Core of Rosslyn Transportation Study
Future Concepts Analysis Report

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1. Introduction

1.1 Study and Background

In 2015, the Arlington County Board adopted the Rosslyn Sector Plan, which included a multimodal transportation vision set forth by the community. In 2017, Arlington County initiated the Core of Rosslyn Transportation Study to assess the feasibility and potential impacts of the proposed changes to the transportation network in Rosslyn through the year 2030 included in the Rosslyn Sector Plan. This study enables an informed evaluation of how the changes proposed in the Rosslyn Sector Plan could feasibly be phased and implemented without significant disruption of existing conditions.

The targeted outcome of this study is a recommended program of projects implementable by 2030. These projects have well-informed cost estimates and are systematically phased for incorporation into the County’s Capital Improvement Program. The study has also identified key transportation projects contingent on redevelopment in the Rosslyn core, as well as projects that will require future study and analysis (because they are not feasible within the next ten years). This Future Concepts Analysis Report focuses on the development of a 2030 Baseline network, which the study team used as the basis to test two different transportation concepts and an eventual Preferred Alternative scenario. The report also details how the study team reviewed each concept’s impacts on Rosslyn’s multimodal transportation system.

1.2 Future Concepts Analysis Report Structure and Purpose

This Future Concepts Analysis Report assesses the Rosslyn street network for the 2030 horizon year. There are four scenarios summarized in this report: 2030 Baseline, 2030 Concept 1, 2030 Concept 2, and 2030 Preferred Alternative conditions. The 2030 Baseline provides a point of comparison for multimodal operations for the two concept scenarios and the Preferred Alternative based on anticipated growth in Rosslyn. The sections that follow outline:

- 2030 Baseline Scenario: estimated study area future conditions and anticipated mobility challenges,
- 2030 Concept 1: initial concept scenario development and testing,
- 2030 Concept 2: a second iteration of concept scenario development and testing using the lessons learned from Concept 1,
- 2030 Concept 1 and Concept 2 Conditions: an evaluation and comparison of the 2030 Baseline and concept scenarios using the study’s designated performance measures,
- 2030 Preferred Alternative: a final iteration of concept scenario development with refinements based on public input received on 2030 Concepts 1 and 2, as well as findings from the 2030 Concepts 1 and 2 analyses,
Performance Measures

The study team developed performance measures to evaluate the street reconfiguration concept scenarios with respect to the transportation goals of the Rosslyn Sector Plan and the County’s Master Transportation Plan. Performance measures are organized by mode or focus area. Each performance measure considers several individual measures of effectiveness (MOEs), both quantitative and qualitative. The overarching goal of performance evaluation is to identify and balance the tradeoffs between modes and desired outcomes and arrive at a preferred alternative. Performance measures, discussed in more detail in the Core of Rosslyn Transportation Study Existing Conditions Report, are shown in Table 1 and are organized in to the following modes and outcomes:

<table>
<thead>
<tr>
<th>Mode / Element</th>
<th>Performance Measures</th>
<th>Measures of Effectiveness</th>
</tr>
</thead>
</table>
| Transit          | • Accessibility of bus and rail transit  
                    • Transit operation                                                                 | a. Quantity of Transit Person Trips  
                    b. Quantity of Bus Stop Locations  
                    c. Quality of Bus Stop Facilities  
                    d. Transit Average Speed          |
| Pedestrian       | • Pedestrian experience and comfort  
                    • Street crossing experience                                                          | a. Quantity of Pedestrian Person Trips  
                    b. Pedestrian Experience and Comfort  
                    c. Quantity of Enhanced Crosswalks / Pedestrian Crossing Times  
                    d. Pedestrian Delay (seconds) at Critical Intersections                             |
| Bicycle          | • Connectivity of bicycle facilities to trail network  
                    • Provision of dedicated bicycle facilities                                           | a. Quantity of Bicycle Person Trips  
                    b. Bicycle Network Connections to Local/Regional Trails  
                    c. Quantity of New or Improved Dedicated Bicycle Facilities  
                    d. Bicycle Delay (seconds) at Critical Intersections                                 |
| Vehicles         | • Vehicle delay and queuing at critical intersections  
                    • Travel time                                                                        | a. Quantity of Vehicular Person Trips  
                    b. Queues at Critical Intersections  
                    c. Overall Vehicle Delay at Intersections  
                    d. Peak Period Travel Time/Speed                                                    |
| Parking and Curbspace | • Public parking (on- and off-street)  
                    • Curbside management                                                                | a. Quantity of On-Street Parking Supply  
                    b. Quantity of New Multimodal Curbspace                                             |
| Urban Design     | • Green infrastructure (landscaping, permeable pavements, street trees, etc.)  
                    • Streetscape elements (benches, decorative walls, sitting areas, wider sidewalks, bicycle racks, pocket parks, etc.)  
                    • Improved access to public spaces                                                  | a. Percentage of Impervious Area  
                    b. Percentage of Street Tree Coverage/Landscaping                                   |
2. 2030 Baseline Scenario

To capture future network changes from existing conditions, the study team analyzed 2030 Baseline scenario conditions. Future 2030 Baseline conditions take into account funded transportation projects or approved redevelopment site plan conditions that are expected to occur separately from the Core of Rosslyn Transportation Study. The 2030 Baseline conditions serve as a comparison point for the future 2030 Concept 1, 2030 Concept 2, and 2030 Preferred Alternative. Figure 2 shows future developments in Rosslyn that are forecasted to occur by 2030.

2.1 Demographic Estimates

County forecasts estimate a 42% increase in population and 34% increase in employment by year 2030\(^1\). These forecasts take into account approved redevelopment site plan conditions for both commercial and residential properties.

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\(^1\) Source: Arlington County, CPHD, Planning Division, Center for Urban Design and Research, December 2017
Figure 2: Future Developments in Rosslyn
2.2 Transportation Network

The study area transportation network in the 2030 Baseline scenario is similar to existing conditions. Figure 3 represents the expected street network in 2030 based on programmed projects and approved redevelopment site plan conditions.

Key elements of the 2030 Baseline scenario include:

- 2018: short-term improvements to the road network – restriping and additional roadway markings to help guide traffic along eastbound Lee Highway and Fort Myer Drive
- Multimodal improvements such as bike lanes, bus bay relocations, and improved sidewalks that will be built with development projects
- Transit route changes proposed in Arlington County’s Transit Development Plan
- Continued use of the Central Place Transit Tunnel, eastbound from N. Moore Street to N. Lynn Street
- Capital Improvement Program (CIP) projects:
  - Lynn Street Esplanade and Custis Trail Improvements (expansion of trail widths along westbound Lee Highway and along Lynn Street)
  - Meade Street Bridge Design and Street Improvements (includes bridge improvements, multimodal safety enhancements, and signalization of the westbound US Route 50 ramps at Meade Street)
Figure 3: 2030 Baseline Street Network
2.3 Future 2030 Baseline Conditions Volume Development

The development of traffic volumes for the 2030 Baseline followed a systematic process. Three datasets informed the analysis:

- Observed vehicle traffic volumes (collected by Arlington County on segments and intersections in the past three years)
- Metropolitan Washington Council of Governments travel demand forecasting model (MWCOG Model) outputs
- VI SUM (a subarea traffic analysis model designed for the Rosslyn study area)

The overall boundaries for the study extend from N. Rhodes Street to N. Arlington Ridge Road and between Arlington Boulevard (US Route 50) to the George Washington Memorial Parkway/Francis Scott Key Bridge. The study area has been further stratified into sub-designations to meet the needs of various technical analyses and to focus the most detailed analyses on the streets under consideration for reconfiguration. The study area sub-designations are shown in Figure 4 and described below:

- **Modeling Context Area** – The broadest boundary for the study area; included immediate regional connections and allowed the travel forecasting to factor in regional travel patterns and the implications of decisions on the larger network.
- **Operational Analysis Area** – Smaller than the Modeling Context Area, this is the area in which operational (traffic) analysis were conducted.
- **Core Street Reconfiguration Area (or Core Area)** – This was the concentrated area in which the street network reconfiguration alternatives were focused. This area had the most detailed multimodal analysis.
- **Critical Intersections** – Within the Core Street Reconfiguration Area, pedestrian and bicycle operational data was analyzed for this subset of intersections.
Figure 4: Study Area
At a high level, the MWCOG Model is the source of traffic analysis zone (TAZ) land use inputs, growth rates, and a seeding origin-destination (O-D) trip table that is refined in the VISUM subarea model. The MWCOG Model is calibrated to reflect travel conditions at a regional level, but it may not accurately reflect traffic patterns within the study area due to coarse TAZs and model network structures; therefore, VISUM is used as a supplemental tool to assign traffic and develop forecasts with greater detail of the TAZs and street network. TAZs from the MWCOG Model are disaggregated to the block or block group level in VISUM for more accurate representation of trip loading to the network. VISUM is used for subarea model development and validation, evaluating traffic diversion, and forecasting future volumes.

In addition to growing vehicular trips, the travel demand forecasting effort estimated growth in transit trips and non-motorized trips. Combining with vehicular trips, the study team estimated and reported inflow and outflow person trips for the Rosslyn study area for existing (2017), 2030 Baseline, and 2030 concept scenarios.

2.4 Future 2030 Baseline Conditions Volumes
Traffic volumes and travel patterns in Rosslyn in the 2030 Baseline follow similar trends are shown in the existing conditions. Figure 5 illustrates heavy vehicular demand during the AM and PM peak hours for N. Lynn Street, eastbound Lee Highway, eastbound Wilson Boulevard, and portions of Fort Myer Drive.

Appendix A shows intersection turning movement and freeway segment volumes.
Figure 5: 2030 Baseline Peak Hour Traffic Demand

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Traffic Demand
Peak Hour Volumes
- 0 - 250
- 250 - 500
- 500 - 750
- 750 - 1000
- 1000 - 1250
- 1250+
2.5 Vehicle Traffic Operation Analysis

Similar to the existing conditions analysis, the study team used VISSIM traffic simulation software and Synchro to model traffic operations within the study area under 2030 Baseline conditions. This section summarizes the results from the 2030 Baseline analyses, main findings, and operational issues for all modes. Detailed VISSIM and Synchro results (i.e. simulated delays, average queuing, and maximum queuing by movement and approach, as well as additional simulated travel times for freeways) can be found in Appendix A.

VISSIM Analysis Results

Travel Speeds

Estimated 2030 average peak hour travel speeds from the traffic simulation are shown in Figure 6. The estimates suggest that peak period congestion will continue to occur in the study area at a similar magnitude to existing conditions.

- Congested segments predicted for the AM peak hour:
  - I-66 eastbound operates at speeds less than 20 mph for most of the morning peak (33 percent of posted speed), compared to 25 mph under existing conditions
  - Arlington Boulevard eastbound operates at speeds less than 5 mph for most of the morning peak (11 percent of posted speed), compared to 8 mph under existing conditions
  - N. Lynn Street from Georgetown to US Route 50 operates at speeds less than 10 mph, which is similar to existing conditions
  - Clarendon Boulevard eastbound from N. Oak Street to N. Rhodes Street operates at speeds less than 5 mph, compared to approximately 10 mph under existing conditions
  - N. Nash Street/19th Street N. eastbound and westbound operate at speeds less than 10 mph between Key Boulevard and N. Kent Street, which is similar to existing conditions
  - Lee Highway eastbound and westbound approaching Fort Myer Drive and N. Lynn Street experience speeds less than 5 mph, similar to existing conditions

- Congested segments predicted for the PM peak hour:
  - I-66 eastbound operates at speeds less than 20 mph for most of the morning peak (33 percent of posted speed), compared to over 30 mph under existing conditions
  - Arlington Boulevard eastbound is less congested and operates at moderate speeds, which is similar to existing conditions
  - N. Lynn Street from Georgetown to US Route 50 operates at speeds less than 10 mph, compared to over 10 mph under existing conditions
  - N. Nash Street/19th Street N. eastbound and westbound operate at speeds less than 5 mph between Key Boulevard and N. Kent Street, compared to over 5 mph under existing conditions
  - Lee Highway eastbound operates at speeds less than 5 mph, similar to existing conditions
Figure 6: 2030 Baseline Vehicular Average Travel Speed

AM Peak Hour

PM Peak Hour

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Average Travel Speed
- Less than 5 mph
- 5 to 10 mph
- 10 to 15 mph
- 15 to 20 mph
- 20 to 25 mph
- 25 to 30 mph
- 30 to 40 mph
- 40 to 50 mph
- 50 to 60 mph
- Greater than 60 mph
Intersection Delay

Estimates show most signalized study area intersections operate with simulated delays equivalent to Level of Service (LOS) E or better in 2030, which represents acceptable intersection delays in urban conditions. LOS is a qualitative measure used to rate the quality of motor vehicle traffic service. LOS is used to analyze roadways and intersections by categorizing travel flow and assigning quality levels of traffic based on performance measures such as vehicle speed, congestion, etc.

Intersections that are predicted to operate at LOS F during the AM peak hour are:
- Southbound Key Bridge and George Washington Memorial Parkway
- N. Nash Street and eastbound Lee Highway
- N. Oak Street and Clarendon Boulevard

Intersections that are predicted to operate at LOS F during the PM peak hour are:
- Southbound Key Bridge and George Washington Memorial Parkway
- N. Lynn Street and 19th Street N.
- N. Nash Street and eastbound Lee Highway
- N. Kent Street and 19th Street N.

Cumulative delays and representative queuing at critical intersections within the Core Street Reconfiguration Area is presented in Appendix A. The results follow similar trends to existing conditions, in that the maximum vehicle queues (i.e. the amount of queuing that may be reached during the peak of congestion during the peak hours) far exceeds the available block lengths for nearly every approach of the critical intersections.

Synchro Analysis Results

The results of the intersection vehicular delay and LOS analysis are shown in Appendix A. 2030 Baseline traffic operations in Rosslyn operate similar to existing conditions traffic and are shown in Table 2.

- AM peak period experiences eastbound and northbound queueing and congestion
- PM peak period experiences eastbound, westbound, and southbound queueing and congestion
- Queueing far exceeds typical block lengths and spills through multiple intersections; vehicles tend to wait for more than one signal cycle to progress through intersections during the peak periods
<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queues(^2) at Critical Intersections Approaches</td>
<td>Number of critical intersection approaches with queues that exceed available block length during peak hours</td>
<td>AM: 17 out of 18 approaches PM: 16 out of 18 approaches</td>
</tr>
<tr>
<td>Overall Vehicle Delay(^3) at Intersections</td>
<td>Number of intersections operating with significant overall delay (LOS F) during peak hours (VISSIM analysis area)</td>
<td>9 out of 43 intersections during the AM and/or PM peak hours</td>
</tr>
<tr>
<td>Peak Period Travel Time/Speed(^4)</td>
<td>Number of critical segments with travel speeds less than 50 percent of posted speed limit during peak hours</td>
<td>AM: 5 out of 6 critical segments PM: 8 out of 6 critical segments</td>
</tr>
</tbody>
</table>

\(^2\) Source: Study VISSIM model  
\(^3\) Source: Study VISSIM model  
\(^4\) Source: Study VISSIM model
3. 2030 Concept 1

The study team built upon the analyses of existing and future year conditions to develop 2030 Concept 1, which is closely tied to the Rosslyn Sector Plan’s recommendations. The 2030 Concept 1 scenario assumes completion of the proposed projects identified in the 2030 Baseline scenario. Analysis of the revised 2030 Concept 1 is presented below. Stakeholders and the public reviewed the concept and evaluation. Together, analysis and public input guided the development of subsequent concepts.

3.1 Transportation Network

The 2030 Concept 1 scenario, shown in Figure 7, assumes completion of the proposed projects identified in the 2030 Baseline conditions and additional network changes in support of study goals. The 2030 Concept 1 scenario comes as close as possible to the transportation network design proposed in the Rosslyn Sector Plan; however, there are certain locations where there is not enough County-owned right-of-way to achieve the envisioned Rosslyn Sector Plan street cross sections. In these locations, the study team made tradeoffs to accommodate and balance the transportation modes in accordance with Rosslyn Sector Plan’s policies and vision.

Key elements of 2030 Concept 1 include:

- Conversion of N. Lynn Street, N. Moore Street, and Fort Myer Drive to two-way streets
- Strong emphasis on enhancing the bike network with the addition of protected facilities along northbound N. Lynn Street, southbound Fort Myer Drive, and westbound Wilson Boulevard
- Removal of the Fort Myer Drive tunnel under Wilson Boulevard, bringing the intersection of Wilson Boulevard and Fort Myer Drive entirely to-grade
- Removal of 17th Street N. access to N. Lynn Street and reallocating the previous ramp space along N. Lynn Street to sidewalk area
- Removal of the bus tunnel connection between N. Moore Street and N. Lynn Street (the two-way conversion of N. Lynn Street rendered the bus tunnel a less efficient route)
- Modified intersection of Fairfax Drive, Fort Myer Drive, and N. Lynn Street (including the removal of the slip lane access from Fort Myer Drive to N. Lynn Street).

While the multimodal improvements analyzed in 2030 Concept 1 were effective in enhancing the pedestrian and bicycle experience, the disruptions to traffic operations were largely significant and changes were necessary to better balance the performance measures in the Rosslyn Core. Section 4: 2030 Concept 2 lists the changes made to Concept 1 to arrive at a refined Concept 2 for testing. Section 5: Concept 1 and Concept 2 Conditions section provides a detailed summary of the analyses and performance measures evaluated for both concepts.
Figure 7: 2030 Concept 1
4. 2030 Concept 2

2030 Concept 2 was developed based on findings from the Concept 1 analysis and the public input received on Concept 1. In other words, Concept 2 is refined iteration of Concept 1 rather than a concept designed for competitive comparison to Concept 1. The 2030 Concept 2 scenario assumes completion of the proposed projects identified in the 2030 Baseline scenario.

4.1 Transportation Network

Whereas Concept 1 primarily focuses on one-way to two-way conversion of major north-south streets in the Core Street Reconfiguration Area, Concept 2 maintains one-way operations on N. Lynn Street and N. Moore Street and includes most other changes listed in the Rosslyn Sector Plan.

Key elements of 2030 Concept 2 include:

- N Lynn Street remains one-way with off-peak parking and a northbound protected cycle track at sidewalk level
- Protected bike lanes on N. Lynn Street northbound (south of Wilson Boulevard), Wilson Boulevard westbound, and Wilson Boulevard eastbound
- Conversion of Fort Myer Drive to two-way operations and removal of the tunnel under Wilson Boulevard, bringing the intersection of Wilson Boulevard and Fort Myer Drive entirely to-grade
- Addition of a signalized mid-block crosswalk on Fort Myer Drive
- Addition of a southbound protected cycle track at sidewalk level to Fort Myer Drive
- Modified intersection of Fairfax Drive, Fort Myer Drive, and N. Lynn Street (including the removal of the slip lane access from Fort Myer Drive to N. Lynn Street)
- Removal of 17th Street N. access to N. Lynn Street and reallocating the previous ramp space along N. Lynn Street to sidewalk area
- Addition of a protected bike lane on 19th Street N eastbound and bike lane on 19th Street N.
- Adjusted intersection of Meade Street and US Route 50 ramps to allow for vehicle to access northbound Fort Myer Drive from the off-ramps

The tweaks to the multimodal improvements incorporated into Concept 2 along with a less drastic change to the vehicular network resulted in more balanced performance measures. Section 5: Concept 1 and Concept 2 Conditions provides a detailed summary of the analyses and performance measures evaluated for both concepts. The final Concept 2 is shown in Figure 8.
Figure 8: 2030 Concept 2
5. Concept 1 and 2 Conditions
This section summarizes the results from the concept analyses. The analysis calculated and reviewed performance measures for each mode or focus area including: Transit, Pedestrian, Bicycle, Vehicles, and Parking and Curbspace. Each of the following subsections describes the network and analysis of each mode or focus area.

5.1 Transit Network
The Rosslyn transit network includes Metrorail service, local bus service (Washington Metropolitan Area Transit Authority [WMATA] Metrobus, Arlington Transit [ART], and DC Circulator), commuter bus service (Loudoun County Transit [LCT], Potomac and Rappahannock Transportation Commission [PRTC]), intercity bus, and private shuttles. Service is frequent, and ridership is high in existing conditions. Rosslyn is currently the 11th busiest station in the Metrorail system and second-busiest station in Virginia by ridership.

2030 Baseline
Within the Core Street Reconfiguration Area, there are no anticipated changes in the number of bus stops. The 2030 Baseline scenario includes changes to bus routes from Arlington County’s Transit Development Plan (2016). Bus routes were re-routed to use the new bus-only Central Place Transit Tunnel between N. Moore Street and N. Lynn Street. The intercity bus connection point remains in the 2030 Baseline scenario.

2030 Concept 1
In Concept 1, geometric changes to the roadway network affected the path of transit routes. 2030 Concept 1 removes the Central Place Transit Tunnel since an unsignalized terminus at N. Lynn Street is incompatible with two-way street operations. Instead, buses circulate through Rosslyn using the two-way street network. These geometric changes affected five bus routes:

- WMATA Metrobus routes 5A, 10E, and 38B
- ART route 55
- DC Circulator Dupont Circle-Georgetown-Rosslyn route

2030 Concept 2
In 2030 Concept 2, transit routes do not change from the 2030 Baseline due to the assumption that the Central Place Transit Tunnel remains.

Figure 9 shows anticipated future transit conditions for the 2030 Baseline scenario, 2030 Concept 1, and 2030 Concept 2 (which are identical to the 2030 Baseline scenario).
Figure 9: Future Transit Network

2030 Baseline

2030 Concept 1

2030 Concept 2

Legend
- Core Street Reconfiguration
- Rosslyn Metrobus Station
- Metrorail

Bus Stops
- Local Bus Stops
- Commuter Bus Stops
- Northeast Intercounty Bus Connections

Bus Routes
- WMATA Metrobus
- ART Buses
- DC Circulator

Regional Commuter Bus
Potomac and Rappahannock Transportation Commission (PRTC)
- Loudoun County Trans (LCT)

The following changes from existing are according to the Arlington County Transit Development Plan.

1. ART 63/ART 6 replaced by ART 63
2. Metrobus 4A replaced by ART 77
3. Metrobus 4B replaced by ART 41
Transit Conditions

The number of bus stop locations does not vary between the 2030 Baseline and the two concepts. However, future analysis of transit stops may be a result of street reconfigurations. Concept 1 estimations resulted in lower average transit speeds\(^5\) throughout the network as compared to the 2030 Baseline, most significantly in the AM peak. Concept 2 estimations also resulted in lower average transit speeds as compared to the 2030 Baseline although the decrease during the AM peak was smaller than that of Concept 1. Generally, 11 mph is considered as a target bus speed.

Table 3 shows anticipated future transit measures for the 2030 Baseline scenario, 2030 Concept 1, and 2030 Concept 2.

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Concept 1</th>
<th>2030 Concept 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of Bus Stop Locations</td>
<td>Number of existing stops in Core Street Reconfiguration Area</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Transit Average Speed</td>
<td>Average travel speed for representative bus routes between entry and exit points to the modeled network</td>
<td>AM Peak: 8.9 mph PM Peak: 9.7 mph</td>
<td>AM Peak: 5.8 mph PM Peak: 8.4 mph</td>
<td>AM Peak: 7.7 mph PM Peak: 7.9 mph</td>
</tr>
</tbody>
</table>

\(^5\) Source: Project VISSIM model. Transit travel times were collected from the project VISSIM model and describe the total time it takes for each route to enter the study area, travel along its route, stop where designated, and then exit the study area. The average travel speed for these segments is presented in the table for summary purposes.
5.2 Pedestrian Network

The Rosslyn Core experiences high pedestrian volumes every day given its centrally-located transit hub, as well as its high-density employment and housing. According to American Community Survey Data (2011-2015 5-Year Averages) and the Arlington County Office Building Study (2015-2016), about 10% of Rosslyn employees and residents walk to work—much higher than the national average. The sidewalk, crosswalk, and trail network in the Core Street Reconfiguration Area represent the main components of the Rosslyn pedestrian network.

2030 Baseline

Streets in Rosslyn currently provide semi-narrow pedestrian facilities with sidewalks along long street blocks, crosswalks at most legs of intersections, and two major mid-block crossings at N. Lynn Street and N. Moore Street. The 2030 Baseline includes 154,900 square feet of sidewalk area. The pedestrian network in the 2030 Baseline scenario uses approved site plan developments and CIP projects as the basis for these infrastructure assumptions, which includes the major sidewalk and trail improvements associated with the Lynn Street Esplanade and Custis Trail Improvements, as well as new sidewalks built in conjunction with development.

2030 Concept 1

Concept 1 includes the following new or enhanced pedestrian infrastructure:

- 14 new or improved pedestrian crosswalks (improvements include either shortening of crossing distance or addition of refuge islands)
- Support for the development of the 18th Street Pedestrian Corridor with new mid-block crossings on N. Nash Street and Fort Myer Drive
- Modified crossings on streets with two-way operations
- Removal of crossings in poor locations or conditions (e.g., the crosswalk over Wilson Boulevard at N. Moore Street was removed due to high vehicle volumes and poor placement)
- About 24,400 square feet of new sidewalk as a result of widened sidewalks, removed slip lanes, and filling of sidewalk gaps.

2030 Concept 2

Concept 2 includes the following new or enhanced pedestrian infrastructure:

- 18 new or improved pedestrian crosswalks (improvements include either shortening of crossing distance or addition of refuge islands)
- Support for the development of the 18th Street Pedestrian Corridor with new mid-block crossings on N. Nash Street and Fort Myer Drive
- Modified crossings on streets with two-way operations
- Removal of crossings in poor locations or conditions (e.g., the crosswalk over Wilson Boulevard at N. Moore Street was removed due to high vehicle volumes and poor placement)
- About 10,000 square feet of new sidewalk as a result of widened sidewalks, removed slip lanes, and filling of sidewalk gaps.

Figure 10 shows anticipated future pedestrian conditions for the 2030 Baseline, 2030 Concept 1, and 2030 Concept 2.
Figure 10: Future Pedestrian Network

2030 Baseline

2030 Concept 1

2030 Concept 2

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network
- Sidewalk
- Preferred Alternative Crosswalks
- New
- Improved
- Remove
- Existing
Pedestrian Conditions

Both concepts result in increased area of sidewalk in the public right-of-way due to street reconstruction. Concept 2 includes four more crosswalk enhancements than Concept 1, such as shortened crossing distances, removed slip lanes, or added pedestrian refuge islands. Both concepts contribute positively to the development of the 18th Street Pedestrian Corridor by adding new mid-block crossings. (See Table 4).

Table 4: Future Conditions Pedestrian Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Concept 1</th>
<th>2030 Concept 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Experience and Comfort</td>
<td>Area of sidewalk in the public right-of-way (Core Street Reconfiguration Area)</td>
<td>154,900 square feet</td>
<td>179,300 square feet</td>
<td>164,900 square feet</td>
</tr>
<tr>
<td>Quantity of Enhanced Crosswalks</td>
<td>The number of new or enhanced pedestrian crossings provided</td>
<td>0</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Pedestrian Delay(^6) at Critical Intersections</td>
<td>Number of intersections with 40 or more seconds of pedestrian delay (LOS E or F)</td>
<td>AM: 3 out of 13 intersections PM: 7 out of 13 intersections</td>
<td>AM Peak: 6 out of 13 intersections PM Peak: 8 out of 13 intersections</td>
<td>AM Peak: 4 out of 13 intersections PM Peak: 6 out of 13 intersections</td>
</tr>
</tbody>
</table>

\(^6\) Source: Study VISSIM model. The study VISSIM model was used to simulate pedestrian crossings at study area intersections. The average pedestrian delay waiting to cross an intersection can be related to a level of service threshold based on the methodology of the 2000 Edition of the Highway Capacity Manual (HCM 2000). This threshold indicates the likelihood of a pedestrian not complying with the “WALK” and “DON’T WALK” traffic indications based on the amount of time that they are delayed in crossing the intersection.
5.3 Bicycle Network

Rosslyn is located along various regional trails including the Custis Trail, the Mt. Vernon Trail, the Arlington Boulevard Trail, and bridge crossings on the Key Bridge and Theodore Roosevelt Bridge. In existing conditions, the segment of the Custis Trail along US Route 29 has among the highest bicycle volumes in the County, but there is low bicycle ridership in the Core Street Reconfiguration Area compared to surrounding trails, which may be related to fewer dedicated bike facilities in the core.

The study team calculated Bicycle Level of Traffic Stress (BLTS) for each future scenario. BLTS is scored from one to four (one representing low stress for a bicyclist and four representing high stress for a bicyclist), based on factors such as bicycle facility type, traffic speed, street width, and bike lane width. The combination of these factors contributes to the level of stress that a bicyclist may feel as they travel along a roadway segment. A street with a BLTS score of 1 provides a comfortable and low stress riding experience for bicyclists of all ages and abilities. This methodology is used to compare the quality of bicycle facilities in the Rosslyn Core.

2030 Baseline

The 2030 Baseline scenario includes four segments of bike lanes along Fort Myer Drive, 19th Street N, N Nash Street, and Key Boulevard based on programmed development projects. The Lynn Street Esplanade and Custis Trail improvements also are included.

2030 Concept 1

2030 Concept 1 includes the following new or enhanced bicycle facilities:

- On-street protected bike lanes northbound on N. Lynn Street
- On-street protected bike lanes southbound on Fort Myer Drive
- Improved connection to the Custis Trail and Mount Vernon Trail along N. Lynn Street
- A continuous protected bike facility on Wilson Boulevard in the westbound direction. In the eastbound direction the facility only includes protection east of N. Lynn Street due to right-of-way constraints.
- Protected bike lanes along 19th Street N

2030 Concept 2

2030 Concept 2 includes the following new or enhanced bicycle facilities:

- Off-street protected cycle tracks on Fort Myer Drive and N. Lynn Street. These are one-way facilities that would be between the street and the sidewalk, surrounded on both sides by street trees.
- A continuous protected bike facility on Wilson Boulevard in the westbound direction (the eastbound direction only includes protection east of Lynn Street due to right-of-way constraints on the south side)
• A protected bike lane on 19th Street N in the eastbound direction only. Concept 2 removes the westbound protected bike lane on 19th Street N to assist in mitigating intersection delay along 19th Street N, which has small blocks, making increased vehicle storage necessary to maintain an appropriate level of service.

**Figure 11** shows the on-street bicycle facilities, Capital Bikeshare locations, and bicycle level of stress (BLTS) around the study area for the 2030 Baseline, 2030 Concept 1, and 2030 Concept 2.
Figure 11: Future Bicycle Network

2030 Baseline

2030 Concept 1

2030 Concept 2

Legend
- Core Street Reconfiguration
- Rosslyn Metrorail Station
- Capital Bikeshare Stations
- Potential Bike Box
- Trail Network
- Bike Facility (Bike lane, buffered or protected bike lane, sharrows)
- Street with no bike facility

Bicycle Level of Traffic Stress
- 1 - Most Comfortable
- 2
- 3
- 4 - Most Uncomfortable

LTS guidance uses prevailing speeds. This analysis used existing posted speed limits.
Bicycle Conditions

Both concepts increase the presence of protected or buffered bike lanes compared to the 2030 Baseline, adding approximately 1.3 or 1.4 miles, in Concept 1 and 2, respectively. These additional facilities increase the comfort level of cycling in the study area, as measured by BLTS. In 2030 Concept 1, there is a 28% increase in the quantity of “low stress” street segments (BLTS 1 and 2) compared to the 2030 Baseline scenario. 2030 Concept 2 has a 34% increase. Future concepts also have the potential to add additional bike boxes, which provide cyclists with a safe and visible way to get ahead of traffic during the red signal (see Table 5).

Table 5: Future Conditions Bicycle Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Concept 1</th>
<th>2030 Concept 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Network Connections to Local/Regional Trails</td>
<td>Number of connection points in the modeling context area to major trails (Custis Trail, Mount Vernon Trail, and Arlington Boulevard Trail)</td>
<td>5 - N. Scott Street, N. Lynn Street, N. Meade Street, Arlington Boulevard, and Arlington Ridge Road bike lanes</td>
<td>5 - N. Scott Street, N. Lynn Street, N. Meade Street, Arlington Boulevard, and Arlington Ridge Road bike lanes</td>
<td>5 - N. Scott Street, N. Lynn Street, N. Meade Street, Arlington Boulevard, and Arlington Ridge Road bike lanes</td>
</tr>
<tr>
<td>Quantity of New or Improved Dedicated Bicycle Facilities</td>
<td>Existing bicycle level of traffic stress segments (Core Street Reconfiguration Area)</td>
<td>Distributions of level of stress by directional street centerline mileage:</td>
<td>• BLTS 1: 12%</td>
<td>• BLTS 1: 45%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• BLTS 2: 16%</td>
<td>• BLTS 2: 11%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• BLTS 3: 71%</td>
<td>• BLTS 3: 44%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• BLTS 4: 1%</td>
<td>• BLTS 4: 0%</td>
</tr>
<tr>
<td>Bicycle Delay* at Critical Intersections</td>
<td>Number of critical intersections with 40 or more seconds of bicycle delay (LOS E or F)</td>
<td>AM: 0 out of 13 intersections PM: 2 out of 13 intersections</td>
<td>AM: 4 out of 13 intersections PM: 3 out of 13 intersections</td>
<td>AM: 1 out of 13 intersections PM: 3 out of 13 intersections</td>
</tr>
</tbody>
</table>

* Source: Study VISSIM model. The study VISSIM model was used to simulate bicycle movements along study area streets. The average bicycle delay at each critical intersection was collected as shown below. HCM 2000 provides a methodology for relating bicycle delays at signalized intersections to level of service.
5.4 Vehicle Network
Rosslyn is located at the junction of several regionally-significant highways. These routes (I-66, George Washington Memorial Parkway, US Route 50, Virginia Route 110, Lee Highway, and the Key Bridge) provide critical connections across the DC-Maryland-Virginia region and carry heavy volumes of commuter traffic in peak hours. Analysis of existing conditions showed that about 80% of trips that touched Rosslyn were through trips, signaling that most of the neighborhood’s traffic does not need local access. This position—located at the crux of the region’s major routes and outlets—is challenging for Rosslyn, particularly in maintaining local traffic flow and access.

2030 Baseline Network
The 2030 Baseline traffic operational conditions in AM and PM peak period are summarized below. The key elements of the 2030 Baseline scenario include:

- Short-term improvements to the road network—restriping and additional roadway markings to help guide traffic along eastbound Lee Highway and Fort Myer Drive
- Multimodal improvements such as bike lanes, bus bay relocations, and improved sidewalks that will be built along with development projects
- Transit route changes proposed in Arlington County’s Transit Development Plan
- Opening of the Central Place Transit Tunnel, eastbound from N. Moore Street to N. Lynn Street
- Capital Improvement Plan (CIP) projects:
  - Lynn Street Esplanade and Custis Trail Improvements
  - Meade Street Bridge Design and Street Improvements

Figure 12 shows the peak hour demand by link for the AM and PM time periods.
Figure 12: 2030 Baseline Peak Hour Traffic Demand

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Traffic Demand
Peak Hour Volumes
- 0 - 250
- 250 - 500
- 500 - 750
- 750 - 1000
- 1000 - 1250
- 1250+
Additionally, the study team modeled peak hour traffic volume at intersections, both signalized and unsignalized, in the Rosslyn study area. Figures showing the peak hour traffic volumes at specific study area intersections are provided in Appendix A.

The study team modeled average travel speed for the AM and PM peak periods using the study VISSIM model along five critical segments in the Core of Rosslyn Transportation Study area:

- Northbound N. Lynn Street (Arlington Boulevard to George Washington Memorial Parkway)
- Southbound Fort Myer Drive (George Washington Memorial Parkway to Arlington Boulevard)
- Eastbound Clarendon Boulevard (N. Rhodes Street to N. Arlington Ridge Road)
- Westbound Wilson Boulevard (N. Arlington Ridge Road to N. Oak Street)
- Eastbound 19th Street N. (Key Boulevard to N. Kent Street)

**Figure 13** shows vehicular average travel speeds along these corridors during the AM and PM peak periods, respectively.

During the AM peak period the 2030 Baseline presents congestion hot spots along N Lynn Street, Fort Myer Drive, Clarendon Boulevard, Arlington Boulevard, and the Key Bridge. The greatest increases in travel time occurred eastbound from Lee Highway to Georgetown (increase of four minutes) and northbound from Arlington Boulevard to Georgetown (increase of three minutes). Other travel times were approximately within one minute of existing conditions.

During the PM peak period the 2030 Baseline presents congestion hot spots along N Lynn Street, Fort Myer Drive, and at the Key Bridge. The greatest increases in travel time occurred northbound from Arlington Boulevard to Georgetown (increase of five minutes) and eastbound from Lee Highway to Georgetown (increase of two minutes). Other travel times were approximately within one minute of existing conditions.
Figure 13: 2030 Baseline Vehicular Traffic Flow

- AM Peak Hour
- PM Peak Hour

Legend:
- Core Street Reconfiguration Area
- Rosslyn Metro Rail Station
- Metrorail Entrances
- Trail Network

Average Travel Speed:
- Less than 5 mph
- 5 to 10 mph
- 10 to 15 mph
- 15 to 20 mph
- 20 to 25 mph
- 25 to 30 mph
- 30 to 40 mph
- 40 to 50 mph
- 50 to 60 mph
- Greater than 60 mph

Travel time differences reference change from existing conditions.
2030 Concept 1 Network
Using the 2030 Baseline volumes, the study team distributed future volumes throughout the roadway network with the Concept 1 network adjustments. Major changes to the network under 2030 Concept 1 would:

- Convert N Lynn Street to two-way operations
- Convert Fort Myer Drive to two-way operations
- Remove the Fort Myer Drive tunnel
- Relocate George Washington Memorial Parkway access to Fort Myer Drive
- Convert N. Moore Street to two-way operations
- Add protected bike lanes to N. Lynn Street northbound, Fort Myer Drive southbound, and Wilson Boulevard westbound
- Adjust the intersection of Fairfax Drive, Fort Myer Drive, and N Lynn Street
- Remove 17th Street N access to N Lynn Street
- Remove the Central Place Transit Tunnel

Figure 14 shows the peak hour demand by link for the AM and PM time periods. Compared with the 2030 Baseline, Concept 1 generally increases the demand for vehicular traffic on Fort Myer.
Figure 14: Concept 1 Peak Hour Traffic Demand

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Traffic Demand
Peak Hour Volumes
- 0 - 250
- 250 - 500
- 500 - 750
- 750 - 1000
- 1000 - 1250
- 1250+
Figure 15 and Figure 16 show vehicular average travel speeds along the five critical segments in the Core of Rosslyn Transportation Study area during the AM and PM peak periods, respectively.

During the AM peak period, compared with the 2030 Baseline, Concept 1 introduced new congestion hot spots along Wilson Boulevard, Fort Myer, 19th Street N, and the US Route 50 ramps. The greatest increase in travel times occurred southbound from Georgetown to westbound US Route 50 (increase of six minutes from 2030 Baseline) and eastbound from N Rhodes Street to N Arlington Ridge Road (increase of four minutes).

During the PM peak period, new congestion hot spots were introduced at Wilson Boulevard and Fort Myer Drive, and the US Route 50 Ramps. The greatest increases in travel time occurred southbound from Georgetown to westbound US Route 50 (increase of four minutes). Other travel times were approximately within one minute of the 2030 Baseline.
Figure 15: Concept 1 Vehicular Traffic Flow – AM

2030 Baseline

2030 Concept 1

Legend
- Core Street Reconfiguration Area
- Rosslyn Metro Station
- Metro Station Entrances
- Trail Network

Travel time differences reference change from existing conditions

Average Travel Speed
- Less than 5 mph
- 5 to 10 mph
- 10 to 15 mph
- 15 to 20 mph
- 20 to 25 mph
- 25 to 30 mph
- 30 to 40 mph
- 40 to 50 mph
- 50 to 60 mph
- Greater than 60 mph
Figure 16: Concept 1 Vehicular Traffic Flow – PM
2030 Concept 2 Network

Using the 2030 Baseline volumes, the study team distributed future volumes throughout the roadway network with the Concept 2 network adjustments. Major changes to the network under 2030 Concept 2 would:

- Maintain one-way operations on N Lynn Street with off-peak parking
- Add a northbound protected cycle track at sidewalk level to N Lynn Street
- Add protected bike lanes to N Lynn Street northbound, Wilson Boulevard westbound, and Wilson Boulevard eastbound (between N Lynn Street and Arlington Ridge Road)
- Convert Fort Myer Drive to two-way operations (between Fairfax Drive and eastbound Lee Highway)
- Remove the Fort Myer Drive tunnel
- Add a signalized mid-block crosswalk on Fort Myer Drive
- Add a southbound protected cycle track at sidewalk level to Fort Myer Drive (connects to Meade Street Bridge)
- Remove the Dark Star Park slip lane and adjust the intersection
- Remove 17th Street N access to N Lynn Street
- Add a protected bike lane on 19th Street N eastbound (between Fort Myer Drive and N Lynn Street) and a bike lane on 19th Street N (between N Lynn Street and Arlington Ridge Road)
- Adjust the intersection of Meade Street and the US Route 50 on-ramps

Figure 17 shows the peak hour demand by link for the AM and PM time periods. Compared with the 2030 Baseline, Concept 2 generally increases the demand for vehicular traffic on Fort Myer.

Figures showing the peak hour traffic volumes at specific study area intersections are provided in Appendix A.
Figure 17: Concept 2 Peak Hour Traffic Demand
Figure 18 and Figure 19 show vehicular average travel speeds along the five critical segments in the Core of Rosslyn Transportation Study area during the AM and PM peak periods, respectively.

During the AM peak period, compared with the 2030 Baseline, Concept 2 introduced new congestion hot spots along Fort Myer Drive at Wilson Boulevard and at the Arlington Boulevard ramps. The greatest increase in travel times occurred southbound from Georgetown to westbound US Route 50 (increase of three minutes from 2030 Baseline).

During the PM peak period, new congestion hot spots were also introduced at along Fort Myer Drive at Wilson Boulevard, as a result of the removal of the Fort Myer Drive Tunnel and subsequent creation of an at-grade intersection, and at the Arlington Boulevard ramps. The greatest increases in travel times occurred along N Lynn Street northbound from US Route 50 to Georgetown (increase of two minutes). Other travel times under 2030 Concept 2 were approximately within one minute of the 2030 Baseline.
Figure 18: Concept 2 Vehicular Traffic Flow – AM Peak Period

2030 Baseline

2030 Concept 2

Legend

- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Average Travel Speed

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Change from existing conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>-</td>
</tr>
<tr>
<td>5 to 10</td>
<td>+</td>
</tr>
<tr>
<td>10 to 15</td>
<td>+</td>
</tr>
<tr>
<td>15 to 20</td>
<td>+</td>
</tr>
<tr>
<td>20 to 25</td>
<td>+</td>
</tr>
<tr>
<td>25 to 30</td>
<td>+</td>
</tr>
<tr>
<td>30 to 40</td>
<td>+</td>
</tr>
<tr>
<td>40 to 50</td>
<td>+</td>
</tr>
<tr>
<td>50 to 60</td>
<td>+</td>
</tr>
<tr>
<td>Greater than 60</td>
<td>+</td>
</tr>
</tbody>
</table>

Travel time differences reference change from existing conditions.
Figure 19: Concept 2 Vehicular Traffic Flow – PM Peak Period

2030 Baseline

2030 Concept 2

Legend
- Core Street Reconfiguration Area
- Rosslyn Metro Rail Station
- Metro Rail Entrances
- Trail Network

Average Travel Speed
- Less than 5 mph
- 5 to 10 mph
- 10 to 15 mph
- 15 to 20 mph
- 20 to 25 mph
- 25 to 30 mph
- 30 to 40 mph
- 40 to 50 mph
- 50 to 60 mph
- Greater than 60 mph

Travel Time Differences (reference change from existing conditions)
Future Conditions Vehicle Measures

A summary of future conditions vehicle measures is provided in Table 6. The study team applied a VISSIM model for microsimulation analysis to evaluate traffic delay and maximum queue length for the 2030 Baseline and the concept scenarios. For full detail on the traffic modeling methodology and tools, see the Core of Rosslyn Transportation Study Existing Conditions Report, Appendix B: Forecasting and Traffic Operations Analysis Framework Document.

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>Concept 1</th>
<th>Concept 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queues(^8) at Critical Intersections Approaches</td>
<td>Number of critical intersection approaches with queues that exceed available block length during peak hours</td>
<td>AM: 17 out of 18 approaches PM: 16 out of 18 approaches</td>
<td>AM: 16 out of 18 approaches PM: 15 out of 18 approaches</td>
<td>AM: 15 out of 18 approaches PM: 15 out of 18 approaches</td>
</tr>
<tr>
<td>Overall Vehicle Delay(^9) at Intersections</td>
<td>Number of intersections operating with significant overall delay (LOS F) during peak hours (VISSIM analysis area)</td>
<td>8 out of 43 intersections during the AM and/or PM peak hours</td>
<td>17 out of 43 intersections during the AM and/or PM peak hours</td>
<td>12 out of 43 intersections during the AM and/or PM peak hours</td>
</tr>
<tr>
<td>Peak Period Travel Speed(^10)</td>
<td>Average network peak period speed</td>
<td>AM: 9 MPH PM: 9 MPH</td>
<td>AM: 7 MPH PM: 7 MPH</td>
<td>AM: 8 MPH PM: 7 MPH</td>
</tr>
</tbody>
</table>

---

\(^8\) Source: Study VISSIM model
\(^9\) Source: Study VISSIM model
\(^10\) Source: Study VISSIM model
5.5 Parking and Curbspace Network

Rosslyn’s competing curbspace demands include on-street parking, carshare parking, bus stops, bikeshare stations, loading zones, taxi stands, bus parking, and pick-up and drop-off of Transportation Network Companies (e.g. Uber and Lyft). Balancing curbside needs and maximizing usage is critical to enhance multimodal access and operations.

2030 Baseline

The 2030 Baseline scenario parking and curbspace assumptions are very similar to existing conditions, except for changes to the curbspace associated with approved development projects. The 2030 Baseline network has approximately 98 on-street parking spaces within the Core Street Reconfiguration Area. On-street parking is primarily concentrated on the north-south streets, especially on N Lynn Street. Other primary curbspace uses include:

- Curb ramps
- Driveways
- No parking zones
- Multimodal curbspace
  - Freight loading zones
  - Bus loading and unloading
  - Carshare
  - Bikeshare
  - Bike lanes buffered by parking

2030 Concept 1

2030 Concept 1 removes on-street parking, primarily along the east side of Fort Myer Drive and the west side of N Lynn Street, to allow for the two-way conversion of the streets. In other locations, some additional street parking is added. Much of the on-street parking serves to create protected bicycle facilities. The design results in an overall loss of two-spaces, keeping the parking conditions close to that of the 2030 Baseline scenario. Bus stops for transfers to and from the Metrorail station are unchanged and remain on the west side of N. Moore Street.

2030 Concept 2

Concept 2 adds additional on-street parking spaces along Fort Myer Drive, N Moore Street, and portions of N Lynn Street. Parking spaces on the east side of Lynn Street and the west side of Fort Myer Drive are off-peak parking spaces only (i.e., no parking during rush hour periods to accommodate higher traffic volumes). Much of the on-street parking serves to create protected bicycle facilities. Bus stops for transfers to and from the Metrorail station are unchanged and remain on the west side of N. Moore Street.
Parking and Curbspace Conditions
The 2030 Baseline scenario and Concept 1 have approximately the same amount of on-street parking spaces. Concept 2 resulted in an increase of 39 additional spaces compared to the 2030 Baseline scenario, including off-peak parking, as shown in Figure 20. Table 7 compares the 2030 Concepts 1 and 2 parking supply to that of the 2030 Baseline scenario.

Demand for curbspace is evolving dramatically due to new transportation options, as such, the study team is not prescribing specific curbspace purposes (parking, taxi stands, bus parking, etc.). The County will revisit curbspace allocation as new transportation projects resulting from this study are implemented.
Figure 20: Future Parking and Curbspace

2030 Baseline

2030 Concept 1

2030 Concept 2

Legend:
- New Street Parking
- Changed Street Parking compared to 2030 Baseline
- Parking spaces on west side of Lyn St and west side of 1st Meridian St are off peak spaces only (no parking during rush hour periods)
### Table 7: Future Conditions Parking and Curbspace Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Concept 1</th>
<th>2030 Concept 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantify of On-Street Parking Supply</td>
<td>Existing number of on-street parking (Core Street Reconfiguration Area)</td>
<td>Approximately 98 on-street parking spaces</td>
<td>Approximately 96 on-street parking spaces</td>
<td>Approximately 137 parking spaces (includes off-peak parking)</td>
</tr>
<tr>
<td></td>
<td>Approximate 98 on-street parking spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantify of New Multimodal Curbspace</td>
<td>Existing Multimodal Curbspace(^{11}) (Core Street Reconfiguration Area)</td>
<td>Approximately 2,240 feet curbspace, or 11% of the total curbspace</td>
<td>Approximately 2,720 feet curbspace, or 14% of the total curbspace</td>
<td>Approximately 2,600 feet curbspace, or 13% of the total curbspace</td>
</tr>
<tr>
<td></td>
<td>Approximate 2,240 feet curbspace, or 11% of the total curbspace</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{11}\) Assumed to include car share, bike share, loading zone, taxi, bus parking areas shown in Existing Conditions.
5.6 Concept Analysis Summary

Figure 21 summarizes the concepts analyzed in the Core Street Reconfiguration Area of Rosslyn. Overall, both concepts show improvement over the 2030 Baseline scenario in the areas of pedestrian and urban design, bicycles, and parking and curbspace management. 2030 Concept 1 showed these multimodal improvements came with significant traffic impacts. 2030 Concept 2 adjusted some of the factors causing congestion (i.e., eliminating the N Lynn Street two-way conversion and refining the intersection design at Wilson Boulevard and Fort Myer Drive without the tunnel) to mitigate the impacts of the multimodal improvements to better balance the performance measures of each mode.

The study team reviewed 2030 Concepts 1 and 2 with stakeholders and the public. Based on feedback and responses, the County refined Concept 2 to arrive at the 2030 Preferred Alternative, discussed in Section 6.
### Figure 21: 2030 Concepts 1 and 2 Performance Summary

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>MEASURE</th>
<th>Baseline</th>
<th>2030 CONCEPT 1 IN COMPARISON TO 2030 BASELINE SCENARIO</th>
<th>2030 CONCEPT 2 IN COMPARISON TO 2030 BASELINE SCENARIO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRANSIT</strong></td>
<td>Transit Average Speed - AM</td>
<td>9 MPH</td>
<td>↓ 6 MPH</td>
<td>↑ 8 MPH</td>
</tr>
<tr>
<td></td>
<td>Transit Average Speed - PM</td>
<td>10 MPH</td>
<td>↓ 8 MPH</td>
<td>↑ 8 MPH</td>
</tr>
<tr>
<td><strong>PEDESTRIAN AND URBAN DESIGN</strong></td>
<td>Quantity of Sidewalks in Public Right-of-Way</td>
<td>154,000 sq ft</td>
<td>↑ 179,300 sq ft</td>
<td>↑ 154,000 sq ft</td>
</tr>
<tr>
<td></td>
<td>Number of New or Improved Pedestrian Crossings (Length of Additional Median)</td>
<td>–</td>
<td>↑ 14</td>
<td>↑ 18</td>
</tr>
<tr>
<td></td>
<td>Pedestrian Delay at Critical Intersections - AM (Number of intersections with 40 or more seconds of delay)</td>
<td>3</td>
<td>↑ 6</td>
<td>↑ 4</td>
</tr>
<tr>
<td></td>
<td>Pedestrian Delay at Critical Intersections - PM (Number of intersections with 40 or more seconds of delay)</td>
<td>7</td>
<td></td>
<td>↑ 6</td>
</tr>
<tr>
<td><strong>BICYCLES</strong></td>
<td>Bicycle Network Connections to Local/Regional Trails</td>
<td>5</td>
<td>↑ 5 (improved connections to Custis and M St, Vornado Trails and Key Bridge)</td>
<td>↑ 5 (improved connections to Custis and M St, Vornado Trails and Key Bridge)</td>
</tr>
<tr>
<td></td>
<td>Quantity of New or Improved Protected Bike Facilities</td>
<td>2,200 ft (0.4 miles)</td>
<td>↑ 6,900 ft (1.3 miles)</td>
<td>↑ 9,700 ft (1.8 miles)</td>
</tr>
<tr>
<td></td>
<td>Percentage of Segments with Low-stress Biking Experience (Bike Level of Traffic Stress 1 or 2)</td>
<td>28%</td>
<td>↑ 56%</td>
<td>↑ 62%</td>
</tr>
<tr>
<td></td>
<td>Bicycle Delay at Critical Intersections - AM (Number of intersections with 40 or more seconds of delay)</td>
<td>0</td>
<td>↑ 4</td>
<td>↑ 1</td>
</tr>
<tr>
<td></td>
<td>Bicycle Delay at Critical Intersections - PM (Number of intersections with 40 or more seconds of delay)</td>
<td>2</td>
<td></td>
<td>↑ 3</td>
</tr>
<tr>
<td><strong>VEHICLES</strong></td>
<td>Total Network Queue Length - AM (Number of intersections with queues that exceed block length)</td>
<td>1,205 vehicles (17)</td>
<td>↑ 1,563 vehicles (18)</td>
<td>↑ 1,321 vehicles (15)</td>
</tr>
<tr>
<td></td>
<td>Total Network Queue Length - PM (Number of intersections with queues that exceed block length)</td>
<td>855 vehicles (16)</td>
<td>↑ 1,419 vehicles (15)</td>
<td>↑ 1,185 vehicles (15)</td>
</tr>
<tr>
<td></td>
<td>Overall Vehicle Delay at Intersections (Number of intersections operating with significant overall delay)</td>
<td>8</td>
<td>↑ 17</td>
<td>↑ 12</td>
</tr>
<tr>
<td></td>
<td>Peak Period Travel Speed - AM</td>
<td>9 MPH</td>
<td>↓ 7 MPH</td>
<td>↑ 8 MPH</td>
</tr>
<tr>
<td></td>
<td>Peak Period Travel Speed - PM</td>
<td>9 MPH</td>
<td>↓ 7 MPH</td>
<td>↑ 7 MPH</td>
</tr>
<tr>
<td><strong>PARKING AND CURBSPACE</strong></td>
<td>Quantity of On-Street Parking Supply</td>
<td>98 parking spaces</td>
<td>↑ 96 parking spaces</td>
<td>↑ 137 parking spaces (includes off-peak parking)</td>
</tr>
<tr>
<td></td>
<td>Quantity of New Multimodal Curb Space (includes bus, taxi, bike lanes protected by parking, loading zones, carshare/bikeshare)</td>
<td>11%</td>
<td>↑ 14%</td>
<td>↑ 13%</td>
</tr>
</tbody>
</table>
6. 2030 Preferred Alternative

6.1 Transportation Network

The study team developed the 2030 Preferred Alternative, which further refined 2030 Concept 2, and proposed project implementation phasing. The concept underwent high-level qualitative screening by the study team, as well as review and comment by public agencies. The 2030 Preferred Alternative was presented at a public meeting in June 2019. The study team gathered feedback offered by additional County staff, the Rosslyn BID, stakeholders, and the public.

The 2030 Preferred Alternative assumes completion of the proposed projects identified in the 2030 Baseline scenario. The study team made refinements based on the public input received on 2030 Concepts 1 and 2 and findings from the 2030 Concepts 1 and 2 analyses. The final version of the 2030 Preferred Alternative is shown in Figure 22 and includes the following key elements:

- N. Lynn Street remains one-way with off-peak parking
- Added northbound protected bicycle facility at sidewalk level on N. Lynn Street
- Added westbound protected bicycle facility and eastbound bicycle lane on Wilson Boulevard
- Converted Fort Myer Drive to two-way operations from Fairfax Drive to Lee Highway eastbound
- Removed Fort Myer Drive tunnel
- Added signalized mid-block crosswalk on Fort Myer Drive
- Added bidirectional protected bicycle facility on Fort Myer Drive, connecting the Key Bridge to Meade Street
- Removed Dark Star Park slip lane and adjusted intersection
- Removed 17th Street N. access to N. Lynn Street
- Adjusted intersection of Meade Street and US-50 on-ramps
- Removed slip lane from N. Nash Street to Fort Myer Drive

A full, detailed summary of findings from the 2030 Preferred Alternative is included in the following sections for the modes of transportation and design categories of Street Network, Transit Network, Pedestrian Network, Bicycle Network, Vehicle Network, and Parking and Curb-space Network.
Figure 22: 2030 Preferred Alternative
7. 2030 Preferred Alternative Conditions

7.1 Transit Network

2030 Baseline

Within the Core Street Reconfiguration Area, there were no changes in the number of bus stops and Capital Bikeshare dock locations. Considering the proposed transit improvements in Arlington County’s Transit Development Plans, the study team incorporated changes to the bus routes into the 2030 Baseline scenario. The study team rerouted bus routes to use the new bus-only Central Place Transit Tunnel between N. Moore Street and N. Lynn Street. The intercity bus connection point remains in the 2030 Baseline scenario.

2030 Preferred Alternative

In the 2030 Preferred Alternative, shown in Figure 23, transit routes do not change from the 2030 Baseline scenario due to the assumption that the Central Place Transit Tunnel remains in operation.
Figure 23: 2030 Preferred Alternative Transit Network

Legend

- Core Street Reconfiguration
- Rosslyn Metro Rail Station
- Metrorail
- Bus Stops
  - Local Bus Stops
  - Commuter Bus Stops
- Northeast Intercity Bus Connections

Bus Routes

- WMATA Metrobus
- ART Bus
- DC Circulator
- Regional Commuter Bus
- Potomac & Rappahannock Transportation Commission (PRTC)
- Loudoun County Transit (LCT)

The following changes from existing are according to the Arlington County Transit Development Plan:

- ART 61A/61B replaced by ART 83
- Metrobus 44 replaced by ART 77
- Metrobus 44 replaced by ART 31
Transit Conditions

The number of bus stop locations does not vary between the 2030 Baseline scenario and the 2030 Preferred Alternative. Bus stops are maintained on N. Moore Street in combination with multimodal street improvements. ART and WMATA will reassess bus stop locations as new transportation projects are phased into the Rosslyn street network.

Traffic modeling and analysis forecast that the Preferred Alternative will result in lower average transit speeds throughout the network as compared to the 2030 Baseline, most significantly in the PM peak period, as shown in Table 8.

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of Bus Stop Locations</td>
<td>Number of existing stops in Core Street Reconfiguration Area</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>
| Transit Average Speed          | Average travel speed for representative bus routes between entry and exit points to the modeled network | AM Peak: 8.9 mph  
PM Peak: 9.7 mph | AM Peak: 7.5 mph  
PM Peak: 8.0 mph |
7.2 Pedestrian Network

2030 Baseline
Streets in Rosslyn currently provide semi-narrow pedestrian facilities with sidewalks along long street blocks, crosswalks at most legs of intersections, and two major mid-block crossings at N. Lynn Street and N. Moore Street.

2030 Preferred Alternative
New or enhanced pedestrian infrastructure in the 2030 Preferred Alternative as compared to the 2030 Baseline is shown in Figure 24. The Preferred Alternative includes the following for the pedestrian network:

- 18 new or improved pedestrian crosswalks (improvements include either shortening crossing distances or adding median refuge islands)
- 8 removed crosswalks, many of which are removed to close and fill in vehicular slip lanes to expand and improve pedestrian space, such as at Dark Star Park and the southwest corner of Fort Myer Drive and N. Nash Street
- Support for the development of the 18th Street Pedestrian Corridor with new mid-block crossing on N. Nash Street and Fort Myer Drive
Figure 24: 2030 Preferred Alternative Pedestrian Network

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network
- Sidewalk
- Preferred Alternative Crosswalks
  - New
  - Improved
  - Remove
  - Existing
Pedestrian Conditions

The 2030 Preferred Alternative results in increased area of sidewalk in the public right-of-way. The 2030 Preferred Alternative includes crossing improvements such as shortened crossing distances, removed slip lanes, or added pedestrian refuge islands and contributes positively to the development of the 18th Street Pedestrian Corridor by adding new mid-block crossings (see Table 9).

Table 9: Future Conditions Pedestrian Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Experience and Comfort</td>
<td>Area of sidewalk in the public right-of-way (Core Street Reconfiguration Area)</td>
<td>154,900 square feet</td>
<td>182,200 square feet</td>
</tr>
<tr>
<td>Quantity of Enhanced Crosswalks</td>
<td>The number of new or enhanced pedestrian crossings provided</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Pedestrian Delay(^{12}) at Critical Intersections</td>
<td>Number of intersections with 40 or more seconds of pedestrian delay (LOS E or F)</td>
<td>AM: 3 out of 13 intersections PM: 7 out of 13 intersections</td>
<td>AM Peak: 3 out of 13 intersections PM Peak: 5 out of 13 intersections</td>
</tr>
</tbody>
</table>

\(^{12}\) Source: Study VISSIM model. The study VISSIM model was used to simulate pedestrian crossings at study area intersections. The average pedestrian delay waiting to cross an intersection can be related to a level of service threshold based on the methodology of the 2000 Edition of the Highway Capacity Manual (HCM 2000). This threshold indicates the likelihood of a pedestrian not complying with the “WALK” and “DON’T WALK” traffic indications based on the amount of time that they are delayed in crossing the intersection.
7.3 Bicycle Network

2030 Baseline
In the 2030 Baseline Scenario, four segments of bike lanes along Fort Myer Drive, 19th Street N, N. Nash Street, and Key Boulevard are included based on programmed development projects. Improvements to the Lynn Street Esplanade and Custis Trail also are included.

2030 Preferred Alternative
The bicycle network in the 2030 Preferred Alternative includes bicycle facilities on Fort Myer Drive and N. Lynn Street that are off-street, protected, and at the sidewalk level. The Fort Myer Drive facility is proposed to be two-way, while the N. Lynn Street facility is proposed to be one-way northbound—both of which would be between the street and the sidewalk and surrounded on both sides by street trees.

**Figure 25** compares the on-street bicycle facilities, bicycle level of stress (BLTS), and Capital Bikeshare locations around the study area between the 2030 Baseline scenario and the 2030 Preferred Alternative.
Figure 25: 2030 Preferred Alternative Bicycle Network

Legend
- Core Street Reconfiguration
- Rosslyn Metrorail Station
- Capital Bikeshare Stations
- Potential Bike Box
- Trail Network
- Bike Facility (Bike lane, buffered or protected bike lane, sharrows)
- Street with no bike facility

Bicycle Level of Traffic Stress
- 1 - Most Comfortable
- 2
- 3
- 4 - Most Uncomfortable

LTS guidance uses prevailing speeds. This analysis used existing posted speed limits.
Bicycle Conditions

The 2030 Preferred Alternative increases the amount of protected or buffered bike lanes compared to the 2030 Baseline, adding approximately 1.7 miles. These additional facilities increase the comfort level of biking in the study area, as measured by BLTS. In the 2030 Preferred Alternative, there is a 35 percent increase in the quantity of “low stress”—or BLTS 1 and 2—street segments compared to the 2030 Baseline. The 2030 Preferred Alternative also has the potential to add additional bike boxes at intersections, which provide cyclists with a safe and visible way to get ahead of traffic during a red signal (see Table 10).

Table 10: Future Conditions Bicycle Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>Concept 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Network Connections to Local/Regional Trails</td>
<td>Number of connection points in the modeling context area to major trails (Custis Trail, Mount Vernon Trail, and Arlington Boulevard Trail)</td>
<td>5 – N. Scott Street, N. Lynn Street, N. Meade Street, Arlington Boulevard, and Arlington Ridge Road bike lanes</td>
<td>5 – N. Scott Street, N. Lynn Street, N. Meade Street, Arlington Boulevard, and Arlington Ridge Road bike lanes (improved connections to Custis and Mt. Vernon Trails and Key Bridge)</td>
</tr>
</tbody>
</table>
| Quantity of New or Improved Dedicated Bicycle Facilities | Existing bicycle level of traffic stress segments (Core Street Reconfiguration Area) | Distributions of level of stress by directional street centerline mileage: | • BLTS 1: 12%  
• BLTS 2: 16%  
• BLTS 3: 71%  
• BLTS 4: 1% | • BLTS 1: 61%  
• BLTS 2: 3%  
• BLTS 3: 37%  
• BLTS 4: 0% |
| Bicycle Delay at Critical Intersections | Number of critical intersections with 40 or more seconds of bicycle delay (LOS E or F) | AM: 0 out of 13 intersections  
PM: 2 out of 13 intersections | AM: 2 out of 13 intersections  
PM: 0 out of 13 intersections |

13 Source: Study VISSIM model. The study VISSIM model was used to simulate bicycle movements along study area streets. The average bicycle delay at each critical intersection was collected as shown below. HCM 2000 provides a methodology for relating bicycle delays at signalized intersections to level of service.
7.4 Vehicle Network
The 2030 Preferred Alternative includes converting Fort Myer Drive to two-way operations and maintains one-way operations on N. Lynn Street and N. Moore Street. Additional key elements of the 2030 Preferred Alternative include:

- N. Lynn Street remains one-way with off-peak parking
- Added northbound protected bicycle facility at sidewalk level on N. Lynn Street
- Added westbound protected bicycle facility and eastbound bicycle lane on Wilson Boulevard
- Converted Fort Myer Drive to two-way operations from Fairfax Drive to Lee Highway eastbound
- Removed Fort Myer Drive tunnel
- Added signalized mid-block crosswalk on Fort Myer Drive
- Added bidirectional protected bicycle facility on Fort Myer Drive, connecting the Key Bridge to Meade Street
- Removed Dark Star Park slip lane and adjusted intersection
- Removed 17th Street N. access to N. Lynn Street
- Adjusted intersection of Meade Street and US-50 on-ramps
- Removed slip lane from N. Nash Street to Fort Myer Drive

Preferred Alternative Traffic Volumes
Using the 2030 Baseline volumes as a starting point, the study team distributed future volumes throughout the roadway network in accordance with the Preferred Alternative street adjustments. Figure 26 shows the peak hour demand by link for the AM and PM time periods. Compared with the 2030 Baseline, the 2030 Preferred Alternative generally increases the volume of vehicular traffic on Fort Myer Drive and Wilson Boulevard. Having a northbound lane on Fort Myer Drive allows for better internal circulation in the Rosslyn Core.

During the AM peak period, the greatest traffic demand occurs along N. Lynn Street, Wilson Boulevard eastbound, and Lee Highway eastbound. During the PM peak period, the greatest traffic demand occurs along N. Lynn Street, Fort Myer Drive southbound, and Lee Highway eastbound. Additionally, the study team modeled peak period traffic counts at intersections, both signalized and unsignalized, in the Rosslyn study area.
Figure 26: Preferred Alternative Peak Hour Traffic Demand

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Traffic Demand
Peak Hour Volumes
- 0 - 250
- 250 - 500
- 500 - 750
- 750 - 1000
- 1000 - 1250
- 1250+
2030 Preferred Alternative Vehicle Traffic Operations Analysis

Using the study VISSIM model, the study team modeled average travel speed for the AM and PM peak periods along six critical segments in the Core of Rosslyn Transportation Study area:

- Northbound N. Lynn Street (Arlington Boulevard to George Washington Memorial Parkway)
- Southbound Fort Myer Drive (George Washington Memorial Parkway to Arlington Boulevard)
- Eastbound Clarendon Boulevard (N. Rhodes Street to N. Arlington Ridge Road)
- Westbound Wilson Boulevard (N. Arlington Ridge Road to N. Oak Street)
- Eastbound 19th Street N. (Key Boulevard to N. Kent Street)

Figure 27 and Figure 28 show vehicular average travel speeds along these corridors during the AM and PM peak periods, respectively.

During the AM peak period, compared with the 2030 Baseline, the 2030 Preferred Alternative introduced new congestion hot spots along Fort Myer Drive at the intersections of Wilson Boulevard and Fairfax Drive. The greatest increase in travel times occurred southbound from Georgetown to westbound US Route 50 (increase of four minutes from the 2030 Baseline) and eastbound from N. Rhodes Street to N. Arlington Ridge Road (increase of three minutes from the 2030 Baseline).

During the PM peak period, new congestion hot spots were introduced on Fort Myer Drive at the intersections of Wilson Boulevard and Fairfax Drive. The greatest increases in travel times occurred southbound from Georgetown to westbound Route 50 (increase of two minutes from the 2030 Baseline). Other travel times were approximately within one minute of the 2030 Baseline conditions. I-66 eastbound is congested between N. Lynn Street and DC, forecast to operate at 40 percent of posted speed. A summary of future conditions vehicle measures is provided in Vehicle Conditions.

In general, the impact of the 2030 Preferred Alternative street reconfiguration on the major regional roadways is consistent with that observed due to the volume growth of the baseline conditions. The proposed changes to the transportation network and signal operations from Concept 2 generally have a positive impact to the multimodal operations in the Core of Rosslyn except for locations where trade-offs were made with the vehicle network for improved bus access or pedestrian and bicyclist safety. At an overall network level, the 2030 Preferred Alternative has similar levels of traffic throughput, but higher vehicular delays compared to baseline conditions while providing safer facilities for bicyclists and pedestrians and better access for vehicular traffic. It also has greater throughput and less delays compared to Concept 2 due to improved signal timing.

Table 11.
Figure 27: Preferred Alternative Vehicular Traffic Flow – AM
Figure 28: Preferred Alternative Vehicular Traffic Flow – PM

Legend
- Core Street Reconfiguration Area
- Rosslyn Metrorail Station
- Metrorail Entrances
- Trail Network

Average Travel Speed
- Less than 5 mph
- 5 to 10 mph
- 10 to 15 mph
- 15 to 20 mph
- 20 to 25 mph
- 25 to 30 mph
- 30 to 40 mph
- 40 to 50 mph
- 50 to 60 mph
- Greater than 60 mph

Travel time differences:
- Reference change from existing conditions
- Change from 2030 Baseline Scenario

Congestion Hot Spots
Study Area Speed Limits
- 25 Rosslyn Core Streets
- 30 Lee Highway
- 45 Arlington Boulevard
- 66 I-66
Vehicle Conditions

In general, the impact of the 2030 Preferred Alternative street reconfiguration on the major regional roadways is consistent with that observed due to the volume growth of the baseline conditions. The proposed changes to the transportation network and signal operations from Concept 2 generally have a positive impact to the multimodal operations in the Core of Rosslyn except for locations where trade-offs were made with the vehicle network for improved bus access or pedestrian and bicyclist safety. At an overall network level, the 2030 Preferred Alternative has similar levels of traffic throughput, but higher vehicular delays compared to baseline conditions while providing safer facilities for bicyclists and pedestrians and better access for vehicular traffic. It also has greater throughput and less delays compared to Concept 2 due to improved signal timing.

Table 11: Future Conditions Vehicle Measures

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>2030 Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queues(^{14}) at Critical Intersections Approaches</td>
<td>Number of critical intersection approaches with queues that exceed available block length during peak hours</td>
<td>AM: 17 out of 18 approaches PM: 16 out of 18 approaches</td>
<td>AM: 14 out of 18 approaches PM: 16 out of 18 approaches</td>
</tr>
<tr>
<td>Overall Vehicle Delay(^{15}) at Intersections</td>
<td>Number of intersections operating with significant overall delay (LOS F) during peak hours (VISSIM analysis area)</td>
<td>8 out of 43 intersections during the AM and/or PM peak hours</td>
<td>10 out of 43 intersections during the AM and/or PM peak hours</td>
</tr>
<tr>
<td>Peak Period Travel Time/Speed(^{16})</td>
<td>Number of critical segments with travel speeds less than 50 percent of posted speed limit during peak hours</td>
<td>AM: 5 out of 6 critical segments PM: 5 out of 6 critical segments</td>
<td>AM: 6 out of 7 critical segments PM: 7 out of 7 critical segments</td>
</tr>
</tbody>
</table>

\(^{14}\) Source: Study VISSIM model  
\(^{15}\) Source: Study VISSIM model  
\(^{16}\) Source: Study VISSIM model
7.5 Parking and Curbspace Network

2030 Baseline
The 2030 Baseline scenario parking and curbspace assumptions are very similar to existing conditions, except for changes to the curbspace associated with approved development projects. The 2030 Baseline network has approximately 98 on-street parking spaces within the Core Street Reconfiguration Area. On-street parking is primarily concentrated on the north-south streets, especially on N. Lynn Street. Other primary curbspace uses include:

- Curb ramps
- Driveways
- No parking zones
- Multimodal curbspace
  - Freight loading zones
  - Bus loading and unloading
  - Carshare
  - Bikeshare
  - Bike lanes buffered by parking

2030 Preferred Alternative
The 2030 Preferred Alternative adds additional on-street parking spaces along Fort Myer Drive, N. Moore Street, and portions of N. Lynn Street. Parking spaces on east side of N. Lynn Street and west side of Fort Myer Drive are off-peak spaces only that prohibit parking during morning and evening rush hour periods to provide additional travel lanes. In some locations, space currently allocated to on-street parking is repurposed and offset from the curb to create dedicated, parking-protected bicycle facilities. Bus stops for transfers to and from the Metrorail station are unchanged and remain on the west side of N. Moore Street.

Parking and Curbspace Conditions
The 2030 Preferred Alternative resulted in an increase of 64 additional spaces compared to the 2030 Baseline scenario, including off-peak parking, as shown in Figure 29. Table 12 compares the 2030 Preferred Alternative parking supply to that of the 2030 Baseline.

Demand for curbspace is evolving dramatically due to new transportation options and, as such, the study team is not prescribing specific curbspace purposes (parking, taxi stands, bus parking, etc.). The County will revisit curbspace allocation as new transportation projects resulting from this study are implemented.
Figure 29: 2030 Preferred Alternative Parking and Curbspace

LEGEND
- CLAY RD/ROSSLYN BURG (SUBWAY)
- CURRENT SUBWAY
- PROPOSED SUBWAY
- EXISTING DEVELOPMENT/PROJECTS
- TRAFFIC SIGNAL
- ON-PARK CYCLE TRACK
- TWO-WAY CYCLE TRACK
- BIKE LANE
- BIKE LANE BLASTED DOUBLE LANE
- PARKING LANE
- OFF-PARKING LANE
- BUS LANE
- METRO STATION
- BUS STOP
- STREET PARKING REMOVED
- NEW STREET PARKING
- UNCHANGED STREET PARKING COMPARED TO 2030 BASELINE

Parking spaces on east side of Lynn St and west side of Fort Myer Dr are off-peak spaces only (no parking during rush hour periods).
<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Evaluation Metric</th>
<th>2030 Baseline</th>
<th>Concept 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantify of On-Street Parking Supply</td>
<td>Existing number of on-street parking (Core Street Reconfiguration Area)</td>
<td>Approximately 98 on-street parking spaces</td>
<td>Approximately 162 on-street parking spaces (includes off-peak parking)</td>
</tr>
<tr>
<td>Quantity of New Multimodal Curbspace</td>
<td>Existing Multimodal Curbspace\textsuperscript{17} (Core Street Reconfiguration Area)</td>
<td>Approximately 2,240 feet of multimodal curbspace, or 11% of the total curbspace</td>
<td>Approximately 2,900 feet multimodal curbspace, or 15% of the total curbspace</td>
</tr>
</tbody>
</table>

\textsuperscript{17} Assumed to include car share, bike share, loading zone, taxi, bus parking areas shown in Existing Conditions.
7.6 2030 Preferred Alternative Summary

A summary of findings for the 2030 Preferred Alternative is shown in Table 13. Overall, the 2030 Preferred Alternative shows improvement over the 2030 Baseline scenario in the areas of pedestrian and urban design, bicycles, and parking and curbspace management by applying lessons learned and public input from 2030 Concepts 1 and 2 to better balance multimodal operations.
### Table 13: 2030 Preferred Alternative Multimodal Measures of Effectiveness Summary

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>MEASURE</th>
<th>Baseline</th>
<th>2030 PREFERRED ALTERNATIVE IN COMPARISON TO 2030 BASELINE SCENARIO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRANSIT</strong></td>
<td>Peak Period Average Transit Speed - AM</td>
<td>9 MPH</td>
<td>8 MPH</td>
</tr>
<tr>
<td></td>
<td>Peak Period Average Transit Speed - PM</td>
<td>10 MPH</td>
<td>8 MPH</td>
</tr>
<tr>
<td><strong>PEDESTRIAN AND URBAN DESIGN</strong></td>
<td>Quantity of Sidewalks in Public Right-of-Way</td>
<td>154,000 sq ft</td>
<td>182,245 sq ft</td>
</tr>
<tr>
<td></td>
<td>Number of New or Improved Pedestrian Crossings (Shortened or Added Median)</td>
<td>~</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Pedestrian Delay at Critical Intersections - AM (Number of intersections with &gt;0 or more seconds of delay)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pedestrian Delay at Critical Intersections - PM (Number of intersections with &gt;0 or more seconds of delay)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td><strong>BICYCLES</strong></td>
<td>Bicycle Network Connections to Local/Regional Trails</td>
<td>5</td>
<td>5 (Improved connections to Custis and Nl, Vernon Trails and Key Bridge)</td>
</tr>
<tr>
<td></td>
<td>Quantity of New or Improved Protected Bike Facilities</td>
<td>2,205 ft (6.4 miles)</td>
<td>11,400 ft (3.1 miles)</td>
</tr>
<tr>
<td></td>
<td>Percentage of Segments with ‘Low stress’ Biking Experience (Bike Level of Traffic Stress 1 or 2)</td>
<td>28%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Bicycle Delay at Critical Intersections - AM (Number of intersections with &gt;0 or more seconds of delay)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bicycle Delay at Critical Intersections - PM (Number of intersections with &gt;0 or more seconds of delay)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>VEHICLES</strong></td>
<td>Total Network Queue Length – AM (Number of intersections with queues that exceed block length)</td>
<td>1,206 vehicles (17)</td>
<td>1,209 vehicles (14)</td>
</tr>
<tr>
<td></td>
<td>Total Network Queue Length – PM (Number of intersections with queues that exceed block length)</td>
<td>855 vehicles (16)</td>
<td>1,515 vehicles (16)</td>
</tr>
<tr>
<td></td>
<td>Overall Vehicle Delay at Intersections (Number of intersections operating with significant overall delay)</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Peak Period Average Travel Speed - AM</td>
<td>9 MPH</td>
<td>8 MPH</td>
</tr>
<tr>
<td></td>
<td>Peak Period Average Travel Speed - PM</td>
<td>9 MPH</td>
<td>7 MPH</td>
</tr>
<tr>
<td><strong>PARKING AND CURBSPACE</strong></td>
<td>Quantity of On-Street Parking</td>
<td>96 parking spaces</td>
<td>162 parking spaces (includes off-peak parking)</td>
</tr>
<tr>
<td></td>
<td>Quantity of New Multimodal Curb Space (includes bus, taxi, bike lanes protected by parking, loading zones, carshare/bikeshare)</td>
<td>11%</td>
<td>15%</td>
</tr>
</tbody>
</table>
8. Next Steps
Following the completion of the Core of Rosslyn Transportation Study, the study team will continue to work on progressing project implementation, cost estimates, and phasing. Additional detail on these next steps can be found in the Core of Rosslyn Transportation Study and Implementation Plan Final Report.

8.1 Implementation Projects
With the selection of the 2030 Preferred Alternative for this Core of Rosslyn Transportation Study, the study team examined the findings from the analyses and laid out steps for implementation of specific projects that, over time, will result in realizing the Preferred Alternative. The team also looked ahead and examined additional courses of action to take in the coming years to further realize the vision of the Rosslyn Sector Plan.

Implementing all of the changes from the 2030 Baseline to the 2030 Preferred Alternative shown in the overall concept plan will require a series of street-by-street projects. The Core of Rosslyn Transportation Study and Implementation Plan Final Report summarizes the contingencies associated with the projects, describes the timing and priorities of the projects, and provides detail for projects that require dedicated funding. Each of the projects includes a description, a comparison of the 2030 Baseline and 2030 Preferred Alternative conditions for that project, a summary of probably costs, anticipated timeline, and other project assumptions. A summary of these projects is shown in Figure 30.
8.2 Future Considerations

As the implementation projects move forward into programming, design, and construction, additional efforts will be necessary to further realize the Preferred Alternative, including:

- Transit Stop Assessment
- Curbspace Management
- Hired Ride Services
- Two-Way N. Lynn Street
- Connections to Gateway Park
- Investigation of Rosslyn Bypass Options

Further detail on these considerations can be found in the *Core of Rosslyn Transportation Study and Implementation Plan Final Report*. 