2, in both directions, on Fairfax County Parkway, despite the addition of queue jump lanes. This may be in part due to the Comprehensive Plan having the additional HOV lanes. Buses running as part of the Parkway Express Route #496 are anticipated to have difficulty accessing transit queue jump lanes at some intersections due to the location of bus stops (many of which are off corridor), limiting the effectiveness of the Concept 2 configuration.

### **Concept 3**

Concept 3 was developed with the intent to maximize the potential benefit of planned HOV facilities and the HOV vehicles that use them through the study corridors and included the provision of HOV connections to other significant regional facilities. Additionally, some general purpose vehicle capacity improvements were included for locations which were identified in previous concepts with conditions that impacted the corridor negatively. The enhanced HOV connectivity promoted greater HOV use of the study corridor by allowing HOV 2+, rather than HOV 3+, and providing facility to facility HOV connections. As a result, the non-HOV through volumes were reduced compared to Comprehensive Plan traffic volumes due to the assumed HOV 2+ (under other Concepts HOV 2 vehicles could only use the general purpose lanes). Specific configuration elements included:

- Provision of HOV2+ (less restrictive of the Comprehensive Plan assumed HOV3+) through the corridor from the interchange of Fairfax County Parkway and Route 7 in the north through the interchange of Franconia-Springfield Parkway and Frontier Drive (consistent with the Comprehensive Plan limits)
- Corridor widening, consistent with the Comprehensive Plan
- HOV and Transit Improvements at 24 intersections/interchanges
- Modification of 3 additional intersections/interchanges

Overall, Concept 3 performance for HOV vehicles is substantially improved over all other scenarios, as a result of several through movement flyovers and direct regional facility connections. Some of these accommodations also improve transit operations along the corridor. However, as noted in the Comprehensive Plan, provision of HOV lanes reduces the capacity of general purpose lanes. This results in substantial increases in queuing and delays in bottleneck locations, detracting from overall corridor operations. Intersections or interchanges that experience mainline bottlenecks which impact corridor operations are:

- Sunrise Valley Drive and the Dulles Toll Road
- Rugby Road
- Route 123
- Huntsman Boulevard
- Interchange of Fairfax County Parkway and Franconia-Springfield Parkway
- Loisdale Road and I-95
- Terminal Road
- Franconia-Springfield Parkways and I-95 Express Lanes

### **Preliminary Recommendations**

Preliminary recommendations were developed based on the analysis results of Concepts 1, 2, and 3, as well as public input from the Summer 2020 virtual public meetings and online survey. Key elements of the Preliminary Recommendations combined the high-impact elements of Concept 1, while maintaining the functional elements of Concept 2. This approach balanced the implementation of improvements that improve corridor operations with improvements that limit impacts to the surrounding areas. The

Preliminary Recommendations also included the recommendation to remove HOV lanes from the study corridors due to a general lack of HOV demand, competing needs of the general purpose traffic, and significant costs of HOV infrastructure. The addition of direct HOV connections to regional HOV and HOT facilities based on the outcomes of Concept 3 were, however, added. Specific configuration elements of the Preliminary Recommendations included:

- Removal of HOV from the entire corridor
- Corridor widening:
  - Widen to a 6-lane cross section between Route 7 and Route 123, consistent with the Comprehensive Plan
  - Retain the existing/widen to a 6-lane cross section on both Fairfax County Parkway and Franconia-Springfield Parkway between Hooes Road and the Franconia-Springfield Metro Station Loop Ramp (a modification of the Comprehensive Plan)
  - Widen to a 6-lane cross section between Boudinot Drive and Telegraph Road, a one-lane increase over the Comprehensive Plan
- Modification of 19 intersections/interchanges.

The analysis results showed an overall increase in corridor capacity is provided by the removal of the HOV designation of the Comprehensive Plan. This increased capacity, with the implementation of the most effective intersection improvement locations, provide consistent operations throughout the study corridor. Additionally, the removal of bottleneck locations (as the result of improved capacity or signal operations) allows Fairfax County Parkway and Franconia-Springfield Parkway to both operate as uninterrupted facilities for several miles along various segments.

The provisions of HOV direct connections in the Preliminary Recommendations also improves operations and travel time for HOV vehicles through interchanges while permitting an improvement in transit travel times through the I-66 interchange.

Bottleneck locations are largely mitigated in the Preliminary Recommendations, but remaining locations of mainline bottlenecks which will require additional future study are:

- Dulles Toll Road
- Huntsman Boulevard
- I-95 (at Fairfax County Parkway)

## **Final Recommendations**

Following the analysis of the Preliminary Recommendations, the results were reviewed to determine if any further refinements should be made in the selection of the Final Recommendations. One area that remained a bottleneck was in Segment 3 near Huntsman Boulevard. Public feedback was mixed with regards to the number of lanes in Segment 3. As a result, the single element that was revisited was the number of lanes along Fairfax County Parkway in Segment 3 between Route 123 and Franconia-Springfield Parkway. Based on the analyses, it was determined that the Final Recommendations would maintain a six-lane cross-section in Segment 3 until a more comprehensive study of this section of the

corridor could be conducted, with further analysis and outreach. Impacts of maintaining a four lane cross section should be assessed on parallel and proximate facilities, such as Route 123, Braddock Road and Old Keene Mill Road. All other elements of the Final Recommendations remained the same as those in the Preliminary Recommendations.

A comparison of elements between the Comprehensive Plan and the Final Recommendations are shown in **Table E-1**, including interchange modifications, roadway widening, HOV accommodations, and trail accommodations.

**Table E-1: Comparison of Comprehensive Plan and Final Recommendations**

	<b>Current Comprehensive Plan</b>	<b>Final Recommendations</b>	<b>Change</b>
<b>New Interchanges (each)</b>	7	7	-
<b>New Partial Interchanges (each)</b>	0	1	+1
<b>Interchange Modifications (each)</b>	6	7	+1
<b>Roadway Widening (miles)</b>	22	22	-
<b>HOV Feeders (each)</b>	0	3	+3
<b>Trails (miles)</b>	5	40	+35

## Conclusions

The Long-Term Study resulted in the development of the Final Recommendations. The Final Recommendations are shown in **Figure E-2**. This process included the development of project measures of effectiveness based on County policies, robust public engagement, and analysis of different corridor strategies. The key findings from the study were:

- A need and desire for enhanced bicycle and pedestrian facilities
- Potential for enhanced transit routing and performance
- Low demand for High Occupancy Vehicle (HOV) Lanes
- Wide-ranging need for 6 travel lanes (general purpose)
- Desire to minimize impacts to properties and environment
- Continued need for grade separated interchanges and interchange modifications to allow long stretches of free flow traffic
- Benefit of innovative intersections at certain key locations

The elements of the Final Recommendations are recommended to be incorporated into the Comprehensive Plan Transportation Map, associated Area Plan transportation maps, and Plan text and

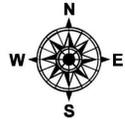
notes, as necessary. The County can utilize these results to proceed with a Comprehensive Plan Amendment (subject to Board of Supervisors authorization), updated project prioritization, and project funding requests.

Additionally, FCDOT has initiated a prioritization process for updated elements as a result of this study. This Alternatives Prioritization may be found in **Appendix L**.

# Figure E-2: Final Recommendations

This map summarizes the key elements of the proposed configuration of the Final Recommendations that represent a change from the current Fairfax County Transportation Plan (shown in the background below).

## FAIRFAX COUNTY TRANSPORTATION PLAN



### 1 Fairfax County Parkway Route 7 to Franklin Farm Road

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Wiehle Avenue
- Remove interchange symbol at Baron Cameron Avenue (constructed)
- No interchange at McLearn Road
- New interchange at Franklin Farm Road

### 2 Fairfax County Parkway Franklin Farm Road to Route 123

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Rugby Road (quadrant intersection)
- Remove interchange symbols at Monument Drive and Fair Lakes Parkway (constructed)
- New interchange at Burke Centre Parkway
- Interchange improvements at Route 123

### 3 Fairfax County Parkway Route 123 to Franconia-Springfield Parkway

- No HOV lanes
- 6 travel lanes north of Sydenstricker Road interchange (no change)
- 6 travel lanes south of Sydenstricker Road interchange (currently proposed to be 8 lanes)
- Innovative intersection at Huntsman Boulevard (quadrant intersection)
- Remove interchange symbol at Hooes Road (constructed)

### Franconia-Springfield Parkway Fairfax County Parkway to Beulah Street

- No HOV lanes
- 6 travel lanes (currently proposed to be 8 lanes)
- Interchange improvements at I-95

### Fairfax County Parkway Franconia-Springfield Parkway to Richmond Highway

- 6 travel lanes north of John J Kingman Road (currently proposed to be 4 lanes)
- 4 travel lanes south of John J Kingman Road (no change)
- Additional network connectivity between I-95 and Backlick Road
- Remove interchange symbols at Barta Road and Boudinot Drive (constructed)

		Metrorail Station
		Commuter Parking Lot
		Transit Transfer Center (No Parking)
		Commuter Rail Station
		Rail Station
		Full Interchange Improvement (Study Required)
		Partial Interchange Improvement
		Proposed Highway Overpass
		Proposed Highway Underpass
		High Occupancy Toll (HOT) Lanes
		High Occupancy Vehicle (HOV) Lanes
		Widen or Improve Arterial Roadway (Number Indicates Proposed Number of Lanes Including HOV or HOT Lanes)
		Construct Arterial on New Location
		Widen or Improve Collector or Local Street (Number Indicates Proposed Number of Lanes)
		Construct Collector or Local Street on New Location as Development Occurs
		Cross sections to be finalized during process of reviewing plans for proposed development
		Proposed Cul-de-Sac
		Rail Transit or Bus Rapid Transit (BRT)
		Enhanced Public Transportation Corridor <sup>1</sup>

**Notes:**

- Enhanced Public Transportation Corridor - Major public transportation facility (such as Metrorail, light rail, bus rapid transit, and high occupancy vehicles lanes) will be provided in this corridor based upon the results of a comprehensive alternatives analysis. Final location of component facilities (e.g. rail stations, commuter parking lots) are subject to completion of the area plans or appropriate studies.
- Right-of-way requirements are shown in the comprehensive plan text.
- Final alignment subject to completion of appropriate engineering studies.
- All roads without lane designations are subject to safety and geometric improvements, as long as such improvements do not result in an increase in the number of through traffic lanes and are within existing rights-of-way. Should improvements require additional rights-of-way, there would be a public information meeting and/or public hearing as required.
- Road improvements on the Transportation Plan are based on County level analysis. Further and more detailed study may be conducted to verify designation of number of lanes prior to design of road improvements.
- Refer to Area Plan text of the Fairfax County Comprehensive Plan for a conceptual enhanced street network (grid of streets) for the following areas:
  - Tyson's Corner Urban Center
  - Franconia-Springfield Area
  - Baileys Crossroads Community Business Center
  - Reston Transit Station Areas (TSAs)
  - Innovation Center Transit Station Area
  - Seven Corners



# 1. Introduction

Fairfax County is a strong and vibrant community. By design, the landscape of the County includes an urban and suburban form, served by a diverse transportation network. Fairfax County Parkway and Franconia-Springfield Parkway (the Parkways) are at the heart of the County's transportation network. Stretching nearly 35 miles, from Route 7 to Richmond Highway and the Franconia-Springfield Metrorail Station, the Parkways support quality neighborhoods and thriving commercial areas.

Completed in 2017, the Fairfax County Parkway & Franconia-Springfield Parkway Corridor Study (Corridor Study) was co-administered by the Fairfax County Department of Transportation (FCDOT) and the Virginia Department of Transportation (VDOT). This study provided an operational and safety assessment of the existing Parkways and set the foundation for FCDOT to continue evaluating the roadways that provide a critical role within the Fairfax County transportation network. The Corridor Study identified challenges of the existing Parkways and multimodal opportunities for improvement, ultimately resulting in the identification of over 350 safety and operational improvements, but did not consider the long-term conditions for the corridors.

This study, the Fairfax County and Franconia-Springfield Parkways Alternatives Analysis & Long-Term Study (Long-Term Study), was a follow-on planning study administered by FCDOT, in partnership with VDOT, to identify and mitigate long-term conditions for the Parkways. Specifically, the purpose of the Long-Term Study was to:

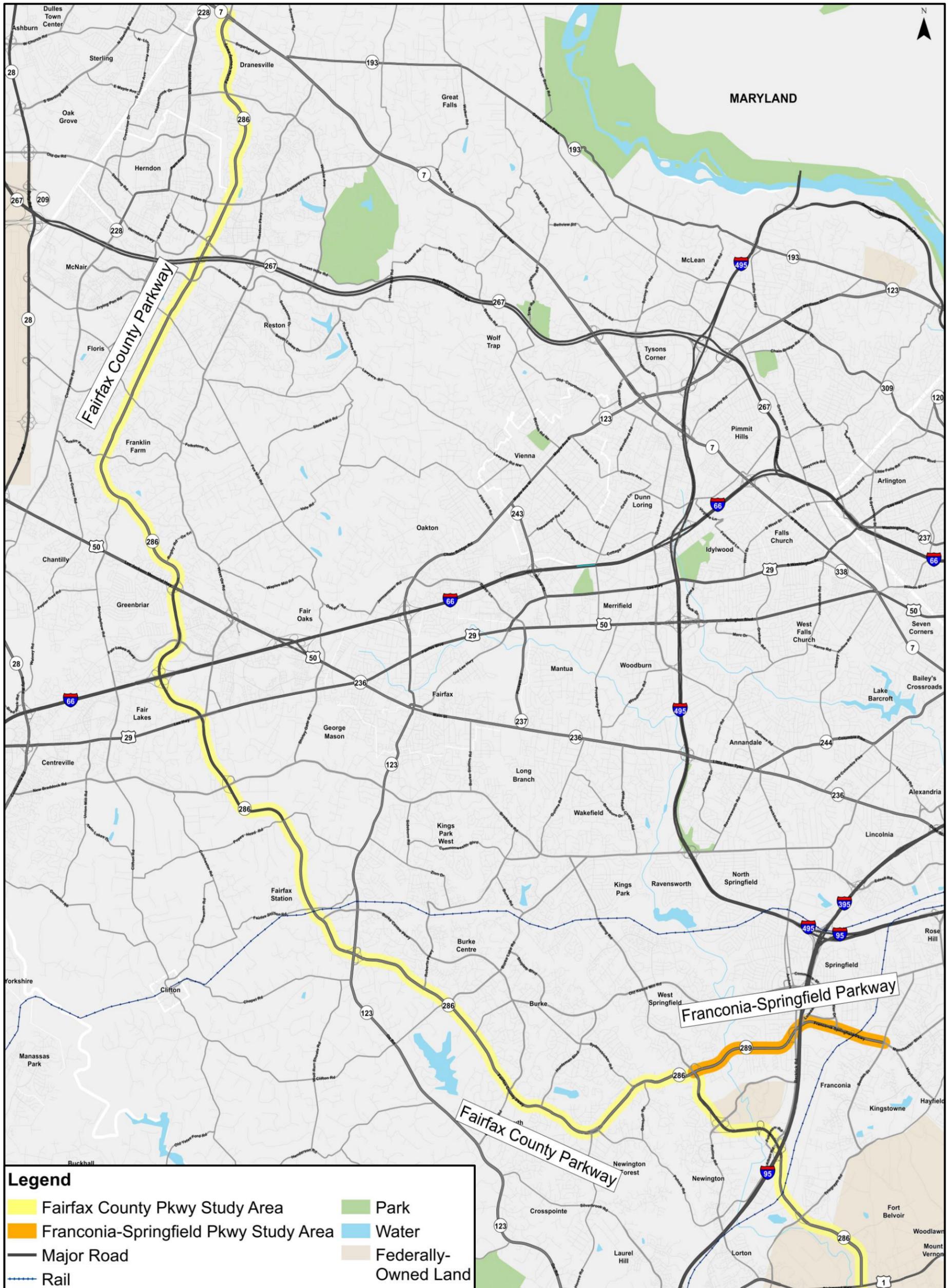
- evaluate future conditions of the Parkways based on currently planned network modifications and planned land use;
- identify shortcomings of the planned network modifications;
- collect public input on preferred elements to be incorporated into the future conditions of the Parkways;
- develop a preferred configuration of the Parkways (i.e. number of lanes, grade separation, high-occupancy lanes); and
- prioritize the newly developed transportation network recommendations.

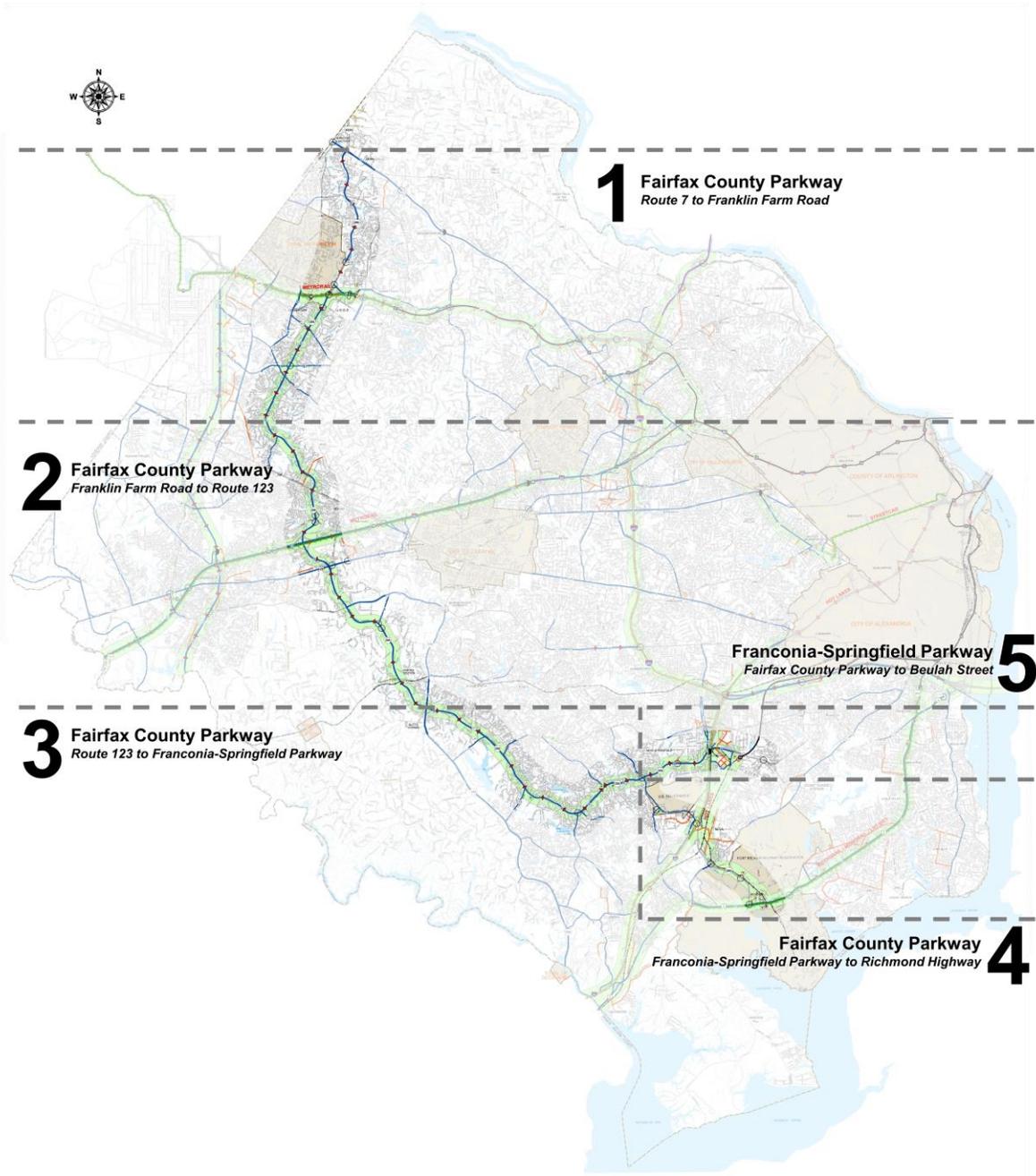
A location map of the study corridors is shown in **Figure 1**. The study segmentation (as shown on the current Comprehensive Plan Transportation Plan map) is shown in **Figure 2**. Note that the following segments are referenced throughout this study and are based on the surrounding land uses of that segment of the corridor, as well as the types of controls present at corridor intersections:

- **Segment 1:** Fairfax County Parkway from Route 7 in the north to Franklin Farm Road in the south
- **Segment 2:** Fairfax County Parkway from Franklin Farm Road in the north to Route 123 in the south
- **Segment 3:** Fairfax County Parkway from Route 123 in the north to Franconia-Springfield Parkway in the south
- **Segment 4:** Fairfax County Parkway from Franconia-Springfield Parkway in the north to Richmond Highway in the south
- **Segment 5:** Franconia-Springfield Parkway from Fairfax County Parkway in the west to Beulah Street in the east

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 1: Study Location Map





**Figure 2: Study Area Segmentation Map**

The intended outcome of the Long-Term Study was to provide an updated set of recommendations for the Fairfax County Comprehensive Plan Transportation Plan Map that better fit with current data, trends and public sentiment, as they pertain to the Parkways. These recommendations primarily consisted of the following:

- number of travel lanes (maintain, increase, or decrease the number of lanes in the current Comprehensive Plan);

- designation of high occupancy vehicle (HOV) travel segments (HOV is currently recommended for a majority of the Parkways);
- addition or removal of proposed grade-separated interchanges at existing at-grade intersections or planned network connections; and
- additional interchange modifications to already built interchanges along the corridor.

As outlined in this report, multimodal improvements were considered as part of the suite of recommendations for the future configuration of the Parkways. While the current Transportation Plan Map is generally centered around vehicular modes and considers how the configuration of the countywide transportation network directly affects travel and access for these modes, this study addressed all other modes at a high level. However, location-specific recommendations were not intended to be included in an update to the Transportation Plan Map. Such improvements are best suited for, and are being addressed in, the recently commenced ActiveFairfax Transportation Plan (will include updates to the existing Countywide Trails Plan and Bicycle Master Plan).

## 2. Study Process and Community Engagement

At the onset of the Long-Term Study, a project kickoff meeting was hosted with key stakeholders from FCDOT, VDOT, and core project team members to establish preliminary goals and objectives for the study. During this meeting, the following objectives were identified:

- Address multimodal uses, including bicycle, pedestrian, HOV, and transit (including Fairfax Connector, Express Bus, etc.)
- Consider potential right-of-way (ROW) impacts
- Account for community impacts as the facility grows
  - Enhance bicycle and pedestrian facilities
  - Improve trail crossings (safety)
  - Assess east/west connections, which suffer due to high volume of north/south travel

The project team acknowledged the importance of executing the Long-Term Study with an unbiased perspective regarding the different future year conditions slated to be evaluated. An initial project process was discussed with the project team to define milestones and expectations throughout the life of the multi-year planning study. The process diagram, illustrated in **Figure 3**, below, captures the main components agreed to during the project kickoff meeting.



**Figure 3: Long-Term Study Project Process Diagram**

## **Measures of Effectiveness (MOEs)**

The project team identified a number of measures of effectiveness (MOEs) to set the framework for evaluating future conditions. The MOEs were shaped by several resources, including the Fairfax County Comprehensive Plan, the VDOT 2014 Approved Functional Classification Map, the Fairfax County Countywide Transit Network Study, and the Commonwealth Transportation Board (CTB) Meeting Resolutions. A review of these documents yielded a total of five guiding principles for the Long-Term Study, as summarized in **Table I**.

**Table I: Guiding Principles of the Long-Term Study**

<b>Guiding Principle</b>	<b>Source</b>
Provide a multimodal corridor that reduces excessive reliance upon the automobile	Comprehensive Plan
Provide sidewalk and trail connections to mass transit, high density areas, public facilities, and employment areas	Comprehensive Plan
Accommodate all vehicle classifications	VDOT Principle Arterial Designation
Accommodate express bus service	Countywide Transit Network Study
Maintain the limited access designation of FCP/FSP	CTB Resolution

After establishing guiding principles for the Long-Term Study, a list of study goals was developed. Given that one of the outcomes of the Long-Term Study will lead to an amendment to the Comprehensive Plan to reflect the final recommendations and the preferred corridor alternative, study goals were identified in relation to the countywide objectives and policies, as outlined in the Transportation Policy Plan, within the Comprehensive Plan. In coordination with Fairfax County and VDOT, three study goals were identified, as follows:

1. Safely and efficiently carry people and goods
2. Connect Fairfax County's communities and neighborhoods
3. Minimize impacts to the natural and built environments

The pairing of study goals with countywide objectives and policies allowed the project team to develop specific MOEs, which are summarized in **Table 2**. Documentation of the development of MOEs can be found in **Appendix A**.

**Table 2: Study Goals (The Parkways will...) and associated MOEs (A-K, The proposed alternative will...)**

<b>1</b>	<b>Safely and efficiently carry people and goods</b>
<b>A</b>	Provide a multimodal corridor that reduces excessive reliance upon the automobile
<b>B</b>	Provide sidewalk and trail connections to mass transit, high density areas, public facilities, and employment areas
<b>C</b>	Accommodate all vehicle classifications
<b>D</b>	Accommodate express bus service
<b>2</b>	<b>Connect Fairfax County's communities and neighborhoods</b>
<b>E</b>	Maintains existing or creates new crossings of the Parkways
<b>F</b>	Provides non-auto routes across the Parkways
<b>G</b>	Balances accommodations for all modes
<b>H</b>	Provides a new/alternative network connectivity (vehicular or trail)
<b>3</b>	<b>Minimize impacts to the natural and built environments</b>
<b>I</b>	Accommodated within existing ROW
<b>J</b>	Minimizes encroachment on watershed/waterways
<b>K</b>	Relevant design character/consistency

## **Summary of Public Outreach**

As noted in the project process diagram (**Figure 3**), three rounds of public outreach were conducted throughout the project, with each round serving a specific purpose to inform continued project development. FCDOT staff delivered a brief presentation to the Board of Supervisors at the Board Transportation Committee (BTC) meeting prior to the second and third rounds of public outreach. The presentations at the BTC meetings were intended to provide an overview to the Board of Supervisors regarding the information planned to be shared with the public and the format for soliciting feedback from the public. Commentary and feedback provided at each BTC meeting was used by FCDOT staff to

adjust the public outreach materials and presentations ultimately shared in those rounds of public outreach.

The following is a brief summary from each round of public outreach. More detailed summaries from each public outreach effort are included in **Appendix B.1, B.2, and B.3.**

## Fall 2018 Public Outreach

In October 2018, three different in-person meetings were hosted along the study corridor as the first stage of public outreach for the Long-Term Study:

- **October 9, 2018** - Navy Elementary School (*located near the Route 50 interchange with FCP*), 23 meeting attendees signed in
- **October 11, 2018** - Sangster Elementary School (*located near the Reservation Drive intersection with FCP*), 31 meeting attendees signed in
- **October 16, 2018** - Armstrong Elementary School (*located near the Lake Newport Road intersection with FCP*), 23 meeting attendees signed in



Figure 4: Fall 2018 Public Meeting

The public meetings consisted of a formal presentation and interactive activities. The meetings began with a presentation by FCDOT staff. The presentation included an overview of the project, background and history of the Parkways, goals and objectives for the Long-Term Study, review of existing conditions and the prior Corridor Study, and results of initial traffic analyses of the current Comprehensive Transportation Plan. This was followed by a series of activities facilitated by FCDOT.

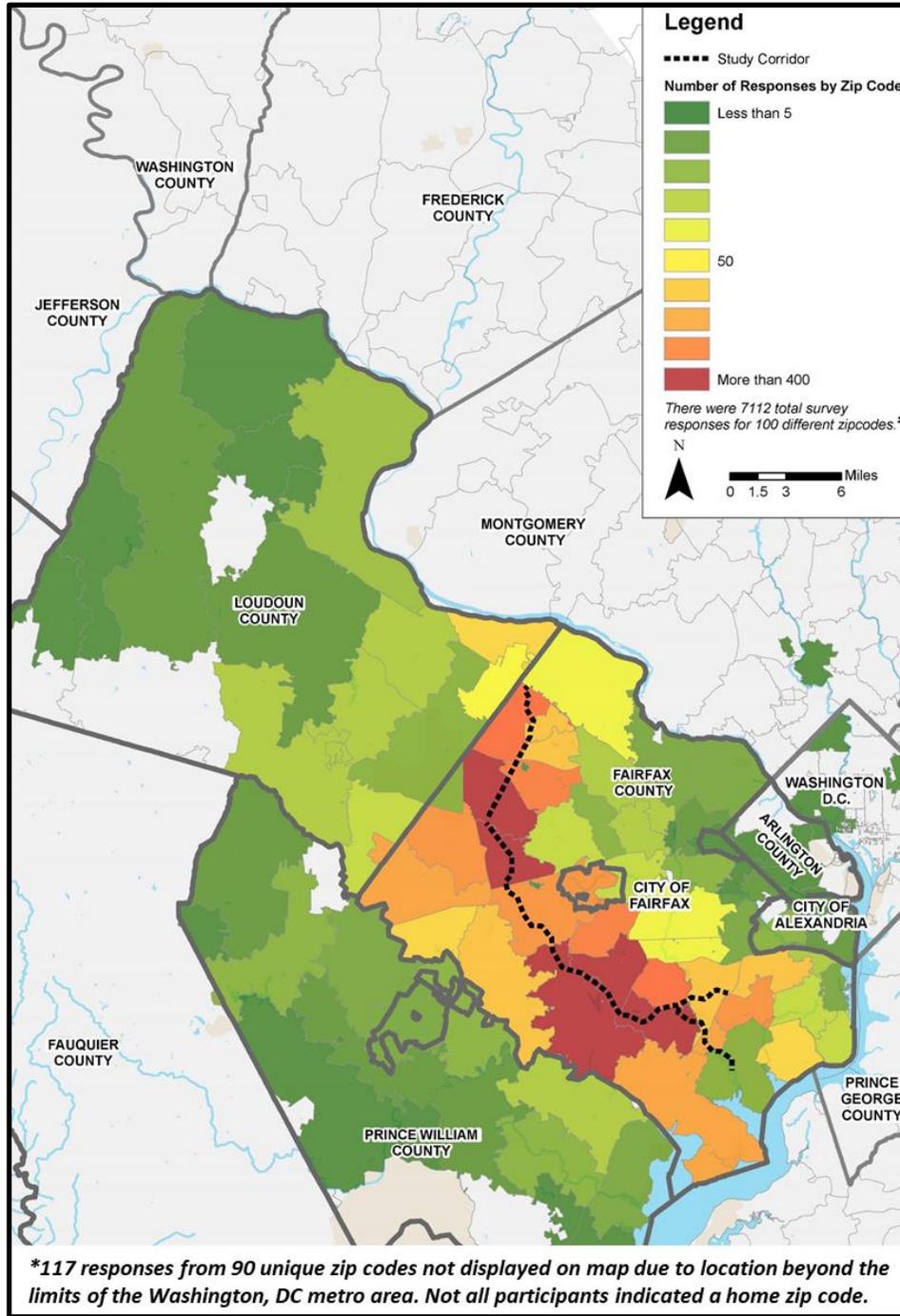
The activities that occurred during the meeting were duplicated in a subsequent online survey that was available for any individual to take beginning October 11, 2018 through November 30, 2018. The activity and survey were intended to capture targeted feedback from the public as follows:

- **Corridor Travel Priorities** - participants were asked to rank five priorities for the study corridor, including high occupancy vehicle (HOV) lanes, bicycle/pedestrian accommodations, transit, widening/interchanges, and express/toll lanes, for each of the five previously identified corridor segments, in order of importance, from highest to lowest.
- **Connecting and Preserving** - participants were asked to note locations where new connections should be added, or where specific environmental or right-of-way features should be preserved, by clicking and dragging a marker to a location on the map and writing a brief description.
- **Changes to the Comprehensive Plan Transportation Plan Map** - participants were asked to indicate whether they agree that the current Comprehensive Plan Transportation Plan Map is adequate for each segment.

Below is a high-level overview of the feedback provided by participants.

- **Public Meetings** – a total of **314** recorded responses
- **Online Survey** – a total of **15,150** recorded responses
- **Project Website Comment Form** – a total of **96** recorded responses
- **District Offices** – a total of **6** recorded responses
- **Email** – a total of **6** recorded responses
- **Facebook** – a total of **71** comments, **281** likes, and **172** shares

A summary of online survey participation by zip code is illustrated in **Figure 5**.



**Figure 5: Summary of Participant Residency Based on Zip Code**

Among the more than 15,000 responses received as part of this public outreach effort, there were common themes identified among the results. The common themes are summarized below:

- **HOV** – significant opposition to HOV along the Parkways, in any form, though some support of HOV-2+ in lieu of HOV-3+; participants also noted concern for the impact to neighborhoods, if motorists divert to alternative routes/local roads to avoid the Parkways

- **Tolls** – strong opposition to tolling and concern for the impact tolls would have on residential and disadvantaged communities served by the Parkways; participants also noted an increased burden on locals using the Parkways to complete short, local trips
- **Widening and Interchanges** – support for widening, but not for HOV-exclusive lanes, as well as support for interchanges to eliminate signalized intersections; participants also noted concerns regarding the impact to property values for homes adjacent to the Parkways
- **Bicycle/Pedestrian** – support for enhanced bicycle/pedestrian facilities, with opposition to widening for vehicular traffic, if at the expense of existing or future bicycle/pedestrian facilities; participants also demonstrated support for a continuous bicycle route along the Parkways, as there are existing gaps in the network
- **Transit** – support for enhanced transit services and for an increase in the number of park-and-ride lots to accommodate transit and carpooling; participants also indicated support for a Metrorail line between Franconia-Springfield Parkway and Dulles Airport

As a result of this round of public engagement, HOV, widening and interchange modifications, pedestrian/bicycle, and transit elements were carried forward for consideration in later project phases. Strong opposition to tolling on the study corridors resulted in its removal from consideration as an alternative. A more-detailed summary of the Fall 2018 public outreach is included in **Appendix B.1**.

### Spring 2019 Public Outreach

In late March and early April 2019, three different in-person meetings were hosted along the study corridor, as the second stage of public outreach for the Long-Term Study:

- **March 27, 2019** – Willow Springs Elementary School (*located near the Braddock Road interchange with FCP*), 11 meeting attendees signed in
- **March 28, 2019** – Armstrong Elementary School (*located near the Lake Newport Road intersection with FCP*), 31 meeting attendees signed in
- **April 4, 2019** – Sangster Elementary School (*located near the Reservation Drive intersection with FCP*), 67 meeting attendees signed in



**Figure 6: Spring 2019 Public Meeting**

The public meetings consisted primarily of a formal presentation by FCDOT staff. The meetings began with an overview of the project and summary of public outreach results from the Fall 2018 online survey, both for the corridors, as a whole, and by individual segments. Following a brief period of question and answer regarding the Fall 2018 survey results, FCDOT then presented preliminary improvement strategies and how these would be used to build corridor concepts, by segment. Following this portion of the presentation, meeting attendees were, again, given the opportunity to ask questions.

Attendees were also given the option to use tablets, on-site, to complete the second online survey for the Long-Term Study. The same electronic survey was made available online for the public to respond from March 27 through June 3, 2019.

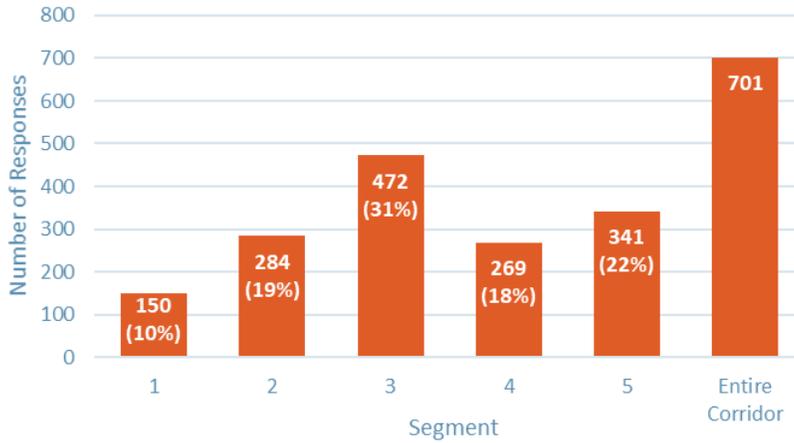
Before and after the presentations, nine display boards were provided in the room to give attendees a high-level summary of feedback from the Fall 2018 online survey, by segment, and to provide additional detail on the preliminary improvement strategies. Specifically, these strategies included the following, which are intended to build upon baseline improvements that Fairfax County has programmed for implementation:

- **Strategy A** – Expanded Bicycle and Pedestrian Facilities
- **Strategy B** – Capacity Improvements (Intersections/Interchanges)
- **Strategy C** – Capacity Improvements (widening without HOV)
- **Strategy D** – HOV Feeders
- **Strategy E** – Enhanced Transit and HOV-2+

Participants were given the option to select as many strategies as desired to evaluate at the corridor or segment level. This offered flexibility in taking the survey and the opportunity for participants with specific concerns to tailor their feedback based on their use or personal interests in the corridor. A participant was not required to evaluate all five segments and had the choice to select the entire corridor or as few as one segment. A total of 1,391 responses were recorded. Below are general results, with more detailed information included in **Appendix B.2**.

- **For which segments would you like to provide feedback?**

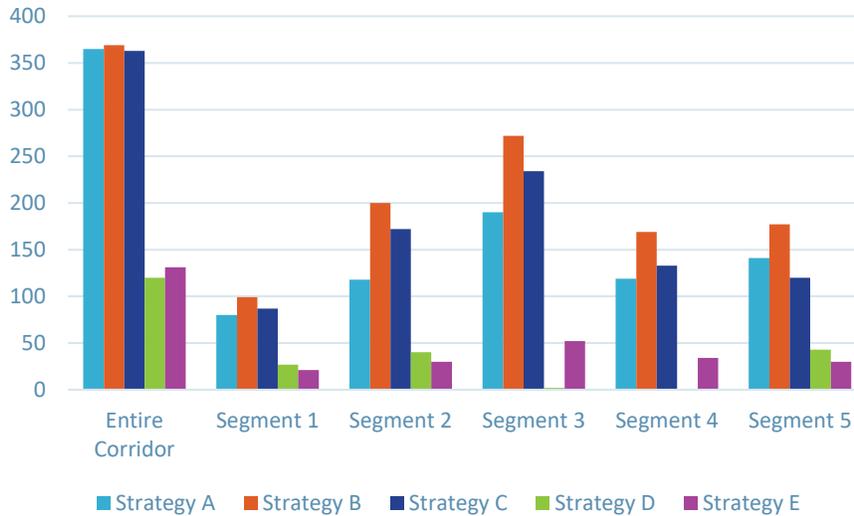
*Note: the percentages represent the proportion of segment evaluations received from those not evaluating the entire corridor. A participant could evaluate multiple segments; hence, the total number of segment evaluations is 1,516, not 1,391 (as noted above).*



These results indicate Segment 3 (from Route 123 to FSP/Rolling Road) received the most feedback by participants scoring individual segments, while Segment 1 (from Route 7 to Franklin Farm Road) received the least feedback.

- **Which strategies would you like to evaluate?**

*Note: Strategy D (HOV Feeder) was not an option for evaluation in Segment 3 (from Route 123 to FSP/Rolling Road) and Segment 4 (from FSP/Rolling Road to Richmond Highway), since a crossing facility with an HOV facility is not currently accessible from these corridor segments.*



Across the board, the most popular strategies for evaluation were strategies A through C, which represent bicycle and pedestrian enhancements, as well as capacity improvements (widening and intersection/interchange improvements). These three strategies captured approximately 25% to 30% of the participation, each. Participants did not indicate a strong preference to evaluate HOV accommodations in strategies D and E. These two strategies captured less than 15% of the participation, combined.

## Summer 2020 Public Outreach

In late July and early August 2020, three public meetings were hosted, virtually, due to the COVID-19 pandemic:

- **July 29, 2020** – 11:45 AM – 1:15 PM
- **July 30, 2020** – 7:00 PM – 8:30 PM
- **August 4, 2020** – 7:00 PM – 8:30 PM

The virtual public meetings consisted of a presentation by FCDOT, outlining the background of the study, overview of the Comprehensive Plan, the study process, and a summary of the public outreach following the Spring 2019 public outreach. Subsequently, FCDOT presented the development and evaluation of three concepts, preliminary recommendations, and the overall project schedule. The presentation was followed by a question and answer session regarding the preliminary results, the project as a whole, and the public engagement strategy.

Coinciding with the virtual public meetings, a third online survey for the Long-Term Study was open for the public to provide input between July 29, 2020 and August 31, 2020. The survey solicited public input on the elements of the Preliminary Recommendations for the Fairfax County Parkway and Franconia-Springfield Parkway, as part of the Long-Term Study. Feedback received was used to inform the elements of the eventual Final Recommendations. The survey consisted of questions regarding the Preliminary Recommendations along the five segments of the study corridors, followed by an opportunity to provide free-form comments for each segment. A final question was posed, allowing for a free-form comment on the project, as a whole. Questions were generally presented as “agree” or “disagree,” with a particular recommendation; however, responses were not required. Thus, the absence of a response was interpreted to indicate a survey participant did not have a strong opinion regarding the particular recommendation.

A total of 156 survey responses were recorded along with 12 email responses and 64 Facebook comments. The structure of the survey presented various questions pertaining to the preliminary recommendations, relevant to each segment, including the following topic areas:

- Number of Travel Lanes;
- HOV Lanes and Feeders;
- Adding and Removing Future Interchanges;
- Adding and Removing Interchange Modifications;
- Trails along Both Sides of the Parkways; and
- Network Improvements.

A review of the written feedback (including the online survey, Facebook comments, and email comments) yielded seven general topics:

- **Biking** – Comments were either submitted by cyclists advocating for safer accommodations or by those who generally drive personal vehicles advocating for the safety of those cyclists.
- **Trails** – Comments concerning trails were mostly connected with those related to biking and focused on adding and/or widening the trails for aesthetic and safety purposes. Some comments

were in support of trails on both sides of Fairfax County Parkway and Franconia-Springfield Parkway, but suggested doing so only if right-of-way is available and protective barriers could be provided between the trail and vehicular travel way. A few comments were not in support of trails on both sides of the Parkways due to perceived low demand/usage and recommended trails be located elsewhere, away from the Parkways.

- **HOV** – Of the small number of comments received, the feedback regarding the provision of HOV along the Parkways was mixed between support and opposition; however, a handful of comments acknowledged the additional benefit of HOV to transit operations.
- **Interchanges** – Feedback regarding interchanges was inconsistent, with a mix of support and opposition to providing new interchanges. A handful of comments suggested better maintenance.
- **Transit** – Several requests had been made advocating for the inclusion of a bus route, more robust mass transit, or a light rail system with signal priority at traffic signals.
- **Congestion** – Comments related to congestion were also associated with traffic signal improvements.
- **Nature** – Participants are hoping to maintain the natural aesthetic of the parkway by preserving the existing trees, as well as adding more canopy. Several comments were made to prioritize tree preservation over the expansion of transportation infrastructure, both vehicular travel lanes and trails. A few comments suggested that trees contribute to a more-pleasant trail experience for bicyclists and pedestrians.

A more-detailed summary of the Summer 2020 public outreach is included in **Appendix B.3**.

### **3. Existing Conditions Summary**

The Corridor Study was completed in 2017 as a precursor to this Long-Term Study. The primary purpose of the Corridor Study was to assess short-term multimodal improvements that could be implemented along the Fairfax County Parkway and Franconia-Springfield Parkway. The short-term improvements were identified through a combination of efforts, including crash data analyses along both corridors, traffic operations analyses, and an inventory of existing operating conditions and identified safety deficiencies. Two separate public outreach efforts were conducted in June and November of 2016 to share the preliminary and final improvement recommendations, respectively, which were made available for public consumption with respect to geographic location, cost, and potential benefit.

Altogether, more than 350 operational and safety improvements were identified, ranging from simple pavement marking adjustments to intersection geometric modifications. The Virginia Department of Transportation (VDOT) has already started to implement the programmatic improvements through existing contract mechanisms within their organization and FCDOT has started to evaluate capital improvement projects for further study and implementation.

As part of Long-Term Study, the traffic operational analyses completed as part of the Corridor Study were updated to account for intersections, interchanges, and freeway mainlines and ramps adjacent to the Parkways. The goal of expanding the study network was to capture the impacts to key regional corridors that access the Parkways. The expanded study area network, shown in **Figure 7A, 7B and 7C**, includes 12 interchanges, 26 intersections, and the mainlines and ramps of I-95, I-66, and the Dulles Toll Road. Incorporating the expanded study network ensured that future-year analyses could be considered viable having been developed from the calibrated existing conditions model. A microscopic traffic simulation tool called VISSIM was used to perform the operational analysis of existing conditions at both an intersection turning movement level, as well as at a corridor segment level.

The primary operational issues identified consisted of mainline congestion and queue spillback at the following locations:

- Sunrise Valley Drive to north of the Dulles Toll Road interchange
- Popes Head Road to Route 29
- Sydenstricker Road interchange to Huntsman Boulevard
- I-95 and Loisdale Road
- Richmond Highway

In addition to mainline operational issues, side-street movements were determined to experience congestion and queue spillback at the following intersections:

- Sunrise Valley Drive
- West Ox Road
- Franklin Farm Road
- Rugby Road
- Popes Head Road

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Overall, the AM peak hour can be characterized by lengthy intersection delays along the Parkways in the vicinity of the Dulles Toll Road, Burke Centre Parkway, Loisdale Road, John J. Kingman Road, and Richmond Highway. During the PM peak hour, similar areas of significant intersection delays for through travel along the corridor are reported as the AM peak hour. However, side street delays are much greater in the PM peak hours as compared to the AM peak hour.

Documentation of the existing conditions analysis of the expanded study area can be found in **Appendix C**.



**Figure 7A: Expanded Study Area (Northern Segment)**

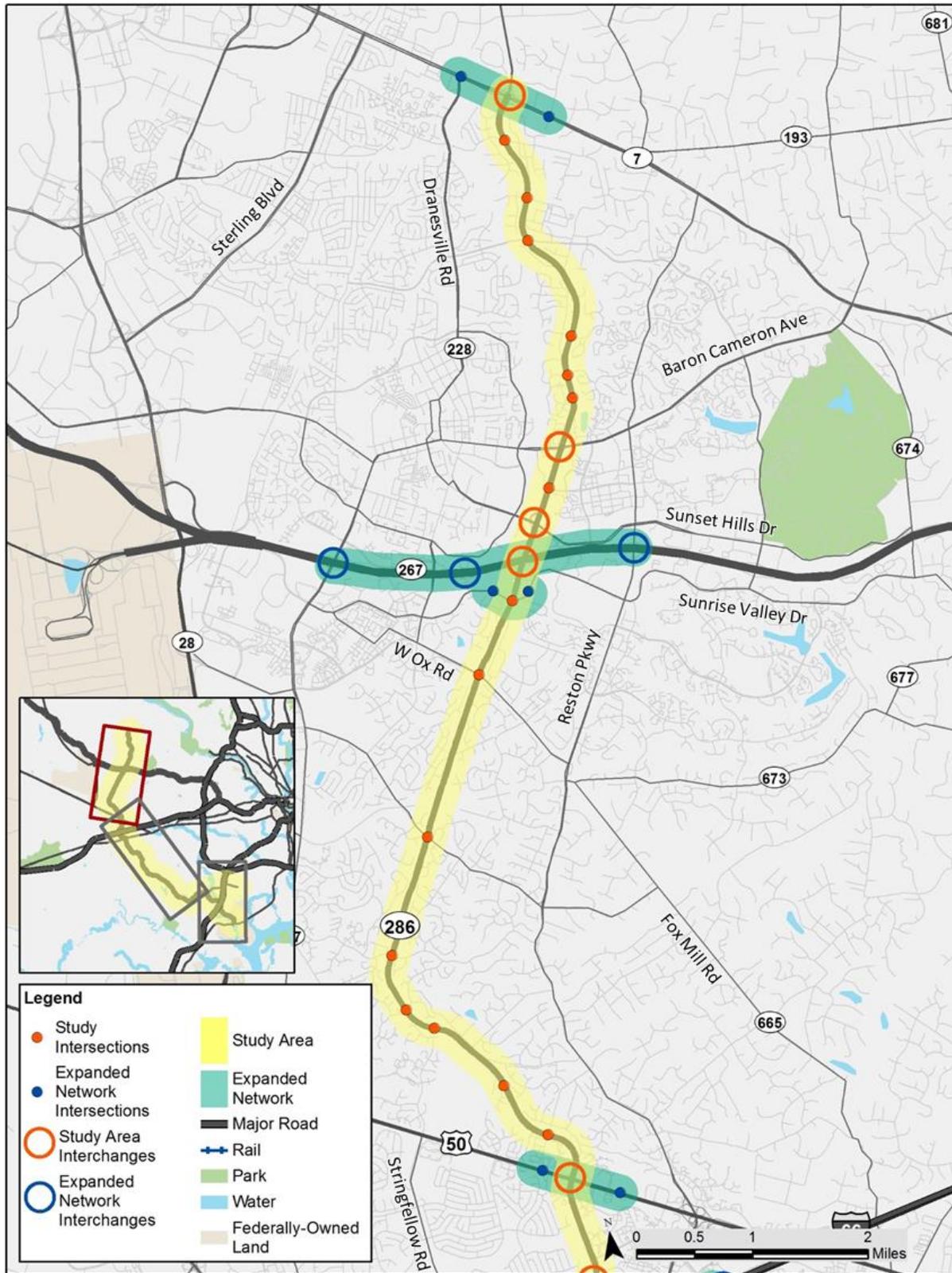


Figure 7B: Expanded Study Area (Central Segment)

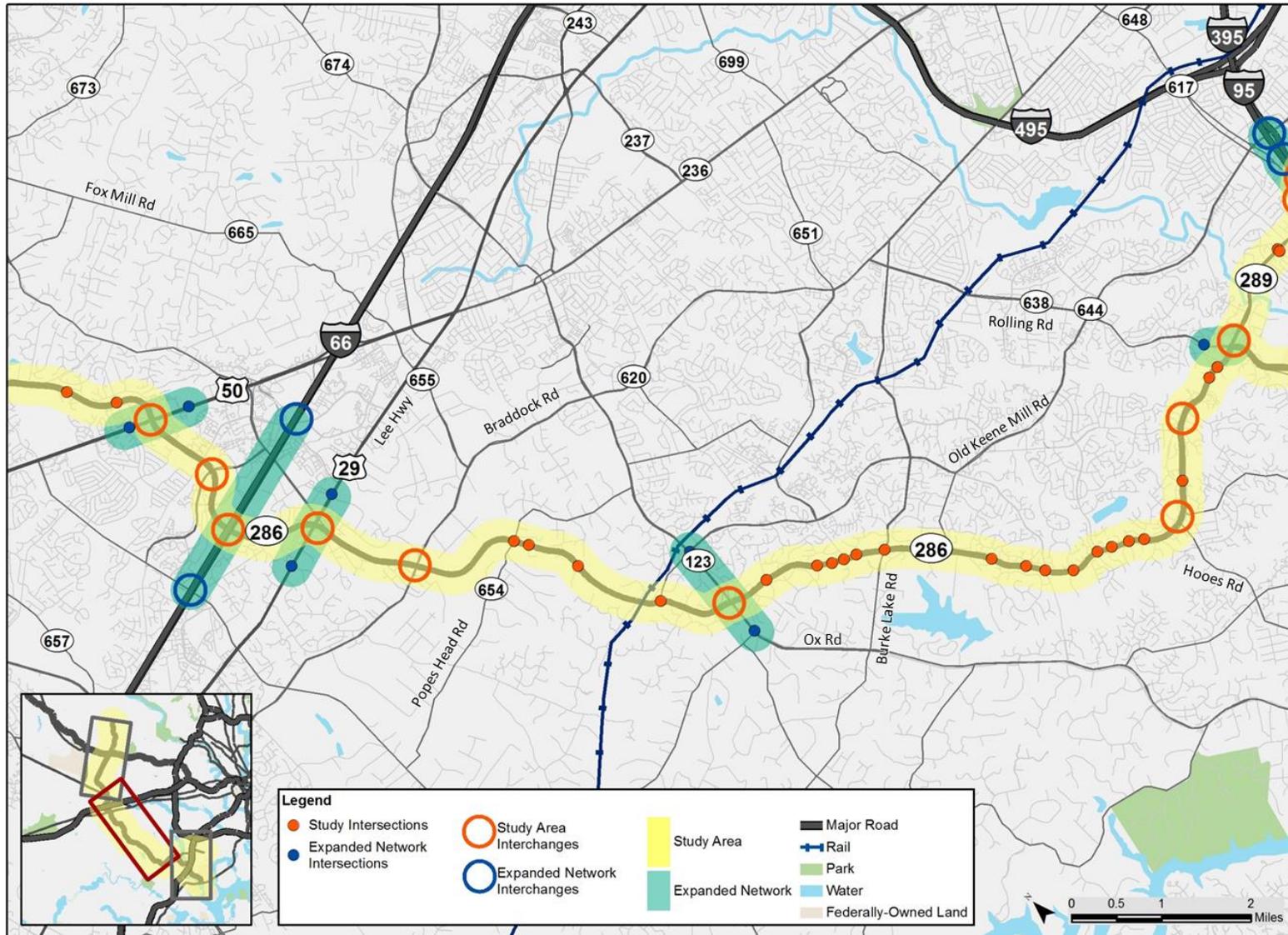
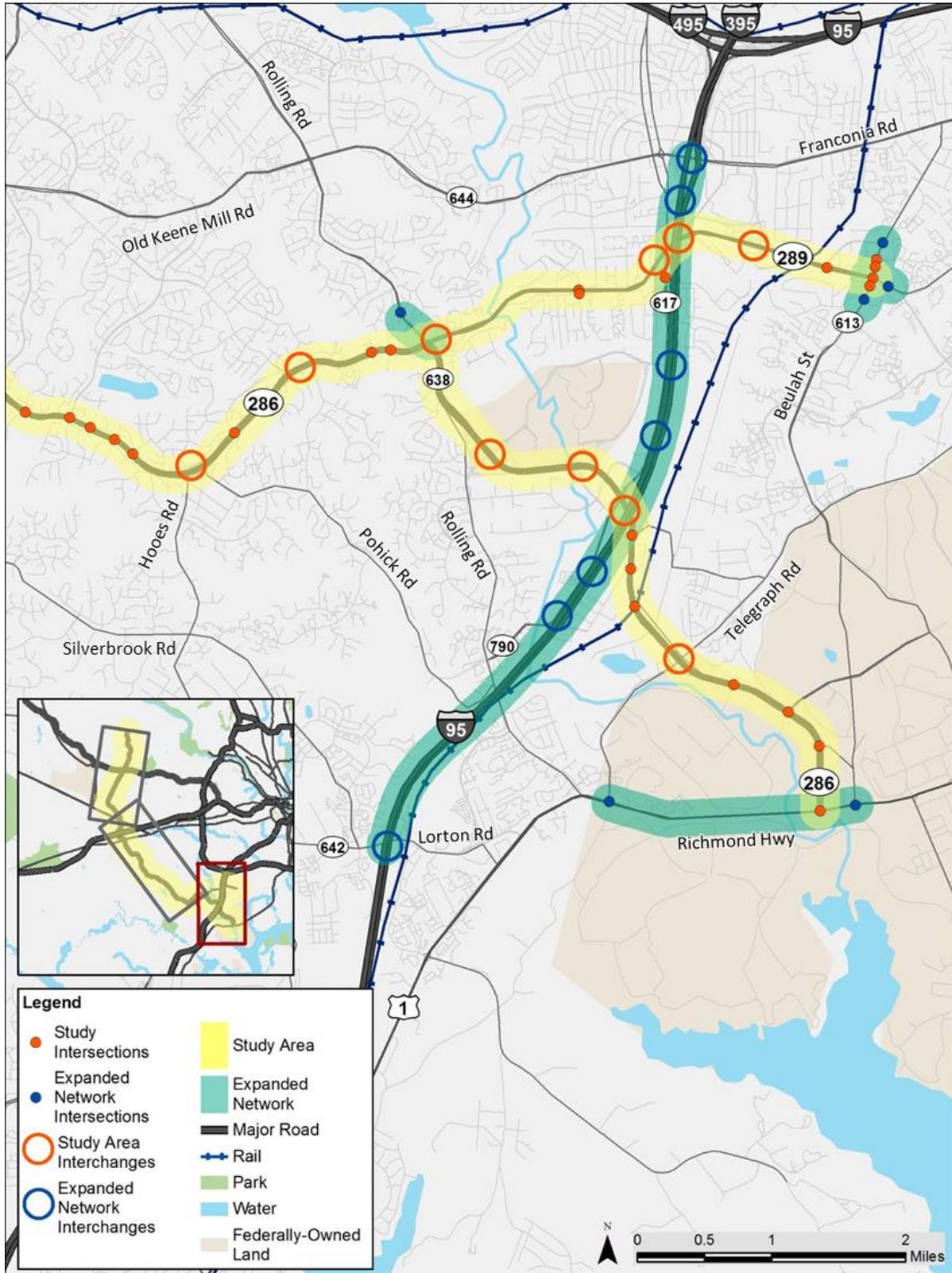


Figure 7C: Expanded Study Area (Southern Segment)



## **4. Future Conditions Evaluation Methodology**

### **Multimodal Review**

Analysis of the pedestrian and bicycle accommodations, throughout the study corridors, was performed qualitatively at a high level, with consideration for access and safety. For the concept development and analysis, this included providing new crosswalks for at-grade intersection approaches and adjusting signal timings to accommodate crossings. The addition of a second Fairfax County Parkway trail was also considered in conjunction with these intersection improvements. Fairfax County, through the ongoing Active Fairfax Transportation Plan, is developing more specific recommendations related to connections and other design considerations.

A transit analysis was performed as a quantitative evaluation of corridor travel times, as well as qualitative considerations for access to transit stops. For the purposes of this study, the planned Fairfax Connector Route 496 and a theoretical corridor-long transit route (Fairfax County Parkway and Route 7 to Franconia-Springfield Parkway and Beulah Street) were modeled in each scenario to demonstrate the transit travel time comparisons between different improvement strategies (such as HOV lanes and/or bus transit intersection queue jumps).

### **Traffic Volumes**

Traffic volumes used in each of the long-term scenarios were developed using a combination of data sources. This process utilized the existing conditions traffic volume development (including traffic counts and origin-destination data), as well as the Fairfax County Travel Demand Model (TDM), to forecast peak hour traffic volumes throughout the study area network for general purpose, HOV-2, and HOV-3 vehicles. The County TDM is based upon the regional Metropolitan Washington Council of Governments (MWCOG) TDM and consists of a network of roadway link segments that have associated characteristics, including the number of travel lanes, link speeds, and roadway classification. The assignment of traffic through the network for a given future year condition is impacted by roadway network geometry and the socioeconomic data coded to the various traffic analysis zones (TAZs). The TDM functions as a gravity model, whereby trips are assigned through the network based upon the attraction of the destination and the shortest path of least resistance.

For all long-term scenarios, volumes were forecasted to year 2040. The link level percent changes between existing and 2040 model runs, for each of the future scenarios, were applied to existing traffic data in order to determine future analysis volumes.

### **Planned County Scenarios**

For the Constrained Long-Range Transportation Plan (CLRP) and Comprehensive Plan scenarios, the existing conditions volumes were grown using the percent change differences between existing and CLRP, and existing and Comprehensive Plan, County TDM link volumes. The percent change was applied to existing conditions link volumes to determine a set of “target” traffic volumes. The target volumes from the growth forecast were then combined with the Existing Conditions origin-destination

data using VISUM as a macroscopic origin-destination trip assignment tool. Using an algorithm known as 'TFlowFuzzy', VISUM assigns SOV, HOV-2, and HOV-3 vehicles to paths within the model network, consistent with origin-destination data in order to meet the volume targets.

Following the initial output of this process, County staff provided feedback on the reasonableness of the volumes and manual adjustments were performed in a second round of the process to create a final set of "target" traffic volumes and VISUM vehicle path assignments. These volumes and assignments were then loaded into the Fairfax County Parkway VISSIM model for operational analysis.

## **Concept Analysis Scenarios**

Similar to the CLRP and Comprehensive Plan volume development, analysis scenario volumes for the concepts were developed using the County TDM and the percent change between models on a link-by-link basis. However, the analysis scenarios were developed starting from the 2040 Comprehensive Plan County TDM, rather than the existing conditions model, and the percent differences were applied to the network traffic volumes used in the Comprehensive Plan analysis. This was done differently than the CLRP and Comprehensive Plan volume development in order to capture the manual adjustments that were performed as part of the CLRP and Comprehensive Plan volume development processes.

The outputs of the above process were run through the VISUM assignment to determine final network traffic volume assignments for each of the analysis scenarios. Final manual adjustments were performed at individual locations where concepts changed the geometric configuration and/or required a modified vehicle path based on the concept configuration (i.e. adding HOV direct connections or installing a quadrant intersection).

## **Traffic Analysis**

As with existing conditions, VISSIM was used to determine intersection movement-level operational outputs as well as arterial segment operations at grade-separated interchanges. The focus of the analyses was, first, the comparison of the CLRP to the Comprehensive Plan, then a comparison of the Comprehensive Plan to, and between, each Concept.

Key metrics included a consideration of corridor-level operations, such as travel time, vehicle density, queuing, and the performance of corridor segments, or grouping of intersections, which have a high interaction with one another. Intersection throughput was also considered a key parameter at capacity-constrained locations to determine the effectiveness of different corridor and intersection configurations.

## **Potential Right-of-Way Impacts**

GIS mapping software was used in combination with concept sketches to quantify the approximate areas of impact of each concept. Available right-of-way (ROW) information was overlaid with the outline of the concept sketches for each concept in GIS. Data analysis tools available in the GIS mapping software allowed the areas of impacts, outside the public ROW, to be calculated.



This process was performed for the concept sketches, with and without the trail improvements. The reasons for the two ROW impact assessments were to quantify the magnitude of roadway infrastructure improvements, separate from the trail improvements. In some segments, the difference was significant. This was the case where roadway infrastructure improvements were not identified, but in order to accommodate the trail along the existing alignment, the trail had to be located outside public ROW.

## **Opinion of Probable Cost**

For each Concept, a planning level Opinion of Probable Cost (OPC) was developed to compare the magnitude of costs. Below is the methodology and list of assumptions used when developing the OPC:

1. Cost estimates were prepared based on infrastructure improvements (roadway or trail) identified along the Fairfax County Parkway and Franconia-Springfield Parkway study corridors. A few exceptions to this approach were considered if projects aligned with other ongoing efforts or fell outside the corridor area of this study:
  - Construction of the Fairbrook Drive connector (within Town of Herndon) in Concept 1.
  - Widening of the Dulles Toll Road in Concept 3 to accommodate lane transitions and an auxiliary lane in the eastbound direction
  - Widening of I-66 in Concept 3 to accommodate the access ramps between HOV lanes along Fairfax County Parkway (FCP) and the I-66 Express Lanes
  - Construction of auxiliary roadways for quadrant intersection configurations in Concept 1 and Concept 2
  - Construction of the additional roadways near Loisdale Road and Terminal Road in Concept 2.
2. An OPC was not prepared for network elements included in the Comprehensive Plan intersecting the corridor that are not currently funded but were assumed to be present in the concept (e.g. McLearen Road extension).
3. An OPC was not prepared for programmed improvements, not yet constructed, but assumed to be present in all three concepts as follows:
  - Fairfax County Parkway widening between Route 29 and Route 123
  - Frontier Drive extension
  - Fairfax County Parkway and Rolling Road interchange improvements
4. Base Construction Costs
  - VDOT Project Cost Estimating System tool (PCES) was used to quantify costs based on the linear distance (miles) of widening improvements and linear feet of shared-use path for each of the five segments. This was also used for the transit queue jump lanes in Concept 2.
  - VDOT Transportation and Mobility Planning Division Statewide Planning Level Cost Estimates tool (TMPD) was used for costs associated with interchange improvements (roadway, bridge decks) and several components associated with intersection improvements (signal upgrades, crosswalks, pedestrian signals)
5. When generating a cost for displaced left turns using TMPD, the crossover line item was used to quantify the left turn that crosses the opposing direction of travel, and an additional 1 lane

- line item was also used to quantify the right-turn lanes that run adjacent and contraflow to the displaced left
6. A new signal was assumed at all intersections that would be affected by widening
  7. The “New Signal” line item was assumed to include costs for pedestrian signals and crosswalks
    - If pedestrian accommodations were added at an intersection, but widening was not identified at the intersection to require a new signal, then individual line items for pedestrian signals and crosswalks were assumed
  8. The additional pavement quantified using the TMPD tool captured pavement not encompassed in the widening improvements from the PCES tool
  9. At interchanges, the following methodology was used:
    - In addition to the “New Interchange” line item, quantities for bridge decks and additional pavement were included
    - The “New Interchange” line item is assumed to include costs for interchange grading, signals used within the interchange, crosswalks, and pedestrian signals
    - A quantity of “1” for a new interchange assumes four interchange ramps. Interchange quantities of 0.5 and 1.5 were used where there were two ramps or six ramps respectively.
    - A partial interchange line item was used to quantify the ramps for HOV grade-separated intersections.
  10. To account for barrier separation of HOV lanes from general purpose through and left-turn lanes at an at-grade intersection, an average area of barrier separation (i.e. raised median) was assumed per intersection. Half of this ‘per intersection’ cost was used where only one direction of travel was median separated.
  11. VDOT estimated a total cost of \$90 million to construct the I-95 flyover at the interchange with Fairfax County Parkway in 2016. An inflated cost (\$101.3 million) was added to the Concept 3 cost estimate since improvements were not included in this concept sketch.
  12. Costs associated with previously identified short-term improvements from the VDOT Fairfax County Parkway study were adjusted from 2016 to 2020 based on an assumed inflation rate of 3% per year.
  13. Baseline Factor
    - An additional 40% of the base construction cost (combination of PCES and TMPD) was assumed as a baseline contingency factor
  14. Additional Factors (*added to the base construction cost + baseline contingency factor for PCES and TMPD as noted*)
    - An additional 50% factor (combination of PCES and TMPD) was assumed to account for right-of-way and utility costs
    - An additional 30% factor (combination of PCES and TMPD) was assumed for preliminary engineering and construction contingencies
    - An additional 15% factor (PCES only) was assumed for stormwater, drainage, environmental, and permitting costs
    - An inflation rate of 3% per year was used for TMPD costs to inflate costs from 2015 to 2020 dollars

Considering the above methodology, a unique PCES cost estimate was developed for each segment within each concept, while a range of cost estimates (“low” and “high”) were developed using TMPD. This is consistent with the format of the TMPD tool.

## 5. Future Conditions and Scenarios Evaluated

As described in Chapter 2, the start of the process for completing the future conditions and scenario evaluations is the establishment of baseline conditions, as shown in **Figure 8**. The Long-Term analysis portion of this study evaluated the effectiveness of Fairfax County’s Financially Constrained, Long-Range Plan (CLRP) and Comprehensive Plan networks at addressing future demand. The results of this analysis were presented to the public for comment.

Based on the outcomes of this process, the project team developed and analyzed three additional alternative concepts, each of which focus on a different central strategy to meet the County’s long-term needs. Again, the outcomes of this assessment were presented to the public and County leadership for feedback. Effective elements of the alternative concepts’ assessments were combined to form Final Recommendations, which were intended to revise the County’s current Comprehensive Plan. Note that corridor configurations presented in this section are reflective of a planning-level study of traffic operations, and the analysis presented herein makes assumptions regarding lane use, intersection configuration, and other geometric factors which will be subject to further study and design at the time of implementation. As such, results are presented for comparative purposes in Chapter 5, Chapter 6, and Chapter 7.



**Figure 8: Establish Future Baseline Conditions Process**

## **Existing County Scenario Plans**

### **Constrained Long-Range Plan (CLRP)**

#### ***Scenario Description and Assumptions***

The CLRP analysis was performed consistent with Fairfax County's approved and funded long-range transportation improvements, at the time of the analysis in Spring 2018. The plan includes widening of Fairfax County Parkway to 6 general-purpose lanes, from Fox Mill Road, in the north, to Route 123, in the south, and widening of Franconia-Springfield Parkway to 8 general purpose lanes, from Fairfax County Parkway, in the west, to the Metro Loop Ramp at the Franconia-Springfield Metrorail Station, in the east.

Specific intersection or interchange configuration improvements include the following:

- Transform I-66 Express Lanes Project;
- Interchange at Fairfax County Parkway and the planned Shirley Gate Road extension;
- Fairfax County Parkway/Franconia-Springfield Parkway/Rolling Road Ultimate Improvement Plan;
- Fairfax County Parkway/I-95 Interchange Improvement Plan;
- Grade separated connection between Pohick Road and Fairfax County Parkway at Richmond Highway, bypassing the at-grade signalized intersections;
- Interchange at Franconia-Springfield Parkway and Hampton Creek Way; and
- Frontier Drive Extension and braided Ramp Project.

Analysis volumes for the CLRP scenario were developed consistent with the methodology, as described previously. Intersection-level turning movement volumes may be found in **Appendix D.1**.

#### ***Results***

Overall, the CLRP results indicate significant growth in traffic demand throughout the study corridors, with some locations of significant delay and congestion. These locations create bottlenecks, which inhibit traffic flow along the Parkways mainlines and throughout the region. Key intersections or interchanges within the study corridors that result in bottlenecks along the mainline, as noted below:

- Sunrise Valley Drive and the Dulles Toll Road;
- Route 123;
- Huntsman Boulevard;
- Hooes Road;
- Pohick Road;
- Loisdale Road/northbound I-95;
- John J. Kingman Road;
- Richmond Highway;
- Backlick Road at Franconia-Springfield Parkway
- Beulah Street.



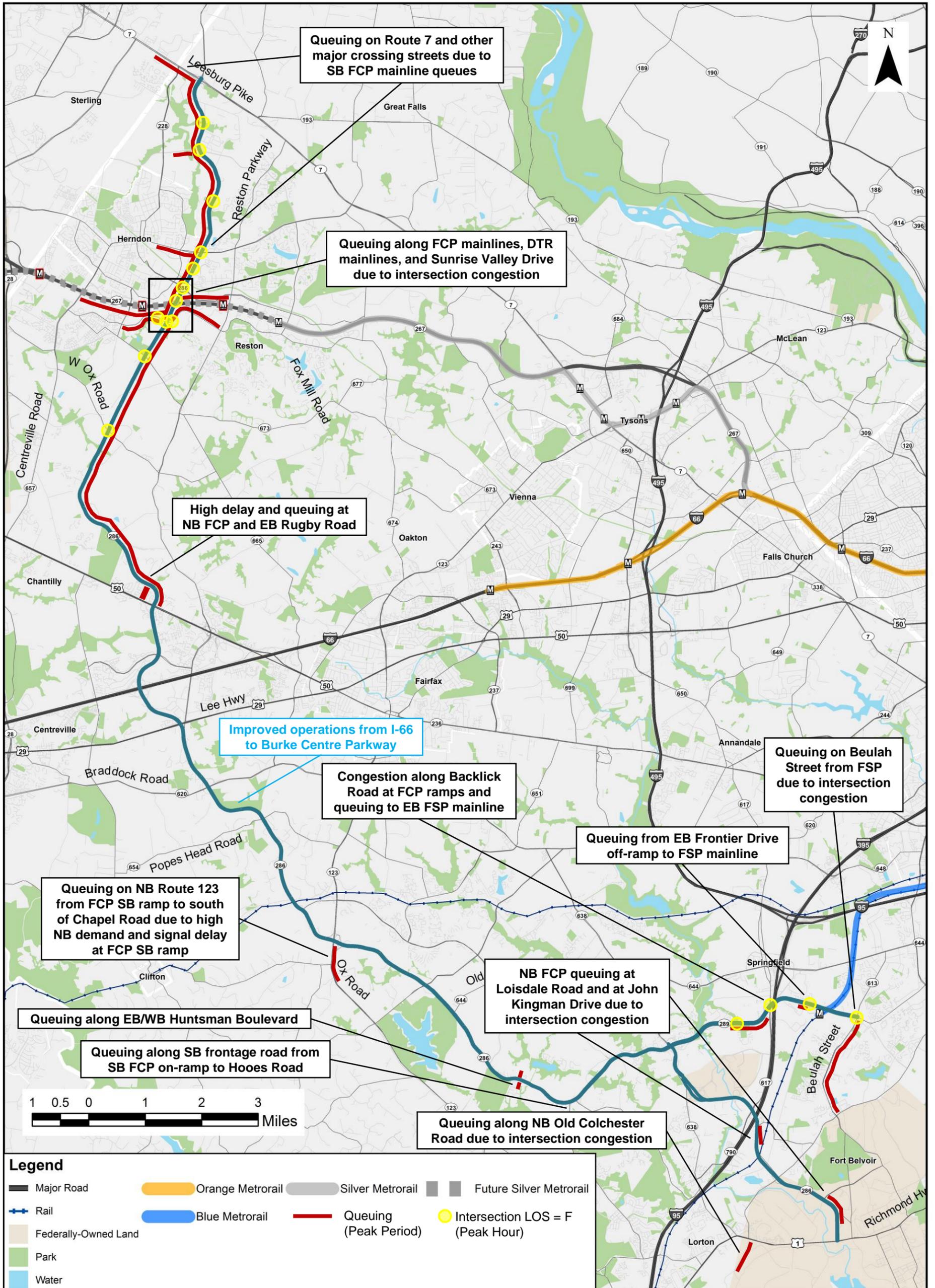
Fairfax County and Franconia Springfield Parkways  
**Alternatives Analysis & Long-Term Planning Study**

These locations of increased delay (and demand) result in increased queue lengths and travel time throughout the corridors, when compared to existing conditions. Improvements in operations are primarily isolated to locations where intersection capacity is increased under the CLRP, whereas other locations experienced further degradation compared to existing conditions. A map summary of results is shown in **Figure 9** and **Figure 10**. Detailed descriptions of results, by segment, may be found in **Appendix D.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix D.3** and **D.4**, respectively.



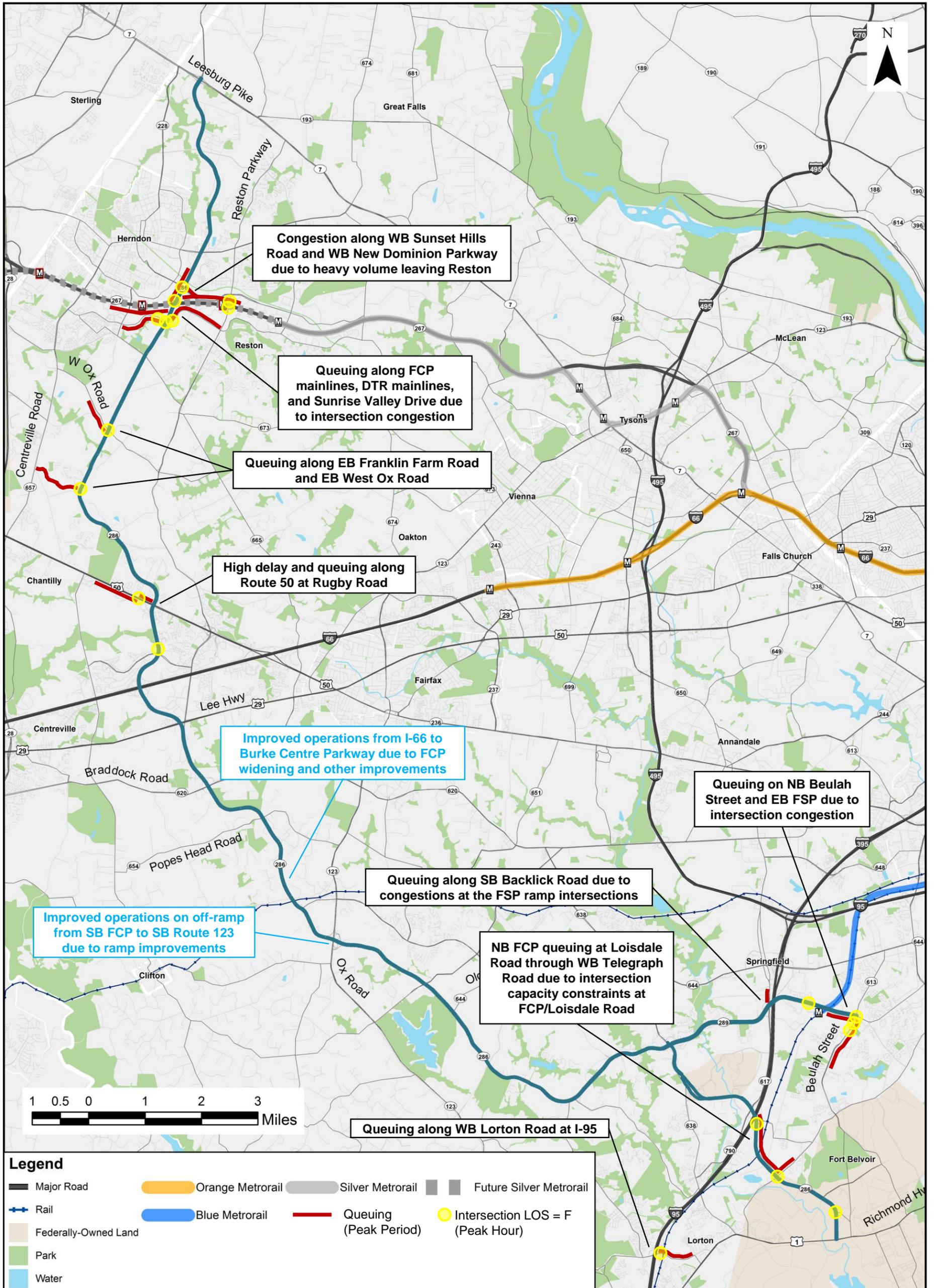
# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 9: CLRP – AM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 10: CLRP – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



## **Comprehensive Plan**

### ***Scenario Description and Assumptions***

The Comprehensive Plan analysis was performed consistent with Fairfax County's most recently approved Comprehensive Plan Transportation Plan amendment, dated September 2015. Compared to the CLRP scenario, the Comprehensive Plan scenario provides accommodations for HOV operations throughout the study corridors, extending from the existing Franconia-Springfield Parkway and I-95 Express Lanes interchange, in the south, continuing along Fairfax County Parkway to Route 7, in the north. The scenario also includes widening of Fairfax County Parkway to 6 lanes (including one HOV lane in each direction), from Route 7, in the north, to Sydenstricker Road/Shady Palm Drive, in the south, and widening to 8 lanes (including one HOV lane in each direction to and from I-95), from Sydenstricker Road/Shady Palm Drive, in the west, Frontier Drive at the Franconia-Springfield Metrorail Station, in the east. In addition to these corridor-level modifications, other network modifications were accounted for in the development of traffic volume forecasts; however, the VISSIM network extents were consistent with the Existing Conditions and CLRP.

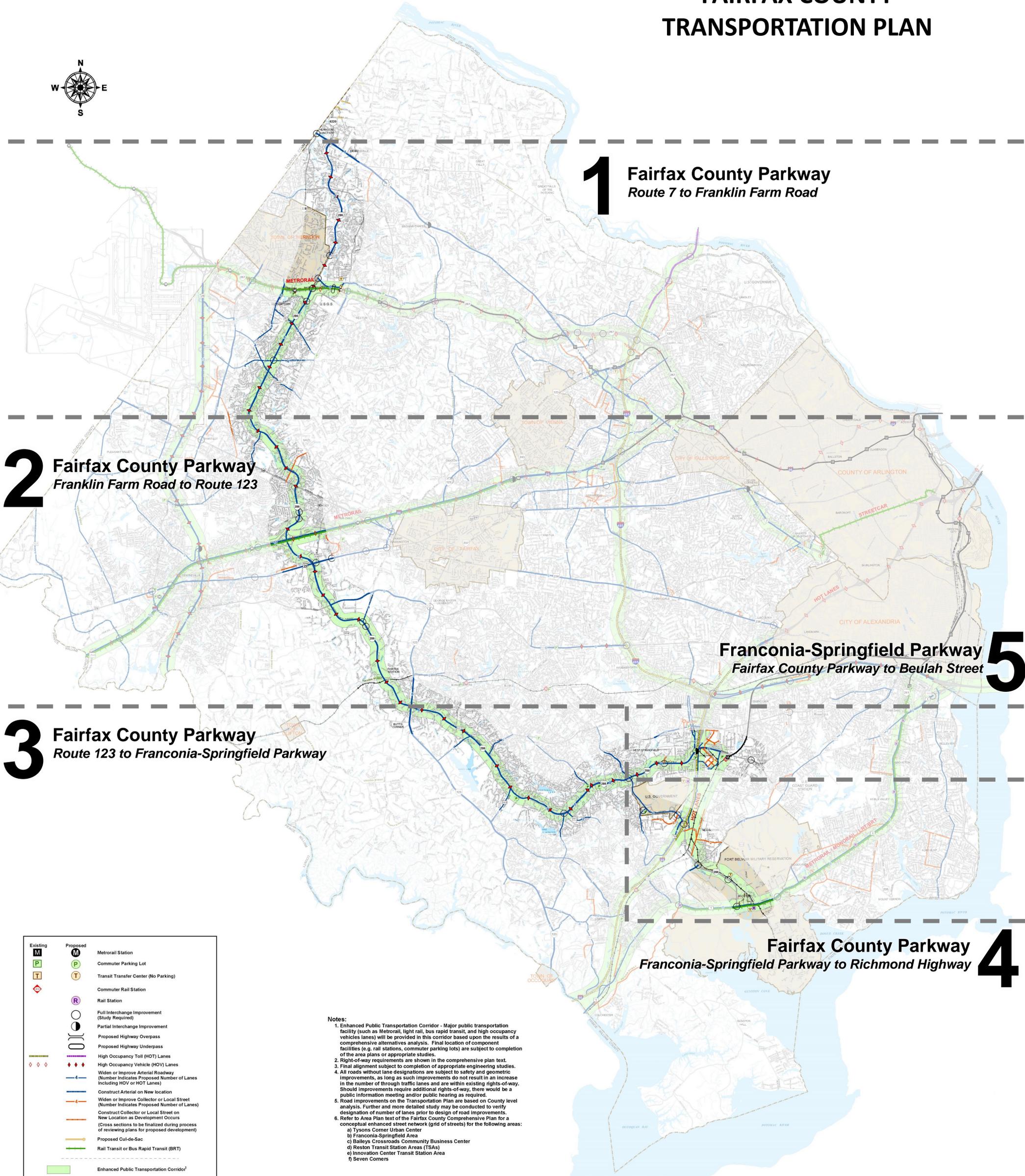
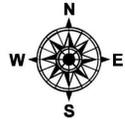
Specific intersection configuration improvements include the following:

- Interchange at Fairfax County Parkway and Sunrise Valley Drive;
- Interchange at Fairfax County Parkway and the planned McLearen Road extension;
- Interchange at Fairfax County Parkway and Popes Head Road and the planned Shirley Gate Road extension;
- Interchange at Fairfax County Parkway and Farrar Drive/John J. Kingman Road;
- Interchange at Fairfax County Parkway and Richmond Highway;
- Interchange at Franconia-Springfield Parkway and Hampton Creek Way; and
- Interchange at Franconia-Springfield Parkway and Beulah Street.

A map of the planned Comprehensive Plan elements is shown in **Figure II**. Analysis volumes for the Comprehensive Plan scenario were developed consistent with the methodology, as described previously. Intersection-level turning movement volumes may be found in **Appendix E.1**.

# Figure 11: Existing Comprehensive Plan

## FAIRFAX COUNTY TRANSPORTATION PLAN



**1** Fairfax County Parkway  
 Route 7 to Franklin Farm Road

**2** Fairfax County Parkway  
 Franklin Farm Road to Route 123

**5** Franconia-Springfield Parkway  
 Fairfax County Parkway to Beulah Street

**3** Fairfax County Parkway  
 Route 123 to Franconia-Springfield Parkway

**4** Fairfax County Parkway  
 Franconia-Springfield Parkway to Richmond Highway

		Metrorail Station
		Commuter Parking Lot
		Transit Transfer Center (No Parking)
		Commuter Rail Station
		Rail Station
		Full Interchange Improvement (Study Required)
		Partial Interchange Improvement
		Proposed Highway Overpass
		Proposed Highway Underpass
		High Occupancy Toll (HOT) Lanes
		High Occupancy Vehicle (HOV) Lanes
		Widen or Improve Arterial Roadway (Number Indicates Proposed Number of Lanes Including HOV or HOT Lanes)
		Construct Arterial on New Location
		Widen or Improve Collector or Local Street (Number Indicates Proposed Number of Lanes)
		Construct Collector or Local Street on New Location as Development Occurs (Cross sections to be finalized during process of reviewing plans for proposed development)
		Proposed Cul-de-Sac
		Rail Transit or Bus Rapid Transit (BRT)
		Enhanced Public Transportation Corridor <sup>1</sup>

**Notes:**

- Enhanced Public Transportation Corridor - Major public transportation facility (such as Metrorail, light rail, bus rapid transit, and high occupancy vehicles lanes) will be provided in this corridor based upon the results of a comprehensive alternatives analysis. Final location of component facilities (e.g. rail stations, commuter parking lots) are subject to completion of the area plans or appropriate studies.
- Right-of-way requirements are shown in the comprehensive plan text.
- Final alignment subject to completion of appropriate engineering studies.
- All roads without lane designations are subject to safety and geometric improvements, as long as such improvements do not result in an increase in the number of through traffic lanes and are within existing rights-of-way. Should improvements require additional rights-of-way, there would be a public information meeting and/or public hearing as required.
- Road improvements on the Transportation Plan are based on County level analysis. Further and more detailed study may be conducted to verify designation of number of lanes prior to design of road improvements.
- Refer to Area Plan text of the Fairfax County Comprehensive Plan for a conceptual enhanced street network (grid of streets) for the following areas:
  - Tysons Corner Urban Center
  - Franconia-Springfield Area
  - Balleys Crossroads Community Business Center
  - Reston Transit Station Areas (TSAs)
  - Innovation Center Transit Station Area
  - Seven Corners



## **Results**

The Comprehensive Plan scenario indicates some improvement over the existing conditions and CLRP scenarios, most notably at new or reconfigured interchange locations. However, additional capacity along the study corridor attracts additional demand, resulting in some degradation of conditions at intersections or interchanges within the study corridors that result in bottlenecks along the mainline, as noted below:

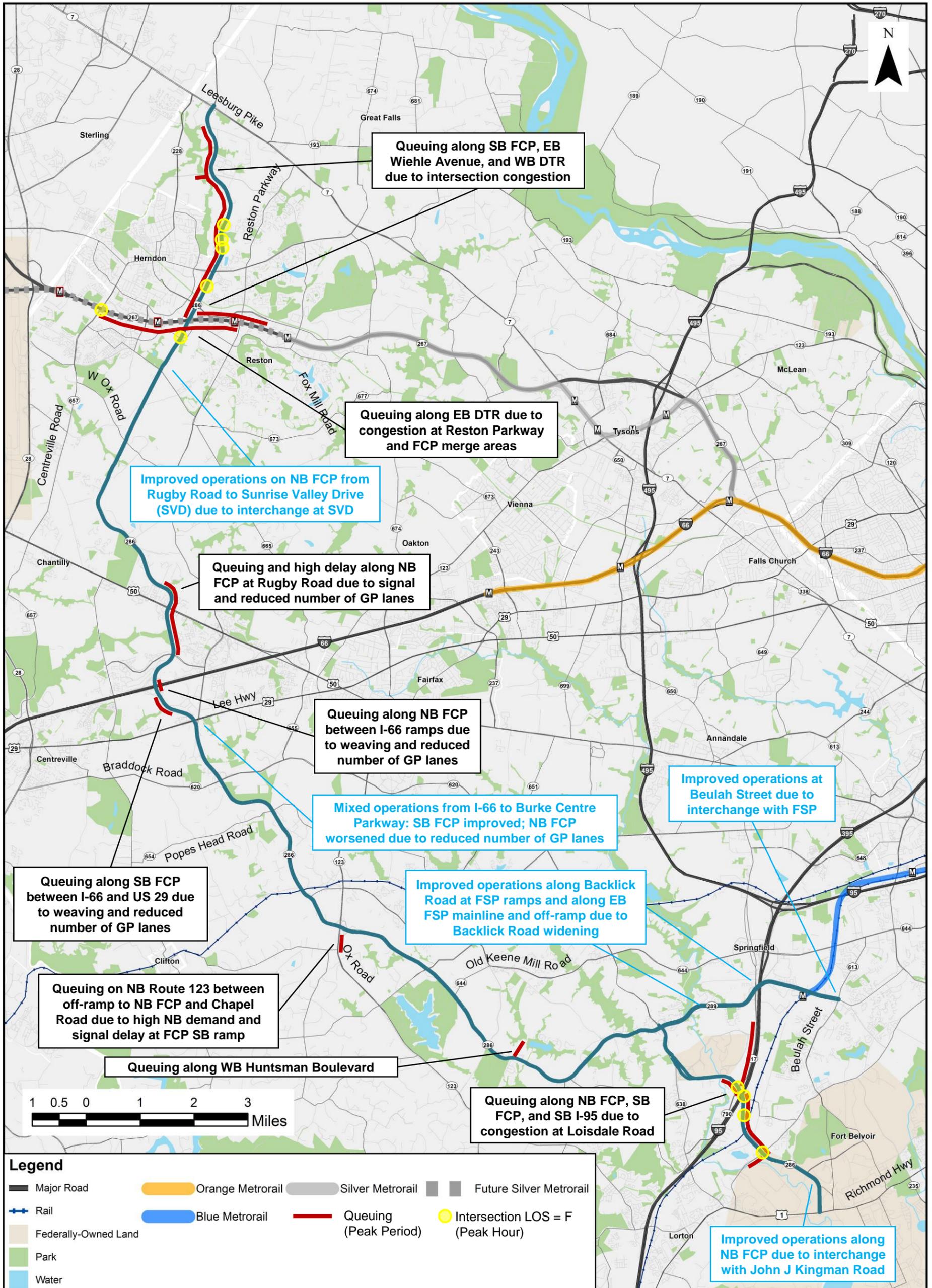
- Sunrise Valley Drive and the Dulles Toll Road;
- Rugby Road;
- Route 123;
- Loisdale Road; and
- Backlick Road at Franconia Springfield Parkway.

With the provision of HOV lanes in the corridor, general purpose traffic experiences additional delay and congestion, particularly in the northern portion of the network, where existing 3-lane directional capacity is reduced to 2 general purpose lanes and one HOV lane. This configuration exacerbates queues and mainline delays for general purpose traffic where capacity is effectively reduced when compared to the CLRP or existing conditions. HOV vehicles experience travel time and delay benefits as a result of the configuration, but are still inhibited at certain bottleneck locations where these vehicles re-enter general purpose lanes.

A map summary of results is shown in **Figure 12** and **Figure 13**. Detailed descriptions of results, by segment, may be found in **Appendix E.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix E.3** and **Appendix E.4**, respectively.

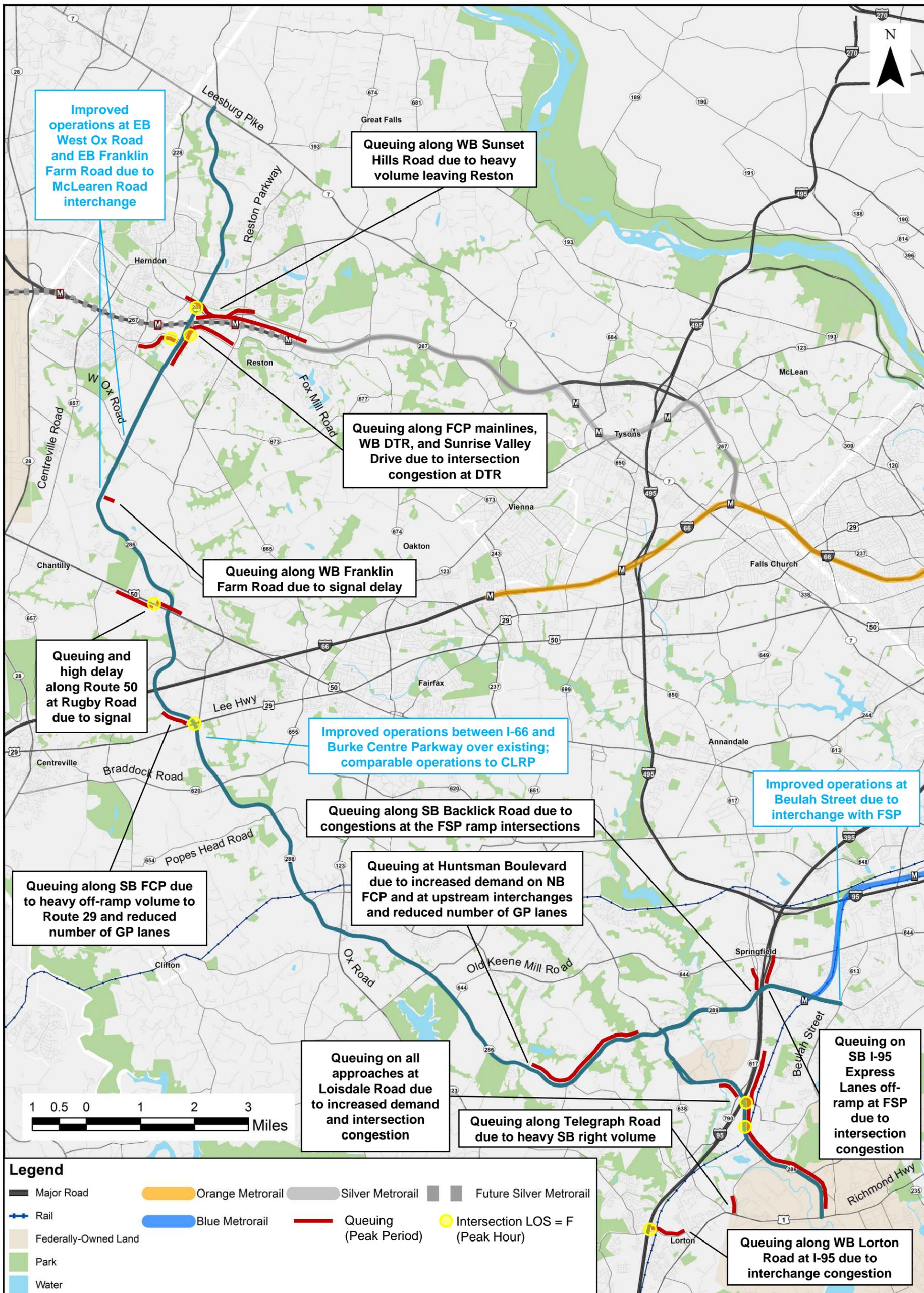
# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 12: Comprehensive Plan – AM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



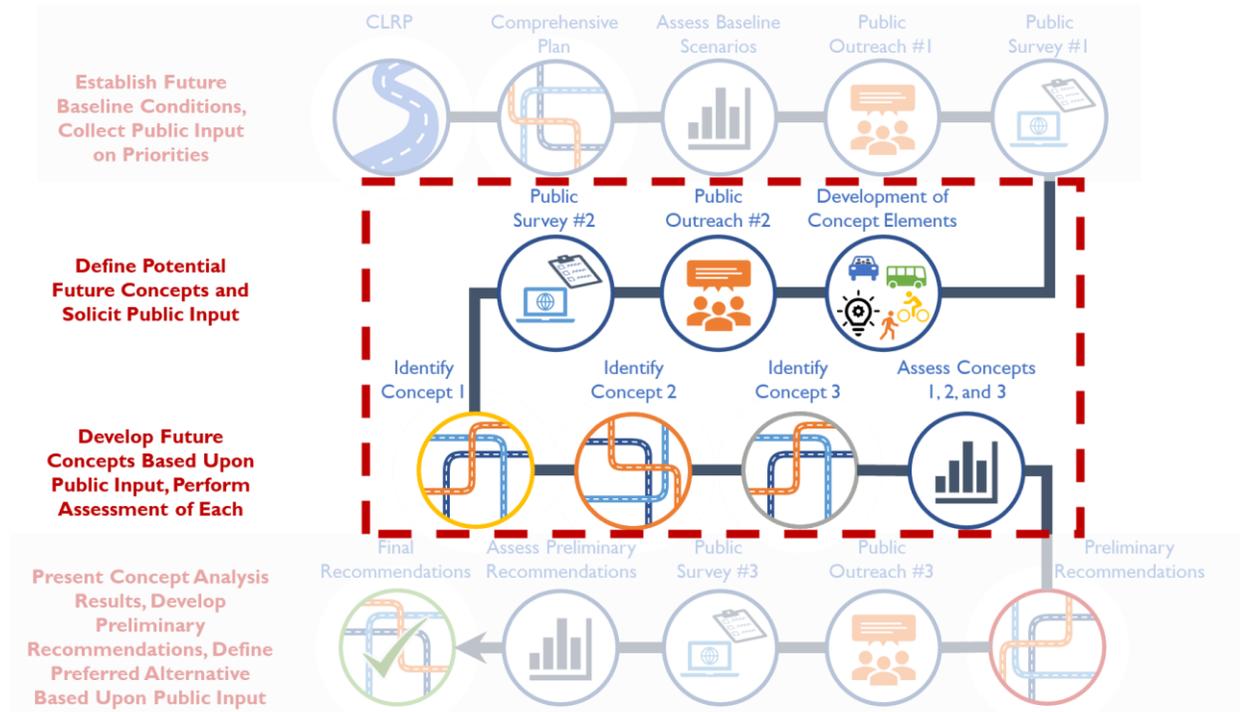
# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 13: Comprehensive Plan – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



## **Alternatives Assessment**

The next portion of the future conditions evaluation is summarized on **Figure 14**.



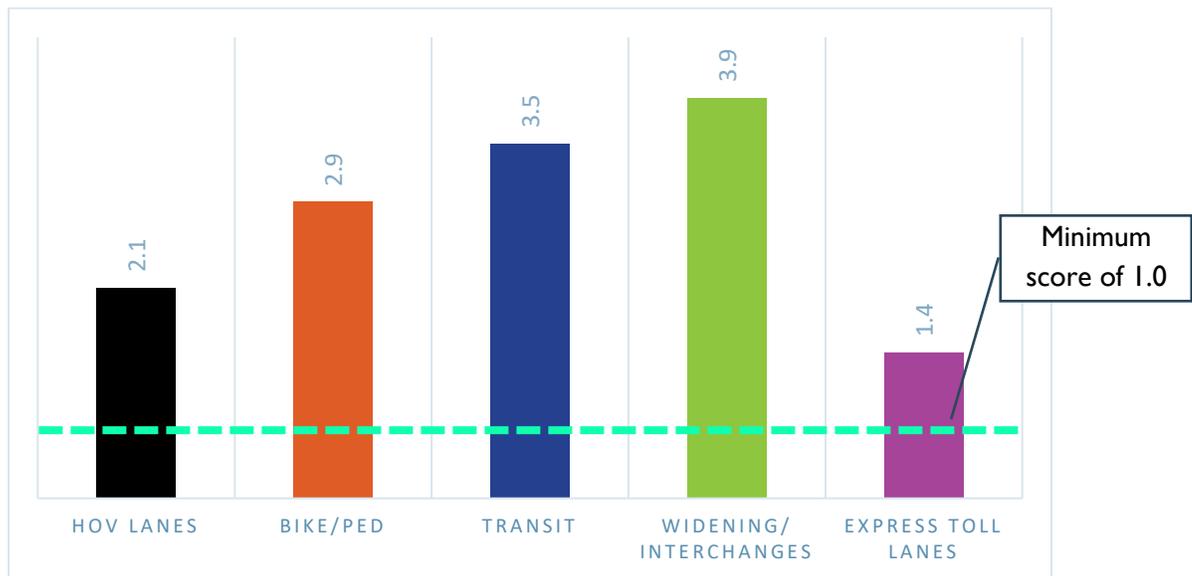
**Figure 14: Development and Evaluation of Concepts**

### **Concept Development**

The CLRP and Comprehensive Plan analyses were used to identify challenges and potential improvement opportunities within the study corridors. These results were then supplemented by public input from three public meetings and an online survey in Spring of 2019, as described in the Community Engagement section of this report.

### **Community Engagement and Public Feedback**

As described in **Chapter 2**, the first round of public engagement for the Long-Term Study consisted of three public input meetings, an online survey, and a project website to better understand the public's priorities on high level corridor concept elements. The priorities were the foundation for subsequent public engagement and concept development. The engagement received thousands of unique responses. A ranked consideration of major themes and corridor priorities is shown in aggregate in **Figure 15**. Scoring of priorities was based on a scale of 1 to 5, where 1 represented the lowest priority and 5 the highest priority. A score of 0 was not permitted as part of the survey. What is displayed in **Figure 15** is the average score based on the responses that were received.



**Figure 15: Average Rankings of Corridor Travel Priorities**

Based on the public input, the transportation users of the study corridors are most interested in widening and interchange improvements to address perceived capacity issues. This priority averaged 3.9 out of a possible 5.0. The lowest priority was express lanes and/or tolls, which averaged 1.4 out of 5.0.

As a result of public comment, concepts were developed to modify the Comprehensive Plan. These are described in further detail in the following sections and are reflective of the public priorities. Concepts cover a range of options, giving additional consideration for corridor widening and interchange improvements, where needed, or exploring corridor configurations which rely less on HOV lanes. A transit-focused concept was also developed to assess potential improvements for transit vehicles. All concepts considered pedestrian and bicycle accommodations, based on the priority of multimodal facilities within the County.

### **Concept Descriptions**

Three concepts were developed around key central themes to address the challenges associated with the Constrained Long-Range Plan and Comprehensive Plan analyses and reflect community priorities, based on public input. Additionally, the concepts were specifically created to be different, in order to better understand and compare key high-level themes (e.g. such as HOV). The concept numbers, corresponding themes, and brief descriptions are as follows:

1. Expanded Corridor Capacity;
2. Limited Impact Improvements with Transit Priority; and
3. HOV Priority/Regional Facility Connectivity.

**Concept I**, Expanded Corridor Capacity, was developed to provide mitigations to vehicular capacity constraints demonstrated in the Constrained Long-Range Plan and Comprehensive Plan scenarios. It

included widening of Fairfax County Parkway and Franconia-Springfield Parkway, various interchange improvements, and innovative intersection configurations. Concept 1 did not include HOV improvements.

**Concept 2**, Limited Impact Improvements with Transit Priority, was developed to mitigate only critical capacity constraints, but prioritized transit speed and access at intersections, with minimal impacts to the built and natural environment. Widening of the study roadways was minimized and intersection improvements were generally constrained to the existing right-of-way. Concept 2 did not include HOV improvements.

**Concept 3**, HOV Priority/Regional Facility Connectivity, was developed to try to maximize the benefit and attractiveness of a corridor-wide, semi-limited access HOV2+ facility in the existing center median of Fairfax County Parkway. HOV-only flyovers were added at capacity-constrained intersections to limit starting and stopping and direct feeder connections were established between the HOV facility and regional HOV facilities at the Dulles Toll Road, I-66, and I-95. Transit vehicles were permitted to use the HOV facility, providing additional benefit. Some general purpose vehicular capacity improvements were provided throughout the corridor at critical locations while still prioritizing HOV access and throughput.

### ***Assumptions for All Concepts***

All concepts were developed assuming the following:

- All Constrained Long-Range Plan improvements would be implemented, as described in the Constrained Long-Range Plan section, previously;
- Traffic volumes were based on the County's Travel Demand Model, consistent with the Comprehensive Plan analysis and an analysis year of 2040 (See Chapter 4);
- Trail improvements are provided along both sides of Fairfax County Parkway and Franconia-Springfield Parkway;
- Pedestrian accommodations are provided at all at-grade intersections and crosswalks are provided across all approaches;
- Addition of an Express Bus Service, consistent with the Countywide Transit Network Study recommendations; and
- McLearen Road extension would be constructed and intersect with Fairfax County Parkway.

Detailed descriptions of each Concept are provided below.

## **Concept 1**

### ***Scenario Description and Assumptions***

Concept 1 was developed using vehicular capacity improvements for locations which were identified as congested in the Comprehensive Plan analysis. It also assumed no HOV improvements would be added to the corridor in order to maximize general purpose capacity. As a result of the increased capacity along the mainline and improved interchange locations, Concept 1 generally had higher vehicular traffic

volumes than the other concepts considered in this study. This pattern was supported by a reduction in traffic along parallel routes, including Route 28 and I-495. Specific configuration elements included:

- Removal of all HOV designations
- Corridor widening:
  - Widen to a 6-lane cross section, between Route 7 and Sydenstricker Road, consistent with the Comprehensive Plan;
  - Widen to an 8-lane cross section on both Fairfax County Parkway and Franconia-Springfield Parkway, between Sydenstricker Road and the Franconia-Springfield Metro Station Loop Ramp, consistent with the Comprehensive Plan; and
  - Widen to a 6-lane cross section between Boudinot Drive and Richmond Highway, one additional lane compared to the Comprehensive Plan.
- Modifications to the following intersections/interchanges:
  - Wiehle Avenue (displaced left turn along Fairfax County Parkway);
  - New Dominion Parkway (displaced left turn along Fairfax County Parkway);
  - Spring Street/Sunset Hills Road (modified diamond interchange);
  - Dulles Toll Road (bifurcated, i.e. split level, interchange);
  - Sunrise Valley Drive (single point urban interchange);
  - McLearen Road (fully displaced left turn intersection);
  - West Ox Road (fully displaced left turn intersection);
  - Franklin Farm Road (restricted crossing U-turn intersection);
  - Rugby Road (quadrant intersection);
  - Lee Chapel Road (bowtie roundabout intersection);
  - Huntsman Road (quadrant intersection);
  - Fairfax County Parkway and I-95 (single point urban interchange and directional flyover ramps);
  - Loisdale Road (accommodation for southbound flyover from I-95);
  - Terminal Road (accommodation for southbound flyover from I-95);
  - Remove the Bonniemill Lane/Spring Village Drive intersection and construct the adjacent interchange at Hampton Creek Way;
  - Backlick Road at Franconia-Springfield Parkway (partial displaced left turn); and
  - Beulah Street (quadrant intersection).

Several other assumptions supported the concept configuration, adjacent to the study corridor, including:

- The planned Fairbrook Road Connector between Herndon Parkway and Spring Street would be completed (Town of Herndon);
- The traffic signal at the intersection of Fairfax County Parkway and Burke Centre Parkway would be replaced with a southbound to eastbound flyover (westbound left-turn movements were restricted);
- Additional roadway infrastructure would be completed near Rugby Road to support quadrant intersection<sup>1</sup> operations;
- Additional roadway infrastructure would be completed in the shopping center near Huntsman Boulevard to support quadrant intersection operations;
- Additional roadway infrastructure would be completed along Silver Lake Boulevard, in the area of Beulah Street, to support quadrant intersection operations; and
- Interchange modifications of I-95 at Fairfax County Parkway/Loisdale Road would be completed.

A summary of the Concept I modifications, as indicated over the current Comprehensive Plan map, is shown in **Figure 16**. Analysis volumes for Concept I were developed consisted with the methodology, as described previously. Intersection-level turning movement volumes may be found in **Appendix F.1**.

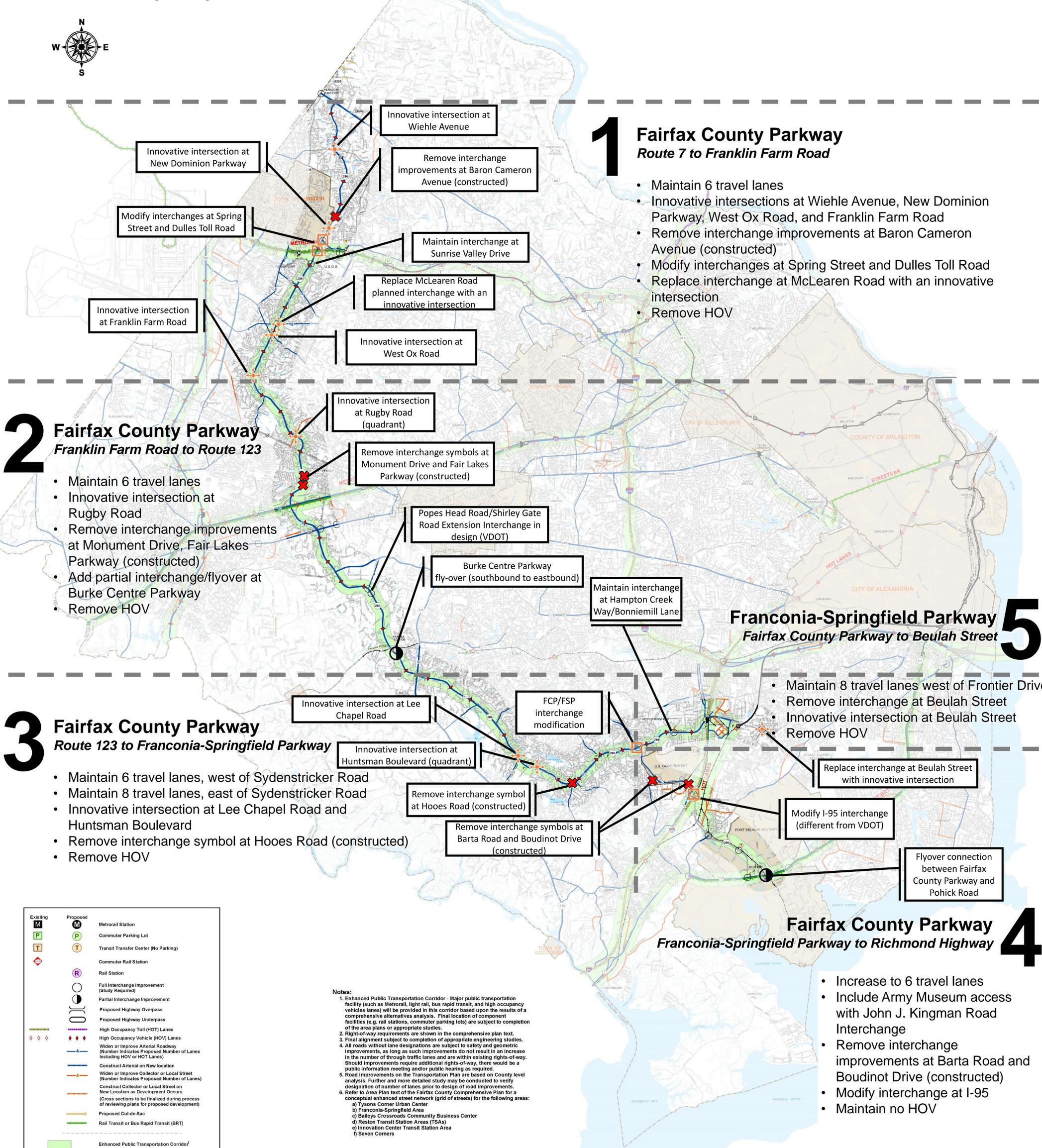
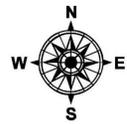
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<sup>1</sup> A quadrant intersection is an intersection design with one main intersection and two secondary intersections that are linked by a connector road in any quadrant of the intersection  
([https://www.virginiadot.org/info/innovative\\_intersections\\_and\\_interchanges/qr.asp](https://www.virginiadot.org/info/innovative_intersections_and_interchanges/qr.asp))

# Figure 16: Concept 1 – Maximize Traffic Flow

*This map summarizes the key elements of the configuration of Concept 1 (current Fairfax County Transportation Plan Map shown in the background)  
 Note: current interchange configurations are maintained unless otherwise noted*

## FAIRFAX COUNTY TRANSPORTATION PLAN



- ### 1 Fairfax County Parkway Route 7 to Franklin Farm Road
- Maintain 6 travel lanes
  - Innovative intersections at Wiehle Avenue, New Dominion Parkway, West Ox Road, and Franklin Farm Road
  - Remove interchange improvements at Baron Cameron Avenue (constructed)
  - Modify interchanges at Spring Street and Dulles Toll Road
  - Replace interchange at McLearen Road with an innovative intersection
  - Remove HOV

- ### 2 Fairfax County Parkway Franklin Farm Road to Route 123
- Maintain 6 travel lanes
  - Innovative intersection at Rugby Road
  - Remove interchange improvements at Monument Drive, Fair Lakes Parkway (constructed)
  - Add partial interchange/flyover at Burke Centre Parkway
  - Remove HOV

- ### 3 Fairfax County Parkway Route 123 to Franconia-Springfield Parkway
- Maintain 6 travel lanes, west of Sydenstricker Road
  - Maintain 8 travel lanes, east of Sydenstricker Road
  - Innovative intersection at Lee Chapel Road and Huntsman Boulevard
  - Remove interchange symbol at Hooes Road (constructed)
  - Remove HOV

- ### 5 Franconia-Springfield Parkway Fairfax County Parkway to Beulah Street
- Maintain 8 travel lanes west of Frontier Drive
  - Remove interchange at Beulah Street
  - Innovative intersection at Beulah Street
  - Remove HOV

- ### 4 Fairfax County Parkway Franconia-Springfield Parkway to Richmond Highway
- Increase to 6 travel lanes
  - Include Army Museum access with John J. Kingman Road Interchange
  - Remove interchange improvements at Barta Road and Boudinot Drive (constructed)
  - Modify interchange at I-95
  - Maintain no HOV

**Notes:**

- Enhanced Public Transportation Corridor - Major public transportation facility (such as Metrorail, light rail, bus rapid transit, and high occupancy vehicles lanes) will be provided in this corridor based upon the results of a comprehensive alternatives analysis. Final location of component facilities (e.g. rail stations, commuter parking lots) are subject to completion of the area plans or appropriate studies.
- Right-of-way requirements are shown in the comprehensive plan text.
- Final alignment subject to completion of appropriate engineering studies.
- All roads without lane designations are subject to safety and geometric improvements, as long as such improvements do not result in an increase in the number of through traffic lanes and are within existing rights-of-way. Should improvements require additional rights-of-way, there would be a public information meeting and/or public hearing as required.
- Road improvements on the Transportation Plan are based on County level analysis. Further and more detailed study may be conducted to verify designation of number of lanes prior to design of road improvements.
- Refer to Area Plan text of the Fairfax County Comprehensive Plan for a conceptual enhanced street network (grid of streets) for the following areas:
  - Tyson's Corner Urban Center
  - Franconia-Springfield Area
  - Baileys Crossroads Community Business Center
  - Reston Transit Station Area (TSAs)
  - Innovation Center Transit Station Area
  - Seven Corners

Existing	Proposed	Description
		Metrorail Station
		Commuter Parking Lot
		Transit Transfer Center (No Parking)
		Commuter Rail Station
		Rail Station
		Full Interchange Improvement (Study Required)
		Partial Interchange Improvement
		Proposed Highway Overpass
		Proposed Highway Underpass
		High Occupancy Toll (HOT) Lanes
		High Occupancy Vehicle (HOV) Lanes
		Widen or Improve Arterial Roadway (Number Indicates Proposed Number of Lanes Including HOV or HOT Lanes)
		Construct Arterial on New Location
		Widen or Improve Collector or Local Street (Number Indicates Proposed Number of Lanes)
		Construct Collector or Local Street on New Location as Development Occurs (Cross sections to be finalized during process of reviewing plans for proposed development)
		Proposed Cul-de-Sac
		Rail Transit or Bus Rapid Transit (BRT)
		Enhanced Public Transportation Corridor <sup>1</sup>



## **Results**

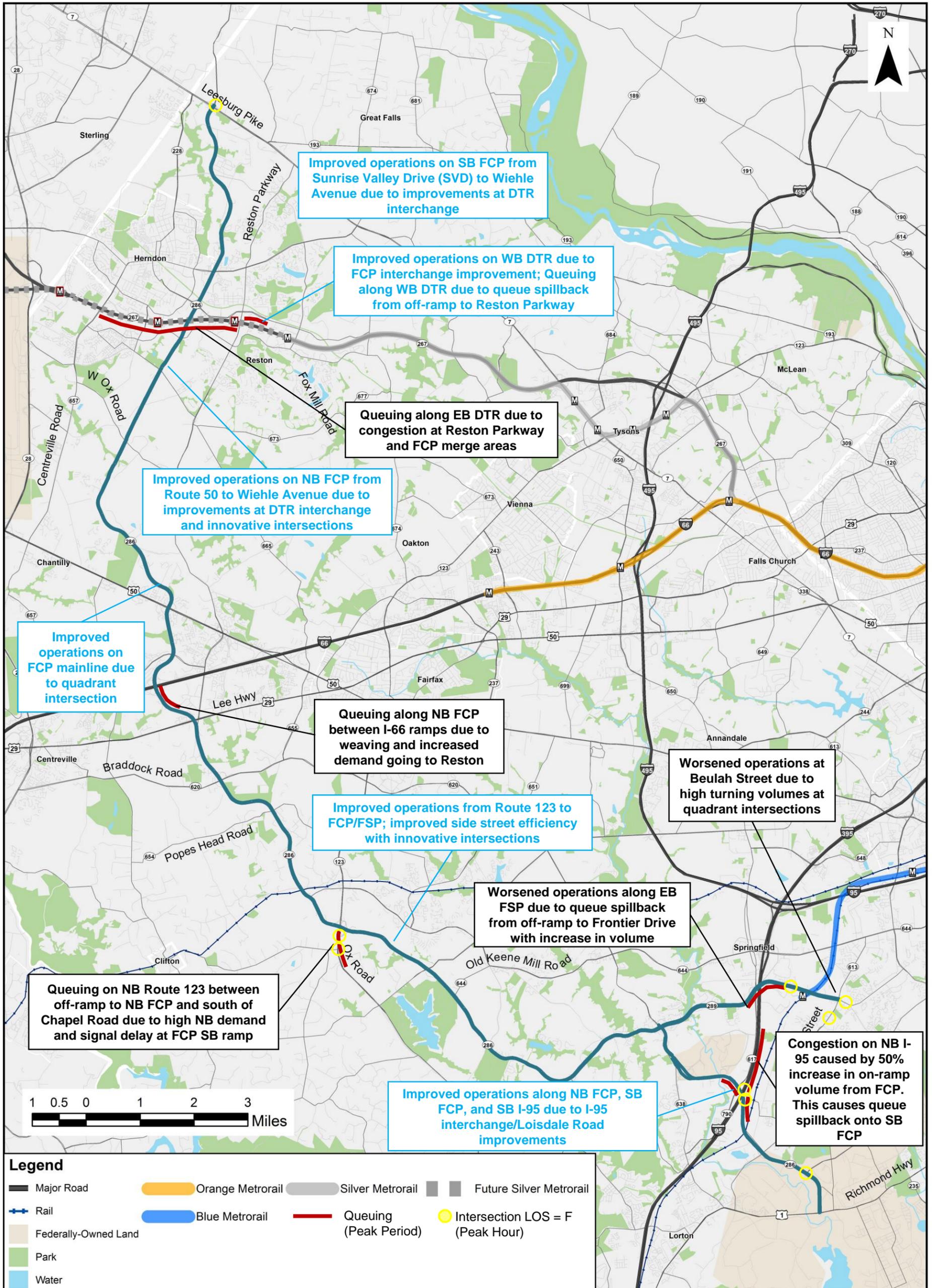
Overall, Concept I indicates improved corridor performance, over the Comprehensive Plan. The increase in Fairfax County Parkway mainline capacity promotes overall improved throughput and flow along the majority of the corridor, while also drawing additional traffic demand from other regional facilities. The increase in demand along Fairfax County Parkway is mostly accommodated with intersection/interchange capacity improvements, but some intersections or interchanges with bottlenecking still remain as a result of poorly performing innovative intersections or higher traffic demand:

- Franklin Farm Road;
- I-66 interchange;
- Route 123;
- I-95 and Fairfax County Parkway;
- John J. Kingman Drive;
- Backlick Road at Franconia-Springfield Parkway; and
- Beulah Street.

A map summary of results are shown in **Figure 17** and **Figure 18**. Detailed descriptions of results, by segment, may be found in **Appendix F.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix F.3** and **Appendix F.4**, respectively.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

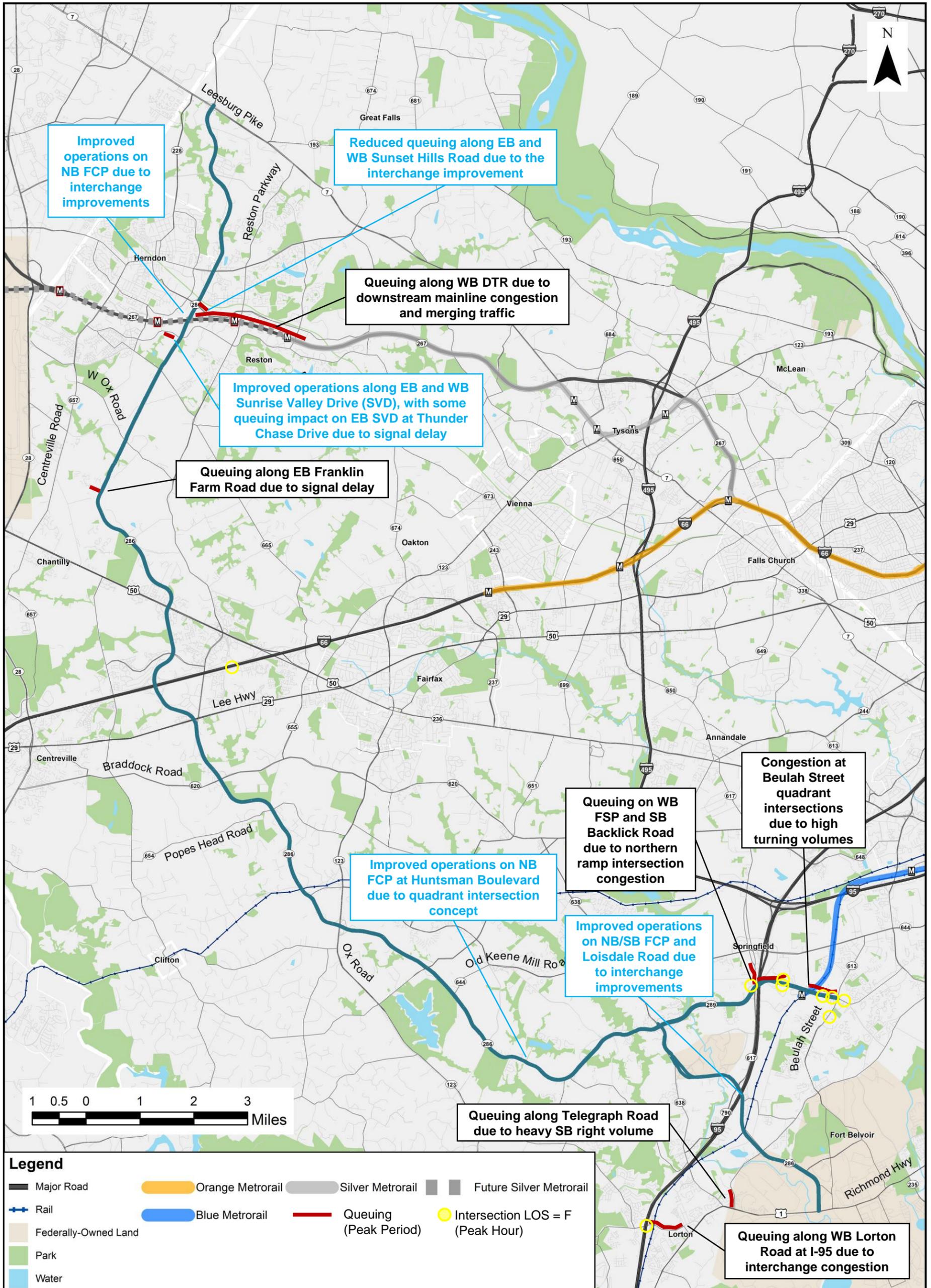
Figure 17: Concept 1 – AM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 18: Concept 1 – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

## **Concept 2**

### ***Scenario Description and Assumptions***

Concept 2 was developed to limit right-of-way and other impacts to the corridor and surrounding communities. Some vehicular capacity improvements were included for locations that were identified in the Comprehensive Plan analysis with conditions that impacted the corridor negatively. Concept 2 also included prioritization of transit vehicles through at-grade intersections using right-lane queue jumps. Vehicular traffic volumes in Concept 2 were reduced, as compared to the Comprehensive Plan, since mainline capacity was reduced. As a result, vehicular traffic was pushed to other parallel routes or bypassed portions of Fairfax County Parkway using alternative routes with excess capacity. Specific configuration elements included:

- Removal of all HOV designations
- Corridor widening (modified from the CLRP):
  - Widen to a 6-lane cross section, between Route 50 and Route 123, a shorter section of widening (currently under design), as compared to the Comprehensive Plan; and
  - Maintain a 6-lane cross section on both Fairfax County Parkway and Franconia-Springfield Parkway, between Sydenstricker Road and Beulah Street, one fewer lane when compared to the Comprehensive Plan.
- Modify the following intersections/interchanges:
  - Wiehle Avenue (displaced left turn along Fairfax County Parkway);
  - New Dominion Parkway (operations/capacity to support transit);
  - Sunrise Valley Drive (operations/capacity to support transit);
  - Fox Mill Road (operations/capacity to support transit);
  - McLearen Road (at-grade, operations/capacity to support transit);
  - West Ox Road (operations/capacity to support transit);
  - Franklin Farm Road (operations/capacity to support transit);
  - Springhaven Drive/Tuckaway Drive (operations/capacity to support transit);
  - Stringfellow Road (operations/capacity to support transit);
  - Burke Centre Parkway (time-restricted southbound left-turn proposed as part of the VDOT widening project during the AM peak period);
  - Lee Chapel Road (operations/capacity to support transit);
  - Reservation Drive (operations/capacity to support transit);
  - Huntsman Road (operations/capacity to support transit);
  - Fairfax County Parkway and I-95 (single point urban interchange and directional flyover ramps);
  - Loisdale Road (restricted and rerouted movements);
  - Terminal Road (restricted and rerouted movements);
  - Richmond Highway (operations/capacity to support transit);

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- Remove the Bonniemill Lane/Spring Village Drive intersection and construct the adjacent interchange at Hampton Creek Way;
- Backlick Road at Franconia-Springfield Parkway (partial displaced left turn);
- Frontier Drive (operations/capacity to support transit); and
- Beulah Street (single point urban interchange).

Several other assumptions supported the concept configuration, adjacent to the study corridor, including:

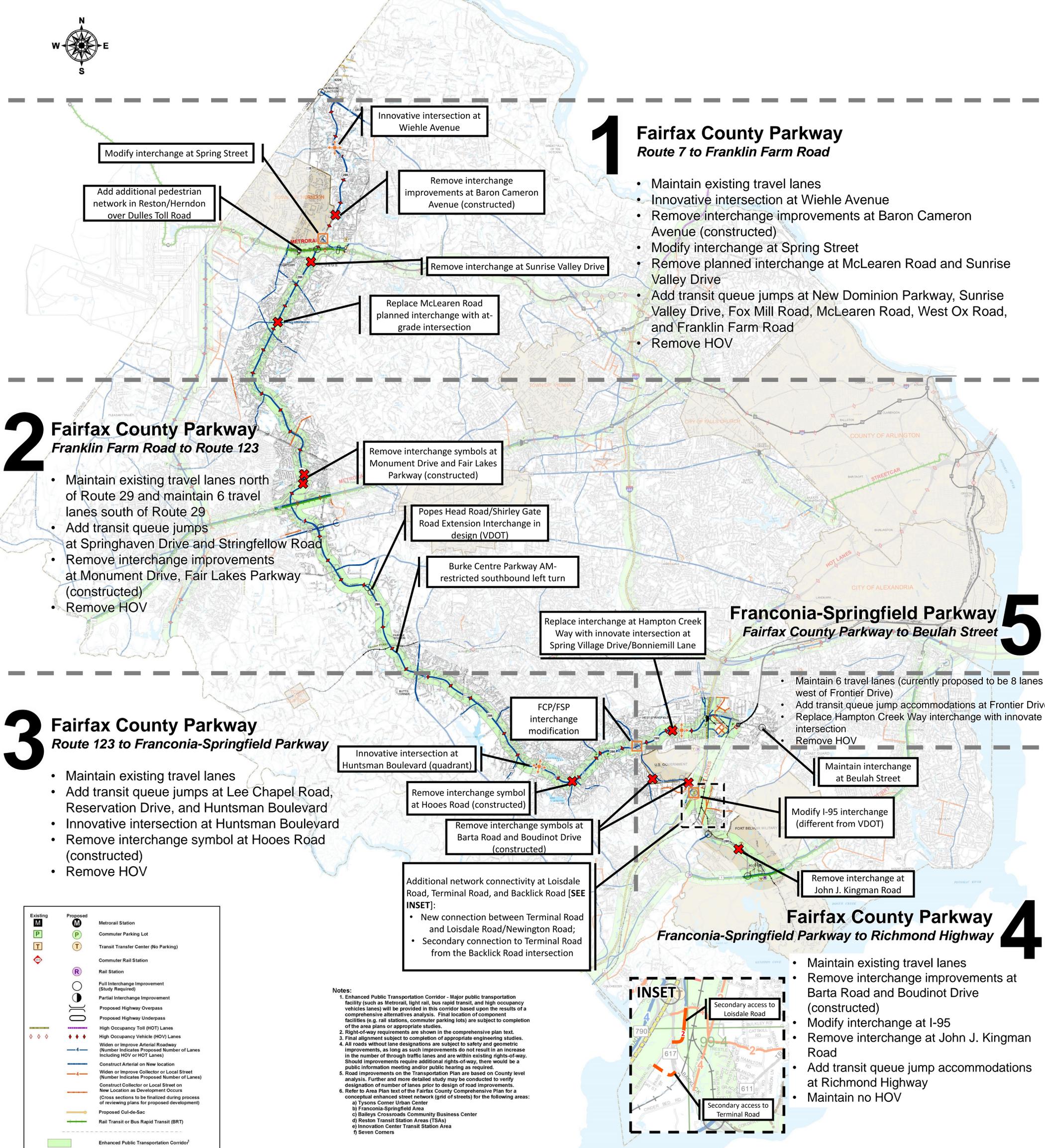
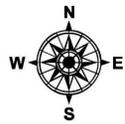
- The southbound left turn would be restricted during the AM peak period at the intersection of Fairfax County Parkway and Burke Centre Parkway and the westbound left turn is eliminated altogether;
- Interchange modifications of I-95 at Fairfax County Parkway/Loisdale Road would be completed; and
- Additional roadway infrastructure would be completed between Loisdale Road and Terminal Road to support quadrant intersection operations.

A summary of the Concept 2 modifications, as indicated over the current Comprehensive Plan map, is shown in **Figure 19**. Analysis volumes for Concept 1 were developed consistent with the methodology as described previously. Intersection-level turning movement volumes may be found in **Appendix G.1**.

# Figure 19: Concept 2 – Minimize Impacts

*This map summarizes the key elements of the configuration of Concept 2 (current Fairfax County Transportation Plan Map shown in the background)  
 Note: current interchange configurations are maintained unless otherwise noted*

## FAIRFAX COUNTY TRANSPORTATION PLAN



## **Results**

The prioritization of transit in Concept 2 negatively impacts conditions for general purpose vehicles throughout the corridor, since bus queue jumps reduce available green time at intersections and block right-turn movements when present. Reduced mainline capacity (as compared to Comprehensive Plan and Concept 1) also diverts some traffic volume to parallel facilities, not studied as part of this Long-Term Study. Some minor improvements occur at locations of increased roadway capacity, but overall network operations are worse than previous scenarios. Transit operations improve as a result of the configuration but are limited in some places as a result of poor mainline operations blocking transit queue jumps or deviations off the study corridor to access stops. Locations/intersections of mainline bottlenecks which impact corridor operations are:

- Sunrise Valley Drive and the Dulles Toll Road;
- McLearen Road;
- I-66 interchange;
- Route 123;
- Huntsman Boulevard;
- John J. Kingman Road; and
- Backlick Road at Franconia-Springfield Parkway.

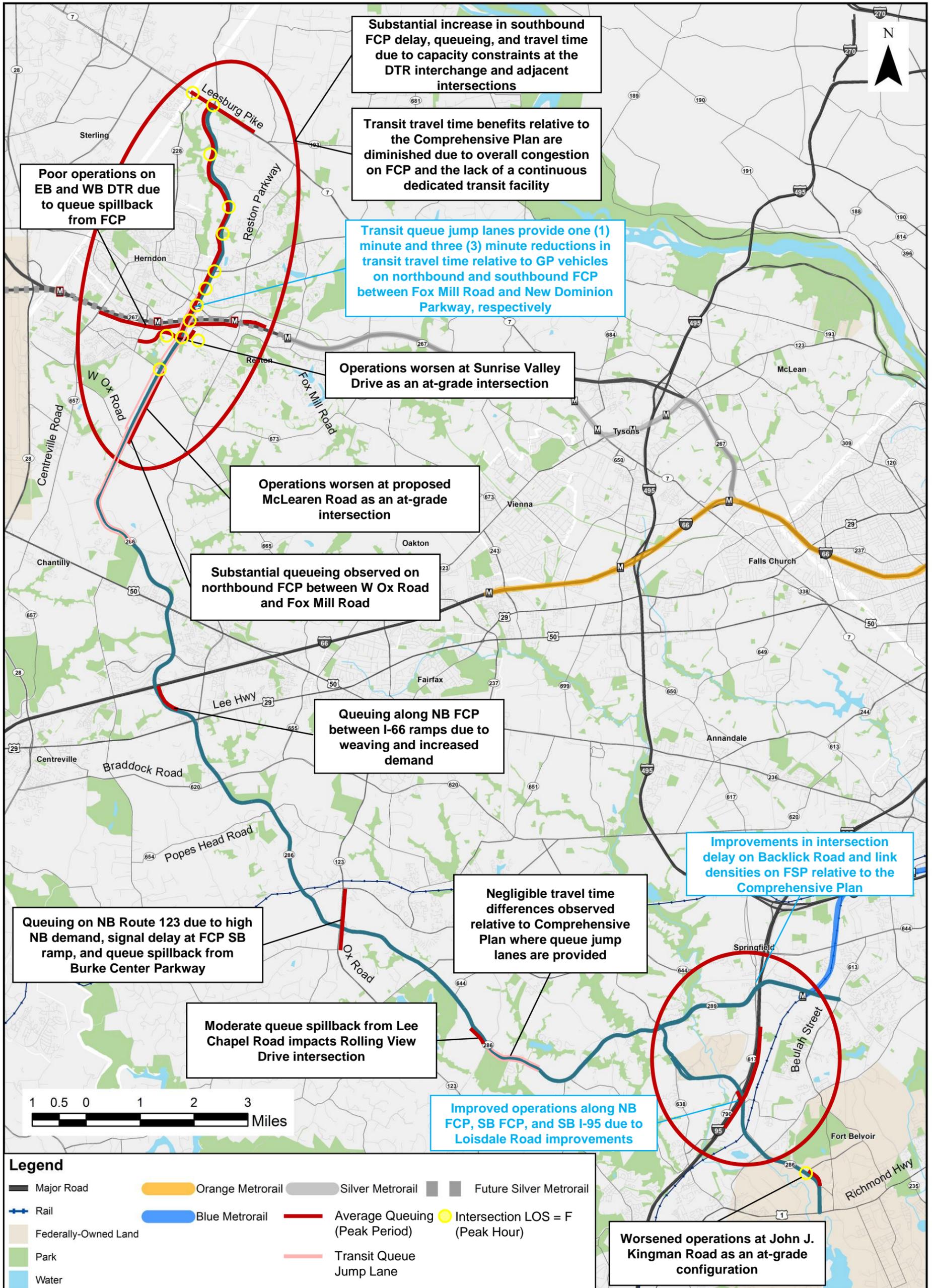
Transit travel time is lower in both directions of Fairfax County Parkway, relative to general purpose traffic under Concept 2; however, travel time for buses is generally higher, relative to that observed under the Comprehensive Plan, on southbound Fairfax County Parkway. This finding suggests that capacity constraints associated with Concept 2 may outweigh the potential benefits for transit in this area of the corridor (note that transit vehicles travel in dedicated HOV lanes under the Comprehensive Plan, but in mixed traffic under Concept 2).

Since Concept 2 was focused on transit improvements, the project team also specifically measured and observed impacts to corridor transit operations and the planned Parkway Express Route. Along the full corridor (Fairfax County Parkway, at Route 7, to Franconia-Springfield Parkway, at Beulah Street), transit travel time is nearly the same under the Comprehensive Plan and Concept 2 in both directions on Fairfax County Parkway, despite the addition of queue jump lanes. Buses running the Parkway Express Route have difficulty accessing transit queue jump lanes at some intersections due to the location of bus stops (many of which are off corridor), limiting the effectiveness of the Concept 2 configuration.

A map summary of results is shown in **Figure 20** and **Figure 21**. Detailed descriptions of results by segment may be found in **Appendix G.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix G.3** and **Appendix G.4**, respectively.

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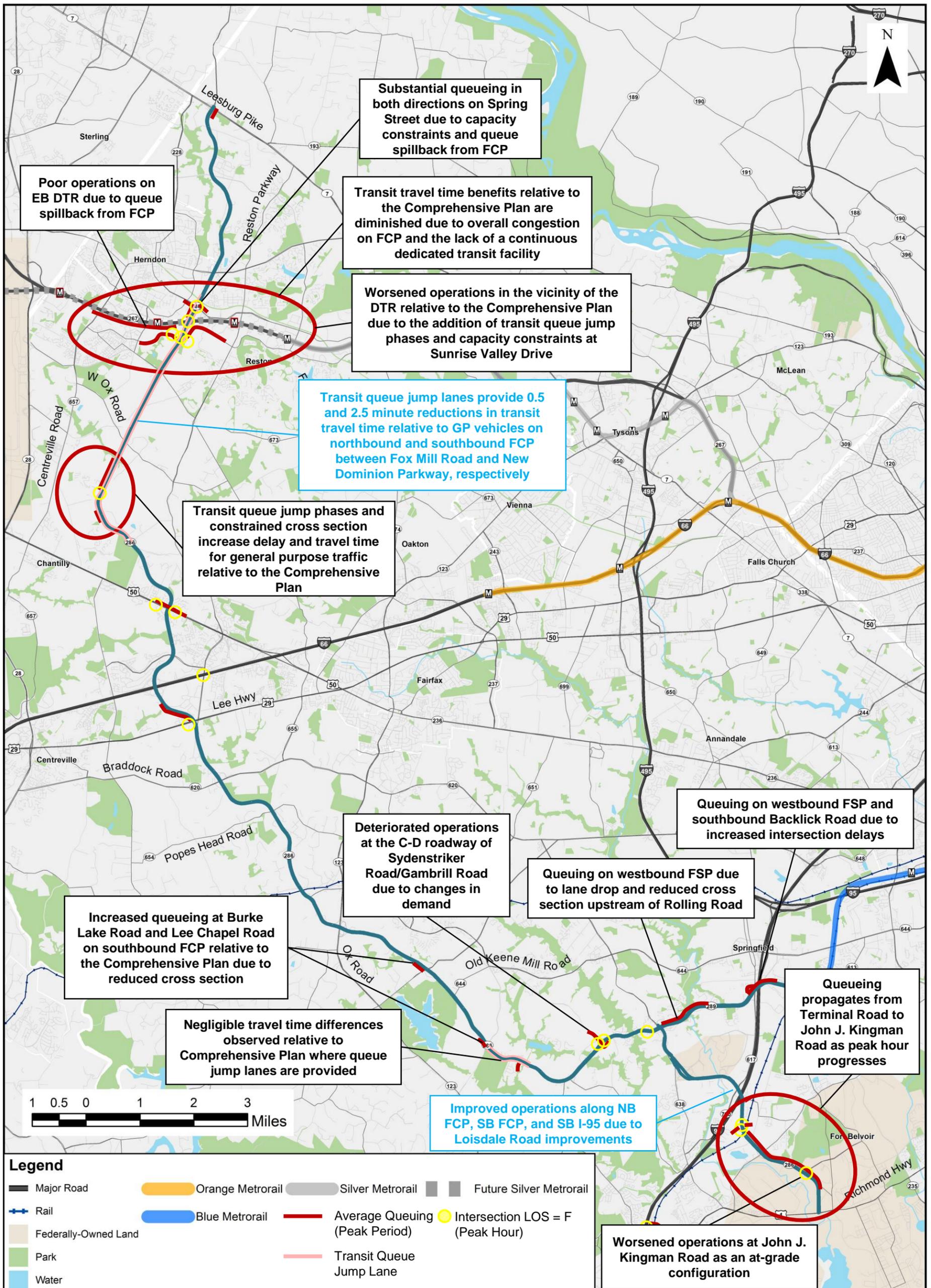
Figure 20: Concept 2 – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 21: Concept 2 – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

## Concept 3

### *Scenario Description and Assumptions*

Concept 3 was developed to maximize the potential benefit and attractiveness of HOV through the study corridors, including feeder connections to other regional facilities (Dulles Toll Road, I-66, and I-95). Additionally, some general purpose vehicle capacity improvements were included for locations which were identified in previous concepts with conditions that impacted the corridor negatively. Non-HOV through volumes were reduced, compared to Comprehensive Plan traffic volumes. However, the enhanced HOV connectivity promoted greater HOV use along the study corridors by allowing HOV 2+ and providing facility to facility HOV connections. Specific configuration elements included:

- Provision of HOV2+ (less restrictive of the Comprehensive Plan assumed HOV3+) through the corridor from the interchange of Fairfax County Parkway and Route 7 in the north through the interchange of Franconia-Springfield Parkway and Frontier Drive (consistent with the Comprehensive Plan limits)
- Corridor widening, consistent with the Comprehensive Plan
- HOV and Transit Improvements:
  - Sugarland Road (separated, center running HOV through lane);
  - Wiehle Avenue (grade-separated HOV through-lane flyover);
  - Lake Newport Road (separated, center running HOV through lane);
  - N Walnut Branch Road (separated, center running HOV through lane);
  - Spring Street/Sunset Hills Road (grade-separated HOV through-lane flyover);
  - Dulles Toll Road (grade-separated HOV through-lane flyover and direct connection to freeway HOV lanes);
  - Fox Mill Road (separated, center running HOV through lane);
  - West Ox Road (separated, center running HOV through lane);
  - Franklin Farm Road (grade-separated HOV through-lane flyover);
  - Springhaven Drive/Tuckaway Drive (separated, center running HOV through lane);
  - Stringfellow Road (separated, center running HOV through lane);
  - Rugby Road (grade-separated HOV through-lane flyover);
  - I-66 (grade-separated HOV through-lane flyover and direct connection to freeway HOV lanes, consistent with I-66 HOT lanes concepts);
  - Burke Centre Parkway (separated, center running HOV through lane, southbound only);
  - Karmich Street/Roberts Parkway (separated, center running HOV through lane);
  - Burke Lake Road (separated, center running HOV through lane);
  - View Park Drive/Old Keene Mill Road (separated, center running HOV through lane);
  - Lee Chapel Road (separated, center running HOV through lane);
  - Reservation Drive (separated, center running HOV through lane);
  - Huntsman Boulevard (grade-separated HOV through-lane flyover);
  - Lee Chapel Road (operations/capacity to support transit);
  - Reservation Drive (operations/capacity to support transit);
  - Huntsman Road (operations/capacity to support transit); and

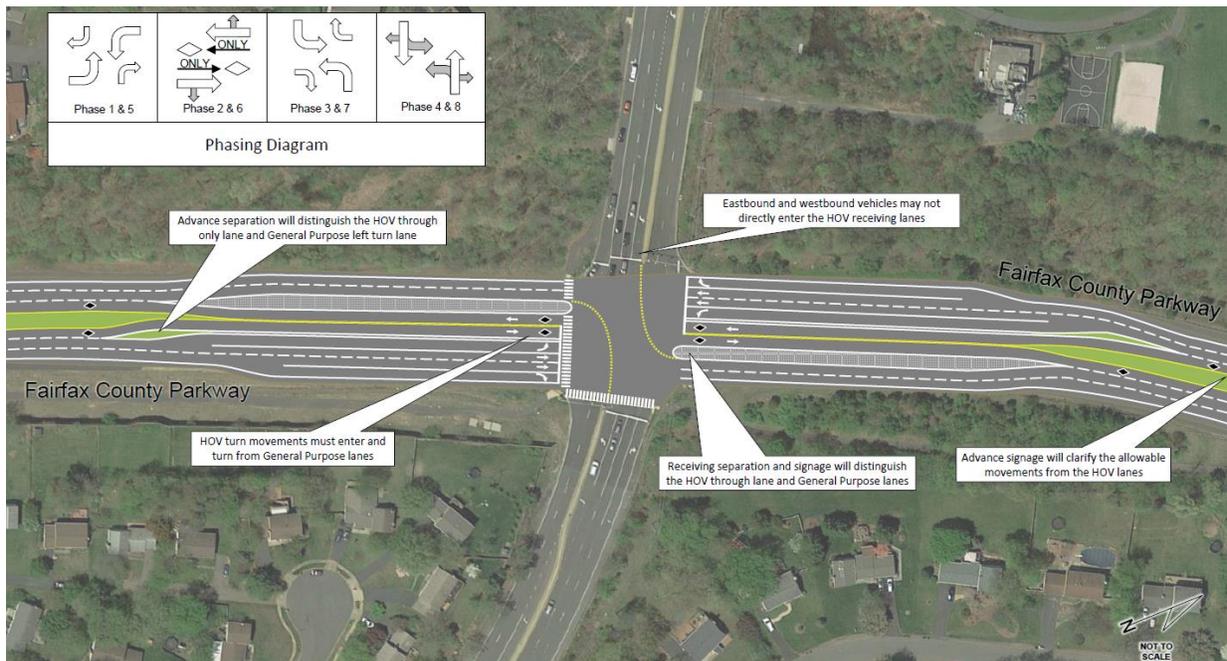
**Fairfax County and Franconia Springfield Parkways  
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- I-95/Frontier Drive (grade-separated HOV through-lane flyover, direct connection to freeway HOV lanes, and direct ramp from HOV lanes to Franconia-Springfield Metro Station).
- Modify the following intersections/interchanges:
  - Richmond Highway (interchange improvements);
  - Remove the Bonniemill Lane/Spring Village Drive intersection and construct the adjacent interchange at Hampton Creek Way; and
  - Beulah Street (single point urban interchange).

Several other assumptions supported the concept configuration adjacent to the study corridor, including:

- The southbound left turn and the westbound left turn would be restricted during the AM peak period at the intersection of Fairfax County Parkway and Burke Centre Parkway; and
- Interchange modifications of I-95 at Fairfax County Parkway/Loisdale Road would be completed.

An example of at-grade HOV through lanes is shown in **Figure 22**. At signalized intersections where operations could not accommodate at-grade HOV through lanes due to congestion or demand, flyover lanes for HOV through movements were modeled, removing this volume from signalized operations and allowing HOV users to express through the intersection. A summary of the Concept 3 modifications, as indicated over the current Comprehensive Plan map, is shown in **Figure 23**. Analysis volumes for Concept I were developed consistent with the methodology as described previously. Intersection-level turning movement volumes may be found in **Appendix H.1**.

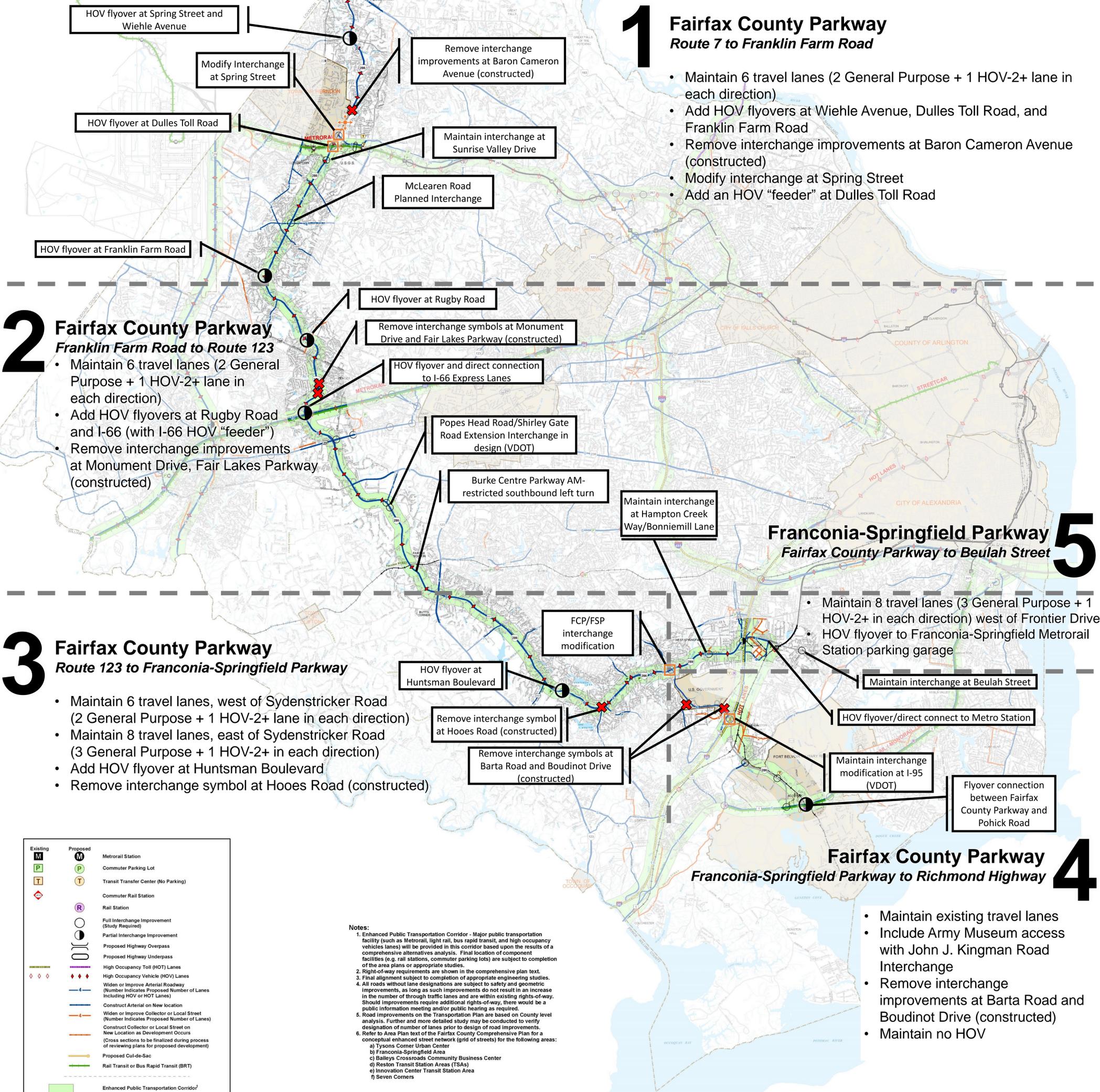
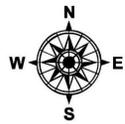


**Figure 22: Concept Sketch of At-Grade HOV Through Lanes**

# Figure 23: Concept 3 – Optimize HOV

*This map summarizes the key elements of the configuration of Concept 3 (current Fairfax County Transportation Plan Map shown in the background)  
 Note: current interchange configurations are maintained unless otherwise noted*

## FAIRFAX COUNTY TRANSPORTATION PLAN



## **Results**

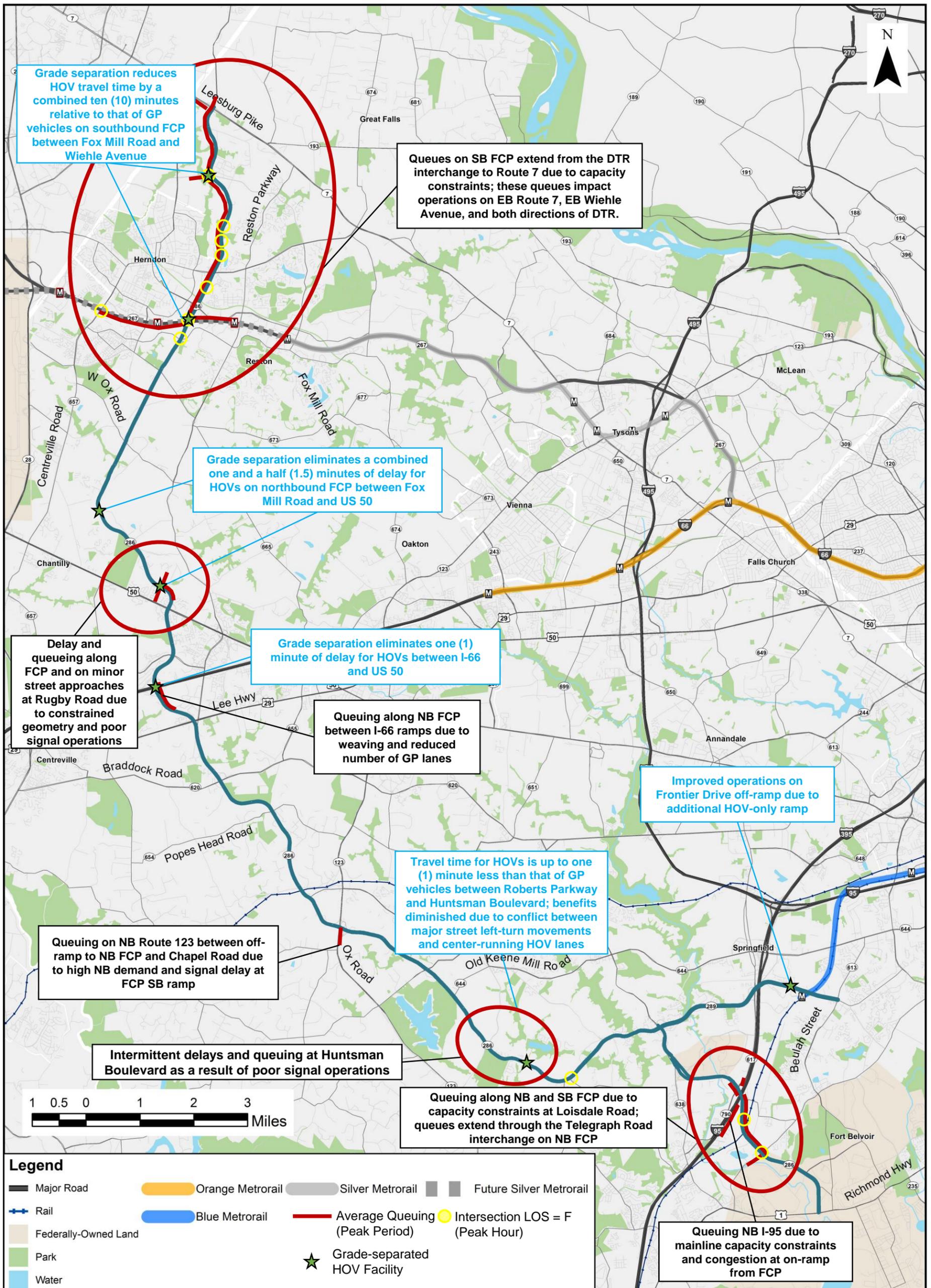
Overall, Concept 3 performance for HOV vehicles is substantially improved over all other scenarios, as a result of several through movement flyovers and direct regional facility feeder connections. Some of these accommodations also improve transit operations along the corridor. However, as noted in the Comprehensive Plan, provision of HOV lanes reduces the capacity of general purpose lanes. This results in substantial increases in queuing and delays in bottleneck locations, detracting from overall corridor operations. Intersections or interchanges that experience mainline bottlenecks which impact corridor operations are:

- Sunrise Valley Drive and the Dulles Toll Road;
- Rugby Road;
- Route 123;
- Huntsman Boulevard;
- Interchange of Fairfax County Parkway and Franconia-Springfield Parkway;
- Loisdale Road and I-95;
- Terminal Road; and
- Franconia-Springfield Parkways and I-95 Express Lanes.

A map summary of results is shown in **Figure 24** and **Figure 25**. Detailed descriptions of results by segment may be found in **Appendix H.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix H.3** and **Appendix H.4**, respectively.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

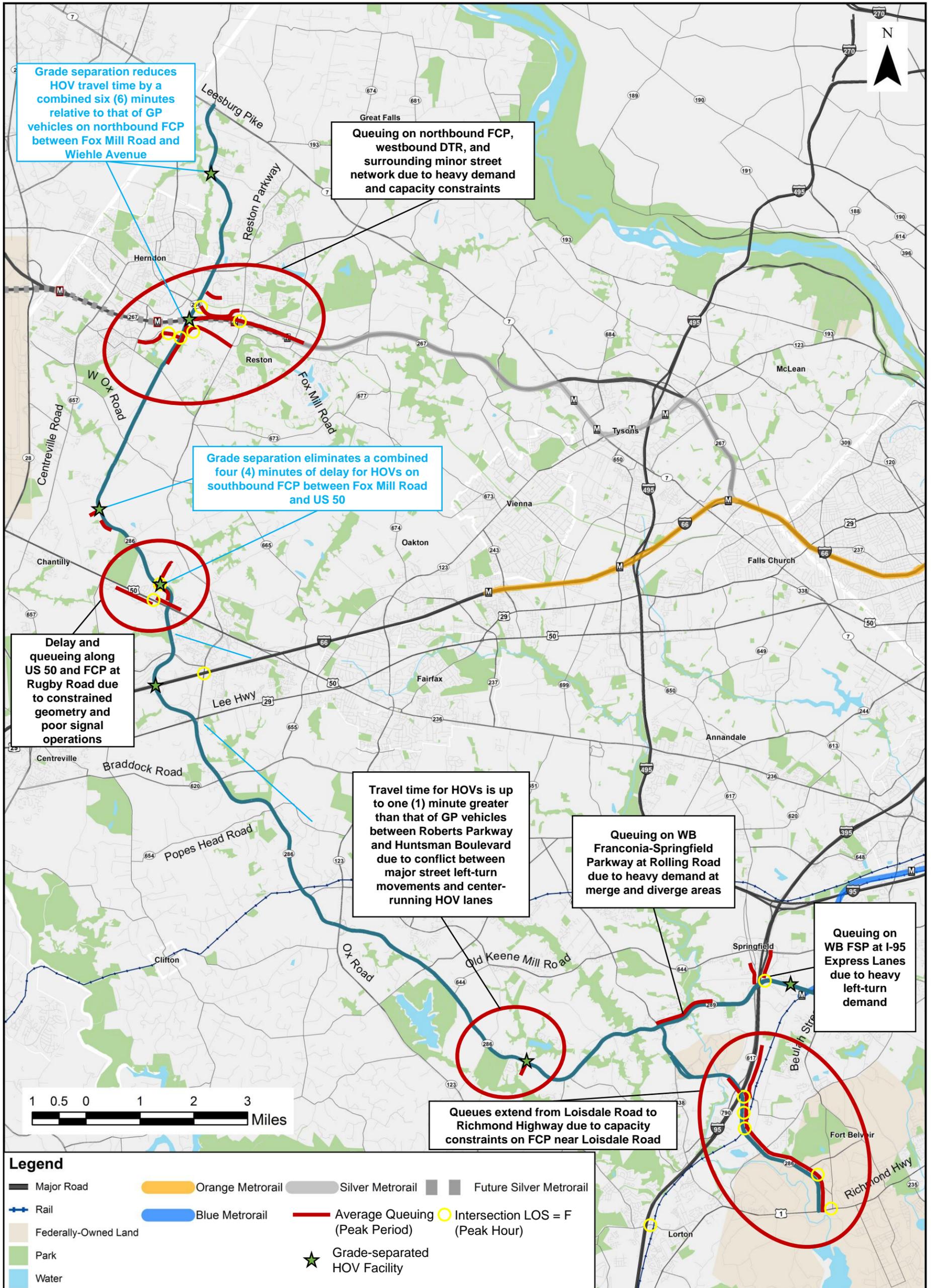
Figure 24: Concept 3 – AM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 25: Concept 3 – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

## Comparison of Alternatives

Following the analysis of the three alternative concepts, the project team assessed the performance of each against both quantitative and qualitative metrics. Quantitative metrics were determined from VISSIM model results (traffic volume throughput, travel time, intersection delay, and queuing), potential right-of-way impacts to the natural and built environments, and estimation of probable cost. Qualitative metrics included public feedback and input for each concept, and project team ranking against the following themes and criterion which are based on County Comprehensive Plan goals/objectives:

- Safely and efficiently carry people and goods
  - A. Minimizes vehicular and non-vehicular conflicts
  - B. Reduces travel times
  - C. Maximizes person throughput
  - D. Cost-effective improvement
  
- Connect Fairfax County's communities and neighborhoods
  - E. Maintains existing or creates new crossings of the Parkways
  - F. Provides non-auto routes across the Parkways
  - G. Balances accommodations for all modes
  - H. Provides a new/alternative network connectivity
  
- Minimize impacts to the natural and built environment
  - I. Accommodated within existing ROW
  - J. Minimizes encroachment on watershed/waterways
  - K. Relevant design character/consistency

A comparison summary of all three alternative concepts, using the above criteria, is shown in **Table 3**. Further details are found in the following sections. Note that the comparison presented in **Table 3** is relative to the Comprehensive Plan.

**Table 3: Concept Comparison Matrix**

	Safely and efficiently carry people and goods.				Connect Fairfax County's communities and neighborhood				Minimize impacts to the natural and built environment		
	A	B	C	D	E	F	G	H	I	J	K
Concept 1		++	++			+			--	-	-
Concept 2	+			+		+	+	+			+
Concept 3	+			--		+	++		--	-	--

**Legend**

- Significantly Better      ++
- Better                      +
- Neutral
- Worse                        -
- Significantly Worse      --

**Table 3** shows that Concept 1 effectively addresses the safety and traffic flow criteria but responds poorly in addressing the ROW impact criteria. Concept 2 address the community and neighborhood connections well and is the least impactful. Concept 3 also connects communities and neighborhoods well but has a poor result in terms of impacts.

**Right-of-Way Impacts**

**Table 4** summarizes the estimated ROW impacts (acres) in greater detail for the combination of roadway and trail improvements, for each segment of the corridor, under each concept. As shown, Concept 1 is expected to have the greatest impact. This concept included widening to six lanes within all segments of FCP, and eight lanes along Franconia-Springfield Parkway. Widening to six lanes was only included in the southern portion of FCP between Rolling Road and Richmond Highway (segment 4). This contributes to the highest ROW impact in segment 4.

Concept 2 included major improvements to the I-95 interchange (similar to Concept 1), as well as additional network connectivity at Terminal Road and Backlick Road, which is why a similar ROW impact is expected as Concept 1. Concept 3 included improvements to the I-95 interchange, but these improvements were developed by VDOT, previously; therefore, it is likely that the ROW impacts in Concept 3, within segment 4, are greater.

The remaining segments of the corridor, across the three concepts, are not expected to have the same magnitude of ROW impacts as segment 4, although the relative difference in the area of impact between concepts ranges between 15 and 65 percent. The greatest difference in impact exists in segment 1, where Concept 1 and Concept 3 include a six-lane cross sections, while Concept 2 only includes a four-lane section. Mapping of ROW impacts for roadway and trail improvements in Concept 1, Concept 2, and Concept 3 are illustrated in **Appendix I.1**, **Appendix I.2**, and **Appendix I.3**, respectively.

**Table 4: Summary of Estimated ROW Impacts (acres) – Roadway and Trail Improvements**

Segment	Concept 1	Concept 2	Concept 3
Segment 1	35.1	21.4	30.1
Segment 2	4.8	2.8	5
Segment 3	17	15.1	15.7
Segment 4	77.9	73.1	55.2
Segment 5	8.2	7.1	8
<b>TOTAL</b>	<b>143</b>	<b>119.5</b>	<b>114</b>

**Table 5** provides a summary of the estimated ROW impacts (acres) for only the roadway infrastructure improvements for each segment of the corridor, under each concept. Compared to **Table 4**, Concept 1 and Concept 3 each show an approximately 21 percent reduction in ROW impacts, when considering only the roadway infrastructure improvements. This is an indication of the relative impact of roadway infrastructure impacts, compared to trail improvements.

For Concept 2, the roadway infrastructure improvements represent a 51 percent reduction in total ROW impacts, summarized in **Table 4**. This is an indication that the trail improvements represent a much greater physical impact, outside the public ROW compared to Concepts 1 and 3. Note that Concept 2 includes less corridor widening than Concepts 1 and 3. This information suggests that specific segments within Concept 2 could be refined at the time of implementation to strategically align the location of trails to further minimize potential ROW impacts.

Mapping of ROW impacts for roadway infrastructure improvements only in Concept 1, Concept 2, and Concept 3 are illustrated in **Appendix J.1**, **Appendix J.2**, and **Appendix J.3**.

**Table 5: Summary of Estimated ROW Impacts (acres) –  
 Roadway Infrastructure Improvements Only**

Segment	Concept 1	Concept 2	Concept 3
Segment 1	27.3	12.4	22.1
Segment 2	3.4	0.2	2.5
Segment 3	11.8	5.4	11
Segment 4	62.3	34.1	47
Segment 5	8.2	6.6	7.6
<b>TOTAL</b>	<b>113</b>	<b>58.7</b>	<b>90.2</b>

**Opinion of Probable Costs**

The summary of estimated costs, by segment, reflected in **Table 6** accounts for the total cost of all improvements, rounded to the nearest \$100,000. A range of high and low potential cost is indicated for each overall concept and individual segment, based on the VDOT PCES tool and the VDOT Transportation and Mobility Planning Division Statewide Planning Level Cost Estimates tool. The range is provided to account for unknown projects elements (for example, the high end of the range could be due to more extensive utility and/or right-of-way impacts or material cost escalation).

**Table 6: Opinion of Probable Cost (rounded to nearest \$100,000) based on PCES and TMPD**

	Build Concept:	Concept 1	Concept 2	Concept 3
<b>OVERALL COST RANGE</b>	<b>LOW</b>	<b>\$1,911,000,000</b>	<b>\$637,700,000</b>	<b>\$2,437,500,000</b>
	<b>HIGH</b>	<b>\$2,451,700,000</b>	<b>\$798,400,000</b>	<b>\$3,045,900,000</b>
SEGMENT 1 COST RANGE	LOW	\$784,000,000	\$106,900,000	\$842,100,000
	HIGH	\$1,009,200,000	\$123,300,000	\$1,076,400,000
SEGMENT 2 COST RANGE	LOW	\$98,800,000	\$42,100,000	\$403,500,000
	HIGH	\$122,500,000	\$43,700,000	\$511,200,000
SEGMENT 3 COST RANGE	LOW	\$185,300,000	\$57,600,000	\$236,900,000
	HIGH	\$221,900,000	\$61,900,000	\$279,500,000
SEGMENT 4 COST RANGE	LOW	\$681,600,000	\$268,400,000	\$591,900,000
	HIGH	\$897,600,000	\$357,000,000	\$716,700,000
SEGMENT 5 COST RANGE	LOW	\$161,300,000	\$162,600,000	\$363,100,000
	HIGH	\$200,500,000	\$212,600,000	\$462,100,000

As indicated, above, Concept 3 carries the highest overall potential cost, while Concept 2 carries the least. Higher costs are driven by grade-separated improvements, as indicated by the Segment 1 and Segment 4 costs. Note that trail improvements are included in all three concepts, as described above.

**Benefit Summary of Each Concept**

**Concept 1** provides the primary benefit of additional corridor capacity. The concept eliminates or significantly reduces several bottlenecks throughout the corridor, indicates strong performance on traffic analysis and transit mobility metrics, and is likely to improve regional travel on adjacent roadway facilities by reducing traffic demand on those facilities. The results of Concept 1 indicate that areas of the network may be significantly improved to promote better regional traffic flow.

**Concept 2** focuses improvements on critical locations to enhance operations along isolated segments, but is beneficial for overall corridor transit travel times, when compared to other concepts. As such, the concept performs well, considering it minimizes right-of-way impacts, emphasizes multi-modal travel, and comes at a lower cost than other alternatives. The outcomes of Concept 2 indicate that some sections of the network may be improved with only minor modifications. However, with little new capacity, the traffic forecasts show a larger increase in traffic demand on adjacent, parallel roadways. Further study is needed to understand the impacts to the adjacent roadways and neighborhoods.

**Concept 3** favors HOV traffic and travel flow, as well as benefits transit travel times. It also maintains some of the existing infrastructure of the corridor, limiting impacts to the surrounding areas. The results of Concept 3 highlight key improvements that could make the study corridor more attractive to higher-occupancy travel modes.

Several benefits are common among all three concepts, for both vehicular and non-vehicular modes. Capacity improvements to general purpose lanes result in substantial benefits to all users, including HOV, transit, local access, and regional through traffic. The improvement of corridor intersections

provides additional pedestrian crosswalks, as well as the opportunity to enhance the Parkways trails. Additionally, the Parkways are very attractive commuting corridors, compared to other adjacent routes, connecting several of the County's activity centers; as a result, increased capacity along the study corridors eases demand and congestion on parallel, lower-classification facilities.

The relief of bottleneck locations (resulting from capacity constraints or signal delay) enables the Parkways to operate more effectively as a regional facility, drawing traffic from parallel routes and allowing for reduced travel times for general purpose vehicles and buses. Lastly, interchange improvements with regional facilities, particularly at the Dulles Toll Road and at I-95, reduce queuing and potential spillback to freeway facilities.

### ***Limitations of Each Concept***

The implementation of **Concept 1** is limited by available right-of-way and impact to surrounding communities. Capacity improvements along several sections of the corridors would encroach on adjacent private property and grade separation improvements may impact some aspects of community character. Additionally, several of the tested innovative intersection concepts underperformed, when considering more traditional configurations for operational enhancements. The results of Concept 1 indicate that capacity improvements to the vehicular network have a high impact on the surrounding areas.

**Concept 2** is limited by minimal improvements to overall operations. The lack of improvement to general purpose traffic flow hinders that of all modes, particularly in the Reston area of the network. In this area, interchanges and intersections functioned as a complete system, and any single intersection failure resulted in poor network operations for the surrounding network. As a result of the low-impact nature of the network modifications, only limited improvements are realized throughout the corridor. The results of Concept 2 show that some significant modifications to the study network are required to promote better corridor travel.

**Concept 3** is constrained based on the focused nature of improvements. HOV vehicles experience significant improvements in travel time and delays but come at a high cost and high impact to adjacent communities (mostly as a result of vertical infrastructure). The results of Concept 3 indicate that focused modal improvements provide significant benefits to operations for the intended users but come at a high cost and do not provide comparable network benefits.

In all concepts, when mode-specific improvements are added, such as HOV or transit accommodations, they come at the expense of overall corridor operations. As observed and indicated in the results, the benefits commonly do not outweigh the operational impact to general purpose traffic. Furthermore, the queuing and congestion impacts are extensive enough to result in impacts to the mode-specific user groups further upstream of bottleneck locations.

Key bottleneck locations, notably at the Spring Street/Dulles Toll Road/Sunrise Valley Drive series of interchanges, Franklin Farm Road, Rugby Road, I-95/Loisdale Road, John J. Kingman Road, and Beulah Street have the potential to significantly impact overall corridor operations and throughput. As a result, these locations require capacity improvements for the corridor to function.

As observed in multiple concepts, geographically isolated, at-grade, signalized intersection locations detract from mainline operations and detract from the efficiencies of either a coordinated signal system or a free-flow limited access network. As such, local access should be limited or modified in certain locations to establish consistent facility control.

## **Discussion of Concepts**

Following the initial comparison on concepts, FCDOT presented findings from the initial comparison of alternatives and considerations for public consideration. Note that the presented Measures of Effectiveness were modified during the third round of engagement in order to present more familiar and digestible summary of the concept comparison. This comparison of high-level MOEs is provided in **Table 7**. Note that the comparison presented in **Table 7** is relative to the Comprehensive Plan.

**Table 7: Comparison of High-Level Alternatives MOEs**

	<b>Traffic Operations</b>	<b>Transit Operations</b>	<b>Bicycle/Pedestrian Accommodations</b>	<b>Right-of-Way Impact</b>	<b>Cost</b>
Concept 1	++	+	+	--	-
Concept 2	--	-	++	+	+
Concept 3		+	+	-	--

**Legend**

Significantly Better	++
Better	+
Neutral	
Worse	-
Significantly Worse	--

As shown in **Table 7**, Concept 1 has the greatest benefits from a vehicle operations perspective, which have greater right-of-way and cost impacts given the footprint. Concept 2 outperforms Concept 1 with respect to these MOEs of right-of-way and cost; however, operations were determined to be poor for general purpose traffic and transit. The reason for the decline in transit operations is directly related to the congestion of the general purpose traffic and the impact on the ability of transit to operate along the corridor. There is a benefit to transit given the increased capacity in Concept 1 and the HOV enhancements in Concept 3. Concept 3 performed similar to Concept 1, although the traffic operations MOE was not scored as high because the benefit of HOV enhancements impacted a lower proportion of travelers on the corridor. Bicycle and pedestrian accommodations are improved for each Concept due to the addition of a second trail along the Parkways. Further, Concept 2 has the largest bicycle and pedestrian accommodation benefit due to the overall smaller roadway width and shorter crossing distance.

The development of the Preliminary Recommendations and the Final Recommendations was based on the outcomes of the alternatives analysis. The benefits and limitations of the tested corridor configurations were considered, along with County staff and public input, to select a combination of

improvements that would improve on the current Comprehensive Plan. Overall, an improvement in corridor capacity was determined to have the greatest positive impact but results of all three concepts indicated where capacity improvements were needed or could be limited to minor improvements.

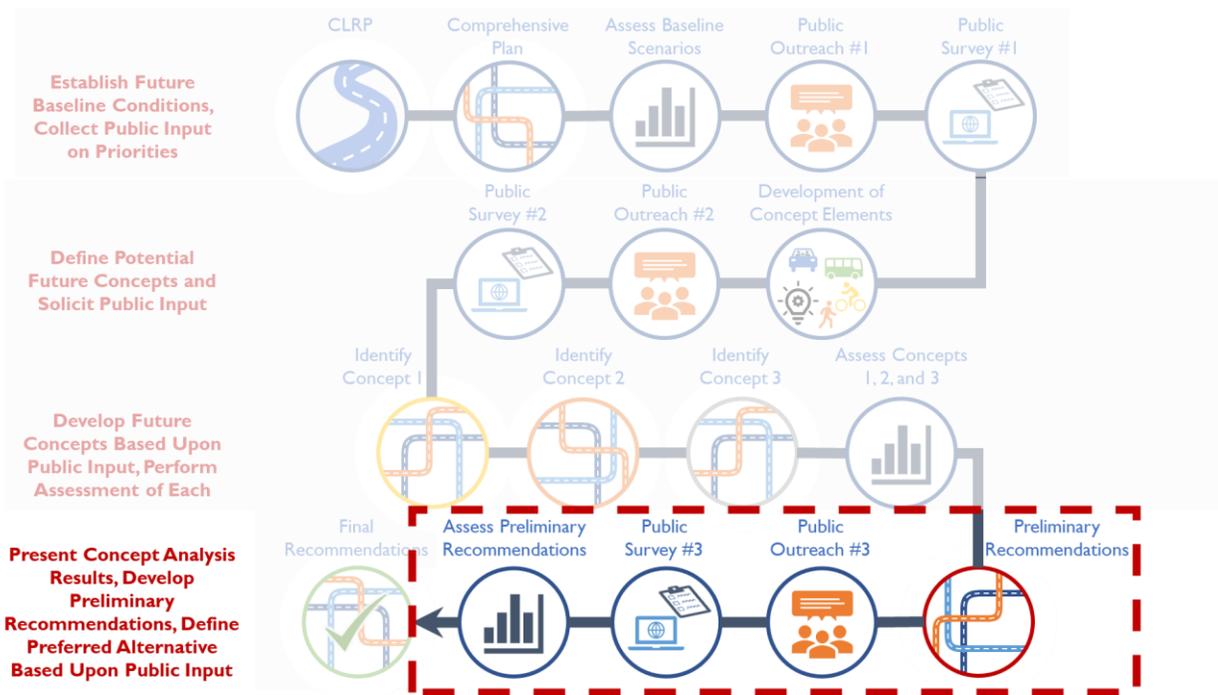
Examples of these include:

- Demonstrated need for strategic interchange configurations near the Dulles Toll Road between Sunrise Valley Drive and Sunset Hills Road to accommodate the various travel patterns
- Limited demand at the planned McLearn Road interchange allowed for removal of grade separation at this location
- Benefit of additional network connectivity to reduce congestion around Loisdale Road
- Benefit of grade separation at bottleneck locations including Franklin Farm Road, John J. Kingman Boulevard, and Beulah Street

This also includes the removal of select at-grade, signalized intersections to establish portions of Fairfax County Parkway and Franconia-Springfield Parkway as limited access facilities. The need for these improvements was weighed against the potential impact on right-of-way, and a combination of all three concepts was considered for the Preliminary Recommendations and Final Recommendations as described in the following sections.

## **6. Preliminary Recommendations**

As described in Chapter 2, the process for developing the Preliminary Recommendations is shown in **Figure 26**. Preliminary recommendations were developed based on the analysis results of Concepts 1, 2, and 3, as well as public input from the Summer 2020 virtual public meetings.



**Figure 26: Preliminary Recommendations Process**

## **Community Engagement and Public Feedback**

As described in Chapter 2, a third round of public engagement was held in Summer 2020 for the Long-Term Study. This consisted of three virtual public information meetings, which included question and answer sessions, followed by an online survey. The purpose of the engagement was to inform the final elements of the Preliminary Recommendations to move forward with analysis. Key elements of input included the following:

- Number of Travel Lanes
  - A strong majority of respondents were in favor of providing six general purpose lanes for segments 1, 2, and 5 (Fairfax County Parkway between Route 7 and Franklin Farm Road, between Franklin Farm Road and Route 123, and between Franconia-Springfield Parkway and Richmond Highway).
  - A slight majority of respondents were in favor of maintaining the existing four travel lanes between Route 123 and Hooes Road, maintain the six travel lanes planned between Hooes Road and Sydenstricker Road, and reduce the Comprehensive Plan to the existing six travel lanes east of Sydenstricker Road.
- HOV Lanes and Feeders
  - Survey participants were mostly in favor of removing the HOV designation for segments 1, 2, and 5 (Fairfax County Parkway between Route 7 and Franklin Farm Road, between

- Franklin Farm Road and Route 123, and between Franconia-Springfield Parkway and Richmond Highway).
- Approximately 50 percent of respondents were in favor of providing the HOV “feeder” connections at the Dulles Toll Road, I-66, and I-95 at FSP.
  - Adding and Removing Future Interchanges
    - Participants were predominantly in favor of maintaining a designation for interchange improvements at current at-grade intersections within the Comprehensive Plan Map.
    - The addition of a designation for new interchange improvements at Franklin Farm Road was mostly supported by respondents, with 46% agreeing, 28% disagreeing, and 26% unresponsive.
    - The addition of a designation for new partial interchange improvements at Burke Centre Parkway was supported by a majority of respondents.
    - Respondents showed support for removing the interchange designation at McLearn Road.
  - Adding and Removing Interchange Modifications
    - Respondents indicated support to maintain all previously planned interchange improvements.
    - Responses also indicate participants were in support of adding interchange modifications to Route 123.
  - Trails along Both Sides of the Parkways
    - Survey participants were strongly in favor of adding trails on both sides of the Parkways.
  - Network Improvements
    - Respondents supported enhanced network connectivity and access to and from Terminal Road and Loisdale Road between I-95 and Backlick Road on FCP (illustrated with yellow lines in **Figure 27**).



**Figure 27: Proposed network Connectivity Enhancements at Loisdale Road and Terminal Road**

The full summary of the Summer 2020 public engagement is included in **Appendix B.3**.

## **Scenario Description and Assumptions**

Key elements of the Preliminary Recommendations combined the high-impact elements of Concept 1 while maintaining the functional elements of Concept 2. This approach balanced the implementation of improvements that improve corridor operations with improvements that limit impacts to the surrounding areas. The Preliminary Recommendations also included the removal of HOV lanes from the corridor, but the addition of direct HOV connections to regional HOV and HOT facilities based on the outcomes of Concept 3. Specific configuration elements of the Preliminary Recommendations included:

- Removal of HOV from the entire corridor
- Corridor widening:
  - Widen to a 6-lane cross section between Route 7 and Route 123, consistent with the Comprehensive Plan;
  - Retain the existing 4-lane cross section between Route 123 and Hooes Road;
  - Widen to a 6-lane cross section on both Fairfax County Parkway and Franconia-Springfield Parkway between Hooes Road and the Franconia-Springfield Metro Station Loop Ramp (a modification of the Comprehensive Plan); and
  - Widen to a 6-lane cross section between Boudinot Drive and Telegraph Road, a one-lane increase over the Comprehensive Plan.
- Modify the following intersections/interchanges:
  - Wiehle Avenue (displaced left turn along Fairfax County Parkway);
  - New Dominion Parkway (displaced left turn along Fairfax County Parkway);
  - Spring Street/Sunset Hills Road (modified diamond interchange);
  - Dulles Toll Road (bifurcated, i.e. split level, interchange and HOV direct connection);
  - Sunrise Valley Drive (single point urban interchange);
  - Franklin Farm Road (echelon intersection);
  - Rugby Road (quadrant intersection);
  - I-66 (grade-separated HOV direct connection);
  - Route 123 (reconfigured southbound Fairfax County Parkway off-ramp);
  - Huntsman Road (quadrant intersection);
  - Fairfax County Parkway and I-95 (single point urban interchange and directional flyover ramps);
  - Loisdale Road (accommodation for southbound flyover from I-95 and additional local access roads);
  - Terminal Road (accommodation for southbound flyover from I-95 and additional local access roads);
  - Telegraph Road (reconfigured northbound on-ramp);
  - Richmond Highway (grade-separated through lanes on Richmond Highway);
  - Remove the Bonniemill Lane/Spring Village Drive intersection and construct the adjacent interchange at Hampton Creek Way;

Fairfax County and Franconia Springfield Parkways  
**Alternatives Analysis & Long-Term Planning Study**

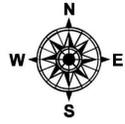
- Backlick Road at Franconia-Springfield Parkway (partial displaced left turn);
- I-95 Express Lanes (grade-separated HOV direct connection); and
- Beulah Street (single point urban interchange).

A summary of the Preliminary Recommendations modifications as indicated over the current Comprehensive Plan map is shown in **Figure 28**. A comparison of elements between the Comprehensive Plan and the Preliminary Recommendations are shown in **Table 8**, including interchange modifications, roadway widening, HOV accommodations, and trail accommodations. Analysis volumes for the Preliminary Recommendations were developed consistent with the methodology as described previously. Intersection-level turning movement volumes may be found in **Appendix K.1**.

# Figure 28: Preliminary Recommendations

This map summarizes the key elements of the proposed configuration of the Preliminary Recommendations that represent a change from the current Fairfax County Transportation Plan (shown in the background below).

## FAIRFAX COUNTY TRANSPORTATION PLAN



### 1 Fairfax County Parkway Route 7 to Franklin Farm Road

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Wiehle Avenue
- Remove interchange symbol at Baron Cameron Avenue (constructed)
- No interchange at McLearn Road
- New interchange at Franklin Farm Road

Innovative intersection at Wiehle Avenue

Remove interchange symbol at Baron Cameron Avenue (constructed)

McLearn Road, at-grade intersection

Franklin Farm Road interchange

### 2 Fairfax County Parkway Franklin Farm Road to Route 123

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Rugby Road (quadrant intersection)
- Remove interchange symbols at Monument Drive and Fair Lakes Parkway (constructed)
- New interchange at Burke Centre Parkway
- Interchange improvements at Route 123

Innovative intersection at Rugby Road (quadrant)

Remove interchange symbols at Monument Drive and Fair Lakes Parkway (constructed)

Burke Centre Parkway interchange

Route 123 interchange improvements

### 3 Fairfax County Parkway Route 123 to Franconia-Springfield Parkway

- No HOV lanes
- 4 travel lanes north of Sydenstricker Road interchange (currently proposed to be 6 lanes)
- 6 travel lanes south of Sydenstricker Road interchange (currently proposed to be 8 lanes)
- Innovative intersection at Huntsman Boulevard (quadrant intersection)
- Remove interchange symbol at Hooes Road (constructed)

Innovative intersection at Huntsman Boulevard (quadrant)

Remove interchange symbol at Hooes Road (constructed)

Remove interchange symbols at Barta Road and Boudinot Drive (constructed)

Loisdale Road, Terminal Road, and Backlick Road, consider additional network connectivity:  
 - New connection between Terminal Road and Loisdale Road/Newington Road;  
 - Secondary connection to Terminal Road from the Backlick Road intersection

### Franconia-Springfield Parkway Fairfax County Parkway to Beulah Street

- No HOV lanes
- 6 travel lanes (currently proposed to be 8 lanes)
- Interchange improvements at I-95

Interchange improvements at I-95 (full interchange, not partial)

- 6 travel lanes north of John J Kingman Road (currently proposed to be 4 lanes)
- 4 travel lanes south of John J Kingman Road (no change)
- Additional network connectivity between I-95 and Backlick Road
- Remove interchange symbols at Barta Road and Boudinot Drive (constructed)

### Fairfax County Parkway Franconia-Springfield Parkway to Richmond Highway

Army Museum Interchange

- Notes:
- Enhanced Public Transportation Corridor - Major public transportation facility (such as Metrorail, light rail, bus rapid transit, and high occupancy vehicles lanes) will be provided in this corridor based upon the results of a comprehensive alternatives analysis. Final location of component facilities (e.g. rail stations, commuter parking lots) are subject to completion of the area plans or appropriate studies.
  - Right-of-way requirements are shown in the comprehensive plan text.
  - Final alignment subject to completion of appropriate engineering studies.
  - All roads without lane designations are subject to safety and geometric improvements, as long as such improvements do not result in an increase in the number of through traffic lanes and are within existing rights-of-way. Should improvements require additional rights-of-way, there would be a public information meeting and/or public hearing as required.
  - Road improvements on the Transportation Plan are based on County level analysis. Further and more detailed study may be conducted to verify designation of number of lanes prior to design of road improvements.
  - Refer to Area Plan text of the Fairfax County Comprehensive Plan for a conceptual enhanced street network (grid of streets) for the following areas:  
 a) Tysons Corner Urban Center  
 b) Franconia-Springfield Area  
 c) Bailey's Crossroads Community Business Center  
 d) Reston Transit Station Areas (TSAs)  
 e) Innovation Center Transit Station Area  
 f) Seven Corners

		Metrorail Station
		Commuter Parking Lot
		Transit Transfer Center (No Parking)
		Commuter Rail Station
		Rail Station
		Full Interchange Improvement (Study Required)
		Partial Interchange Improvement
		Proposed Highway Overpass
		Proposed Highway Underpass
		High Occupancy Toll (HOT) Lanes
		High Occupancy Vehicle (HOV) Lanes
		Widen or Improve Arterial Roadway (Number Indicates Proposed Number of Lanes Including HOV or HOT Lanes)
		Construct Arterial on New Location
		Widen or Improve Collector or Local Street (Number Indicates Proposed Number of Lanes)
		Construct Collector or Local Street on New Location as Development Occurs
		Cross sections to be finalized during process of reviewing plans for proposed development
		Proposed Cul-de-Sac
		Rail Transit or Bus Rapid Transit (BRT)
		Enhanced Public Transportation Corridor <sup>1</sup>



**Table 8: Comparison of Comprehensive Plan and Preliminary Recommendations**

	<b>Current Comprehensive Plan</b>	<b>Preliminary Recommendations</b>	<b>Change</b>
<b>New Interchanges (each)</b>	7	7	-
<b>New Partial Interchanges (each)</b>	0	1	+1
<b>Interchange Modifications (each)</b>	6	7	+1
<b>Roadway Widening (miles)</b>	22	16	-6
<b>HOV Feeders (each)</b>	0	3	+3
<b>Trails (miles)</b>	5	40	+35

## **Results**

An overall increase in corridor capacity is provided by the removal of the HOV designation of the Comprehensive Plan. This increased capacity, with the implementation of the most effective intersection improvement locations, provide consistent operations throughout the study corridor. Additionally, the removal of bottleneck locations (as the result of improved capacity or signal operations) allows Fairfax County Parkway and Franconia-Springfield Parkway to both operate as uninterrupted facilities for several miles along various segments.

The provisions of HOV direct connections in the Preliminary Recommendations also improves operations and travel time for HOV vehicles through interchanges while permitting an improvement in transit travel times through the I-66 interchange.

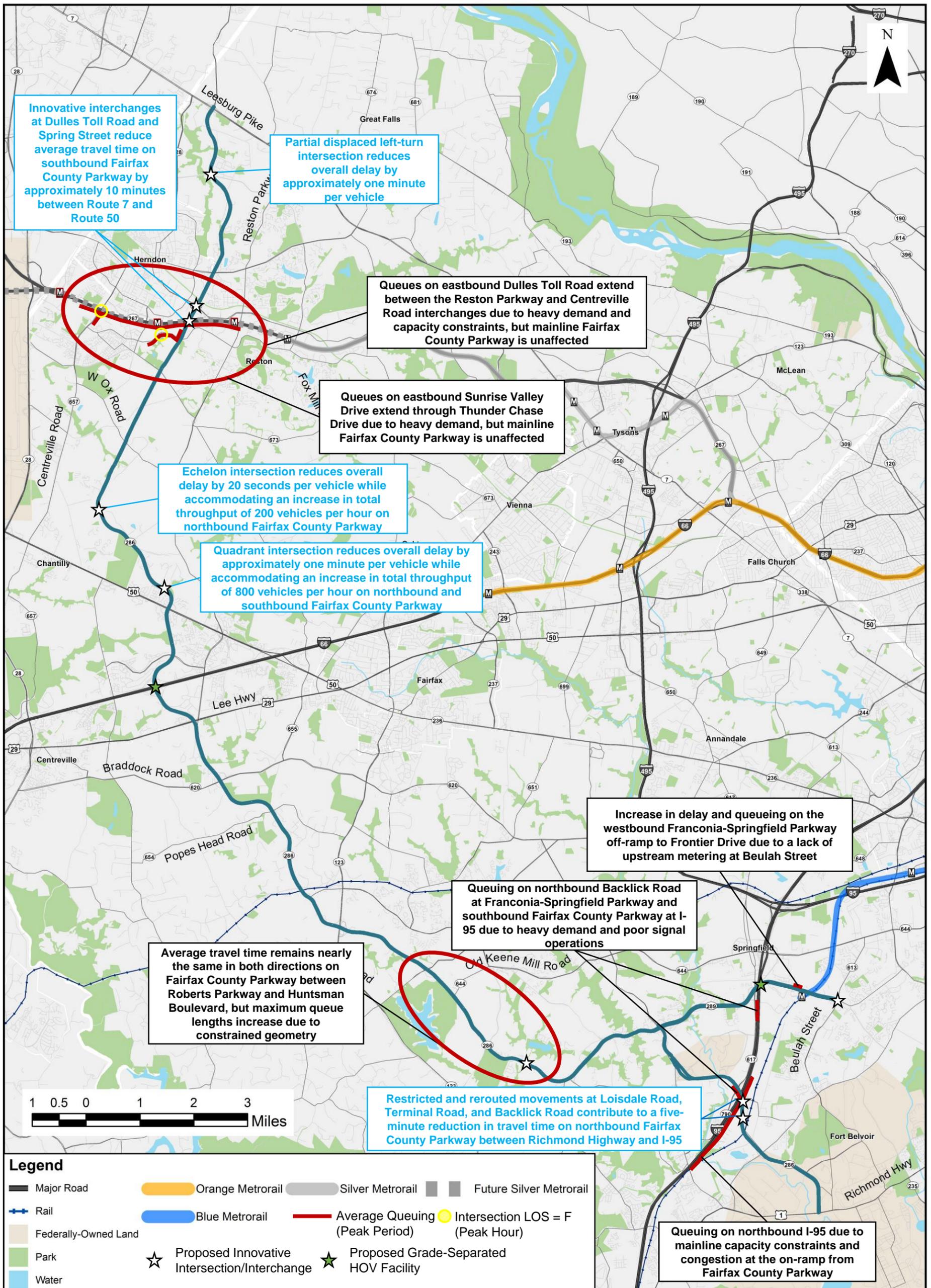
Bottleneck locations are largely mitigated in the Preliminary Recommendations, but locations of mainline bottlenecks are:

- Dulles Toll Road;
- Huntsman Boulevard; and
- I-95 (at Fairfax County Parkway).

A map summary of results is shown in **Figure 29** and **Figure 30**. Detailed descriptions of results by segment may be found in **Appendix K.2**. Complete AM and PM VISSIM analysis MOE results may be found in **Appendix K.3** and **Appendix K.4**, respectively.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

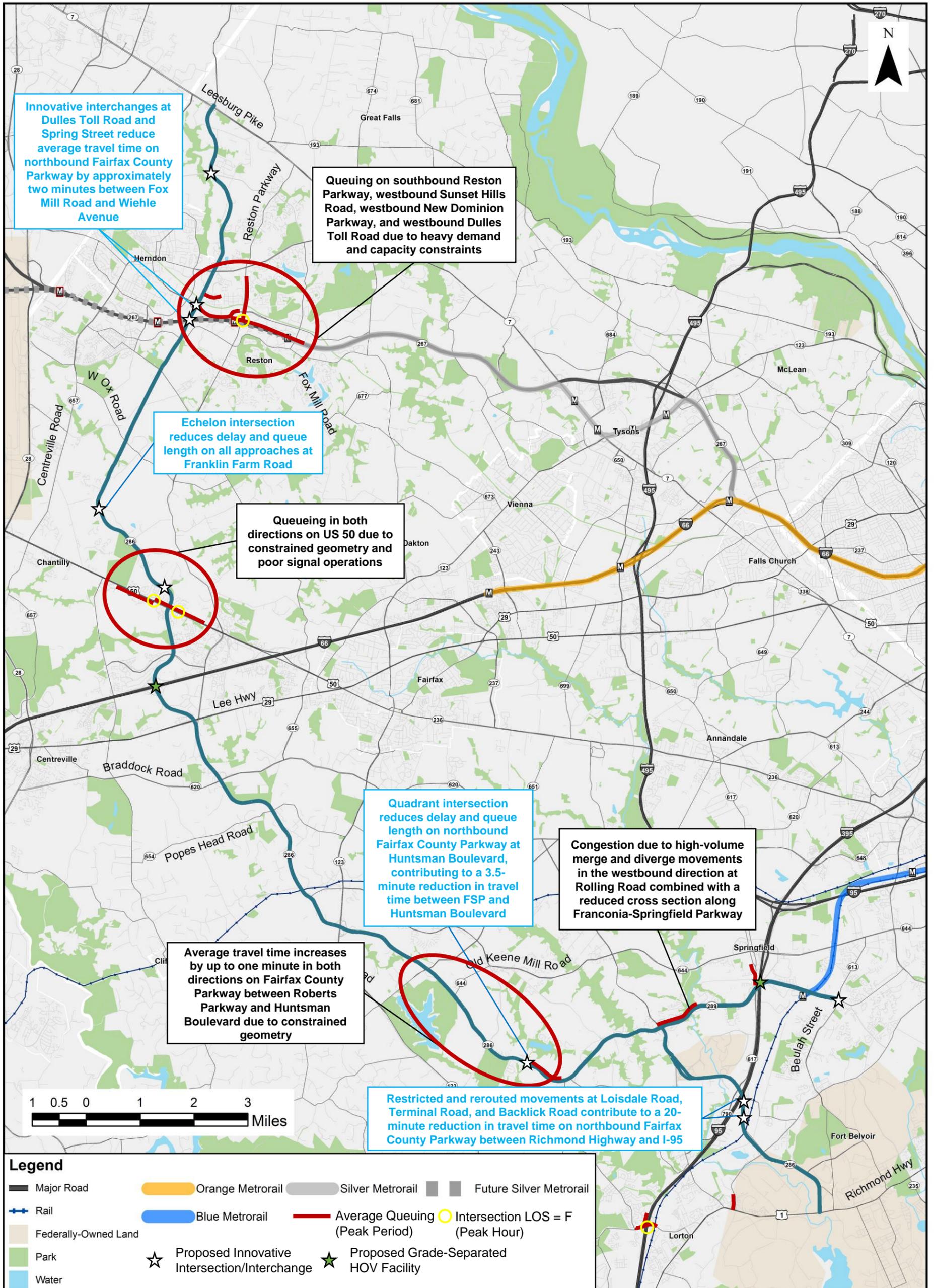
Figure 29: Preliminary Recommendations – AM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

# Fairfax County and Franconia Springfield Parkways Alternatives Analysis & Long-Term Planning Study

Figure 30: Preliminary Recommendations – PM Peak: Mainline Hot Spots, Intersection Hot Spots, and Queuing



The comparison was made against the Comprehensive Plan.

## 7. Final Recommendations

Following the analysis of the Preliminary Recommendations, the results were reviewed to determine if any further refinements should be made in the selection of the Final Recommendations. One area that remained a bottleneck was in Segment 3 near Huntsman Boulevard. As discussed in the previous chapter, public feedback was mixed with regards to the number of lanes in Segment 3. As a result, the single element that was revisited was the number of lanes along Fairfax County Parkway in Segment 3 between Route 123 and Franconia-Springfield Parkway as described below:

- A four-lane cross section will have less impacts to the existing tree canopy, right-of-way/private properties, and limits impacts to environmentally sensitive resources than a six-lane cross section. However, a four-lane cross section may still have impacts due to the installation of a second trail.
- Based on public input survey data collected in Spring 2019, 480 out of 565 recorded responses (85%) indicated support for widening in Segment 3. Based on public input survey data collected in Summer 2020, 83 out of 156 recorded responses (53%) indicated support for maintaining the four-lane cross section. While these results are mixed, there is general support for widening.
- The traffic forecasts show that reducing the cross-section to four lanes will shift traffic to parallel routes. Further study is needed to understand the impacts and whether further widening on these parallel routes may be needed. Long distance/regional trips should be planned to be accommodated on a regional roadway, not other roadways, when possible.
- The future traffic forecasts are uncertain given the recent events with the pandemic and travel pattern changes, emerging technologies, unknowns regarding the future teleworking and transit ridership trends, and potential future of autonomous vehicles.
- A four-lane cross section results in an inconsistent cross section of the corridor end-to-end, leaving one of two four-lane cross sections in Segment 3 (in the middle between six-lane cross-sections on either side) across the 35 miles of roadway. The other four-lane cross section will be a very short segment near Richmond Highway at the southern end of the corridor (based on the Final Recommendations).
- Retaining the six-lane cross-section in the Final Recommendations will allow this item to be revisited in the future, considering the impacts to the adjacent, parallel roadways in more detail and considering revised forecasts based on updated travel patterns.

Based upon the above information, it was determined the Final Recommendations would maintain a six-lane cross-section in Segment 3. All other elements remained the same as the Preliminary Alternative. The Final Recommendations are shown in **Figure 31**.

A comparison of the Final Recommendations elements with the current Comprehensive Plan is shown in **Table 9**.

# Figure 31: Final Recommendations

This map summarizes the key elements of the proposed configuration of the Final Recommendations that represent a change from the current Fairfax County Transportation Plan (shown in the background below).

## FAIRFAX COUNTY TRANSPORTATION PLAN



### 1 Fairfax County Parkway Route 7 to Franklin Farm Road

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Wiehle Avenue
- Remove interchange symbol at Baron Cameron Avenue (constructed)
- No interchange at McLearen Road
- New interchange at Franklin Farm Road

Innovative intersection at Wiehle Avenue

Remove interchange symbol at Baron Cameron Avenue (constructed)

McLearen Road, at-grade intersection

Franklin Farm Road interchange

### 2 Fairfax County Parkway Franklin Farm Road to Route 123

- No HOV lanes
- 6 travel lanes (no change)
- Innovative intersection at Rugby Road (quadrant intersection)
- Remove interchange symbols at Monument Drive and Fair Lakes Parkway (constructed)
- New interchange at Burke Centre Parkway
- Interchange improvements at Route 123

Innovative intersection at Rugby Road (quadrant)

Remove interchange symbols at Monument Drive and Fair Lakes Parkway (constructed)

Burke Centre Parkway interchange

Route 123 interchange improvements

### 3 Fairfax County Parkway Route 123 to Franconia-Springfield Parkway

- No HOV lanes
- 6 travel lanes north of Sydenstricker Road interchange (no change)
- 6 travel lanes south of Sydenstricker Road interchange (currently proposed to be 8 lanes)
- Innovative intersection at Huntsman Boulevard (quadrant intersection)
- Remove interchange symbol at Hooes Road (constructed)

Innovative intersection at Huntsman Boulevard (quadrant)

Remove interchange symbol at Hooes Road (constructed)

Remove interchange symbols at Barta Road and Boudinot Drive (constructed)

Loisdale Road, Terminal Road, and Backlick Road, consider additional network connectivity:  
 - New connection between Terminal Road and Loisdale Road/Newington Road;  
 - Secondary connection to Terminal Road from the Backlick Road intersection

### Franconia-Springfield Parkway Fairfax County Parkway to Beulah Street

- No HOV lanes
- 6 travel lanes (currently proposed to be 8 lanes)
- Interchange improvements at I-95

Interchange improvements at I-95 (full interchange, not partial)

- 6 travel lanes north of John J Kingman Road (currently proposed to be 4 lanes)
- 4 travel lanes south of John J Kingman Road (no change)
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- Remove interchange symbols at Barta Road and Boudinot Drive (constructed)

### Fairfax County Parkway Franconia-Springfield Parkway to Richmond Highway

Army Museum Interchange

		Metrorail Station
		Commuter Parking Lot
		Transit Transfer Center (No Parking)
		Commuter Rail Station
		Rail Station
		Full Interchange Improvement (Study Required)
		Partial Interchange Improvement
		Proposed Highway Overpass
		Proposed Highway Underpass
		High Occupancy Toll (HOT) Lanes
		High Occupancy Vehicle (HOV) Lanes
		Widen or Improve Arterial Roadway (Number Indicates Proposed Number of Lanes Including HOV or HOT Lanes)
		Construct Arterial on New Location
		Widen or Improve Collector or Local Street (Number Indicates Proposed Number of Lanes)
		Construct Collector or Local Street on New Location as Development Occurs
		Cross sections to be finalized during process of reviewing plans for proposed development
		Proposed Cul-de-Sac
		Rail Transit or Bus Rapid Transit (BRT)
		Enhanced Public Transportation Corridor <sup>1</sup>

**Notes:**

- Enhanced Public Transportation Corridor - Major public transportation facility (such as Metrorail, light rail, bus rapid transit, and high occupancy vehicles lanes) will be provided in this corridor based upon the results of a comprehensive alternatives analysis. Final location of component facilities (e.g. rail stations, commuter parking lots) are subject to completion of the area plans or appropriate studies.
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 c) Bailey's Crossroads Community Business Center  
 d) Reston Transit Station Areas (TSAs)  
 e) Innovation Center Transit Station Area  
 f) Seven Corners



**Table 9: Comparison of Comprehensive Plan and Final Recommendations**

	<b>Current Comprehensive Plan</b>	<b>Final Recommendations</b>	<b>Change</b>
<b>New Interchanges (each)</b>	7	7	-
<b>New Partial Interchanges (each)</b>	0	1	+1
<b>Interchange Modifications (each)</b>	6	7	+1
<b>Roadway Widening (miles)</b>	22	22	-
<b>HOV Feeders (each)</b>	0	3	+3
<b>Trails (miles)</b>	5	40	+35

## 8. Conclusions

The Long-Term Study resulted in the development of the Final Recommendations. This process included the development of project measures of effectiveness based on County policies, robust public engagement, and analysis of different corridor strategies. The key findings from the Long-Term Study were:

- A need and desire for enhanced bicycle and pedestrian facilities;
- Potential for enhanced transit routing and performance;
- Low demand for High Occupancy Vehicle (HOV) Lanes;
- Wide-ranging need for 6 travel lanes (general purpose);
- Desire to minimize impacts to properties and environment;
- Continued need for grade separated interchanges and interchange modifications to allow long stretches of free flow traffic; and
- Benefit of innovative intersections at key locations.

The elements of the Final Recommendations are recommended to amend the current Comprehensive Plan Transportation Map. The County can utilize these results to proceed with a Comprehensive Plan Amendment (subject to Board of Supervisors authorization), updated project prioritization, and project funding requests.

## **Project Prioritization**

Additionally, FCDOT has conducted a prioritization exercise, assigning a tier level for each element of the final recommendations, indicating which are more likely to be implemented in the short term, mid-term or long-term. This prioritization may be found in **Appendix L**.

