ITEM 7 - Action
February 18, 2015

Review of Comments Received and Approval of Project Submissions for the Air Quality Conformity Assessment for the 2015 Financially Constrained Long Range Transportation Plan (CLRP) and the FY 2015-2020 Transportation Improvement Program (TIP)

Staff Recommendation: Receive briefing on the comments received and recommended responses, and adopt Resolution R14-2015 to approve project submissions for inclusion in the air quality conformity assessment for the 2015 CLRP and FY 2015-2020 TIP.

Issues: None

Background: At the January 21 meeting, the Board was briefed on the major project changes submitted for inclusion in the air quality conformity assessment for the 2015 CLRP and FY 2015-2020 TIP which were released for a 30-day public comment period that ended February 14. The projects were reviewed by the Technical Committee on February 6.

TPB R14-2015
February 18, 2015

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION ON INCLUSION IN AIR QUALITY CONFORMITY ANALYSIS OF SUBMISSIONS FOR THE 2015 FINANCIALLY CONSTRAINED LONG RANGE PLAN (CLRP) AND THE FY 2015-2020 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

WHEREAS, the National Capital Region Transportation Planning Board (TPB), as the metropolitan planning organization for the Washington metropolitan area, has the responsibility under the provisions of Moving Ahead for Progress in the 21st Century (MAP-21) for developing and carrying out a continuing, cooperative and comprehensive transportation planning process for the metropolitan area; and

WHEREAS, the Joint Planning Regulations issued February 14, 2007 by the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) require that the long range transportation plan be reviewed and updated at least every four years; and

WHEREAS, the transportation plan, program and projects must be assessed for air quality conformity as required by the conformity regulations originally published by the Environmental Protection Agency in the November 24, 1993 Federal Register and with latest amendments published in the Federal Register on July 1, 2004; and

WHEREAS, on October 15, 2014 the TPB adopted resolution R5-2015 determining that the 2014 CLRP and the FY 2015-2020 TIP conform with the requirements of the Clean Air Act Amendments of 1990 and resolution R6-2015 approving the 2014 CLRP; and

WHEREAS, the transportation implementing agencies in the region have provided submissions for the 2015 CLRP and the FY 2015-2020 TIP, which are in response to the November 2014 Call for Projects document issued by the TPB, and the Technical Committee has reviewed these submissions at its meetings on January 9 and February 6, 2015; and

WHEREAS, at the TPB Citizens Advisory Committee meeting on January 15, the submissions for the 2015 CLRP were released for a 30-day public comment and interagency consultation period which ended February 14; and

WHEREAS, at the February 18, 2015 meeting, the TPB was briefed on the project submissions for the 2015 CLRP, the public comments received on the submissions, and the recommended responses to the public comments; and

WHEREAS, the 2015 CLRP is scheduled to be released for public comment on September 10, 2015 and approved by the TPB at its October 21, 2015 meeting; and

WHEREAS, the submissions have been developed to meet the financial plan requirements in the Metropolitan Planning Rules and show the consistency of the proposed projects with already available and projected sources of transportation revenues; and

NOW, THEREFORE, BE IT RESOLVED THAT the National Capital Region Transportation Planning Board approves for inclusion in the air quality conformity analysis of the 2015 CLRP and the FY 2015-2020 TIP, the project submissions as described in the attached memorandum.

MEMORANDUM

February 12, 2015

To: Transportation Planning Board

From: Kanti Srikanth
Director, Department of Transportation Planning

Re: Additions and Changes to Projects Proposed for Inclusion in the 2015 Financially Constrained Long-Range Transportation Plan (CLRP)

The project submissions for inclusion in the Air Quality Conformity Analysis of the 2015 Update to the CLRP were released for on January 15 for a 30 day public comment period. A summary of the major new projects or changes to existing major projects included in the project submissions was presented to the Board at its January 21, 2015 meeting. Members of the Board asked for details, clarifications and some changes to the some of the project documentation during the meeting. Additionally public comments were also received seeking clarifications and details on some of the project submissions. Based on questions and comments received during the public comment and interagency consultation period, TPB staff has worked with the implementing agencies to provide some additional or updated project information.

The public comment period ends on February 14, 2015 The TPB will be asked to approve the project submissions at the February 18th meeting.

Changes made to and additional details provided for some of the projects, since the start of the public comment period, used as inputs to the regional air quality conformity analysis are summarized in Table 1. All changes and/or additional details provided for these projects are reflected in the updated CLRP project description forms under attachment A. The summary of major additions and changes for the 2015 CLRP presented to the Board in January has been updated to reflect the changes and additions made and shown as Exhibit 1.

<u>The following highlights the changes in the project summaries of Exhibit 1 and the project description forms in attachment A.</u>

In **Virginia**, for the I-66 Multimodal Improvements inside the Beltway project, the cost for this project has been updated since the beginning of the public comment period from between $75 and $100 million to $350 million. The project description has also been revised to provide

more information on multi-modal aspects of the project, including bicycle and pedestrian components and transit service enhancements.

For the I-66 outside the Beltway project the description form has been revised to include a table and schematics of transit service assumptions, and transit and transportation demand management definitions for the project.

The letter from VDOT accompanying the I-66 projects has also been included with the original executive summary attachments.

TABLE 1
CHANGES SINCE THE BEGINNING OF THE PUBLIC COMMENT PERIOD

2015 CLRP and FY2015-2020 TIP AIR QUALITY CONFORMITY INPUTS

HIGHWAY PROJECTS:

							Facility		Lanes		
ConlD	Project ID	Agency ID	Improvement	Facility	From	To	Fr	To	Fr	To	Completion Date
789			Construct/Widen	I 66 Eastbound	Washington Blvd. Off-Ramp	***North*** Fairfax Drive	1	1	2	3	2040
759		Alt A	Revise Operations	I-66 Express Lanes Interchange Ramps	EB off-ramp, WB on-ramp to/from I-66 Express lanes ***BUS /HOV-3/HOT ONLY***	@ Vaden Drive / Vienna Metro Station	1	1	Bus Only Operations ***from existing HOV Lanes***	***Bus / HOV-3 / HOT from proposed Express Lanes***	2022
760		Alt B	Revise Operations	I-66 Express Lanes Interchange Ramps	EB off-ramp, WB on-ramp to/from I-66 Express lanes ***BUS ONLY***	@ Vaden Drive / Vienna Metro Station	1	1	Bus Only Operations ***from existing HOV Lanes***	***Bus ~~HOV-3/HOT~~ Only Operations from proposed Express Lanes***	2022
310	VP6EAA		Widen~~/Upgrade~~	VA 28 PPTA Phase II	I 66	US 50	***5*** ~~1~~	***5*** ~~1~~	6	8	2025
310	VP6EBB		Widen~~/Upgrade~~	VA 28 PPTA Phase II	US 50	Sterling Blvd.	***5*** ~~1~~	***5*** ~~1~~	6	8	***2016*** ~~2025~~
310	VP6ECC		Widen~~/Upgrade~~	VA 28 PPTA Phase II	Sterling Blvd.	VA 7	***5*** ~~1~~	***5*** ~~1~~	6	8	2025

NOTE: Shaded cells show changes since the beginning of the public comment period.

TABLE 1
CHANGES SINCE THE BEGINNING OF THE PUBLIC COMMENT PERIOD

2015 CLRP and FY2015-2020 TIP AIR QUALITY CONFORMITY INPUTS

TRANSIT PROJECTS:

Improvement	Facility	From	To			Complete
Construct	Benning Road Streetcar	Oklahoma Avenue NE	45th Street/Benning Road Metro			***2020*** ~~***2016***~~
Construct	Anacostia Streetcar Extension	Howard Road Firth Sterling	Good Hope Road SE			***2017*** ~~***2016***~~
Construct	DC Streetcar - Anacostia Initial Line (AIL)	Defense Blvd. and S. Capitol St. SE	Howard Rd. and Firth Sterling			***2017*** ~~***2015***~~
Implement ~~Study~~	DC Circulator Expansion	***Union Station to Georgetown Route*** ~~Phase I TDP Routes Wisconsin/Woodley~~	***Extension to*** National Cathedral			2017 ~~Not Coded~~
Implement ~~Study~~	DC Circulator Expansion	***Union Station to Navy Yard Route*** ~~Phase I TDP Routes Navy Yard/ M Street SE~~	***Extension to*** Waterfront ~~/ Maine Ave. SW~~			2017 ~~Not Coded~~
Implement	***DC Circulator Expansion***	***Rosslyn to Dupont Circle Route***	***Extension to U St./ Howard University***			***2017***
Implement	I-66 Corridor Enhanced Bus Service ***(details shown with project description sheet)***	Inside the beltway				***2025*** ~~***2017***~~
Implement	***I-66 Corridor Enhanced Bus Service (details shown with project description sheet)***	***Inside the beltway***				***2040***
Implement	I-66 Corridor Enhanced Bus Service ***(details shown with project description sheet)***	Outside the beltway				2022
Implement	***I-66 Corridor Enhanced Bus Service***	***Outside the beltway***				***2040***
Construct	***I-66 Corridor Park and Ride lot***	***US 15 in Haymarket***				***2022***
Construct	***I-66 Corridor Park and Ride lot***	***University Blvd. in Gainesville***				***2022***
Construct	***I-66 Corridor Park and Ride lot***	***Balls Ford Road in Manassas***				***2022***
Expand	***I-66 Corridor Park and Ride lot***	***Prince William Parkway***				***2022***
Expand	***I-66 Corridor Park and Ride lot***	***Stringfellow Road***				***2022***
Expand	***I-66 Corridor Park and Ride lot***	***Monument Drive***				***2022***

NOTE: Shaded cells show changes since the beginning of the public comment period.

Exhibit 1: Summary of Major Additions and Changes for the 2015 Financially Constrained Long-Range Transportation Plan

District of Columbia

Dedicated Bike Lanes, Citywide

Length: 9 miles
Complete: 2015
Cost: $470,000

The District Department of Transportation (DDOT) proposes to add a series of dedicated bike lane projects that will remove one or more lanes for vehicular traffic on 10 different roadways by reducing lanes as follows:

a. 4th St. SW, M St. to P St.
4 to 2 lanes

b. 6th St. NE, Florida Ave. to K St.
2 to 1 lane

c. 7th St. NW, New York Ave. to N St.
4 to 2 lanes

d. 12th St. NW, Pennsylvania Ave. to Massachusetts Ave.
4 to 3 lanes

e. 14th St. NW, Florida Ave. to Columbia Rd.
4 to 2 lanes

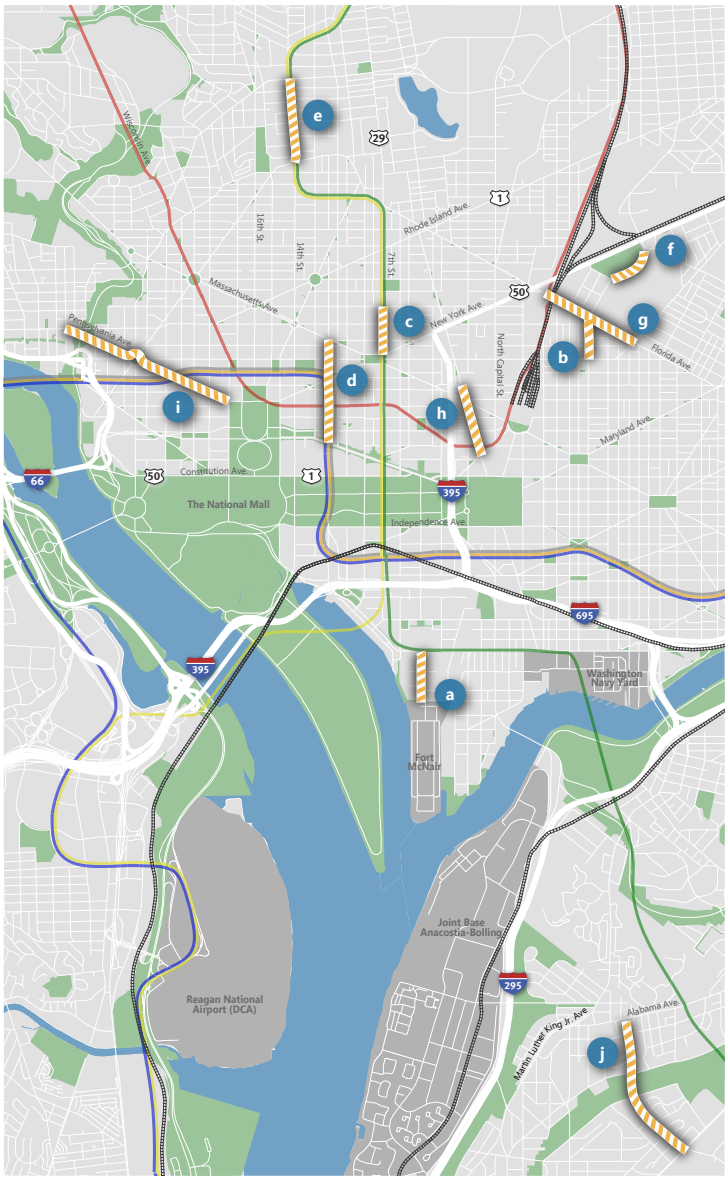
f. Brentwood Pkwy. NE, 6th St./Penn St. to 9th St.
4 to 2 lanes

g. Florida Ave. NE, 2nd St. to West Virginia Ave.
6 to 4 or 5 lanes

h. New Jersey Ave. NW, H St. to Louisiana Ave.
4 to 2 lanes

i. Pennsylvania Ave. NW, 17th St. to 29th St.
4/6 to 2 or 4 lanes

j. Wheeler Rd. SE, Alabama Ave. to Southern Ave.
4 to 2 lanes



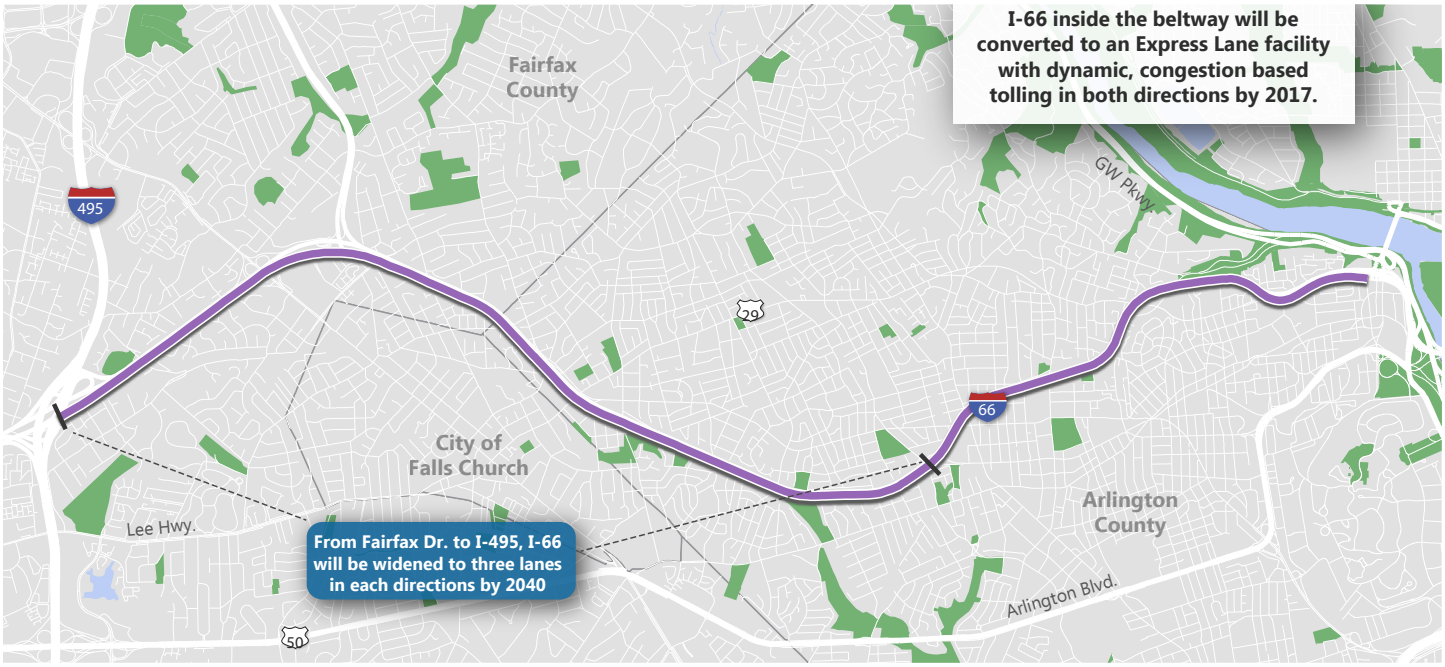
Remove: Benning Road Streetcar Spur

The 2014 Update to the CLRP included the addition of a streetcar spur line running from Benning Rd. along Minnesota Ave. to the Minnesota Ave. Metro Station. This project is being withdrawn from the CLRP.

VIRGINIA

I-66 Multimodal Improvement Project, Inside the Beltway US Route 29 in Rosslyn to I-495

Length: 10 miles
Complete: 2017, 2040
Cost: $350 million



The Virginia Department of Transportation (VDOT) proposes to convert I-66 inside the Capital Beltway into a managed express lanes facility with dynamic, congestion-based tolling for all vehicles with less than three occupants, in both directions during the morning and evening peak periods. VDOT plans to implement this conversion by 2017. VDOT also proposes widening I-66 to 3 lanes in both directions between Fairfax Dr. and I-495 (and from 3 to 4 lanes on eastbound I-66 from the Dulles Toll Road to Washington Blvd.) The widening is projected to be complete by 2040.

VDOT proposes to implement a number of multimodal improvements with this project, including enhanced bus service and completion of elements of the bicycle and pedestrian network around the corridor. Tolls from the managed express lanes will be used to fund further transit enhancements.

The currently approved CLRP includes an assumption that the existing HOV requirement on I-66 inside the Beltway would increase from 2 to 3 occupants in 2020. This proposed project would advance that requirement to 2017 inside the Beltway. The CLRP also currently includes two spot improvement projects that provide additional lanes on westbound I-66 between Westmoreland Dr./Washington Blvd. and Haycock Rd./Dulless Access Highway (complete in 2015), and between Lee Highway/Spout Run and Glebe Rd. (complete in 2020).

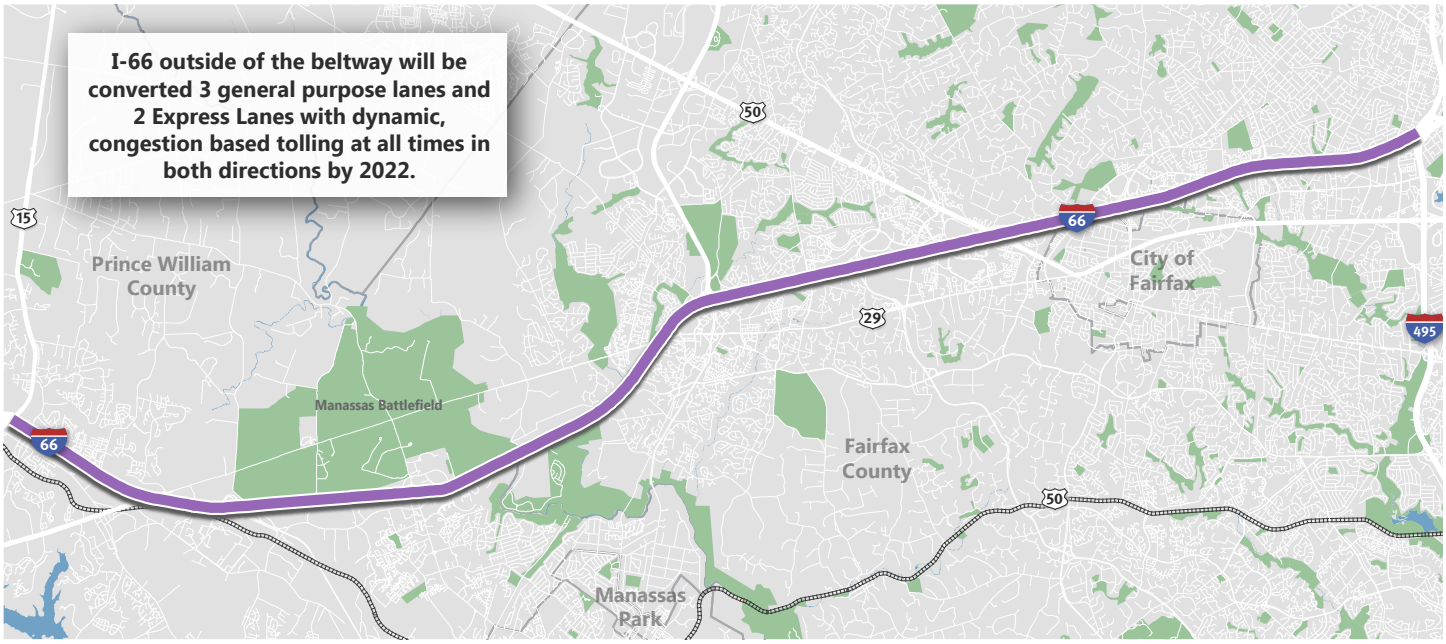
See the CLRP Project Description Form and supplemental materials provided by VDOT in Attachment A for more information.

I-66 Corridor Improvements outside the Capital Beltway
I-495 to US Route 15 in Prince William County

Length: 25 miles

Complete: 2022

Cost: $2-3 billion



VDOT proposes to reconfigure I-66 outside the Capital Beltway to have two managed express lanes and three general purpose lanes in each direction. Please see the 2015 CLRP Air Quality Conformity Inputs table for further details on lane configurations. The managed express lanes would use dynamic, congestion-based tolling for vehicles with less than 3 occupants at all times to maintain free-flow conditions.

VDOT has proposed two alternative sets of access and egress points between the express lanes and the general purpose lanes. Both alternatives (A and B) are detailed in the Air Quality Conformity Inputs table and will be analyzed separately.

Multimodal aspects of the proposed project include implementation of a new high-frequency bus service and the construction of new, and expansion of existing commuter park-and-ride lots.

See the CLRP Project Description Form and supplemental materials provided by VDOT in Attachment A for more information.

Remove: Columbia Pike Streetcar and Crystal City Streetcar Projects

The Columbia Pike Streetcar project between Skyline Center and Pentagon City was added to the CLRP in 2008 and was scheduled to be complete in 2017. The Crystal City Streetcar from the Pentagon City Metro Station to Four Mile Run at the Alexandria city line was added in 2011 and was projected to be complete by 2019. Due to recent policy and funding changes in Arlington County, both projects are proposed for removal.

Attachment A

Project Description Forms and Supplemental Materials

BASIC PROJECT INFORMATION

1. Submitting Agency: DDOT
2. Secondary Agency:
3. Agency Project ID:
4. Project Type: ☐ Interstate ☐ Primary ☐ Secondary ☐ Urban ☐ Bridge ☒ Bike/Ped ☐ Transit ☐ CMAQ ☐ ITS ☐ Enhancement ☐ Other ☐ Federal Lands Highways Program ☐ Human Service Transportation Coordination ☐ TERMs
5. Category: ☐ System Expansion; ☐ System Maintenance; ☐ Operational Program; ☐ Study; ☒ Other
6. Project Name: **Dedicated Bike Lanes, Citywide**

	Prefix	Route	Name	Modifier
7. Facility:			See facilities and limits in description below	
8. From:				
9. To:				

10. Description:

4th Street SW from M Street to P Street

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to two lanes with a center turn lane and bicycle lanes.
Length: 0.3 mile
Cost $10,000

6th Street NE from Florida Avenue to K Street

This project will implement recommendations from the recent Florida Ave study. It will reduce roadway capacity through the conversion of the existing roadway from two-way to one-way operation with one general purpose travel lane and two-way protected bicycle lanes on the east side of the road.
Length: 0.26 mile
Cost: $30,000

7th Street NW from New York Avenue to N Street

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to two lanes with a center turn lane and bicycle lanes.
Length: 0.3 mile
Cost: $20,000

12th Street NW from Pennsylvania Avenue to Massachusetts Avenue

12th St is a four lane, one-way northbound road with two rush-hour restricted parking lanes. This project will reduce rush-hour roadway capacity by one lane by changing the east side rush-hour restricted parking lane to full-time parking and adding a bicycle lane.
Length: 0.64 mile
Cost $20,000

14th Street NW from Florida Avenue to Columbia Road

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to two lanes with a center turn lane and bicycle lanes. It will connect existing bike lanes, making it the longest continuous bike lane corridor in the city.
Length: 0.52 mile
Cost: $20,000

Adams Mill Road NW from Kenyon Street to Klingle Road

Adams Mill Road has two southbound lanes and one northbound lane. This project will reduce roadway capacity through the elimination of one of the southbound lanes to provide room for the addition of 5' bicycle lanes on either side of the roadway. It will provide a bicycle connection between the National Zoo and Mount Pleasant to Klingle Road/Porter Street and neighborhoods to the west of Rock Creek Park.
Length: 0.24 mile
Cost: $10,000

Brentwood Parkway NE from 6th Street/Penn Street to 9th Street

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to three lanes. Traffic analysis is still required to determine which lane would be eliminated. The extra space will be used for bicycle lanes on either side of the road, or a two-way protected bicycle lane on one side of the street. This will connect the 6th St NE bike lanes to the 9th St Bridge.
Length: 0.22
Cost: $10,000

New Jersey Avenue NW from H Street to Louisiana Avenue

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to two lanes with a center turn lane and bicycle lanes.
Length: 0.45 mile
Cost: $25,000

Wheeler Road SE from Alabama Avenue to Southern Avenue

This project will reduce roadway capacity through converting the existing roadway configuration from four general purpose travel lanes to two lanes with a center turn lane and bicycle lanes.
Length: 0.94 mile
Cost: $35,000

11. Projected Completion Year: 2015
12. Project Manager: Mike Goodno
13. Project Manager E-Mail: mike.goodno@dc.gov
14. Project Information URL:
15. Total Miles: 3.9
16. Schematic:
17. Documentation:
18. Jurisdictions: Washington, DC
19. Baseline Cost (in Thousands): $180 cost estimate as of 12/05/14
20. Amended Cost (in Thousands): cost estimate as of MM/DD/YYYY
21. Funding Sources: ☐ Federal; ☐ State; ☒ Local; ☐ Private; ☐ Bonds; ☐ Other

Regional Policy Framework

22. **Provide a Comprehensive Range of Transportation Options**

Please identify all travel mode options that this project provides, enhances, supports, or promotes.

☐Single Driver	☐Carpool/HOV		
☐Metrorail	☐Commuter Rail	☐Streetcar/Light Rail	
☐BRT	☐Express/Commuter bus	☐Metrobus	☐Local Bus
☒Bicycling	☐Walking	☐Other	

Does this project improve accessibility for historically transportation-disadvantaged individuals (i.e., persons with disabilities, low-incomes, and/or limited English proficiency?) ☒Yes ☐No

23. **Promote Regional Activity Centers**
Does this project begin or end in an Activity Center? ☒Yes ☐No
Does this project connect two or more Activity Centers? ☐Yes ☒No
Does this project promote non-auto travel within one or more Activity Centers? ☒Yes ☐No

24. **Ensure System Maintenance, Preservation, and Safety**
Does this project contribute to enhanced system maintenance, preservation, or safety? ☐Yes ☒No

25. **Maximize Operational Effectiveness and Safety**
Does this project reduce travel time on highways and/or transit without building new capacity (e.g., ITS, bus priority treatments, etc.)? ☐Yes ☒No
Does this project enhance safety for motorists, transit users, pedestrians, and/or bicyclists? ☒Yes ☐No

26. **Protect and Enhance the Natural Environment**
Is this project expected to contribute to reductions in emissions of criteria pollutants? ☒Yes ☐No
Is this project expected to contribute to reductions in emissions of greenhouse gases? ☒Yes ☐No

27. **Support Interregional and International Travel and Commerce**
Please identify all freight carrier modes that this project enhances, supports, or promotes.
☐Long-Haul Truck ☐Local Delivery ☐Rail ☐Air
Please identify all passenger carrier modes that this project enhances, supports, or promotes.
☐Air ☐Amtrak intercity passenger rail ☐Intercity bus

28. **Additional Policy Framework**
In the box below, please provide any additional information that describes how this project further supports or advances these and other regional goals.

MAP-21 PLANNING FACTORS

29. Please identify any and all planning factors that are addressed by this project:
a. ☐ Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
b. ☐ Increase the **safety** of the transportation system for all motorized and non-motorized users.
i. Is this project being proposed specifically to address a safety issue? ☐ Yes; ☐ No
ii. If yes, briefly describe (in quantifiable terms, where possible) the nature of the safety problem:
c. ☐ Increase the ability of the transportation system to support **homeland security** and to safeguard the personal security of all motorized and non-motorized users.
d. ☒ Increase **accessibility and mobility** of people.
e. ☐ Increase accessibility and mobility of **freight.**
f. ☒ Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
g. ☒ Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.
h. ☐ Promote efficient system **management and operation**.
i. ☐ Emphasize the **preservation** of the existing transportation system.

ENVIRONMENTAL MITIGATION

30. Have any potential mitigation activities been identified for this project? ☐ Yes; ☒ No
    a. If yes, what types of mitigation activities have been identified?
    ☐ Air Quality; ☐ Floodplains; ☐ Socioeconomics; ☐ Geology, Soils and Groundwater; ☐ Vibrations; ☐ Energy; ☐ Noise; ☐ Surface Water; ☐ Hazardous and Contaminated Materials; ☐ Wetlands

CONGESTION MANAGEMENT INFORMATION

31. Congested Conditions
    a. Do traffic congestion conditions necessitate the proposed project or program? ☐ Yes; ☒ No
    b. If so, is the congestion recurring or non-recurring? ☐ Recurring; ☐ Non-recurring
    c. If the congestion is on another facility, please identify it:
32. Capacity
    a. Is this a capacity-increasing project on a limited access highway or other principal arterial? ☐ Yes; ☒ No
    b. If the answer to Question 26.a was "yes", are any of the following exemption criteria true about the project? (Choose one, or indicate that none of the exemption criteria apply):

    ☐ None of the exemption criteria apply to this project – a Congestion Management Documentation Form is required
    ☐ The project will not use federal funds in any phase of development or construction (100% state, local, and/or private funding)
    ☐ The number of lane-miles added to the highway system by the project totals less than one lane-mile
    ☐ The project is an intersection reconstruction or other traffic engineering improvement, including replacement of an at-grade intersection with an interchange
    ☒ The project, such as a transit, bicycle or pedestrian facility, will not allow private single-occupant motor vehicles
    ☐ The project consists of preliminary studies or engineering only, and is not funded for construction
    ☒ The construction costs for the project are less than $10 million.

    c. If the project is not exempt and requires a Congestion Management Documentation Form, click here to open a blank Congestion Management Documentation Form.

RECORD MANAGEMENT

33. Completed Year:
34. ☐ Project is being withdrawn from the CLRP.
35. Withdrawn Date: MM/DD/YYYY
36. Record Creator:
37. Created On:
38. Last Updated by:
39. Last Updated On:
40. Comments:

BASIC PROJECT INFORMATION

1. Submitting Agency: District Department of Transportation
2. Secondary Agency: Policy, Planning and Sustainability Administration (PPSA)
3. Agency Project ID: ZU202A
4. Project Type: ☐ Interstate X Primary ☐ Secondary X Urban ☐ Bridge X Bike/Ped ☐ Transit ☐ CMAQ ☐ ITS X Enhancement ☐ Other ☐ Federal Lands Highways Program ☐ Human Service Transportation Coordination ☐ TERMs
5. Category: ☐ System Expansion; X System Maintenance; ☐ Operational Program; Study; ☐ Other
6. Project Name: *Florida Avenue NE, Multimodal Transportation Study*

	Prefix	Route	Name	Modifier
7. Facility:			Florida Avenue NE	
8. From (☐ at):			2nd Street, NE	
9. To:			West Virginia Avenue	

10. Description: This project is the implementation of the recommended alternative from the *Florida Avenue Multimodal Corridor Study. The corridor will be reconstructed as shown in the recommended Alternative (**attached**).* ***The reconstruction will reduce the number of lanes from six lanes to four lanes in order to improve safety for all users through dedicated left-turn lanes, bicycle facilities, wider sidewalks and shorter crossing distances, decreased curb-to-curb street width and on-street parking to promote slower auto speeds, and pedestrian-scale lighting; increases the tree canopy and green infrastructure along the corridor; and significantly improves non-auto conditions for users, particularly the large deaf community in the area.***

11. Projected Completion Year: 2022
12. Project Manager: Gabe Onyeador
13. Project Manager E-Mail: gabe.onyeador@dc.gov
14. Project Information URL: www.floridaavesafety.org
15. Total Miles: *1.25 miles*
16. Schematic: *see attached*
17. Documentation: *Final report for corridor planning study*
18. Jurisdictions: *District of Columbia ANCs 5C, 5D, 5E, 6A, 6C*
19. Baseline Cost (in Thousands): $12,000 cost estimate as of 10/20/2014
20. Amended Cost (in Thousands): cost estimate as of MM/DD/YYYY
21. Funding Sources: X Federal; ☐ State; ☐ Local; ☐ Private; ☐ Bonds; ☐ Other

Regional Policy Framework

22. **Provide a Comprehensive Range of Transportation Options**

Please identify all travel mode options that this project provides, enhances, supports, or promotes.

X Single Driver	☐Carpool/HOV		
X Metrorail	☐Commuter Rail	☐Streetcar/Light Rail	
☐BRT	☐Express/Commuter bus	X Metrobus	☐Local Bus
X Bicycling	X Walking	☐Other	

Does this project improve accessibility for historically transportation-disadvantaged individuals (i.e., persons with disabilities, low-incomes, and/or limited English proficiency?) X Yes ☐No

23. **Promote Regional Activity Centers**
Does this project begin or end in an Activity Center? X Yes ☐No
Does this project connect two or more Activity Centers? X Yes ☐No
Does this project promote non-auto travel within one or more Activity Centers? X Yes ☐No

24. **Ensure System Maintenance, Preservation, and Safety**
Does this project contribute to enhanced system maintenance, preservation, or safety? X Yes ☐No

25. **Maximize Operational Effectiveness and Safety**
Does this project reduce travel time on highways and/or transit without building new capacity (e.g., ITS, bus priority treatments, etc.)? ☐Yes X No
Does this project enhance safety for motorists, transit users, pedestrians, and/or bicyclists? X Yes ☐No

26. **Protect and Enhance the Natural Environment**
Is this project expected to contribute to reductions in emissions of criteria pollutants? ☐Yes X No
Is this project expected to contribute to reductions in emissions of greenhouse gases? ☐Yes X No

27. **Support Interregional and International Travel and Commerce**

Please identify all <u>freight carrier modes</u> that this project enhances, supports, or promotes.

X Long-Haul Truck X Local Delivery ☐Rail ☐Air

Please identify all <u>passenger carrier modes</u> that this project enhances, supports, or promotes.

☐Air ☐Amtrak intercity passenger rail X Intercity bus

28. **Additional Policy Framework**

In the box below, please provide any additional information that describes how this project further supports or advances these and other regional goals.

The Recommended Alternative for Florida Avenue NE was developed through careful consideration of community priorities, the overall function of the roadway, and physical constraints along the corridor. The Alternative ensures adequate auto mobility on the corridor is maintained; improves safety for all users through dedicated left-turn lanes, bicycle facilities, wider sidewalks and shorter crossing distances, decreased curb-to-curb street width and on-street parking to promote slower auto speeds, and pedestrian-scale lighting; increases the tree canopy and green infrastructure along the corridor; and significantly improves non-auto conditions for users, particularly the large deaf community in the area.

MAP-21 PLANNING FACTORS

29. Please identify any and all planning factors that are addressed by this project:

a. ☐ Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

b. X Increase the **safety** of the transportation system for all motorized and non-motorized users.

i. Is this project being proposed specifically to address a safety issue? X Yes; ☐ No

ii. If yes, briefly describe (in quantifiable terms, where possible) the nature of the safety problem:

A number of issues affect corridor safety, particularly for the non-auto community. These include high auto speeds (85th %-ile speeds approximately 10 mph higher than speed limit), long and poor crossing facilities (six-lane cross section with several uncontrolled crossing locations), inadequate sidewalk infrastructure (sidewalk on south side of corridor is approximately 4 feet wide with numerous instances with less than 2 feet of clearance), and no pedestrian-scale lighting (corridor includes high number of pedestrians walking between NoMa Metro station and Gallaudet University, particularly deaf users that must rely on amenities such as lighting to navigate street safely), and a lack of bicycle facilities on a heavy bike corridor. Intersections with high left-turning volumes experienced a high number of crashes in the 3-year data collection span, including 46 total crashes at 4th Street, 24 at 6th Street, and 24 at West Virginia Avenue. There were 15 pedestrian-related crashes (one being a fatality at 11th Street) and 13 bike-related crashes along the study corridor during the same data collection period.

c. ☐ Increase the ability of the transportation system to support **homeland security** and to safeguard the personal security of all motorized and non-motorized users.

d. ☐ Increase **accessibility and mobility** of people.

e. X Increase accessibility and mobility of **freight.**

f. X Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

g. X Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.

h. X Promote efficient system **management and operation**.

i. X Emphasize the **preservation** of the existing transportation system.

ENVIRONMENTAL MITIGATION

30. Have any potential mitigation activities been identified for this project? ☐ Yes; X No

a. If yes, what types of mitigation activities have been identified?

☐ Air Quality; ☐ Floodplains; ☐ Socioeconomics; ☐ Geology, Soils and Groundwater; ☐ Vibrations; ☐ Energy; ☐ Noise; ☐ Surface Water; ☐ Hazardous and Contaminated Materials; ☐ Wetlands

CONGESTION MANAGEMENT INFORMATION

31. Congested Conditions

a. Do traffic congestion conditions necessitate the proposed project or program? ☐ Yes; X No

b. If so, is the congestion recurring or non-recurring? ☐ Recurring; ☐ Non-recurring

c. If the congestion is on another facility, please identify it:

32. Capacity

a. Is this a capacity-increasing project on a limited access highway or other principal arterial? ☐ Yes; X No

b. If the answer to Question 26.a was "yes", are any of the following exemption criteria true about the project? (Choose one, or indicate that none of the exemption criteria apply):

☐ None of the exemption criteria apply to this project – a Congestion Management Documentation Form is required
☐ The project will not use federal funds in any phase of development or construction (100% state, local, and/or private funding)
☐ The number of lane-miles added to the highway system by the project totals less than one lane-mile
☐ The project is an intersection reconstruction or other traffic engineering improvement, including replacement of an at-grade intersection with an interchange
☐ The project, such as a transit, bicycle or pedestrian facility, will not allow private single-occupant motor vehicles
X The project consists of preliminary studies or engineering only, and is not funded for construction

☐ The construction costs for the project are less than $10 million.

c. If the project is not exempt and requires a Congestion Management Documentation Form, click here to open a blank Congestion Management Documentation Form.

RECORD MANAGEMENT

33. Completed Year:
34. ☐ Project is being withdrawn from the CLRP.
35. Withdrawn Date: MM/DD/YYYY
36. Record Creator:
37. Created On:
38. Last Updated by:
39. Last Updated On:
40. Comments:

BASIC PROJECT INFORMATION

1. Submitting Agency: DDOT
2. Secondary Agency:
3. Agency Project ID:
4. Project Type: ☐ Interstate ☐ Primary ☐ Secondary ☐ Urban ☐ Bridge ☒ Bike/Ped ☐ Transit ☐ CMAQ ☐ ITS ☐ Enhancement ☐ Other ☐ Federal Lands Highways Program ☐ Human Service Transportation Coordination ☐ TERMs
5. Category: ☐ System Expansion; ☐ System Maintenance; ☐ Operational Program; ☐ Study; ☒ Other
6. Project Name: Pennsylvania Avenue NW Protected Bicycle Lanes

	Prefix	Route	Name	Modifier
7. Facility:			Pennsylvania Avenue NW	
8. From (☐ at):			17th Street	
9. To:			29th Street	

10. Description: Pennsylvania Avenue is a four to six lane corridor with two additional parking lanes. This project will reduce roadway capacity by reducing the existing travel lanes by one to two lanes and installing protected bicycle lanes.
    - 17th to 18th Streets will be reduced from 6 to 4 lanes
    - 18th to 20th Street will be reduced from 5 to 4 lanes
    - 20th to 26th Streets will be reduced from 6 to 4 lanes
    - 26th to 28th Streets will be reduced from 5 to 4 lanes
    - 28th to 29th Streets will be reduced from 4 to 2 lanes
11. Projected Completion Year: 2015
12. Project Manager: Mike Goodno
13. Project Manager E-Mail: mike.goodno@dc.gov
14. Project Information URL:
15. Total Miles: 1.03
16. Schematic:
17. Documentation:
18. Jurisdictions: Washington, DC
19. Baseline Cost (in Thousands): 250,000 cost estimate as of 12/05/14
20. Amended Cost (in Thousands): cost estimate as of MM/DD/YYYY
21. Funding Sources: ☐ Federal; ☐ State; ☒ Local; ☐ Private; ☐ Bonds; ☐ Other

Regional Policy Framework

22. **Provide a Comprehensive Range of Transportation Options**

Please identify all travel mode options that this project provides, enhances, supports, or promotes.

☐Single Driver	☐Carpool/HOV		
☐Metrorail	☐Commuter Rail	☐Streetcar/Light Rail	
☐BRT	☐Express/Commuter bus	☐Metrobus	☐Local Bus
☒Bicycling	☐Walking	☐Other	

Does this project improve accessibility for historically transportation-disadvantaged individuals (i.e., persons with disabilities, low-incomes, and/or limited English proficiency?) [X] Yes [ ] No

23. **Promote Regional Activity Centers**
Does this project begin or end in an Activity Center? [X] Yes [ ] No
Does this project connect two or more Activity Centers? [X] Yes [ ] No
Does this project promote non-auto travel within one or more Activity Centers? [X] Yes [ ] No

24. **Ensure System Maintenance, Preservation, and Safety**
Does this project contribute to enhanced system maintenance, preservation, or safety? [ ] Yes [X] No

25. **Maximize Operational Effectiveness and Safety**
Does this project reduce travel time on highways and/or transit without building new capacity (e.g., ITS, bus priority treatments, etc.)? [ ] Yes [X] No
Does this project enhance safety for motorists, transit users, pedestrians, and/or bicyclists? [X] Yes [ ] No

26. **Protect and Enhance the Natural Environment**
Is this project expected to contribute to reductions in emissions of criteria pollutants? [X] Yes [ ] No
Is this project expected to contribute to reductions in emissions of greenhouse gases? [X] Yes [ ] No

27. **Support Interregional and International Travel and Commerce**

Please identify all <u>freight carrier modes</u> that this project enhances, supports, or promotes.

[ ] Long-Haul Truck [ ] Local Delivery [ ] Rail [ ] Air

Please identify all <u>passenger carrier modes</u> that this project enhances, supports, or promotes.

[ ] Air [ ] Amtrak intercity passenger rail [ ] Intercity bus

28. **Additional Policy Framework**

In the box below, please provide any additional information that describes how this project further supports or advances these and other regional goals.

<u>MAP-21 PLANNING FACTORS</u>

29. Please identify any and all planning factors that are addressed by this project:

a. [ ] Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

b. [ ] Increase the **safety** of the transportation system for all motorized and non-motorized users.

i. Is this project being proposed specifically to address a safety issue? [ ] Yes; [ ] No

ii. If yes, briefly describe (in quantifiable terms, where possible) the nature of the safety problem:

c. [ ] Increase the ability of the transportation system to support **homeland security** and to safeguard the personal security of all motorized and non-motorized users.

d. [X] Increase **accessibility and mobility** of people.

e. [ ] Increase accessibility and mobility of **freight.**

f. [X] Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

g. [X] Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.

h. [ ] Promote efficient system **management and operation**.

i. [ ] Emphasize the **preservation** of the existing transportation system.

ENVIRONMENTAL MITIGATION

30. Have any potential mitigation activities been identified for this project? ☐ Yes; ☒ No
    a. If yes, what types of mitigation activities have been identified?
    ☐ Air Quality; ☐ Floodplains; ☐ Socioeconomics; ☐ Geology, Soils and Groundwater; ☐ Vibrations; ☐ Energy; ☐ Noise; ☐ Surface Water; ☐ Hazardous and Contaminated Materials; ☐ Wetlands

CONGESTION MANAGEMENT INFORMATION

31. Congested Conditions
    a. Do traffic congestion conditions necessitate the proposed project or program? ☐ Yes; ☒ No
    b. If so, is the congestion recurring or non-recurring? ☐ Recurring; ☐ Non-recurring
    c. If the congestion is on another facility, please identify it:
32. Capacity
    a. Is this a capacity-increasing project on a limited access highway or other principal arterial? ☐ Yes; ☒ No
    b. If the answer to Question 26.a was "yes", are any of the following exemption criteria true about the project? (Choose one, or indicate that none of the exemption criteria apply):

    ☐ None of the exemption criteria apply to this project – a Congestion Management Documentation Form is required
    ☐ The project will not use federal funds in any phase of development or construction (100% state, local, and/or private funding)
    ☐ The number of lane-miles added to the highway system by the project totals less than one lane-mile
    ☐ The project is an intersection reconstruction or other traffic engineering improvement, including replacement of an at-grade intersection with an interchange
    ☒ The project, such as a transit, bicycle or pedestrian facility, will not allow private single-occupant motor vehicles
    ☐ The project consists of preliminary studies or engineering only, and is not funded for construction
    ☒ The construction costs for the project are less than $10 million.

    c. If the project is not exempt and requires a Congestion Management Documentation Form, click here to open a blank Congestion Management Documentation Form.

RECORD MANAGEMENT

33. Completed Year:
34. ☐ Project is being withdrawn from the CLRP.
35. Withdrawn Date: MM/DD/YYYY
36. Record Creator:
37. Created On:
38. Last Updated by:
39. Last Updated On:
40. Comments:

FINANCIALLY CONSTRAINED LONG-RANGE TRANSPORTATION PLAN FOR 2040
PROJECT DESCRIPTION FORM
BASIC PROJECT INFORMATION

1. Submitting Agency: **Virginia Department of Transportation**

2. Secondary Agency: **Virginia Department of Rail and Public Transportation**

3. Agency Project ID: **UPC 97586**

4. Project Type:
X Interstate ☐ Primary ☐ Secondary ☐ Urban ☐ Bridge **X** Bike/Ped
X Transit ☐ CMAQ ☐ ITS ☐ Enhancement ☐ Other
☐ Federal Lands Highways Program ☐ Human Service Transportation Coordination
☐ TERMs

5. Category:
X System Expansion; ☐ System Maintenance; **X** Operational Program;
☐ Study; ☐ Other

6. Project Name: **I-66 Multimodal Improvement Project, inside the Beltway**
Prefix Route Name Modifier

7. Facility: **I-66**

8. From: **I-495, Fairfax County**

9. To: **Route 29 near Rosslyn, Arlington County**

10. Description:

The I-66 Multimodal Improvement Project (the "Project") is based on the recommendations from the June 2012 Final Report of the I-66 Multimodal Study inside the Beltway. The study team for the Multimodal Study included local, state, regional and federal stakeholders who participated in an interactive process which resulted in endorsements from these partners. The study, which built upon the 2009 Department of Rail and Public Transportation (DRPT) I-66 Transit/Transportation Demand Management (TDM) study, evaluated and recommended various multimodal improvements in the corridor that were further refined in the August 2013 Supplemental Report. The recommended improvements from the study included transit, bike/ped, TDM, integrated corridor management (ICM), tolling, and widening components, making this a truly multimodal solution for the corridor.

VDOT/DRPT is initiating an environmental assessment (NEPA) process to advance the multimodal improvements identified in the I-66 Multimodal Study. This process will assess the Project's impacts on social, cultural, economic and natural resources (such as air, noise, and water quality). The environmental process will provide opportunities for the public and stakeholders to provide comments and feedback throughout the study. In February of 2015 VDOT is beginning a comprehensive toll and revenue study to determine the expected

project revenue by year. Also during this time, VDOT will be working with corridor stakeholders, including local jurisdictional partners, to review the results of the revenue study and prioritize the list of multimodal and operational improvements. The multimodal improvements will be grouped into three categories: for Group 1, the stakeholder team will identify and evaluate **low cost** quickly implementable corridor improvements to be done **in conjunction with the tolling component**.

. Group 2 projects are expected by 2025. Group 3 multimodal projects are expected by 2040. In addition, a Stakeholder Technical Advisory Group is being established with local, state, regional and federal partners. The Project may be updated in future CLRPs in response to the environmental process, public outreach, and stakeholder input.

The tolling component of the Project will be implemented first, concurrent with the selected Group I Multi-modal improvements, and the tolls will be used to help fund the multimodal improvements in the corridor inside the Beltway. The tolling includes conversion of the existing I-66 facility inside the Capital Beltway to an Express Lanes facility with the following characteristics:

- Dynamic tolling in both directions during the peak periods only;
- HOV-3+ vehicles ride free at all times;
- Facility free to all traffic during off-peak periods;
- Consistent with current policy, heavy trucks will be prohibited.

The **transit** components include all the current improvements in the CLRP plus new priority bus routes on I-66, Route 29, and Route 50; Metrorail station improvements at Ballston and East Falls Church, and service enhancements for numerous routes in the study area inside the Beltway. Consideration will also be given to Metrorail core capacity improvements (8-car trains) that will address capacity concerns in the I-66 corridor.

For the **bicycle/pedestrian** components, the Multimodal Study identified approximately 60 capital and operating projects inside the Beltway. The Supplemental Report examined projects deemed to be the most regionally significant of the 60, based on (1) projects that can impact bicycling and walking for relatively large numbers of people and (2) projects that enhance the connectivity and functionality of the regional network. Sample projects include:

- Custis trail/W&OD trail improvements
- Fairfax Drive connector
- Arlington Boulevard trail- Glebe Rd. to City of Fairfax
- West Falls Church connector trail
- VA 7 – Tysons to Falls Church

The **TDM** elements of the Project were built on those recommended in the DRPT Transit and TDM Study of 2009, and in the 2012 Multimodal Study were grouped into high, medium and low impact, based on the ability of each measure to impact travel demand. High impact strategies included rideshare program operational support, enhanced telework, van priority access, direct transit subsidies, and enhanced employer outreach. Medium impact

strategies included vanpool driver incentives, I-66 corridor carpool startup incentives, and regionwide financial incentives. Lower impact strategies included enhanced corridor marketing, enhanced vanpool insurance pool, capital assistance for vanpools, and flexible vanpool network strategies.

The Project **ICM** recommendation also includes the addition of dynamic merge/junction control, speed harmonization, advanced parking management systems for park-and-ride lots, multimodal traveler information including travel time information by mode, and implementing signal priority for transit vehicles in the corridor.

Lastly, the environmental study will also include consideration of a later phase to **widen** I-66 from I-495 to Fairfax Drive near Ballston, as identified in the I-66 Multimodal Study. Eastbound widening includes the addition of a third through lane between I-495 and Fairfax Drive near Ballston; westbound widening includes adding a lane between the Sycamore Street off-ramp west to the Washington Blvd. on-ramp and from the Dulles Connector to I-495. The environmental study will consider this widening with a horizon year of 2040, and will also test an interim year of 2025 for this improvement.

Tolling Policy

As on the other Express Lane facilities in the region, tolls would be congestion-based. To use this section of I-66 inside the Beltway during the peak periods in either direction, motorists would have the choice of forming a 3+ carpool, taking transit, or paying a toll. Carpools of three or more persons, buses, motorcycles, and emergency response vehicles will ride free. Other vehicles not meeting the occupancy requirement will be required to pay a toll, using electronic toll collection equipment, at a rate that will vary based on the level of congestion, to ensure free-flow conditions as specified by Federal and State regulations.

The region's current Constrained Long Range Plan calls for all HOV lanes in Northern Virginia to be HOV-3+ by 2020. Allowing HOV-3 vehicles to ride free is consistent with this policy change, and will also match the occupancy requirement on I-495 and the I-95 Express Lanes. The Project provides a seamless network of Express lanes by connecting to adjacent Express facilities.

It is envisioned that VDOT will operate and maintain the facility. Toll revenues will be used to offset design, construction, operating and maintenance costs of the project. Project revenues will also provide a funding source for multimodal improvements identified in the Description section of this project.

MAP-21 mandates strict performance standards which are intended to ensure free-flowing conditions on the Express lanes. The proposed Express lanes project will include performance monitoring as an integral part of the project and ensure that the MAP-21 mandated performance standards are complied with as a minimum. More specifically, the project will meet all applicable requirements of MAP-21 regarding "HOV Facility Management, Operation, Monitoring, and Enforcement" as described in Section 166 of Title 23 U.S.C., inclusive of the amendments (deletions, insertions and additions) prescribed by MAP-21 Section 1514 "HOV FACILITIES". This includes a minimum average operating speed of 45 mph for 90% of the time over a specific period of time during the peak period.

Schedule

Project development and procurement will take place in 2015, followed by construction starting in 2016. Tolling is expected to enter operations in 2017, along with the first (Group 1) multimodal improvements. The Group 2 multimodal improvements are expected by 2025. Group 3 multimodal improvements and widening are expected by 2040.

Federal Environmental Review ("NEPA") Process

Project scoping is currently underway and will result in the appropriate level of NEPA documentation in coordination with FHWA and FTA as appropriate.

Coordination with Other Projects

The Project will be coordinated closely with other initiatives such as the Active Traffic Management (ATM) project and the potential I-66 Express Lanes project outside the Beltway. The Project will also be coordinated with future improvements that may be underway in the corridor.

Financial Plan

The total baseline cost for the Project is estimated to be approximately $350M (in year of expenditure dollars). This estimate includes the cost of tolling, multimodal improvements, and roadway widening.

Stakeholder Outreach

VDOT and DRPT will work closely with Arlington County, Fairfax County, the City of Falls Church, transit providers, and other stakeholders to implement a comprehensive outreach program. The outreach program will provide the opportunity for direct engagement with various groups along the corridor, including the local political leadership, transit service providers, various other interest groups, and business and community leaders. There will also be opportunities for the public to learn more about the Project, as well as provide comments, both through the CLRP process and the NEPA process.

11. Projected Completion Year: **2017 (tolling, Group 1 multimodal), 2025 (Group 2 multimodal), 2040 (Group 3 multimodal, widening)**

12. Project Manager: **Ms Susan Shaw, P.E.**

13. Project Manager E-Mail: **susan.shaw@VDOT.Virginia.gov**

14. Project Information URL: **<to be determined>**

15. Total Miles: **10 miles (approximate)**

16. Schematic:

17. Documentation: **<to be determined>**

18. Jurisdictions: **Fairfax County, Arlington County**

19. Baseline Cost (in Thousands): **$350,000**
20. Amended Cost (in Thousands): cost estimate as of MM/DD/YYYY

21. Funding Sources: **X** Federal; **X** State; ☐ Local; ☐ Private; ☐ Bonds; **X** Other

Regional Policy Framework

22. **Provide a Comprehensive Range of Transportation Options**
Please identify all travel mode options that this project provides, enhances, supports, or promotes.

X Single Driver **X** Carpool/HOV **X** Metrorail ☐Commuter Rail ☐Streetcar/Light Rail
☐BRT **X** Express/Commuter bus **X** Metrobus **X** Local Bus **X** Bicycling **X** Walking ☐Other

Does this project improve accessibility for historically transportation-disadvantaged individuals (i.e., persons with disabilities, low-incomes, and/or limited English proficiency?) **x** Yes ☐No

23. **Promote Dynamic Activity Centers**

Does this project begin or end in an Activity Center? **X** Yes ☐No
Does this project connect two or more Activity Centers? **X** Yes ☐No
Does this project promote non-auto travel within one or more Activity Centers? **X** Yes ☐No

24. **Ensure System Maintenance, Preservation, and Safety**
Does this project contribute to enhanced system maintenance, preservation, or safety?
X Yes ☐No

25. **Maximize Operational Effectiveness and Safety**
Does this project reduce travel time on highways and/or transit without building new capacity (e.g., ITS, bus priority treatments, etc.)? **X** Yes ☐No

Does this project enhance safety for motorists, transit users, pedestrians, and/or bicyclists?
X Yes ☐No

26. **Protect and Enhance the Natural Environment**
Is this project expected to contribute to reductions in emissions of criteria pollutants and/or greenhouse gases? **X** Yes ☐No

27. **Support Interregional and International Travel and Commerce**
Please identify all freight carrier modes that this project enhances, supports, or promotes.
☐Long-Haul Truck ☐Local Delivery ☐Rail ☐Air

Please identify all passenger carrier modes that this project enhances, supports, or promotes.
☐Air ☐Amtrak intercity passenger rail **X** Intercity bus

28. **Additional Policy Framework**
In the box below, please provide any additional information that describes how this project further supports or advances these and other regional goals.

MAP-21 PLANNING FACTORS

29. Please identify any and all planning factors that are addressed by this project:

a. **X** Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

b. **X** Increase the **safety** of the transportation system for all motorized and non-motorized users.
i. Is this project being proposed specifically to address a safety issue? ☐ Yes; **X** No
ii. If yes, briefly describe (in quantifiable terms, where possible) the nature of the safety problem:

c. **X** Increase the ability of the transportation system to support **homeland security** and to safeguard the personal security of all motorized and non-motorized users.

d. **X** Increase **accessibility and mobility** of people.

e. **X** Increase accessibility and mobility of **freight.**

f. **X** Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

g. **X** Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.

h. **X** Promote efficient system **management and operation**.

i. **X** Emphasize the **preservation** of the existing transportation system.

ENVIRONMENTAL MITIGATION

30. Have any potential mitigation activities been identified for this project? ☐ Yes; **X** No

a. If yes, what types of mitigation activities have been identified?
☐ Air Quality; ☐ Floodplains; ☐ Socioeconomics; ☐ Geology, Soils and Groundwater; ☐

Vibrations;
☐ Energy; ☐ Noise; ☐ Surface Water; ☐ Hazardous and Contaminated Materials; ☐ Wetlands

The Environmental Process has not started yet. VDOT will assess the environmental impacts of the project as required by State and Federal law.

CONGESTION MANAGEMENT INFORMATION

31. Congested Conditions

a. Do traffic congestion conditions necessitate the proposed project or program?
X Yes; ☐ No

b. If so, is the congestion recurring or non-recurring? **X** Recurring; ☐ Non-recurring

c. If the congestion is on another facility, please identify it:

32. Capacity

a. Is this a capacity-increasing project on a limited access highway or other principal arterial? **X** Yes; ☐ No

b. If the answer to Question 32.a was "yes", are any of the following exemption criteria true about the project? (Choose one, or indicate that none of the exemption criteria apply):

X None of the exemption criteria apply to this project – a Congestion Management Documentation Form is required

☐ The project will not use federal funds in any phase of development or construction (100% state, local, and/or private funding)

☐ The number of lane-miles added to the highway system by the project totals less than one lane-mile

☐ The project is an intersection reconstruction or other traffic engineering improvement, including replacement of an at-grade intersection with an interchange

☐ The project, such as a transit, bicycle or pedestrian facility, will not allow private single-occupant motor vehicles

☐ The project consists of preliminary studies or engineering only, and is not funded for construction

☐ The construction costs for the project are less than $10 million.

c. If the project is not exempt and requires a Congestion Management Documentation Form, click here to open a blank Congestion Management Documentation Form.

RECORD MANAGEMENT

33. Completed Year:

34. ☐ Project is being withdrawn from the CLRP.

35. Withdrawn Date: MM/DD/YYYY

36. Record Creator:

37. Created On:

38. Last Updated by:

39. Last Updated On:

40. Comments:

Transit Service Enhancements for I-66 Inside the Beltway 2015 CLRP Submission (placeholder subject to change**)

Route	Change
New Outside the Beltway Services	
Rapid Bus Service from outside the Beltway: Haymarket to Arlington/DC Gainesville to Arlington/DC Manassas to Arlington/DC	Bi-directonal, all day + weekend
New Priority Bus Services	
U.S. 29 Priority Bus	Bi-directional, all day service
U.S. 50 Priority Bus – via Ballston	Bi-directional, all day service
U.S. 50 Priority Bus – via U.S. 50	Add route from Fair Lakes to D.C. core along U.S. 50
U.S. 50 Priority Bus – Tysons	Add route from Tysons Corner along U.S. 50 and Wilson Boulevard
Local Routes in Study Area:	
Metrobus 1B	Increase peak-period frequency; improve inbound runtime
Metrobus 1C	Increase peak and off-peak frequencies
Metrobus 1E	Improve runtime
Metrobus 2C	Increase peak and off-peak frequencies
Metrobus 3A	Extend routing to NVCC and East Falls Church and increase frequency
Metrobus 3E	Add reverse-peak direction service and increase peak-direction service frequency; add off-peak service
Metrobus 3T	Increase off-peak-period frequency
Metrobus 4A	Reroute to end at Seven Corners; increase frequency
Metrobus 4E	Increase peak-period frequency, improve runtime
Metrobus 4H	Improve runtime
Metrobus 10B	Increase peak-period frequency
Metrobus 15L	Increase peak-period frequency
Metrobus 22A	Increase peak-period frequency
Metrobus 23A	Increase peak-period frequency
Metrobus 23C	Increase peak-period frequency
Metrobus 25A	Increase peak and off-peak frequencies
Metrobus 25B	Increase northbound off-peak frequency and peak frequencies in both directions
Metrobus 28A	Increase peak-period frequency, improve runtime
Metrobus 28E	New route between Skyline Plaza and East Falls Church
Metrobus 38B	Increase frequency
ART	
ART 42	Increase the reverse-peak direction, peak-period frequency
ART 45	Increase peak-period frequency, improve run time
ART 52	Increase peak and off-peak frequencies
ART #75	Extend routing to Shirlington and Virginia Square; add off-peak service
ART #77	Extend to Rosslyn and increase frequency
New ART1	Add route between Arlington Hall and Crystal City
New ART2	Add route between Court House and Pentagon City

**Services subject to change based on environmental study, public outreach, and stakeholder working group inputs.

Draft 2/11/15

FINANCIALLY CONSTRAINED LONG-RANGE TRANSPORTATION PLAN FOR 2040
PROJECT DESCRIPTION FORM
BASIC PROJECT INFORMATION

1. Submitting Agency: **Virginia Department of Transportation**

2. Secondary Agency: **Virginia Department of Rail & Public Transportation**

3. Agency Project ID: **0066-96A-297, P101 UPC#105500**

4. Project Type:
   X Interstate ☐ Primary ☐ Secondary ☐ Urban ☐ Bridge ☐ Bike/Ped
   X Transit ☐ CMAQ **X** ITS ☐ Enhancement ☐ Other
   ☐ Federal Lands Highways Program ☐ Human Service Transportation Coordination
   ☐ TERMs

5. Category:
   X System Expansion; ☐ System Maintenance; **X** Operational Program;
   ☐ Study; ☐ Other

6. Project Name: **I-66 Corridor Improvements Project Outside the Beltway**
   Prefix Route Name Modifier

7. Facility: **I-66**

8. From: **US 15, Prince William County**

9. To: **I-495, Fairfax County**

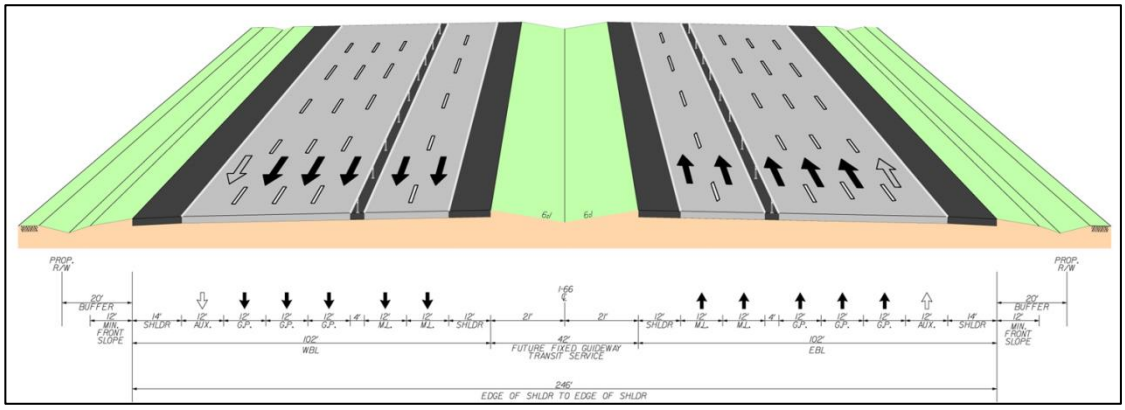
10. Description:

The Commonwealth's I-66 Corridor Improvements Project ("Project") outside the Beltway includes:

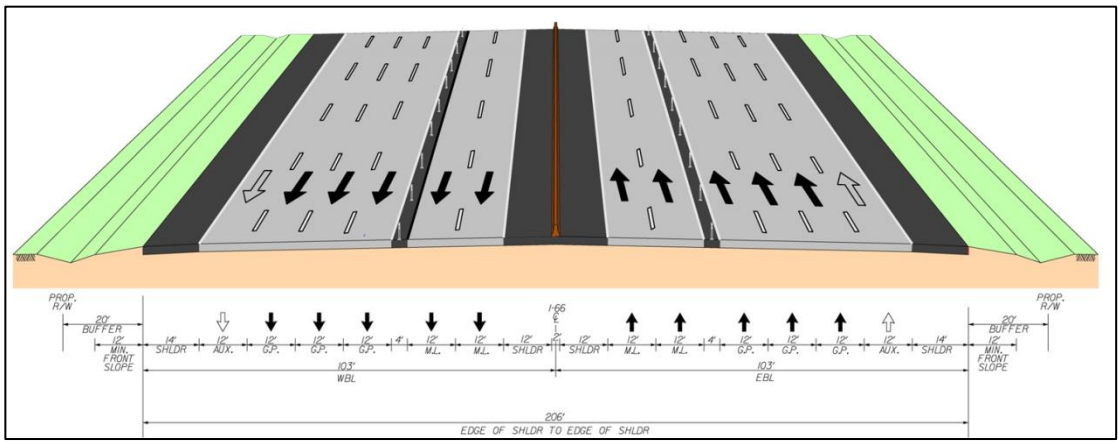
- Three general purpose lanes in each direction (with auxiliary lanes where needed);
- Two barrier-separated managed express lanes in each direction (the existing high-occupancy vehicle (HOV) lane will be converted to an express lane and one new express lane will be added);
- New high-frequency bus service with more predictable travel times;
- Direct access ramps to and from the managed lanes;
- New or expanded commuter park and ride lots in the corridor.

Below are two alternative typical sections being considered, depending on anticipated transit needs and impacts along the corridor.

Alternative 2A – Flexible Barrier with Buffer & Median reserved for Future Center Transit



Alternative 2B – Flexible Barrier with Buffer and No Median



As on the I-495 and I-95 Express Lanes, access to the I-66 Express Lanes will

be available to automobiles, motorcycles, light-trucks, emergency vehicles, buses and transit vehicles only. Vehicles with three or more occupants and motorcycles would travel on the Express Lanes for free, as per the code of the Commonwealth of Virginia and Federal law. The facility will be operated and HOV occupancy and toll payment enforced in a manner that complies with the statutory requirements of the Commonwealth**.** Other vehicles not meeting the occupancy requirement of 3+ will pay a toll, using electronic toll collection equipment, at a rate that will vary based on congestion, to ensure free-flow conditions as specified by Federal regulations.

The region's current Constrained Long Range Plan calls for all HOV lanes in Northern Virginia to be HOV-3+ by 2020. Allowing HOV-3's to ride free is consistent with this policy change, and will also match the High Occupancy Toll lane occupancy requirement on 495 and 95. The Project expands the NoVA network of Express lanes by connecting to the I-495 Express Lanes Project, which also connects to the newly constructed I-95 Express Lanes.

The project includes a robust transit component, consisting of new and modified commuter bus services providing one-seat rides between park and ride lots and major regional destinations, and new frequent all-day Rapid Bus service on I-66 to complement Metrorail in the corridor. New and expanded park and ride lots are included throughout the corridor, with easy or direct access to the managed lanes. Finally, to promote and incentivize alternative modes in the corridor, new and enhanced corridor transportation demand management strategies will be included as part of the project (see attachments).

Bicycle and Pedestrian accommodations in the corridor are currently being developed in cooperation with the localities, and will be consistent with VDOT's Policy for Integrating Bicycle and Pedestrian Accommodations (www.virginiadot.org/**bike**ped**policy**/).

Project construction, operations and maintenance will be procured using Virginia's Public-Private Transportation Act (PPTA) legislation leading to the selection of a private consortium ("Concessionaire"). A comprehensive agreement will ultimately outline all of the terms and conditions of the Public-Private Partnership.

Tolling Policy

Express lanes use dynamic pricing to maintain free-flowing conditions for all users, even during rush hour. The toll rates will vary throughout the day corresponding to demand and congestion levels. Toll prices will be adjusted in response to the level of traffic to ensure free flowing operations.

Dynamic message signs will provide drivers with current toll rates so they can choose whether or not to use the lanes. Toll collection on the Express Lanes

will be totally electronic. There will be no toll booths. The dynamic message signs will be supplemented by other notification/communications methods to ensure all users, including transit operators, have as much advance notice of traffic conditions as is possible.

MAP-21 mandates strict performance standards which are intended to ensure free-flowing conditions on the Express lanes. The proposed Express lanes project will include performance monitoring as an integral part of the project and ensure that the MAP-21 mandated performance standards are complied with as a minimum. More specifically, the project will meet all applicable requirements of MAP-21 regarding "HOV Facility Management, Operation, Monitoring, and Enforcement" as described in Section 166 of Title 23 U.S.C., inclusive of the amendments (deletions, insertions and additions) prescribed by MAP-21 Section 1514 "HOV FACILITIES". This includes a minimum average operating speed of 45 mph for 90% of the time over a specific period of time during the peak period.

Schedule

Construction for the Project is projected to begin in 2017, with an estimated construction completion time of 4-5 years. The facility is expected to enter operations in early 2021-2022. The current schedule calls for environmental review in compliance with Federal (NEPA) and state regulations. FHWA has further conditioned environmental approval to the Project being included in a conforming Transportation Improvement Program ("TIP") and Constrained Long Range Plan ("CLRP") for construction.

Federal Environmental Review ("NEPA") Process

The Tier 2 Environmental Assessment scope builds upon and includes a combination of concepts identified in the Tier 1 Environmental Impact Statement. It will evaluate site-specific conditions and potential effects the proposed improvements would have on air quality, noise, neighborhoods, parks, recreation areas, historic properties, wetlands and streams. The environmental review is currently being conducted in full accordance and compliance with Federal and state law. FHWA is the 'Lead Agency' for the NEPA document and will provide document review / approval and issuance of FONSI at the conclusion of the process.

Transportation Management Plan

As a matter of policy, practice and a reflection the agency's commitment to safety, VDOT adopts Transportation Management Plans for its construction projects. Such Plans are also required by FHWA for large projects such as this initiative. The congestion mitigation plans used for projects such as the Springfield Interchange, the I-495 Express Lanes, and the I-95 Express Lanes

have been very successful in managing traffic during construction. VDOT and the Concessionaire will similarly implement a robust Transportation Management Plan for this Project.

Coordination with Other Projects in the Corridor

This project is being coordinated with other active projects in the corridor such as:

- Vaden Drive ramp improvements
- Active Traffic Management (ATM) project
- Route 28 / I-66 interchange improvements
- US 15 / I-66 interchange improvements
- HOV lane project from Gainesville to US 15

Financial Plan

The total cost for the proposed Project is estimated to be approximately $2 – 3 billion in year of expenditure dollars. Funding sources for the Project will include a combination of private and public equity and third party debt, including private bank loans and/or Private Activity Bonds, with the potential for TIFIA funding as a form of subordinated debt. As the Project progresses, VDOT will explore all avenues of funding to ensure the lowest cost of capital for the Project.

The Concessionaire will be fully authorized to toll the facility, which will serve to pay debt service, operating and maintenance costs and return on equity. Toll revenue will be the main source of revenue. The Commonwealth will enter into a Comprehensive Agreement with the selected Concessionaire, which will authorize the Concessionaire to raise the necessary funds to construct the Project.

Stakeholder Outreach

A Stakeholder Technical Advisory Group (STAG) has been established and meets regularly. The STAG provides the opportunity for direct engagement with various groups along the corridor, including local jurisdictions, environmental resource agencies, transit service providers, and various other agencies. Stakeholder and public outreach is a high priority for the I-66 project team. A Transit/TDM Technical Advisory Group (TTAG) is also actively engaged in project development. There are opportunities for the public to learn more about the Project, as well as provide comments, through public meetings, the project website, and community dialogs in addition to other items. The Project may be updated in future CLRPs in response to the environmental process, public outreach, and stakeholder input.

11. Projected Completion Year: **2022**

12. Project Manager: **Ms Susan Shaw, P.E.**

13. Project Manager E-Mail: **susan.shaw@VDOT.Virginia.gov**

14. Project Information URL: **http://www.transform66.org**

15. Total Miles: **25 miles**

16. Schematic: **See figures in items 9 and 10 above.**

17. Documentation: **The graphics included in the response to items 9 and 10 above will be uploaded to allow a more readable version.**

18. Jurisdictions: **Fairfax County, Prince William County**

19. Baseline Cost (in Thousands): **$2,000,000 - $3,000,000 (approximately 2 to 3 $billion) combined public & private cost estimate as of 11/10/2014**

20. Amended Cost (in Thousands): cost estimate as of MM/DD/YYYY

21. Funding Sources: **X** Federal; **X** State; **X** Local; **X** Private; **X** Bonds; ☐ Other

Regional Policy Framework

22. **Provide a Comprehensive Range of Transportation Options**
Please identify all travel mode options that this project provides, enhances, supports, or promotes.

X Single Driver **X** Carpool/HOV **X** Metrorail ☐Commuter Rail ☐Streetcar/Light Rail
X BRT **X** Express/Commuter bus **X** Metrobus **X** Local Bus **X** Bicycling **X** Walking ☐Other

Does this project improve accessibility for historically transportation-disadvantaged individuals (i.e., persons with disabilities, low-incomes, and/or limited English proficiency?) **X** Yes ☐No

23. **Promote Dynamic Activity Centers**
Does this project begin or end in an Activity Center? **X** Yes ☐No
Does this project connect two or more Activity Centers? **X** Yes ☐No
Does this project promote non-auto travel within one or more Activity Centers? **X** Yes ☐No

24. **Ensure System Maintenance, Preservation, and Safety**
Does this project contribute to enhanced system maintenance, preservation, or safety?
X Yes ☐No

25. **Maximize Operational Effectiveness and Safety**
Does this project reduce travel time on highways and/or transit without building new capacity (e.g., ITS, bus priority treatments, etc.)? ☐Yes **X** No

Does this project enhance safety for motorists, transit users, pedestrians, and/or bicyclists?
X Yes ☐No

26. **Protect and Enhance the Natural Environment**
Is this project expected to contribute to reductions in emissions of criteria pollutants and/or greenhouse gases? **X** Yes ☐No

27. **Support Interregional and International Travel and Commerce**
Please identify all freight carrier modes that this project enhances, supports, or promotes.
X Long-Haul Truck **X** Local Delivery ☐Rail ☐Air

Please identify all passenger carrier modes that this project enhances, supports, or promotes.
☐Air ☐Amtrak intercity passenger rail **X** Intercity bus

28. **Additional Policy Framework**
In the box below, please provide any additional information that describes how this project further supports or advances these and other regional goals.

MAP-21 PLANNING FACTORS

29. Please identify any and all planning factors that are addressed by this project:

a. **X** Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

b. **X** Increase the **safety** of the transportation system for all motorized and non-motorized users.
i. Is this project being proposed specifically to address a safety issue? **X** Yes; ☐ No
ii. If yes, briefly describe (in quantifiable terms, where possible) the nature of the safety problem:

c. **X** Increase the ability of the transportation system to support **homeland security** and to safeguard the personal security of all motorized and non-motorized users.

d. **X** Increase **accessibility and mobility** of people.

e. **X** Increase accessibility and mobility of **freight.**

f. **X** Protect and enhance the **environment**, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

g. **X** Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.

h. **X** Promote efficient system **management and operation**.

i. **X** Emphasize the **preservation** of the existing transportation system.

ENVIRONMENTAL MITIGATION

30. Have any potential mitigation activities been identified for this project? **X** Yes; ☐ No

a. If yes, what types of mitigation activities have been identified?

☐ Air Quality; **X** Floodplains; **X** Socioeconomics; **X** Geology, Soils and Groundwater; ☐ Vibrations;
☐ Energy; **X** Noise; ☐ Surface Water; **X** Hazardous and Contaminated Materials; **X** Wetlands

CONGESTION MANAGEMENT INFORMATION

31. Congested Conditions

a. Do traffic congestion conditions necessitate the proposed project or program?
X Yes; ☐ No

b. If so, is the congestion recurring or non-recurring? **X** Recurring; ☐ Non-recurring

c. If the congestion is on another facility, please identify it:

32. Capacity

a. Is this a capacity-increasing project on a limited access highway or other principal arterial? **X** Yes; ☐No

b. If the answer to Question 32.a was "yes", are any of the following exemption criteria true about the project? (Choose one, or indicate that none of the exemption criteria apply):

X None of the exemption criteria apply to this project – a Congestion Management Documentation Form is required

☐ The project will not use federal funds in any phase of development or construction (100% state, local, and/or private funding)

☐ The number of lane-miles added to the highway system by the project totals less than one lane-mile

☐ The project is an intersection reconstruction or other traffic engineering improvement, including replacement of an at-grade intersection with an interchange

☐ The project, such as a transit, bicycle or pedestrian facility, will not allow private single-occupant motor vehicles

☐ The project consists of preliminary studies or engineering only, and is not funded for construction

☐ The construction costs for the project are less than $10 million.

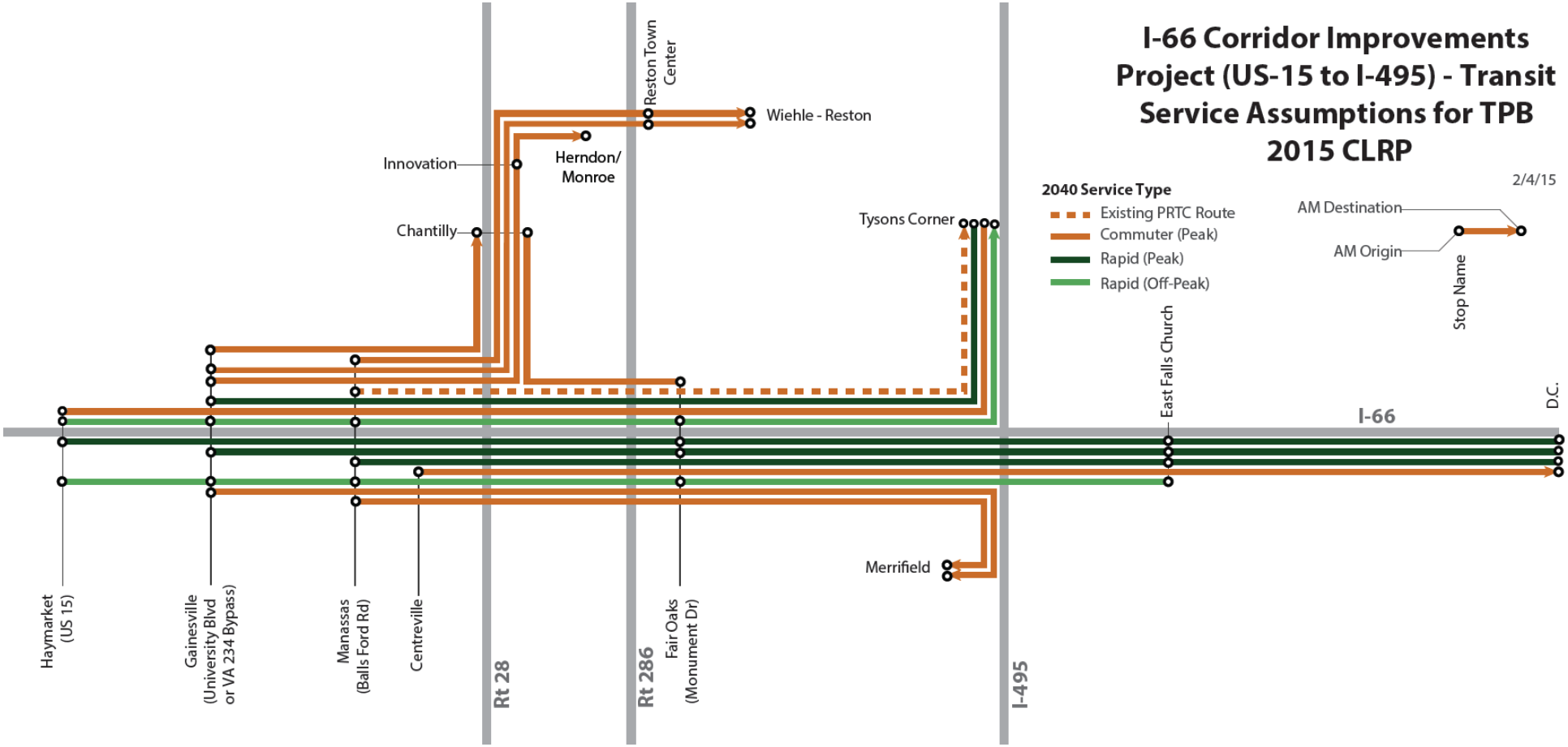
c. If the project is not exempt and requires a Congestion Management Documentation Form, click here to open a blank Congestion Management Documentation Form.

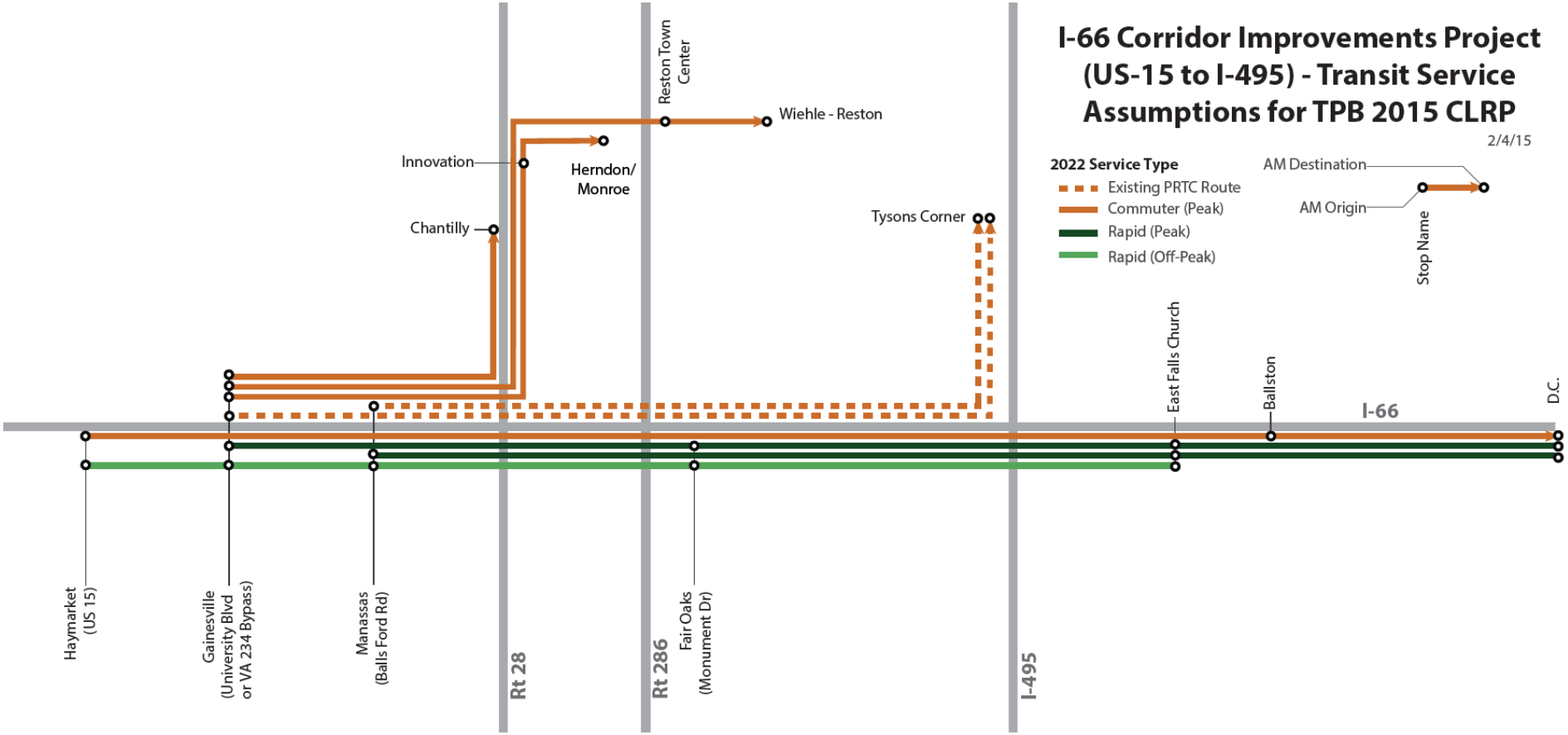
RECORD MANAGEMENT

33. Completed Year:

I-66 Corridor Improvements Project (US 15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP									
Route	**New/ Existing**	**Year**	**Notes**	**Direction**	**Times**	**2022 Average Peak Frequency (minutes)**	**2022 Average Off-Peak Frequency (minutes)**	**2040 Average Peak Frequency (minutes)**	**2040 Average Off-Peak Frequency (minutes)**
Haymarket to Arlington/Downtown DC Commuter Bus	New	2022		Peak Only	Peak Only	60	-	Replaced by Rapid Bus Service	
Haymarket to Arlington/Downtown Rapid Bus	New	2040	Stop at Monument; One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	-	-	30	30
Haymarket to Tysons Corner Commuter Bus	New	2040		Peak Only	Peak Only	-	-	45	-
Gainesville to East Falls Church/ Downtown DC Rapid Bus		2022	Stop at Monument; One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	25	60	10	30
Gainesville to Tysons Corner Commuter Bus	*Existing*		*PRTC's Linton Hall Metro Direct*	*Peak Only*	*Peak Only*	*30*	-	*Continued operation of existing service at the discretion of PRTC with Rapid Bus in place.*	
Gainesville to Tysons Corner Rapid Bus		2040	One off-peak route serves Haymarket, Gainesville & Manassas.	Bi-directional	All-day + Weekend	-	-	25	60
Gainesville to Merrifield Commuter Bus		2040		Peak Only	Peak Only	-	-	35	-
Gainesville to Reston Commuter Bus		2022		Peak Only	Peak Only	45	-	25	-
Gainesville to Innovation/Herndon Commuter Bus		2022		Peak Only	Peak Only	60	-	30	-
Gainesville to Chantilly Commuter Bus		2022		Peak Only	Peak Only	60	-	25	-
Manassas to East Falls Church/Downtown DC Rapid Bus		2022	One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	45	60	25	30
Manassas to Tysons Corner Commuter Bus	*Existing*		*PRTC's Manassas Metro Direct*	*Peak Only*	*Limited mid-day*	*30*	*60*	*30*	*60*
Manassas to Merrifield Commuter Bus		2040		Peak Only	Peak Only	-	-	45	-
Manassas to Reston Commuter Bus		2040		Peak Only	Peak Only	-	-	60	-
Centerville to Downtown DC Commuter Bus		2040		Peak Only	Peak Only	-	-	25	-
Fair Oaks to Chantilly Commuter Bus		2040		Bi-directional	Peak Only	-	-	60	-

**Existing PRTC Metro Direct services shown for informational purposes only*


I-66 Corridor Improvements Project (US-15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP
2/4/15
2040 Service Type
Existing PRTC Route
Commuter (Peak)
Rapid (Peak)
Rapid (Off-Peak)
AM Destination
AM Origin
Stop Name
Reston Town Center
Wiehle - Reston
Herndon/ Monroe
Innovation
Chantilly
Tysons Corner
East Falls Church
I-66
D.C.
Haymarket (US 15)
Gainesville (University Blvd or VA 234 Bypass)
Manassas (Balls Ford Rd)
Centreville
Rt 28
Rt 286
Fair Oaks (Monument Dr)
I-495
Merrifield


I-66 Corridor Improvements Project (US-15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP
2/4/15
2022 Service Type
Existing PRTC Route
Commuter (Peak)
Rapid (Peak)
Rapid (Off-Peak)
AM Destination
AM Origin
Stop Name
Reston Town Center
Wiehle - Reston
Innovation
Herndon/ Monroe
Chantilly
Tysons Corner
East Falls Church
Ballston
I-66
D.C.
Haymarket (US 15)
Gainesville (University Blvd or VA 234 Bypass)
Manassas (Balls Ford Rd)
Rt 28
Rt 286
Fair Oaks (Monument Dr)
I-495

Transit and Transportation Demand Management (TDM) Definition for I-66 Corridor Improvements Project

Introduction

A transit and transportation demand management (TDM) planning process is underway by VDOT and DRPT in coordination with the development of the I-66 Corridor Improvements Project (Project). It is anticipated that the planning will result in an I-66 Transit and TDM Implementation Plan with recommendations that will be integrated with the proposed elements of the I-66 Project. The transit/TDM recommendations will support the overall purpose and need of the Project, seeking to achieve the following objectives:

- Efficient use of public transportation infrastructure and services
- Reduction in congestion
- Increase in the availability and reliability of travel choices
- Improvement in the attractiveness, reliability, and quality of transit
- Increase in park-and-ride space supply, convenience, and availability
- Effective use of the region's developed and emerging managed lanes network including I-66, I-495, I-395, and I-95 through Integrated Corridor Management (ICM)

The following sections briefly define the primary elements of the transit and TDM Implementation Plan, which include:

- Park-and-ride facilities
- Transit services
- TDM programs

Park-and-Ride Facilities

Park-and-ride facilities are an essential part of the transit, TDM, and ICM support infrastructure in the I-66 corridor. These facilities will offer people direct access to transit services, perform a role in people's transition from one mode to another, and support carpooling, vanpooling and casual carpooling/slugging. The nature of existing and future development along the I-66 corridor is such that much of the transit demand in the corridor will be generated by park-and-ride activity and through coordinated local transit and corridor rapid bus services.

Given the role of park-and-ride facilities in the corridor, it is anticipated that the Transit and TDM Implementation Plan will recommend an increase in the number of these facilities and in the supply of parking in the corridor. The plan will also likely recommend improved amenities at park-and-ride facilities, as well as more direct access between the facilities and I-66. The following locations are currently being recommended for proposed park-and-ride lots as part of the I-66 Project:

- Haymarket, west of the I-66/Route 15 interchange (new facility)
- Gainesville, off of University Boulevard (new facility)
- Route 234 Bypass (Cushing Road), east of the I-66 interchange (expansion of existing facility)
- Balls Ford Road, west of Route 234 Business (new facility)
- Stringfellow Road (expansion of existing facility, currently underway by Fairfax County)
- Monument Drive/Fairfax Corner (new facility, likely structured parking)
- Vienna Metrorail Station (possible improvements of access to existing facility)

It is anticipated that the I-66 Transit/TDM Implementation Plan will recommend the following services and amenities at the existing proposed park-and-ride facilities:

- Park-and-ride parking for privately-owned vehicles
- Real-time parking availability information
- Kiss-and-ride accommodation
- Dedicated space for transit operations (bus bays and station/stop facilities)
- Waiting area for buses (shelters, sidewalk, plaza area, etc.)
- Waiting/queuing area for casual carpooling/slugging (depending on anticipated demand)
- Pick-up space for vehicles picking up/dropping off casual carpoolers/sluggers
- Lighting (at bus stations and in lots)
- Static and real-time transit service information
- Landscaping
- Pedestrian walkways
- Bicycle racks, lockers, and/or shelters
- Interconnecting transit service (e.g., local feeder services and rapid bus service on I-66)
- Direct or nearly direct access to/from I-66 managed lanes via new ramps
- Multimodal access from arterial street network (including pedestrian and bicycle access)

Working in coordination with VDOT operations of the corridor, including intelligent transportation system (ITS) elements of the I-66 Corridor Improvements Project, transit and TDM recommendations for park-and-ride facilities will also likely include the development of infrastructure to support the provision of real-time information about park-and-ride facility utilization and transit service information and vanpool and carpool matching to travelers utilizing ICM applications (possibly a mixture of publically-provided information and private applications).

Transit Services

It is anticipated that a combination of existing local and new or expanded corridor-focused transit services will serve weekday and weekend peak and off-peak hour demand intersecting with and along the I-66 corridor. The I-66 Transit/TDM Implementation Plan will likely introduce a new I-66 rapid bus service that will increase service efficiency and effectiveness, while increasing its convenience and utility for many trip purposes and travel periods. The Implementation Plan will also consider increased commuter bus service that will offer peak period service. The transit and TDM plan recommends a mixture of the following transit services:

- **Commuter Bus Services:** Services focused on one-seat rides. The Transit and TDM Implementation Plan will likely recommend strategic routes and other commuter service in the corridor to enhance connectivity to major destinations in DC, Arlington, Vienna, Merrifield, Tysons, Fair Lakes, Reston, Herndon, Centreville, and Manassas. The plan will likely encourage service and facility coordination with these services to enable operators to take advantage of new park-and-ride facilities and their improved access to the corridor.

- **I-66 Rapid Bus Service (RBS):** Service specifically for the I-66 corridor operating as a bus extension/compliment of the Metrorail Orange Line. It is anticipated that the I-66 RBS will operate on several route patterns to offer frequent headways and all-day service to and from key park-and-ride lots (with direct ramp access to/from managed lanes). RBS will operate in the managed lanes with the intention of providing users more daily, reliable rides to and from their destinations.

TDM Programs

TDM programs at several levels of investment and market penetration will likely be recommended as a part of the pending I-66 Transit and TDM Implementation Plan. TDM programs will be designed to complement and support transit facility, infrastructure, and service recommendations. TDM recommendations will be focused on increasing the number, convenience, and effectiveness of travel choices in the I-66 corridor, as well as on managing travel demand during construction and post construction. TDM recommendations will include the following strategies:

- Carpool formation assistance and incentives
- Vanpool formation assistance and incentives
- Employer and destination outreach, services and information
- Home-based outreach
- Promotion of transit, vanpooling and carpooling
- Enhancement of web-based and mobile app ridematching service
- Support for casual carpooling (slugging)

Summary

The current I-66 Transit and TDM planning by VDOT and DRPT will complement the development of the I-66 Corridor Improvements Project. It is anticipated that the planning will be completed in mid-2015 with the primary outcome being an I-66 Transit and TDM Implementation Plan. The plan will include recommendations to be integrated with the proposed I-66 Project, such as park-and-ride lot locations and sizes, enhancement and expansion of transit services, and implementation of TDM programs.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
4975 Alliance Drive
Fairfax, VA 22030

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

January 15, 2015

The Honorable Phil Mendelson, Chairman
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300
Washington, DC 20002-4201

RE: I-66 Corridor Improvements Project (Outside the Beltway) and I-66 Multimodal Improvement Project (Inside the Beltway)

Dear Chairman Mendelson:

As part of the Virginia Department of Transportation's (VDOT) submission of projects for the National Capital Region Transportation Planning Board's 2015 Constrained Long Range Plan (CLRP) and the 2015 CLRP Air Quality Conformity Assessment, we would like to provide additional information to the TPB on two key projects: the I-66 Corridor Improvements Project (Outside the Beltway) and the I-66 Multimodal Improvement Project (inside the Beltway).

The I-66 Corridor Improvement Project (Outside the Beltway) extends from U.S. Route 15 in Prince William County to I-495 in Fairfax County. In addition to roadway widening and multimodal elements, VDOT has submitted two alternative versions of the access points to be included in the TPB's analysis. The completion date for the Outside the Beltway project is 2022.

The I-66 Multimodal Improvement Project (Inside the Beltway) extends from I-495 in Fairfax County to U.S. Route 29 in Arlington County. There are two major components to the Inside the Beltway project. The first component involves multimodal improvements, with the peak-period tolling component starting in 2017. The second component involves widening of some sections of the corridor to provide three lanes in each direction, to be completed after 2025.

In order to provide background information on the two multimodal projects in advance of the Board meeting, the attached documents provide an overview of the project development for the I-66 multimodal corridor:

- Executive Summary of the I-66 Transit/TDM Study Final Report, December 31, 2009
- Executive Summary of the I-66 (Outside the Beltway) Tier I Environmental Study
- Executive Summary of the I-66 (Inside the Beltway) Multimodal Study Final Report, June 2012
- Executive Summary of the I-66 (Inside the Beltway) Multimodal Study Supplemental Report, August 2013

VDOT will make presentations on both projects at the January 21, 2015 Board meeting. Thank you for your consideration of these two very important projects.

Sincerely,

Renée N. Hamilton

for Helen L. Cuervo, P.E.
District Administrator
Northern Virginia District

cc: Ms. Renée Hamilton, VDOT-NoVA
Ms. Jennifer Mitchell, VDRPT
Ms. Susan Shaw, VDOT-NoVA
Mr. Norman Whitaker, VDOT-NoVA

I-66 Transit/TDM Study
Final Report

December 31, 2009

Developed by
I-66 Transit/TDM Technical Advisory Committee

Project Lead
Virginia Department of Rail and Public Transportation
600 East Main Street, Suite 2102
Richmond, VA 23219
www.drpt.virginia.gov

ES.0 Executive Summary

The purpose of the I-66 Transit/Transportation Demand Management[1] (TDM) Study was to identify more transportation choices through transit service and TDM program enhancements to increase mobility in the corridor. The study set out to develop a recommended plan for short- and medium-term transit and TDM service improvements in the I-66 corridor between Haymarket and Washington, D.C. and to be positioned to provide input into the restart of the Virginia Department of Transportation (VDOT) I-66 Multimodal Transportation Environmental Study. The study was mindful to offer approaches that could lay the groundwork for rail extension in the long term.

The study was conducted by the I-66 Transit/TDM Technical Advisory Committee (TAC) consisting of members from state, regional, and local jurisdictions, transit agencies, and transportation demand management providers in cooperation with the Virginia Department of Rail and Public Transportation (DRPT). This multimodal transportation planning effort utilized the results of a market research survey, travel demand forecasting, and park-and-ride demand forecasting, as well as the expertise of the TAC to develop and consider alternative recommendations.

This Executive Summary provides a summary of the key messages emerging from the TAC's work as well as an overview of the study, including the major activities, findings, and recommendations. More detailed information is available on all of the topic areas within the body of the report.

ES.1 Key Messages

Key messages from the I-66 Transit/TDM Study include:

- Today there is robust transit service in the I-66 corridor, including many local and express bus routes with good service frequencies, in addition to trains traveling downtown every six minutes during the peak period on the Metrorail Orange Line. Additionally, complementary transit services operate nearby on U.S. 29, U.S. 50, and on the VRE Manassas Line. However, high quality service is limited during off-peak periods and in the reverse peak direction.
- The projections for the location of households and employment in 2030 for the I-66 corridor indicate that some future land uses in the corridor will be less conducive to being served by transit. Unless corridor-wide transit-oriented development strategies are implemented, sprawl and congestion will continue to grow with an expected 22 percent increase in commuter trips originating in locations within the corridor and an expected 40 percent increase in commuter trips destined to the corridor (due to employment growth exceeding residential growth). There would still be a large market for transit services and potentially some new markets; however, expected growth areas not easily served by transit should be reviewed for impacts on the transportation system.
- The recommended Priority Bus[2] transit improvements will greatly increase service frequency to important destinations from within the corridor by 2030 and, thus, attract more people to

[1] Transportation Demand Management is the application of strategies and programs to change travel behavior in order to reduce the demand on highways and to improve the performance of the transportation system (e.g., carpooling, vanpooling, park-and-ride facilities, guaranteed ride home programs, and shared-ride benefits and support programs).

[2] Priority Bus service includes BRT or elements of BRT that improve the quality and dependability of transit service, including frequent service, substantial stations, improved reliability, advanced technology and information systems, direct access to stations, modern vehicles, and distinct branding

live in the activity centers and ride transit, potentially reducing sprawl. For example, in Haymarket, interlined service frequency to major work destinations will increase from once every 60 minutes to once every 10 minutes (with new destinations served). At Centreville, interlined service frequency will increase from about one bus every six minutes to one bus every two minutes.

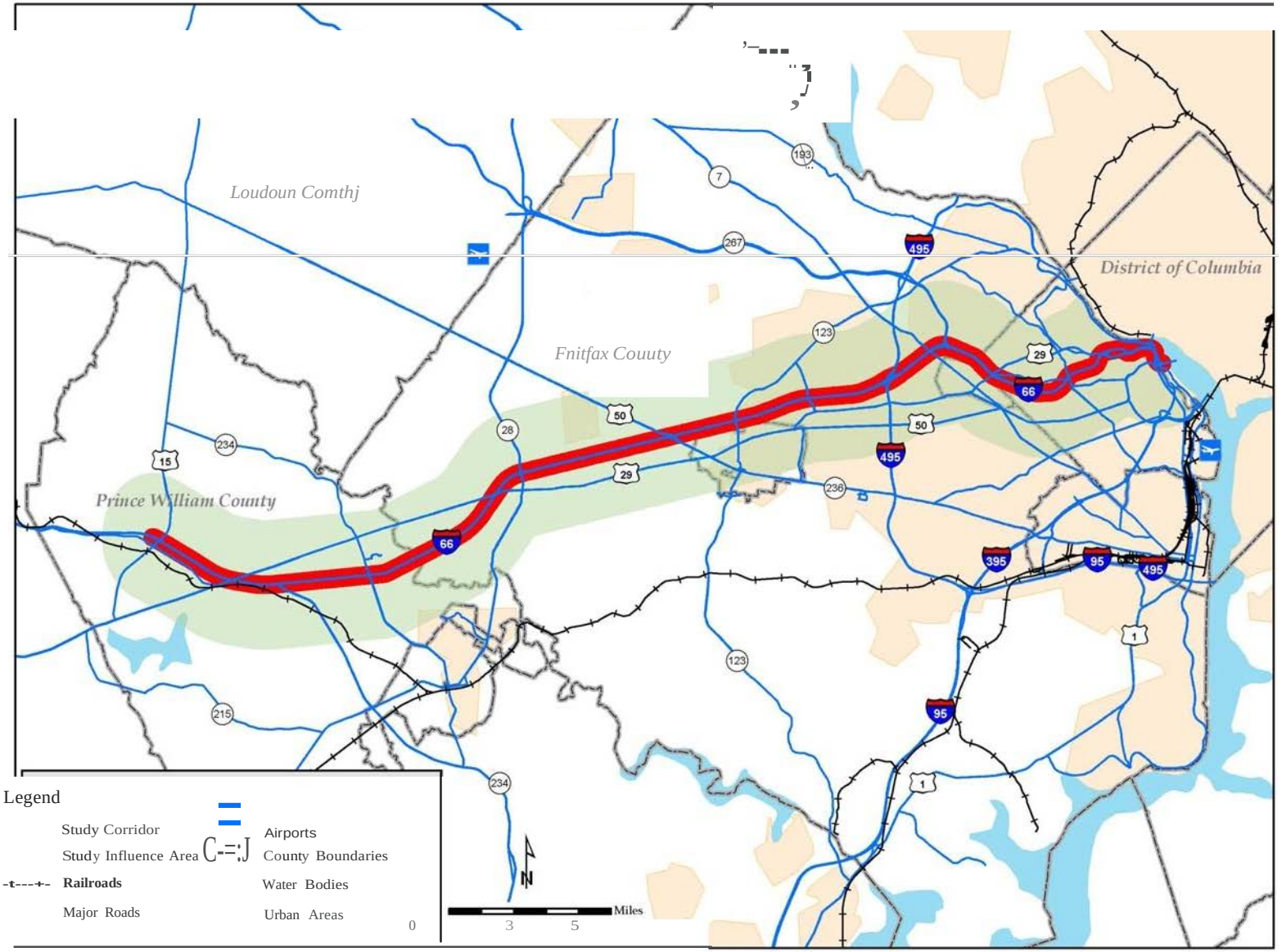
- The recommended Priority Bus transit improvements will also reduce the number of transfers required and create travel time savings to major markets in the I-66 corridor versus existing transit service, attracting more people to transit. For example, a 20 percent time savings is forecast for transit trips via services on U.S. 50 or U.S. 29. A 25 percent time savings is forecast from Haymarket to D.C. and a 10 percent time savings is forecast from Centreville to D.C.
- The full set of recommendations improves transit reliability and attractiveness, resulting in more people moving in the corridor by transit. Similar to the Dulles Corridor, Priority Bus improvements and facilities can be implemented in the short term and lay the groundwork for an extension of rail in the corridor in the long term. The limits of the short-term recommendations confirm that the long-term strategy for the corridor must continue to advance in order to provide the capacity required to meet forecasted demand.
- The recommended TDM programs provide benefits to all travelers in the corridor by reducing vehicle trips, providing a range of travel options, and raising awareness of transit services in the corridor; the corridor and its options are able to meet the needs of more people. As an added benefit, TDM programs have a generally lower cost than infrastructure improvements and can be implemented in the corridor quickly.
- The short-term recommendations require capital investment of $126.8 million and an annual operating cost of $11.8 million above the cost of existing service. The medium-term recommendations require additional investment beyond the short-term recommendations, including $163.7 million in additional capital investment (including replacement vehicles for improvements implemented in the short term). The annual operating cost for the medium-term recommendations is $14.7 million; $2.9 million more than the short-term recommendations. All of these figures are expressed in constant 2010 dollars and are net of projected farebox revenues.
- The study was conducted using the latest regionally adopted analysis tools and associated assumptions. These do not yet officially reflect significant ongoing activities, such as potential changes in land use for Tysons Corner and changes to HOV operations that could further increase the benefits of the strategies recommended in this study.

ES.2 Study Overview

The I-66 Transit/TDM Study represents a part of efforts by the Commonwealth of Virginia to review various multimodal solutions to manage existing congestion and expected growth in the I-66 corridor. This study is focused on identifying short- and medium-term transit and TDM improvements (infrastructure, services, and programs) for the corridor.

The study area comprises an area of approximately two miles on either side of the corridor defined by I-66 from U.S. 15 in Haymarket, Virginia, east to the District of Columbia. The study area included consideration of U.S. 29 and U.S. 50. Figure ES-1 shows the boundaries of the study area. Major destinations in the study area include the Washington D.C. core, Pentagon area, Rosslyn-Ballston corridor, Tysons Corner, Fair Lakes, Centreville, Gainesville, and Haymarket.

Figure ES-1.1-66 Transit/TOM Study Area



The project was executed as a series of closely associated tasks covering a spectrum of activities from data collection through analysis to development of recommendations. A public information program was an important activity throughout the project. The TAC, made up of agency and operator stakeholders, carefully guided the work. Ultimately, a set of multimodal recommendations were developed that encompassed transit service, transit stations, pedestrian and bicycle facilities, TDM strategies, and park-and-ride lots. Cost and revenue projections for these recommended elements were developed in the final stage of the study.

ES.3 Existing Conditions

The I-66 corridor features a wide range of transit services, including commuter rail operated by VRE, Metrorail service operated by WMATA, and various bus services, including express buses, operated by multiple agencies. Thousands of commuters use transit daily in the corridor. A variety of TDM programs and services also operate in and around the study corridor and support ridesharing and transit use as well as reduce overall travel demand. Park-and-ride lots in the corridor are generally heavily used, especially those associated with rail service.

The existing I-66 HOV lane is a critical element in the success of the existing transit services, providing the incentive of travel time savings to transit riders and carpoolers as compared to if the lane did not exist. However, pressure has been developing that is affecting the performance of the lane, and this has been exacerbated by recent construction work related to the Beltway HOT facility construction. Friction from the adjacent general purpose lane, in part due to a lack of physical separation, leads to degradation of the travel time savings available in the HOV lane and threatens the attractiveness of carpooling and transit in the corridor.

ES.4 General Travel Forecasts

Projected growth in population and employment in the corridor are expected to significantly increase in future years and additionally strain transit and highway capacity. This is particularly true in the I-66 corridor where growth and development is currently expected to occur. Areas forecast to experience the most substantial household growth include areas on the far western end of the corridor in Prince William County, west of the City of Fairfax and in Tysons Corner in Fairfax County, and in some parts of Arlington County. Several areas are forecast to experience major employment growth including the area near Dulles International Airport in both Loudoun and Fairfax Counties and the Tysons Corner area in Fairfax County.

In addition to existing traditional commuter patterns to the urban core, the marked increase in population, employment, and activity centers along the western half of the I-66 corridor suggests an increasing likelihood of a gain in prominence of reverse commuting patterns. However, this pattern of commuting is more challenging to serve with transit than are more traditional core commutes and thus the need to consider TDM programs, including ridesharing and telework, as part of the mix is clear. Of course, the form of the development in the corridor is a critical element to consider. Campus-type commercial developments and residential culs-de-sac are not transit friendly. To the extent that transit-oriented development (TOD) can be encouraged, then it may be possible to develop non-core-oriented transit services that are successful. Transit service works best for concentrated travel markets and requires supportive land use policies for optimum conditions.

The appeal of transit has grown in recent years and could signal a paradigm shift where commuters are more receptive to the idea of using transit. Coupled with enhancements in the quality and dependability of service, the potential for Priority Bus services to attract additional riders seems clear. As part of the I-66 Transit/TDM Study, exploration was made of the attractiveness of elements of improved transit service and a framework was developed for

potential expansion of implementation of Priority Bus infrastructure and services to the corridor. Implementation of Bus Rapid Transit or enhancement of the existing commuter bus and express bus services were among the alternatives considered as part of the study.

ES.5 Market Research Findings

As part of the outreach effort for this study, an extensive market research program was conducted. The market research was used to determine current travel patterns, attitudes, and preferences by mode in the study corridor and to explore expected changes in travel behavior as a result of introducing possible enhanced infrastructure, programs, and services. Postcard invitations were mailed to approximately 75,000 households, and direct e-mail lists with thousands of additional contacts were used to reach other potential participants. Nearly 3,000 completed interviews were obtained across the desired target segments to enable analysis with appropriate levels of statistical confidence.

The market research indicated:

- There is strong potential support in the corridor for new and/or improved transit services;
- Dependability is a critical attribute of successful bus services in the corridor;
- Time and cost are more important to commuters than whether the Priority Bus services offered are “BRT” or other forms of express bus;
- Employer and institutional TDM support is necessary to encourage use of modes other than single-occupant vehicles. For example, the availability of employer transit benefits and the presence of the guaranteed ride home program (GRH) are factors in mode choices being made in the corridor;
- Expanded telework programs could eliminate some commuter trips altogether; and
- There is a need for increased marketing of the availability of transit services and TDM programs to realize the full potential for ridership and usage.

The market research fed into the development of the analyzed alternatives, including the definition of potential Priority Bus services for the corridor. Ultimately, the formulation of the study recommendations was also informed by the market research.

ES.6 Public Information Program Findings

The information program for the study included extensive communication and outreach, including conducting stakeholder interviews and holding public meetings. For the stakeholder interview program, a selection of more than 40 stakeholders were interviewed, in consultation with the TAC, representing a broad and diverse cross-section of public interests including: elected and appointed officials; local transportation agency leaders; and representatives from home owners associations, civic associations, chambers of commerce, special interest groups for land use and alternative transportation modes, and industry associations. The interviews covered stakeholder knowledge of the study, preferences on mobility solutions in the corridor, and ideas on ways to communicate about the study. The interviews took the form of a dialog, guided by tailored interview protocols. The interviews provided valuable insights and guided the development of recommendations, including highlighting the criticality of the reliability of the I-66 HOV lane, the importance of providing fast and dependable transit service, and the wide support for transit and TDM improvements.

Six public information meetings were also performed as part of the public outreach program, in two rounds. Presentation boards, slides, handouts, and web site materials were developed for the purpose of informing interested citizens in the corridor about the study process and comment forms (paper and electronic) and question and answer sessions were used to solicit input for use in the study. The meetings were held in Arlington, Fairfax, and Prince William Counties and included both a formal presentation and an open house component. In addition, fact sheets were developed as the study progressed to share information about the progress of the study and its key findings. The input received from the public through this project confirmed the strong desire for transit service enhancements and improvement of the reliability of the underlying HOV lane and guided the development of recommendations.

ES.7 Analysis Findings

A set of three initial alternatives and a final refined alternative were among the improvement scenarios tested. In developing the alternatives, the focus was on short- and medium-term enhancements that could be made to transit infrastructure and services and TDM programs. The objectives that guided the definition and analysis of the transit alternatives and TDM strategies were as follows:

- Transit service improvements should be demand-driven and built from existing service levels to meet forecasts of increased transit demand in the planning horizon.
- Existing transit services already provide excellent coverage in areas with large numbers of transit trips and transit mode share in the corridor. Since it is anticipated that existing services will continue and that transit providers in the corridor have planned and approved service improvements, the alternatives were designed to enhance the coverage or the existing level of services and are defined by specific operator.
- Services should reflect that the basic market needs for transit in the corridor will still consist of long distance commuters whose trips end in downtown D.C., Tysons Corner and the Rosslyn-Ballston corridor in Arlington, though consideration should also be given to new markets.
- Transit service improvements would utilize existing HOV lanes as the travel lanes for any new transit service improvements in the corridor (i.e., no dedicated transit rights-of-way would be assumed) due to the objectives and time horizon of the study.
- Transit improvements would be designed so as to lay the groundwork for the extension of the Metrorail Orange Line.
- Any Priority Bus service framework proposed would be considered as part of an overall Northern Virginia Priority Bus system, including potential Priority Bus services along I-495 and I-95/I-395.
- Proposed Priority Bus services should interface effectively with the Metrorail system, particularly the new Silver Line to Loudoun County and Dulles International Airport.
- BRT would be among the Priority Bus implementation alternatives considered by the study for the I-66 corridor.

The process of developing the testing alternatives was iterative, with qualitative assessments performed with the help of TAC members. Travel forecasting was performed using the MWCOG/TPB regionally adopted model and a post-processor developed for WMATA for submode choice analysis to permit comparison among the testing alternatives. In addition, a number of sensitivity analyses and other checks were performed in reviewing and interpreting the forecasts and arriving at a refined alternative for further consideration.

The refined alternative was based on a broad set of inputs, not just the travel forecasting. The public, stakeholder, and TAC input; the market research; and information about current ridership patterns and recent growth were all important factors. The overall analysis showed that the significant existing transit service will continue to attract additional riders in the corridor over time. In addition, there are opportunities for introducing a Priority Bus framework to the corridor. This framework would include new or enhanced station and access infrastructure, new or expanded park-and-ride facilities, and new or enhanced bus services. In addition, supportive TDM programs were indicated to increase ridesharing, transit use, and telework in the corridor.

ES.8 Recommendations

The analysis work led to a set of infrastructure, program, and service recommendations for transit and TDM in the corridor. The recommendations have been developed to improve conditions in the I-66 corridor for travelers using all modes. Taken together, the recommendations strive to provide congestion relief in the corridor, improve the operations of the existing HOV lane, increase the reliability and speed of transit service in the corridor, increase the amount of park-and-ride spaces available, and provide a range of transportation options for residents and employees in the corridor.

The core recommended infrastructure improvements include the development of eight Priority Bus stations, new direct access ramps at several locations, several new and expanded park-and-ride facilities, and adjustments to improve the reliability of the existing HOV lane. Several complementary transit service recommendations are also made. In addition, a comprehensive supporting TDM strategy is recommended.

ES.8.1 Priority Bus Stations and Ramps

The eight Priority Bus stations recommended for the I-66 corridor include:

- Haymarket;
- VA 234 Bypass;
- Centreville;
- Stringfellow Road;
- Monument Drive/Fairfax Corner;
- East Falls Church;
- Ballston; and
- D.C. Core.

Each of these stations would be served by multiple transit routes, including new Priority Bus services in addition to feeder and realigned existing service. The study developed sketch plans for each of these stations, including desired direct or indirect ramp connections and potential parking facilities for 2015 and 2030 time horizons.

Among the proposed station infrastructure improvements, the study recommends development of a two-way direct access ramp from the eastbound I-66 HOV lane to the Vienna Metrorail station and vice versa. This ramp would make it faster for buses to access the station and provide an easy return in the opposite direction. Even this small amount of travel time savings could attract additional riders. In addition, by eliminating a weaving movement that would otherwise be necessary to access the station, the ramp would make an additional positive contribution to reducing congestion for general purpose traffic.

ES8.2 Runningway Improvements

The existing I-66 HOV lane is a critical element in maintaining dependable, high-quality transit services in the corridor. The travel forecasting, market research, and public input underlined the importance of addressing the reliability of the lane in the short and medium term. Signing and marking improvements are recommended by this study for the congested portion of the lane, particularly between approximately U.S. 50 and the Beltway to create a better defined buffer of two-to-four feet in width with appropriate enforcement. These improvements would define specific entry and exit points from the lane, using double white lines to mark areas where entry or exit was prohibited. In the long term it may be necessary to consider adjusting the hours of operation, occupancy requirements, clean fuel vehicle exemptions, or enforcement protocols of the HOV lane to maintain its reliability. Physical barrier separation of the lane does not seem feasible in the short or medium term. Where HOV facilities are not available, such as on U.S. 29, U.S. 50, or in the off-peak direction on I-66, bus-on-shoulder or queue jump operations may be useful to consider in some locations in order to provide bus services with a reliable runningway.

ES.8.3 Recommended Transit Services

A map depicting the recommended services, including Priority Bus services, is provided as Figure ES-2. The map also indicates the location of the recommended Priority Bus stations. The market focus for the recommended transit service is primarily traditional commute trips in the peak hours and peak directions, although some new reverse commute service is provided on the portion of I-66 east of VA 28. The Priority Bus routes provide service to the employment centers in Arlington by providing direct connections to Ballston. The connection at East Falls Church will also provide transfer opportunities to the Silver Line and the Tysons Corner area. Substantial feeder services are also recommended in addition to the Priority Bus services that provide connections to and from major destinations in the study area including Manassas, Fair Lakes, Centreville, Reston, and Herndon.

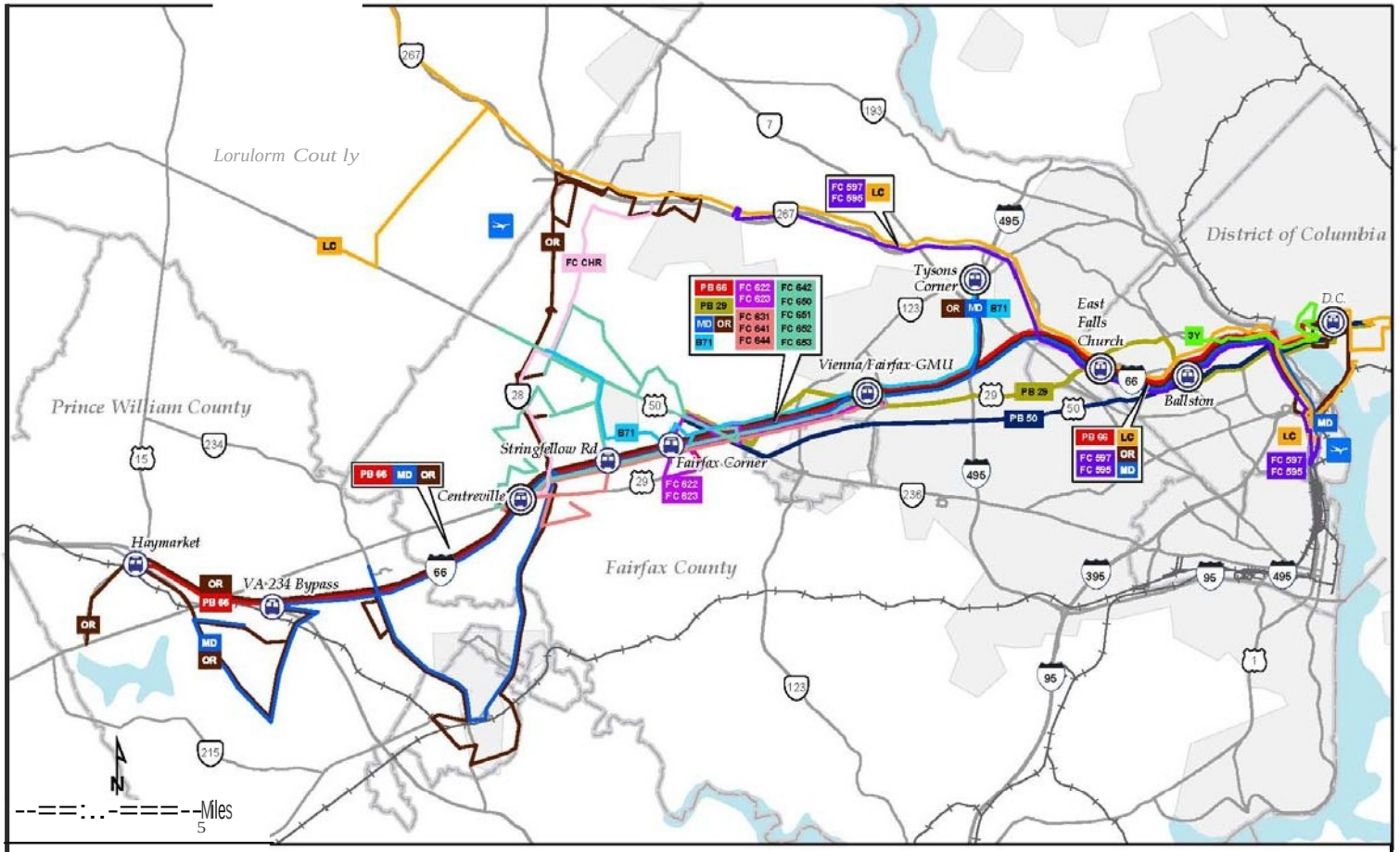
The recommended I-66 Priority Bus service includes many elements of BRT that will improve the quality and dependability of transit service provided in the corridor. Frequent service is supplemented by substantial stations, improved reliability, advanced technology and information systems, and direct access to selected stations. In addition, the market research indicated that the most compelling element of BRT was that it makes fewer stops than other transit alternatives. Each of the recommended new I-66 Priority Bus services has only five stops, providing a shorter a more direct trip to the major destinations in the corridor (e.g., the D.C. Core and the Rosslyn-Ballston corridor).

ES.8.4 Park-and-Ride Lots

Recommendations for expanded parking capacity were developed, in part, based on travel forecasts for the corridor with the other recommended improvements in place. The first priority in allocation of spaces was to provide parking for the proposed new facilities near Haymarket and Centreville. The second priority was to address areas with the largest difference between the forecast demand and capacity.

Where new lots are recommended, transit service is also recommended so as to provide a backbone for supplemental ridesharing activities. However, higher priority was given to expanding existing parking facilities over constructing new ones because travel behavior research has shown that there is usually inertia associated with the ridesharing and transit activities that occur at existing facilities and because the environmental and engineering processes are generally faster with lot expansion as compared with constructing an all new facility.

Figure ES-2. Recommended Transit Service



The recommendations include the addition of 2,650 spaces by 2015 and an additional 350 spaces by 2030 through capacity expansions at three existing lots and the construction of four new lots in the western end of the corridor. This represents a more than 25 percent increase in park-and-ride capacity in the corridor. Of the four new lots, three will be served by the recommended I-66 Priority Bus service.

Work should proceed on developing a system to provide real-time information about park-and-ride facility utilization to corridor travelers along the lines of the recommendations of a June 2009 Feasibility Study conducted by WMATA. The outlined system could include information directing patrons to open spaces as well as indicating space availability to help commuters plan their trips and reduce parking circulation related congestion and the associated time. Implementation of a pilot real-time parking information system at West Falls Church is recommended in the short term as the first step in such a corridor-wide project.

ES.8.5 TDM Strategies

Three tiers of TDM strategies representing varying levels of investment and market penetration were developed in the course of the study. TDM plays an important role in improving the quality of transportation in the I-66 corridor by providing a range of transportation options to residents and employees of the area. In addition, there are recommended TDM elements that focus on increasing awareness of transit services and providing programs that encourage transit use. Because of these potential benefits and the importance of high quality TDM programs illustrated by the market research survey, the highest tier of TDM services was recommended for the I-66 corridor.

TDM recommendations were developed for implementation by the horizon years of 2015 and 2030. Table ES-1 highlights all 15 program elements. Only elements “A” through “I” are indicated for implementation by horizon year 2015. By horizon year 2030, it is recommended that all 15 program elements be implemented. As envisioned, the TDM strategies would be implemented throughout the I-66 corridor study area, which would include areas adjacent to I-66 and residential areas that would be considered “feeders” to I-66 for commuting.

Table ES-1. Recommended TDM Strategies

ID	Program	Description
A	Enhanced Corridor Marketing	Adds targeted marketing (direct mail, newspaper advertisements) for TDM and transit along the corridor and in feeder markets
B	Vanpool Driver Incentive	Provides incentives to get new drivers and retain existing drivers for vanpools
C	Corridor-Specific Startup Carpool Incentives	Provides a three- to six-month startup carpool incentive for participating commuters in Northern Virginia
D	Rideshare Program Operational Support	Additional staff for commuter assistance programs in the corridor and feeder markets to promote TDM programs and transit and for additional employer outreach support
E	Carsharing at Priority Bus Activity Nodes	Expand the existing carshare program to include vehicles at Priority Bus activity nodes
F	Bike Hubs/Storage at Priority Bus Activity Nodes	Priority Bus nodes near employment or residential activity centers include “bike hubs” with bike maintenance, showers, personal lockers, and other services for bicyclists; additional lockers at other nodes

Table ES-1. Recommended TDM Strategies (continued)

ID	Program	Description
G	TDM Program Evaluation	Evaluation of travel and environmental impacts of TDM activities in Northern Virginia, with particular attention to impacts on I-66 corridor system operation
H	Enhanced Virginia Vanpool Insurance Pool	Provides affordable insurance coverage for vanpools
I	Enhanced Telework!VA	Adds new financial incentives for Virginia employers and/or extends the level of assistance available
J	Northern Virginia Ongoing Financial Incentive	Offers a small ongoing reward opportunity (e.g., prize drawings, etc.) to commuters traveling to or from Northern Virginia using a non-SOV mode
K	Van Priority Access	Allows vanpool vans to access bus-only infrastructure in the I-66 corridor
L	Capital Assistance for Vanpools	Provides financial assistance for purchase or lease of vanpool vans
M	Flexible Vanpool Network	Includes a network of overlapping vanpool routes which permits part-time ridership and flexibility for full-time riders to modify their vanpool schedule with a reservation
N	SmartBenefits Subsidy Public Share	Provides a public agency contribution to employer-provided SmartBenefit transit/vanpool subsidies and shares the cost of these subsidies with employers
O	Mobility Centers/Mobile Commuter Stores	Self-serve kiosks or staffed commuter stores at I-66 Priority Bus stations offering personalized trip advice, transit information, and fare media

ES.8.6 Related Recommendations

In addition to the core recommendations of the study, several related recommendations are also made to further the study objectives, including:

- Review of adequacy of pedestrian and bicycle facilities is recommended for existing transit hubs and stations and should be an essential planning element of new facility development.
- Transit-oriented development considerations are also recommended to be a part of new station planning as well as when considering redevelopment around existing transit hubs or activity centers in the corridor.
- As plans evolve for the proposed K Street Transitway, it is recommended that the needs of Priority Bus services traveling from outside D.C. be addressed in a manner that will maintain the attractiveness of these services. This includes exploration of bus priority lanes on facilities leading to and entering D.C., including the Roosevelt Bridge.
- The developments along the VA 28 corridor showed some promise as a potential transit market due to the large amount of employment growth anticipated. However, the land use form and scale and the types of roadway facilities involved indicated that a separate study should be conducted on how best transit ridership could be realized. Therefore, conducting such a study is among the related recommendations of this study. Indeed, a concept review of BRT lanes between U.S. 50 and the Dulles Toll Road is currently being considered as part of a study to develop 30 percent plans for widening VA 28.

- During the development of station sketch planning for the Haymarket area station it was realized that additional comprehensive multimodal planning in the area around and including the Town of Haymarket could be beneficial. Such a study would identify and select from among alternative locations the preferred location and form for a context-sensitive transportation hub and its associated parking facilities. Prince William County, the Town of Haymarket, the Potomac and Rappahannock Transportation Commission (PRTC), Virginia Railway Express, VDOT, and DRPT would be potential stakeholders in such a study.
- Planning for the longer-term extension of rail in the corridor should be progressed, including Metrorail Orange Line extension beyond Vienna and extension of the VRE Manassas Line. Station area plans for each proposed station should advance not only to inform rail planning but also to inform the synergistic development of appropriate Priority Bus infrastructure as a stepwise short- to medium-term improvement that lays the groundwork for rail (e.g., the site location and character of parking and station facilities).

ES.8.7 Program Costs

Table ES-2 summarizes the total capital and operating costs for this study's recommendations in 2010 constant dollars. The medium-term plan element costs are additive to the short-term plan element costs to arrive at the net difference between the medium-term plan elements and existing conditions. The plan elements shown include all recommended transit services, Priority Bus stations, TDM programs, the I-66 HOV lane buffer, and all park-and-ride lot recommendations. The majority of the costs are capital costs associated with park-and-ride lot expansions, construction of Priority Bus stations, and the purchase of vehicles. The total capital cost of the recommendations is estimated as $290.5 million. The annual operating cost for the full medium-term program, net of farebox revenue, is $14.7 million; about $2.9 million more per year than the short-term program.

Table ES-2. Summary Cost Projections for Recommendations

	Annual Operating Cost [2]		Capital Cost		
Plan Element	**Short Term**	**Medium Term [3]**	**Short Term**	**Medium Term [4]**	**Total**
Transit Services	$10.1	$11.1	$35.7	$47.5	$83.2
Priority Bus Stations	-	-	$57.3	$112.2	$169.5
Runningway Improvements	-	-	$2.0	-	$2.0
TDM Programs	$1.5	$3.6	$5.3	$0.5	$5.8
Park and Ride	$0.2	-	$26.5	$3.5	$30.0
Total	$11.8	$14.7	$126.8	$163.7	$290.5

Notes:
1. All costs are expressed in millions of 2010 constant dollars and represent costs beyond providing existing programs and services.
2. Annual operating costs are expressed net of farebox revenue.
3. Medium-term operating costs are inclusive of costs to operate plan elements included as short-term recommendations; they are not additive with the short-term operating costs.
4. Medium-term capital costs include new programs, services, and infrastructure beyond the short-term recommendations, plus cost for vehicle replacements for services initiated in the short term.

ES.9 Next Steps

The recommendations of the I-66 Transit/TDM Study are intended to be implementable in the short- or medium-term time frame. Although the horizon years for the analysis and planning were 2015 and 2030, the actual year of implementation could be earlier. Several of the recommendations represent actions that could be moved forward in the immediate future. These

include moving forward with design of the recommended HOV lane improvements, the preliminary engineering of the direct access ramp for the Vienna Station, park-and-ride capacity expansion at existing locations, and enhancement of many of the TDM programs, including enhanced corridor marketing. Development of cross-operator implementation plans for the Priority Bus framework should also progress in the immediate future.

In the short term, further planning for the additional recommended park-and-ride locations and implementation of new and enhanced transit services would proceed. The recommended VA 28 corridor transit study and Haymarket area transit hub/park-and-ride study could be completed. Additional planning for longer-term rail extensions should also continue. Engineering for two additional direct access ramps, at Stringfellow Road and at Monument Drive/Fairfax Corner could also proceed.

Working towards some of the medium-term recommendations will require additional planning work, including designing bus priority treatments on local streets, engineering for additional direct access ramps, considering additional HOV runningway improvements, and implementing the full range of recommended transit services and TDM programs.

Funding for the transportation infrastructure and service improvements will remain a challenge in the near term. Although the study explored and identified general potential funding sources, it will still be up to planners and policy makers to program funds for the recommended improvements to permit full implementation to be realized.

NOVEMBER 2013

TIER 1 FINAL ENVIRONMENTAL IMPACT STATEMENT AND TIER 1 RECORD OF DECISION

INTERSTATE 66

From US Route 15 in Prince William County
To Interstate 495 in Fairfax County

VDOT Virginia Department of Transportation

DRPT
Virginia Department of Rail and Public Transportation

U.S. Department of Transportation
Federal Highway Administration

FHWA-VA-EIS-13-01-T1F

INTERSTATE 66 CORRIDOR– From U.S. Route 15 to Interstate 495 (Capital Beltway)
Fairfax and Prince William Counties, Virginia

TIER 1 FINAL ENVIRONMENTAL IMPACT STATEMENT AND TIER 1 RECORD OF DECISION

Submitted Pursuant To:
42 U.S.C. 4332(2)(c)

By:
U.S. Department of Transportation, Federal Highway Administration
and
Virginia Department of Transportation
Virginia Department of Rail and Public Transportation

Cooperating Agencies:
Federal Transit Administration
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency

11/20/13
Date of Approval

Gregory A. Nuckols
Environmental Administrator
Virginia Department of Transportation

11/20/13
Date of Approval

Director FOR TD
Virginia Department of Rail & Public Transportation

11/20/2013
Date of Approval

for Division Administrator
Federal Highway Administration

This Tier 1 Final Environmental Impact Statement defines existing and future transportation conditions and needs within the 25-mile I-66 corridor from U.S. Route 15 to I-495 (Capital Beltway), identifies a range of conceptual-level improvements that would address those needs, and evaluates the potential effects of these concepts on the natural and human environments. The "Build" improvement concepts in this Tier 1 study are based on a systems level analysis that focuses on broad issues such as purpose and need, travel modes, technology choices, and general location of multi-modal improvements. The improvement concepts that have been retained in this Tier 1 Final Environmental Impact Statement are: general purpose lanes, managed lanes, Metrorail extension, light rail transit, bus rapid transit, VRE extension, improve spot locations/chokepoints, intermodal connectivity, safety improvements, and transportation communication and technology. In addition, the consideration of tolling as a funding source for improvements is proposed to be advanced to Tier 2. A Tier 1 Record of Decision is included as an appendix to the Tier 1 Final Environmental Impact Statement.

The following persons may be contacted for additional information concerning this document:

Angel Deem
Virginia Department of Transportation
Environmental Division
1401 East Broad Street
Richmond, Virginia 23219
Phone: (804) 371-6756

Amy Inman
Virginia Department of Rail & Public Transportation
600 East Main Street, Suite 2102
Richmond VA 23219
Phone: (804) 225-3207

John Simkins
Federal Highway Administration
400 North 8th Street
Richmond, Virginia 23240
Phone: (804) 775-3347

A Federal agency may publish a notice in the Federal Register, pursuant to 23 U.S.C. §139(1), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 150 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

ES EXECUTIVE SUMMARY

ES.1 NEPA TIERING PROCESS

The Virginia Department of Transportation (VDOT) and the Virginia Department of Rail and Public Transportation (VDRPT), in cooperation with the Federal Highway Administration (FHWA), are studying the potential environmental impacts of transportation improvement concepts along Interstate 66 (I-66). As a Tier 1 document, this Final EIS represents the first step within a tiered approach to National Environmental Policy Act (NEPA) analyses as presented in the Council on Environmental Quality's (CEQ's) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500 – 1508), and in FHWA's and FTA's *Environmental Impact and Related Procedures* (23 CFR 771) and *Linking the Transportation Planning and NEPA Processes* (Appendix A to 23 CFR 450; Question and Answer #9). Tiering involves the evaluation of broad level programs and issues in an initial (Tier 1) analysis followed by more detailed evaluation of specific improvements in subsequent (Tier 2) analyses.

This Tier 1 study was designed to aid in the development of a long-term vision for the I-66 corridor from US 15 to I-495 (Capital Beltway) that includes corridor-wide multimodal concepts and assists in making informed decisions about the best program of near-term and long-term transportation improvements.

This Tier 1 Final EIS defines existing and future transportation conditions and needs within the study corridor, identifies a range of transportation improvement concepts that would serve those needs, evaluates the potential effects of the concepts on the natural and human environment, and presents recommendations for improvement concepts to be advanced. The "Build" improvement concepts in this Tier 1 study are based on a systems-level analysis that focuses on broad issues such as purpose and need, travel modes, technology choices, and general location of improvements. This Tier 1 analysis examines potential impacts at a conceptual level while subsequent Tier 2 NEPA documents will include site-specific quantitative analyses of effects and provide avoidance, minimization, and mitigation measures.

ES.2 STUDY AREA

I-66 is the main east-west interstate highway in Northern Virginia and serves the District of Columbia, Arlington County, Fairfax County, Loudoun County, Prince William County and points west, the cities of Fairfax, Falls Church, Manassas, and Manassas Park and the Towns of Vienna and Haymarket. The study corridor is a complex, comprehensive transportation facility that includes general-purpose and high-occupancy vehicle (HOV) highway facilities, heavy rail transit, local and regional bus service, and bicycle and pedestrian facilities.

The study corridor is comprised of the 25-mile section of the I-66 corridor that extends from US 15 in Prince William County east to I-495 (Capital Beltway) in Fairfax County, as shown in **Figure**

ES-1. From the Capital Beltway (I-495 to US 50), I-66 is six-lane facility. The inside lane (median side) is used as a concurrent HOV-2 (two occupants or more) lane in the peak travel direction between the hours of 5:30 to 9:30 AM and 3:00 to 7:00 PM on weekdays. From US 50 to US 29 (Gainesville), I-66 is an eight-lane facility. The inside lane (median side) is used as a concurrent HOV lane during the peak periods in the peak directions, with the same operating characteristics as the previous section. From US 29 Gainesville to US 15, I-66 is currently a four-lane facility and has no HOV lanes. A planned project by VDOT is slated to widen I-66 to eight lanes in this section, including concurrent HOV lanes. The widening is planned to be completed by 2015. Within the study corridor, I-66 includes eleven general-purpose traffic interchanges and two HOV-dedicated interchanges. The analysis area for this study extends beyond the study corridor and includes areas adjacent to the study corridor. The analysis area includes I-66, its parallel arterial routes US 50 and US 29, and several key routes serving north-south travel, including US 15, VA 234, VA 28, Fairfax County Parkway, VA 123, and I-495.

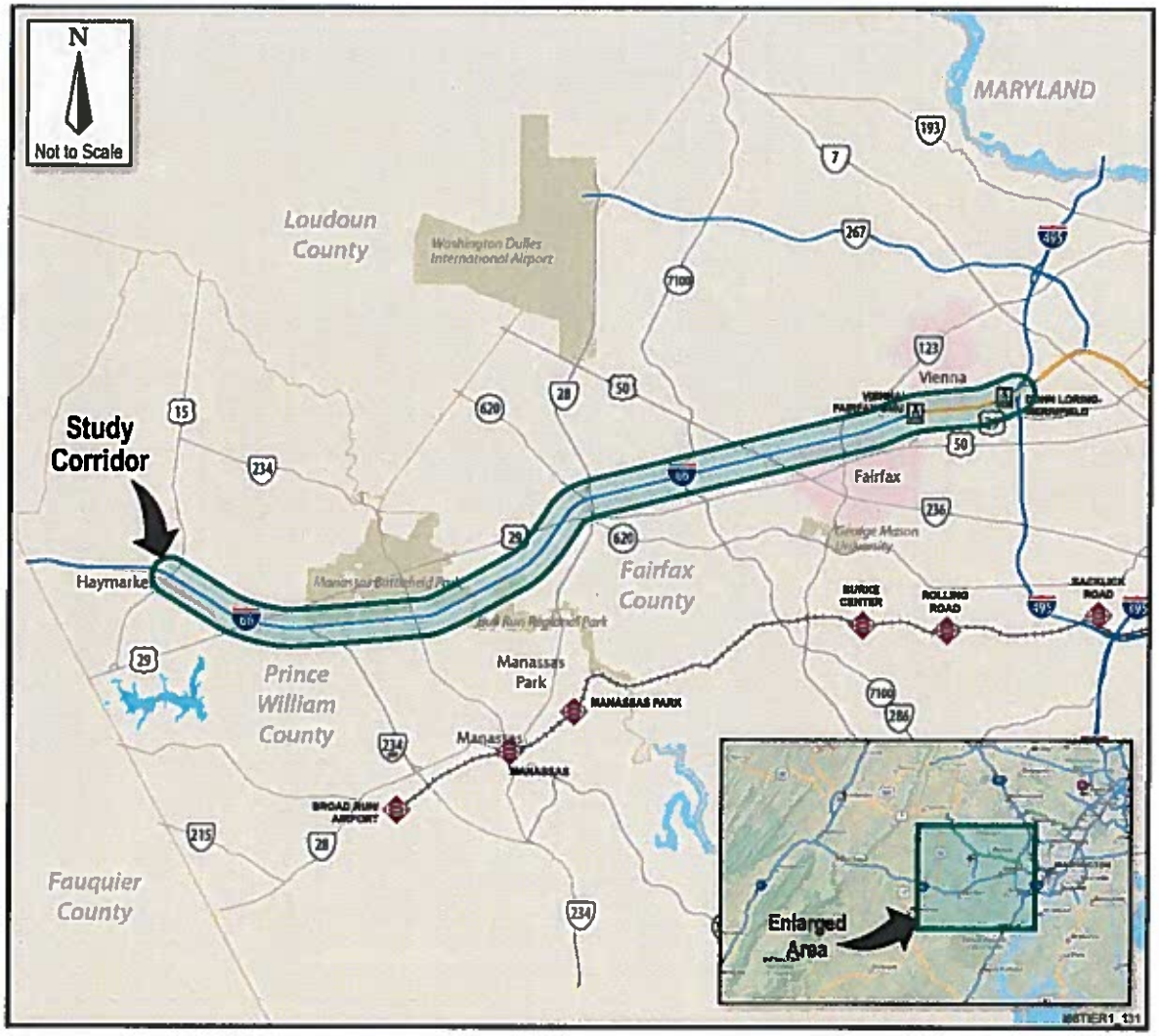


Figure ES-1. Study Corridor

ES.3 PURPOSE AND NEED

The purpose of this Tier 1 EIS is to address existing and future transportation problems on I-66. The study evaluates the effectiveness of both highway and transit improvements in meeting the identified needs. The identified needs to be addressed include: transportation capacity deficiencies, major points of congestion, limited travel mode choices, safety deficiencies, and lack of transportation predictability.

TRANSPORTATION CAPACITY DEFICIENCIES

Travel demands in the corridor, particularly during peak demand periods, exceed the carrying capacity of existing transportation facilities within the corridor. Growth in population and employment in the corridor is expected to further increase travel demand, resulting in a widening differential between demand and capacity.

MAJOR POINTS OF CONGESTION

In addition to the need for increased overall transportation capacity in the I-66 corridor, traffic operations are adversely affected by points of constraint based on either capacity or geometric issues. There are a number of localized constraints (chokepoints) where daily peak period congestion affects both car and bus transit operations.

LIMITED TRAVEL MODE CHOICES

Metrorail's Orange Line service in Virginia is primarily focused on serving commuter trips to and throughout the region's inner core (Arlington and the District of Columbia) employment areas. The peak travel of the Orange Line within the Study Corridor primarily serves home-to-work trips, eastward to the region's core in the morning and the reverse in the evening. Even with the corridor's current transit and commuter bus service, alternatives to single occupant vehicle travel are limited due to lack of connecting facilities/transfer points and largely lack of service and facilities. Transit services for the reverse of the peak direction, and during off-peak times, is much less robust. Existing bus routes in the study corridor are radial in nature and lack north/south routes. Travel choices for bicycling and walking, whether as the primary transportation mode for a trip or as a means to connect to other modes, are lacking within the corridor. Associated with the lack of modal choices are limitations with respect to coordination across the various travel models, limitations on traveler information across these modes, and the need to improve physical linkages between modes through the construction of park-and-ride facilities, intermodal transfer centers, and connections that are supportive of access to intermodal facilities by walking and bicycling.

SAFETY DEFICIENCIES

The I-66 study corridor in both directions has a lower crash rate, fatality rate, and injury rate than the overall statewide average for urban facilities; however, several key areas within the corridor have high crash rates compared to the I-66 corridor average. In both directions of I-66, the areas around the three eastern interchanges have crash rates of over 100 crashes per hundred million vehicle miles travelled (HMVMT). Also, westbound I-66 within the interchange areas at VA 28 and US 29 has a higher crash rate than the corridor; this is likely due to the high weaving volumes in the short segment between the two interchanges.

LACK OF TRANSPORTATION PREDICTABILITY

While it is difficult to quantify, travelers experience highly unreliable travel times on I-66, particularly during peak periods. With volumes either at or over capacity, events such as a disabled vehicle in the travel lane or on the shoulder, adverse weather conditions and/or glare from sunrises or sunsets, can result in substantial variability in travel time. The lack of predictability for travel in the corridor adversely affects the quality of life for travelers in the corridor and also makes it difficult for travelers to make decisions about when to travel and which mode to take. In addition, it adversely affects both travel times and service predictability for the bus services that make use of the I-66 roadway.

EXISTING AND FUTURE CONDITIONS ALONG I-66

The following existing (2011) conditions within the corridor illustrate the need for improvements:

- Over half of the corridor's peak direction roadway miles operate at a Level of Service (LOS) E or LOS F in the AM peak hour.
- Nearly two-thirds of the corridor's peak direction roadway miles operate at a LOS E or LOS F in the PM peak hour.
- Peak period congestion in the eastern portion of the corridor is 4-5 hours per day (in each direction).
- Seven of twenty (one-way) segments within the corridor experience crash rates above the statewide average for urban interstates.
- Nine specific areas of congestion exist along the corridor near interchanges where geometrics or capacity constraints cause peak period delay.
- There is a lack of traveler information along the corridor that can be used to identify alternate routes and modes.
- There is a need for improvements to Park-and-Ride lots within the study area as well as direct connections to the HOV lanes for priority buses.

Future conditions will lead to further deteriorating traffic conditions by 2040 as follows:

- Traffic is expected to grow between 10-66% along the corridor, adversely affecting both vehicular and transit bus operations.
- Employment in the Gainesville-Haymarket area is expected to grow 141%.
- During the AM peak, all of the study corridor segments in the eastbound direction are expected to operate at LOS E or LOS F.
- During the PM peak, over 90% of the study corridor segments in the westbound direction are expected to operate at LOS E or LOS F.
- Peak period congestion in the eastern portion of the corridor is expected to increase to 8-10 hours per day (in each direction), affecting both vehicular operations as well as the reliability of bus transit services.
- Metro's Orange Line demand will exceed the capacity of 120 riders per car.

- Safety concerns are expected to increase as congestion increases and traffic volumes continue to grow, particularly in areas that currently have geometric deficiencies and high weaving volumes between interchanges.
- As volumes increase, the nine specific areas of congestion identified along the corridor near interchanges where geometrics or capacity constraints cause peak period delay will remain and likely worsen.

ES.4 BUILD IMPROVEMENT CONCEPTS

The Build Improvement Concepts include corridor-length options that are intended to increase capacity within the corridor, as well as options to increase travel mode choices, improve individual interchanges, address spot safety needs, and enhance travel efficiency. The concepts were developed with public and participating agency input.

IMPROVEMENT CONCEPT DEVELOPMENT PROCESS

The term *improvement concept* is used in this document rather than the traditional term *alternative* because the improvements developed for this Tier 1 study are conceptual. Ten Build Improvement Concepts that directly address the needs were identified and considered. These concepts, along with the No-Build, are:

1. **General Purpose Lanes**: Construction of additional highway lanes open to all traffic.
2. **Managed Lanes**: Conversion of the existing HOV lane into either a one- or two-lane (in each direction) facility that would operate as a high-occupancy toll facility where only high-occupant vehicles would be exempt from paying a toll.
3. **Metrorail Extension**: Metrorail service extending west from Vienna to either Centreville or Haymarket.
4. **Light Rail Transit**: Light rail service extending west from Vienna to either Centreville or Haymarket.
5. **Bus Rapid Transit**: Separate guideway bus rapid transit extending west from Vienna to Haymarket; service could extend east of Vienna.
6. **VRE Extension**: Extension of existing VRE service from Manassas to Haymarket.
7. **Improve Spot Locations/Chokepoints**: Improvements that address operational constraints at discrete locations (chokepoints) such as individual interchanges or specific junction points within the interchanges (i.e., merge, diverge, or weaving areas).
8. **Intermodal Connectivity**: Availability of a full range of travel modes within the corridor, as well as availability and functionality of connections between travel modes.
9. **Safety Improvements**: Safety improvements that address both location-specific and corridor-wide safety concerns.
10. **Transportation Communication and Technology**: Continued enhancements to Intelligent Transportation Systems (ITS) technology for all modes in the corridor, including traveler information, corridor and incident management, and transit technology.

11. **No-Build**: The No-Build is a stand-alone concept that serves as the baseline against which the Build Improvement Concepts are measured.

The concept development process for **General Purpose Lanes, Managed Lanes, Metrorail Extension, Light Rail Transit, Bus Rapid Transit,** and **VRE Extension** are described as capacity improvement concepts. The process of developing these capacity improvement concepts consisted of four steps:

1. Quantify total travel demand in person-trips for each segment of the corridor in the horizon year of 2040.
2. Identify the range of capacity improvement concepts for carrying person-trips in the corridor.
3. Quantify the generalized ability of each improvement concept to carry person-trips in the study corridor.
4. Identify the range of possible improvement concept combinations (i.e., the improvement concept scenarios).

After evaluation of the six capacity improvement concepts revealed that none could meet the needs of the corridor as stand-alone improvement concepts, they were combined into 47 improvement concept scenarios (ICS). The ICSs represent the logically consistent combinations of the capacity-related improvement concepts and were evaluated for their ability to meet the needs in the corridor. Although the Tier 1 decisions are intended to advance an improvement concept(s) and not an ICS, the ICSs aid decision-makers in understanding how the various improvement concepts can work together.

The process for the three other improvement concepts (i.e., the non-capacity improvement concepts noted as Concepts 7 through 10 above) followed a similar, but less detailed, process of developing and testing concepts to determine the extent of which they address identified needs. This is due to the fact that these concepts focus more on a single mode and/or involve less potential interactions between modes and concepts; additionally, these concepts are generally more geographically focused and/or would involve lesser levels of potential impacts. These concepts can complement the capacity improvement concepts or serve in isolation to address components of the project's purpose and need to varying degrees.

Other Improvement Concepts Eliminated from Detailed Study

In addition to those improvement concepts carried forward for detailed evaluation, other transportation improvement concepts were considered but eliminated from further study. These included the improvement of parallel roadways and system-wide or out-of-corridor improvements to Metrorail (such as Metrorail core capacity improvements). While these concepts may be important to improving mobility across the region, they were not advanced as part of this study because it was determined that they would not directly address the needs within the study corridor across multiple measures, including those related to capacity deficiencies, major points of congestion, and travel time predictability.

In addition, Transportation Demand Management (TDM), which includes a wide range of strategies and policies that seek to reduce the demands on the transportation system by reducing travel by single-occupant vehicle (SOV); reducing peak period travel; promoting travel by transit, walking, or bicycling; and promoting more transportation-efficient land development patterns, has been eliminated as a stand-alone concept because of its inability to meet the purpose and need. TDM strategies were, however, incorporated into the improvement concepts that were carried forward.

Analysis of Build Improvement Concepts

The ten Build Improvement Concepts address the identified needs to varying degrees. **Table ES-1** summarizes the ability of each improvement concept to meet the purpose and need.

Table ES-1. Evaluation of Improvement Concepts Against Purpose and Need Elements

IMPROVEMENT CONCEPT	EXISTING AND FUTURE CAPACITY DEFICIENCIES	IMPROVE SPOT LOCATIONS/ CHOKEPOINTS	LIMITED MODE CHOICES	SAFETY DEFICIENCIES	UNPREDICTABLE TRAVEL TIMES
General Purpose Lanes	🟡[1]	🟡	🔴	🟡	🟡
Managed Lanes	🟡	🟡	🟡	🟡	🟡
Metrorail Extension	🟡	🔴	🟢	🔴	🟡
Light Rail Transit	🟡	🔴	🟢	🔴	🟡
Bus Rapid Transit	🟡	🔴	🟢	🔴	🟡
VRE Extension	🟡	🔴	🟢	🔴	🟡
Improve Spot Locations/Chokepoints	🟡	🟢	🔴	🟢	🟢
Intermodal Connectivity	🟡	🟡	🟢	🔴	🟢
Safety Improvements	🟡	🟡	🔴	🟢	🟢
Communication and Technology	🟡	🟡	🟡	🟢	🟢
No-Build	🔴	🔴	🔴	🔴	🔴

Meets Purpose and Need? 🟢 = *Yes* 🟡 = *Partially* 🔴 = *No*

Notes:

[1]Fully meeting purpose and need would require a total of 18 lanes for higher volume portions of the I-66 study corridor. The "partial" rating shown here reflects the fact that such a roadway width is impractical and not reasonable.

Based on the improvement concept analysis it was determined that:

- None of the Build Improvement Concepts, as stand-alone concepts, fully satisfy the purpose and need.
- The project peak travel demands in the corridor highlight the need for a transportation solution that provides space efficiency – the ability to carry a large number of persons within limited spaces.
- Fully meeting demand with single-mode improvements is unlikely given the constraints within the corridor; multi-modal solutions would be more practicable in addressing transportation needs in the corridor.
- The non-capacity improvement concepts partially address the purpose and need and could advance independently of the capacity improvement concepts.
- The No-Build Concept does not satisfy the purpose and need.

All ten improvement concepts, as well as the No-Build, were evaluated in detail in the Tier 1 Draft EIS and are retained in this Tier 1 Final EIS.

ES.5 ENVIRONMENTAL CONSEQUENCES

The potential impacts of the ten Build Improvement Concepts and the No-Build on the existing conditions and resources within the human and natural environments of the study area were analyzed at a level of detail appropriate for a Tier 1 EIS and the decisions to be made in Tier 1.

APPROACH

The impact analysis:

- **Uses information at a level of detail available at this stage of the process:** The overall transportation improvement development process recognizes that details such as specific footprints and operational details would be developed as part of Tier 2.
- **Focuses on the individual improvement concepts rather than combinations of improvements:** Unless the No-Build is selected, a Tier 1 decision would advance one or more of the improvement concepts. If multiple improvement concepts are evaluated in detail in Tier 2, additional studies would be performed to address in detail the specific interfaces between the specific projects.
- **Supports Tier 1 decision-making by focusing on the comparative impacts of various multi-modal capacity, operational, and safety improvements:** The intent of the impact analysis is to provide decision-makers with information to assist in understanding the potential impacts of each individual improvement concept on the natural and built environment.

PROCESS

For purposes of estimating potential impacts, the ten Build Improvement Concepts were grouped into four categories (referred to as "templates") based on the space requirements for implementation. The description and generalized footprint width for each template are shown in the **Table ES-2**. The **Safety Improvements**, **Intermodal Connectivity**, and **Transportation Communication and Technology Improvement** concepts are anticipated to have limited need for additional rights-of-way and minimal environmental impacts.

POTENTIAL IMPACTS

Based on the templates, the analysis of the potential impacts of the improvement concepts on the human and natural environments are summarized below. **Table ES-3** summarizes the potential quantitative impacts and **Table ES-4** summarizes the potential qualitative impacts. The No-Build would not require any additional right-of-way and would have no impact on the resources below with the exception of air quality and energy which would be affected by continued traffic congestion. The No-Build would not be consistent with local land use plans.

Table ES-2. Improvement Concept Widths and Description

TEMPLATE	FOOTPRINT WIDTH	DESCRIPTION
Median	235 feet	Space within the median would be used by **Metrorail Extension, Light Rail Transit,** or **Bus Rapid Transit.**
Outside		Space to the outside of existing highway would be used for either **General Purpose Lanes** or **Managed Lanes.** Widths for three possibilities of Outside widening are considered as part of the impact analysis.
Add one lane in each direction (either general purpose or managed lane)[1]	270 feet	
Add two lanes in each direction (either general purpose or managed lanes)[2]	295 feet	
Add 5 lanes in each direction (general purpose lanes)[3,4]	355 feet	
Interchange	Existing footprint expanded by 100 feet in all directions	**Improve Spot Locations/Chokepoints** would require space within or immediately adjacent to the existing interchange.
VRE	100 feet	Requirements for rights-of-way for the **VRE Extension** would be along the existing VRE alignment which is generally located approximately 5 miles from the I-66 corridor.

Notes: The estimated footprint widths shown are planning level and would be further refined during Tier 2 analyses. The Outside templates are indicated as: [1] *Outside Minimum;* [2] *Outside Medium;* [3] *Outside Maximum.* [4] Five lanes were chosen to represent a likely maximum upper limit. It was not intended to be a fixed number based on a desirable number of lanes.

Table ES-3. Quantitative Summary of Potential Impacts from Build Improvement Concepts

RESOURCE	SUMMARY OF POTENTIAL IMPACTS - QUANTITATIVE FOR BUILD IMPROVEMENT CONCEPTS (BASED ON TEMPLATES)					
	MEDIAN	OUTSIDE MINIMUM	OUTSIDE MEDIUM	OUTSIDE MAXIMUM	INTERCHANGE	VRE
Approximate template width:	235 feet	270 feet	295 feet	355 feet	Existing plus 100 feet	100 feet
Social and Economic:						
Residential Relocations[1]	0	1	4	36	14	1
Community Facility Impacts	2	10	10	10	2	4
Business Relocations	0	0	0	4	5	6
Relocations within Minority Census Tracts	0	0	1	14	5	0
Relocations within Low-Income Census Tracts	0	0	0	0	0	0
Relocations within Limited English Proficiency Census Tracts	0	0	1	8	4	0

RESOURCE	SUMMARY OF POTENTIAL IMPACTS - QUANTITATIVE FOR BUILD IMPROVEMENT CONCEPTS (BASED ON TEMPLATES)					
	MEDIAN	OUTSIDE MINIMUM	OUTSIDE MEDIUM	OUTSIDE MAXIMUM	INTERCHANGE	VRE
Farmlands *(acres)*	6.5	10.1	13.2	22.4	16.1	<0.1
Public Parks, Recreation Areas, and Open Space Easements[2] *(acres)*	0.9	6.6	12.2	21.3	1.8	0
Historic Properties[3]:	3	4	4	5	3	1
Architectural Sites	3	3	3	3	1	1
Archaeological Sites	0	1	1	2	2	0
Potential Impacts to Section 4(f) Properties (*acres*)	21.2	32.6	43.5	62.9	41.5	19.5
Hazardous Material Sites[4]	1	2	2	5	1	4
Wetlands[5] *(acres)*	3.6	6.8	9.6	17.4	9.4	7.2
Streams *(linear feet)*	5,172	6,354	7,636	9,703	5,634	1,048
Floodplains *(100-yr floodplain, acres)*	22.0	28.3	33.2	45.4	15.4	13.5
Natural Heritage Sites[6] *(acres)*	152.8	175.0	190.9	228.7	164.8	14.5

Notes:

1: Includes single family and multi-family structures.

2: There are no open space easements located within the study area. Acreage includes potential impacts to one federal park, one regional park, and six local public parks and recreation areas. However, given the nature of Manassas National Battlefield Park as a federally owned national park, it is very likely that direct impacts to the Park will be avoided.

3: Includes direct potential impacts to resources that are either listed, eligible, or potentially eligible for listing in the NRHP.

4: Includes CERCLIS Sites (none); VRP Sites (none); Unidentified HAZMAT Sites (none); and Solid Waste Facilities (1). All other identified sites are Petroleum Release Sites.

5: Includes wetland types: Palustrine Forested; Palustrine Scrub Shrub; and Palustrine Emergent.

6: Acreage includes potential impacts to five natural heritage locations within the study area.

Table ES-4. Qualitative Summary of Potential Impacts from Build Improvement Concepts

RESOURCE	SUMMARY OF POTENTIAL IMPACTS - QUALITATIVE FOR BUILD IMPROVEMENT CONCEPTS (BASED ON TEMPLATES)
Land Use	The Build Improvement Concepts are generally consistent with local comprehensive plan objectives which identify the need to improve transportation facilities along the I-66 corridor to reduce congestion and air pollution. The transit improvement concepts (i.e., **Metrorail Extension, Light Rail Transit, Bus Rapid Transit**, and **VRE Extension**), and **Managed Lanes** improvement concepts within the I-66 corridor are compatible with transportation policies of local jurisdictions located along the corridor, because these policies cite the need to move large numbers of people within relatively confined spaces. The **VRE Extension** concept is consistent with the City of Manassas Comprehensive Plan, which seeks to expand the service and promote infill and transit-oriented development. The **Safety Improvements** and **Transportation Communication and Technology** improvement concepts would further contribute to local transportation objectives of reducing congestion by lowering crash rates and providing tools to inform drivers of traffic flow problems.

RESOURCE	SUMMARY OF POTENTIAL IMPACTS - QUALITATIVE FOR BUILD IMPROVEMENT CONCEPTS (BASED ON TEMPLATES)
Air Quality	The additional highway lanes associated with the **General Purpose Lanes** and **Managed Lanes** improvement concepts would improve traffic flow and increase vehicle speeds, thereby reducing vehicle idling and stop-and-start driving conditions that are associated with higher levels of air emissions. However, an increase in vehicles speeds may have different effects for different pollutants, depending on the rate of speed. The **Metrorail Extension, Light Rail Transit, Bus Rapid Transit**, and **VRE Extension** improvement concepts all would reduce the number of vehicles on the roadway resulting in lower air emissions. **Spot Locations/Chokepoints** improvements would allow traffic to flow more efficiently and generally result in lower air emissions compared to the existing conditions. Demonstration of conformity with the State Implementation Plan in accordance with the Clean Air Act will occur during Tier 2 when individual projects are analyzed.
Noise	An initial inventory of noise-sensitive and vibration-sensitive buildings and activity areas adjacent to the study areas was completed. Detailed noise modeling, quantification of potential impacts from individual projects, and identification of appropriate abatement measures will be conducted during Tier 2. The noise analyses for the I-66 corridor would be performed in accordance with FHWA 23 CFR 772 and VDOT noise policy. For the VRE Extension corridor, rail sources are the dominant component to the noise and vibration environment and therefore the noise and vibration analyses for the VRE corridor would be conducted according to FTA criteria.
Visual Quality	The transit improvement concepts (i.e., **Metrorail Extension, Light Rail Transit**, or **Bus Rapid Transit**) would introduce a new visual element that suggests a more urban environment. Widening of the roadway as part of the capacity improvement concepts (i.e., **General Purpose Lanes** and **Managed Lanes**) as well as the **Spot Locations/Chokepoints** improvement concept would potentially impact views of parkland and farmland through the conversion of open space to a more expansive transportation facility. The intensity of potential impacts would be greatest for the Outside Maximum template.
Water Quality	The I-66 corridor crosses four impaired water bodies as identified in the 303(d) VDEQ 2010 Water Quality Assessment. The Build Improvement Concepts have the potential to increase stormwater runoff velocities and roadway contaminants received by these impaired water bodies, and other water resources in the study area. To minimize these potential impacts, appropriate erosion and sediment control practices would be implemented for the individual Tier 2 projects, if a build improvement concept is advanced, in accordance with the Virginia Erosion and Sediment Control Regulations, the Virginia Stormwater Management Law and regulations, and VDOT's Road and Bridge Specifications. More detailed analyses of water quality impacts and necessary stormwater management controls would be conducted for the individual Tier 2 projects when additional design details would be available.
Coastal Zone Management Areas	The entire study area is located within the Coastal Zone. The Build Improvement Concepts would be constructed to be consistent with the established Virginia Coastal Zone Enforceable Policies; and with implementation of mitigation measures, the Build Improvement Concepts would not impair resources protected by the Virginia Coastal Zone Enforceable Policies, including wetlands, dunes, and aquatic animals.
Wild and Scenic Rivers	There are no designated Wild and Scenic Rivers located within the study area. One stream is listed in the National Rivers Inventory and as a potential component of the state Scenic River Inventory; however, as the proposed crossing of the river would be at the existing crossing location, the scenic nature of the river would not be substantially altered.
Wildlife Habitat	While there are some natural lands adjacent to I-66, the Build Improvement Concepts would only potentially affect small amounts of these natural habitats. No substantial fragmentation or disruption of large habitat areas or potential movement corridors would occur because potential impacts would take place along existing facilities. Therefore, the effects of the Build Improvement Concepts should not be substantial.
Threatened and Endangered Species	Based on the habitat model used in the USFWS Information Planning and Conservation (IPAC) online review, potential habitat may exist within the templates for two federally listed plants and one-federally listed mollusk. Correspondence with the VDGIF indicates suitable habitat may occur for two state-listed species. According to the VDGIF Species Observation Database (SppObs), no known occurrences of federal or state listed wildlife species would be impacted by any Build Improvement Concepts based on the templates.

RESOURCE	SUMMARY OF POTENTIAL IMPACTS - QUALITATIVE FOR BUILD IMPROVEMENT CONCEPTS (BASED ON TEMPLATES)
Invasive Species	While highway right-of-way is vulnerable to colonization by invasive plant species from adjacent properties, implementation of the provisions of VDOT's Road and Bridge Specifications would reduce the potential for the establishment and proliferation of invasive species within the study area.
Energy	The capacity improvement concepts range in their rate of energy consumption with average British Thermal Units (BTUs) per passenger mile ranging from 2520 to 4118 for the various modes. The rate of energy consumption for the **Spot Locations/Chokepoints, Safety Improvements, Intermodal Connectivity,** and **Transportation Communication and Technology** improvement concepts cannot be computed at the passenger mile level, however these concepts are likely to have minimal energy expenditures.

ES.6 TIER 1 DECISIONS

A Memorandum of Agreement (MOA) established in June 2011 between VDOT, FHWA, DRPT, and FTA outlines the roles of each agency during the Tier 1 NEPA process and the decisions to be made following completion of the Tier 1 study (see Appendix A). Per the agreement, VDOT, VDRPT, and FHWA are joint Lead Agencies for the Tier 1 EIS pursuant to 23 USC 139(c); while FTA is a Cooperating Agency and may therefore adopt the Tier 1 EIS. Different Lead Agencies may be identified during subsequent Tier 2 NEPA studies.

Per the MOA, decisions on the following will be made upon completion of the Tier 1 study:

- The concepts to be advanced for the I-66 corridor, including transit improvements, transportation demand management strategies, and/or roadway improvements. Within these concepts, consideration will be given to managed lanes and tolling;
- The general location for studying future highway and transit improvements in Tier 2 NEPA document(s);
- Identification of projects with independent utility to be evaluated in Tier 2 NEPA document(s) and evaluated pursuant to other environmental laws; and
- Advancing tolling for subsequent study in Tier 2 NEPA document(s).

Per the MOA, the following decisions will not be made until after the completion of the Tier 2 NEPA document(s):

- Approval of final design;
- Authority to utilize federal funds to acquire right-of-way;
- Authority to utilize federal funds for construction;
- Approval to modify access to Interstate 66; and
- Approval for entry into the Project Development Phase under New Starts.

Proposed decisions based on the Tier 1 study are detailed as follows:

- The build improvement concepts to be advanced are: general purpose lanes, managed lanes, Metrorail extension, light rail transit, bus rapid transit, VRE extension, improvement spot locations/chokepoints, intermodal connectivity, safety

improvements, and transportation communication and technology. In resolutions dated May 15, 2013 and July 17, 2013, the Commonwealth Transportation Board (CTB) endorsed these improvement concepts as those to be advanced for further study.

- The general location for studying future highway and transit improvements in Tier 2 is within the existing I-66 corridor as defined in the Tier 1 Draft EIS, with the exception of VRE improvements for which the general location is the existing VRE alignment. Each of the improvement concepts is proposed to be located within the corridor in which it currently exists, rather than new location corridors.
- No individual projects have been identified at this time.
- Tolling is proposed to be advanced for subsequent study in Tier 2 NEPA document(s).

Information on the future decision-making process is included in Chapter 6.

ES.7 AGENCY COORDINATION AND PUBLIC PARTICIPATION PROCESS

PUBLIC OUTREACH

An extensive public involvement program was implemented to ensure that concerned citizens, interest groups, civic organizations, and businesses were provided adequate opportunities to express their views throughout the NEPA process for the Tier 1 EIS.

Various communication media, including newsletters, brochures, questionnaires, informational videos, a project website, and public meetings were used to provide information about the project and gather input from citizens and other interested parties. A mailing list of interested citizens and local, state, and federal agency representatives and elected officials was created at the beginning of the study; this was used to distribute periodic study updates, as well as announcements of upcoming public meetings and project newsletters.

Three project newsletters were prepared during the course of the Tier 1 Draft EIS study to keep interested parties informed about its status and progress. Information is available on the study website at www.helpfix66.com. Efforts were made throughout the study to engage the media and local transportation stakeholders in helping to build awareness of the study with residents. Individual citizens contacting VDOT about the project were referred to the project website for further information and encouraged to subscribe to project updates as well as participate in public meetings.

SCOPING

The study team has coordinated with local, state, and federal agencies on the I-66 Tier 1 EIS study in accordance with 40 CFR 1501.7. FHWA published a Notice of Intent in the Federal Register on April 18, 2011 to announce its intent to prepare this Tier 1 EIS.

Representatives from federal, state, regional, and local agencies were invited to participate in the scoping process through attendance at scoping meetings and/or by providing comments

and suggestions in writing to the study team. Fourteen agencies participated in the June 7, 2011 scoping meeting that was held at the VDOT Northern District Office in Fairfax.

A total of four public scoping/citizen information meetings were held in Fairfax and Prince William counties in June 2011 and January/February 2012. The purpose of the meetings was to obtain public input on the transportation problems and needs in the corridor, identify options to address those needs, and gain input on any key environmental considerations in the corridor.

The Tier 1 Draft EIS was approved on February 12, 2013 and a Notice of Availability for the document was published in the Federal Register on February 22, 2013. The Tier 1 Draft EIS was made available to the public for review and comment and distributed to agencies and stakeholders with jurisdiction, expertise, or interest in the issues involved in the study. Printed copies of this document were available for review at local libraries and government centers within the project corridor, VDOT's Northern Virginia District and Richmond offices and at the Public Hearings. Digital copies of the document were made available on the project website.

Public Hearings were conducted from 6 p.m. to 9 p.m. on Wednesday, March 13, 2013 in Manassas, Virginia and Thursday, March 14, 2013 in Falls Church, Virginia. The purpose of the hearings was to obtain public input on the Tier 1 Draft EIS and which of the 10 Build Improvement Concepts under consideration best meet corridor needs. The public hearings were carried out in accordance with the guidelines contained in VDOT's *Policy Manual for Public Participation in Transportation Projects*.

AGENCY COORDINATION

Coordination with various federal, state, and local agencies on the scope of this EIS began early and continued throughout the study. Three federal agencies are serving as Cooperating Agencies for this Tier 1 EIS study: Army Corps of Engineers, Environmental Protection Agency, and FTA.

Of the twenty-three federal, regional, state or local agencies that were invited to be Participating Agencies for this study, fourteen accepted the invitation. Meetings were held with the Cooperating and Participating Agencies on November 29, 2011; March 19, 2012; and May 31, 2012.

ES.8 TIER 1 RECORD OF DECISION

The Tier 1 Record of Decision is the official decision document that concludes the Tier 1 National Environmental Policy Act process. On July 6, 2012, the President signed into law the Moving Ahead for Progress in the 21st Century Act (MAP-21). Section 1319(b) of MAP-21 states, "To the maximum extent practicable, the lead agency shall expeditiously develop a single document that consists of a final environmental impact statement and a record of decision, unless (1) the final environmental impact statement makes substantial changes to the proposed action that are relevant to environmental or safety concerns; or (2) there are significant new circumstances or information relevant to environmental concerns and that bear on the proposed action or the impacts of the proposed action." The title page of the Tier 1 Draft EIS stated, "FHWA will issue a single Final Environmental Impact Statement and Record of Decision document pursuant to Public Law 112-141, 126 stat. 405, Section 1319(b) unless FHWA determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section

1319." Since neither of the two statutory criteria is applicable to this Tier 1 study, a single Tier 1 Final Environmental Impact Statement and Tier 1 Record of Decision document has been issued. The Tier 1 Record of Decision is located in Appendix E.

I-66 Multimodal Study

Inside the Beltway

Final Report

prepared for

Virginia Department of Transportation
Virginia Department of Rail and Public Transportation

prepared by

Cambridge Systematics, Inc.

with

KFH Group, Inc.
MCV Associates, Inc.
Rummel, Klepper & Kahl, LLP
Sharp & Company, Inc.
Southeastern Institute of Research, Inc.
Toole Design Group LLC

June 8, 2012

CAMBRIDGE SYSTEMATICS

Executive Summary

The Virginia Department of Transportation (VDOT) and the Department of Rail and Public Transportation (DRPT) commissioned the I-66 Multimodal Study to address long-term multimodal needs within the I-66 corridor inside the Beltway. This study builds on the recommendations of the 2005 Idea-66 Study and the 2009 I-66 Transit/TDM Study, and fulfills the commitment made to the National Capital Regional Transportation Planning Board (TPB) in TPB Resolution R12-2009.[1]

The goal of the I-66 Multimodal Study was to:

Identify a range of current and visionary multimodal and corridor management solutions (operational, transit, bike, and pedestrian, in addition to highway improvements) that can be implemented to reduce highway and transit congestion and improve overall mobility within the corridor and along major arterial roadways and bus routes within the study area.

Building on the region's 2011 Financially Constrained Long Range Plan (CLRP), the study considered a wide range of complementary and mutually supportive multimodal improvement options, balancing the needs and priorities of users and nearby residents. A multitude of options for improvement were considered, including expanded public transportation, additional highway lane capacity, transportation demand management (TDM), high-occupancy vehicle (HOV) policies, high-occupancy/toll (HOT) policies, congestion pricing, managed lanes, integrated corridor management (ICM), and bicycle and pedestrian corridor access.

This final report provides a summary of the year-long I-66 Multimodal Study and includes recommendations and actions that address the study goals. An interim report was published in December 2011 that documents the long-term issues and needs of the corridor, the market research key findings, and the development of an evaluation methodology to formulate and assess the mobility options and multimodal mobility option packages.

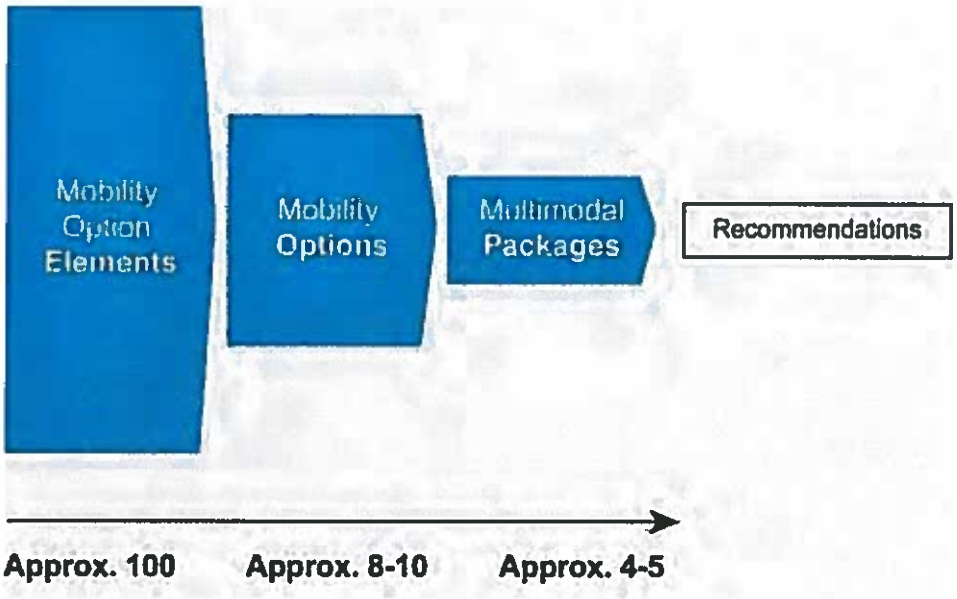
Path to Study Recommendations

The path to developing a final set of recommendations was organized around a structured process for arriving at a set of multimodal solutions. Issues and needs germane to the study area were identified. Subsequently, an evaluation process, illustrated in Figure ES.1, provided a means to move from a starting point of numerous ideas – referred to as mobility option elements – down a path to recommendations, considering first a set of eight to ten discrete

[1] National Capital Region Transportation Planning Board, Resolution on Inclusion in Air Quality Conformity Analysis of Submissions for the 2009 Constrained Long Rang Plan (CLRP) and FY 2010-2015 Transportation Improvement program (TIP). TPB Resolution R12-2009, March 18, 2009.

mobility options and then narrowing to a set of four or five multimodal mobility option packages before developing recommendations.

Figure ES.1 Path to Recommendations



Feedback on key study topics was provided by members of a multi-jurisdictional Participating Agency Representative Committee (PARC) on a regular basis. In addition, public input was provided through market research conducted early in the evaluation process, as well as stakeholder interviews conducted throughout the project, and public meetings held at key milestones of the study.

Technical analysis, coupled with market research, stakeholder interviews, and jurisdictional input from the PARC meetings was used throughout the evaluation process – from identifying issues and needs to selecting a package of multimodal improvements for the long-term.

Mobility Option Elements

Starting with a review of past plans and studies, and proceeding with input from the market research, members of the PARC and Lead Agencies on new strategies, a comprehensive list of mobility option elements was compiled. Section 5.0 of the Interim Report describes this process and lists the more than 100 mobility elements that were examined.

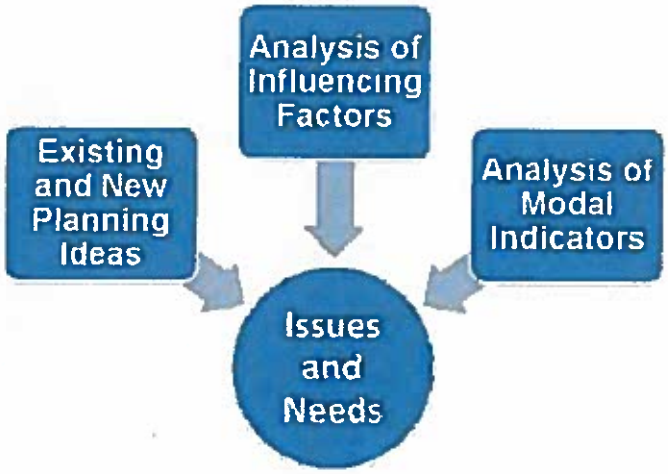
Issues and Needs

A systematic process, as depicted in Figure ES.2, was undertaken to identify the issues and needs associated with the I-66 corridor inside the Beltway. Section 3.0 of the Interim Report

documents this process in greater detail. This comprehensive set of transportation issues and needs within the study addressed the following conditions:

1. Westbound roadway congestion;
2. Eastbound roadway congestion (including interchange capacity constraints at the Dulles Connector Road);
3. Capacity issues at I-66/arterial interchanges;
4. Non-HOV users during HOV operation hours;
5. Orange Line Metrorail congestion;
6. Adverse impact of roadway congestion on bus service;
7. Challenges to intermodal transfers (rail, bus, bicycle, car);
8. Bottlenecks on the Washington & Old Dominion (W&OD) and Custis Trails; and
9. Limitations/gaps in bicycle and pedestrian accessibility and connectivity.

Figure ES.2 Process to Identify Issues and Needs



Mobility Options

The issues and needs were mapped against potential mobility solutions to screen over 100 mobility option elements down to 11 mobility options. These solutions – or mobility options – responded directly to the defined issues and needs in the corridor. The mobility options, organized by mode and submode, are listed in Table ES.1.

Table ES.1 Mobility Options

Name	Brief Description
Option A – HOV Restrictions	Designate I-66 lanes in both directions as Bus/HOV during peak periods
Option B1 – I-66 Bus/HOV/HOT Lane System Option 1	Convert I-66 into an electronically tolled Bus/HOV/high occupancy/toll (HOT) roadway
Option B2 – I-66 Bus/HOV/HOT Lane System Option 2	Convert I-66 into an electronically tolled Bus/HOV/HOT roadway and add a lane in each direction
Option C1 – I-66 Capacity Enhancement Option 1	Add lane designated HOV in both directions during peak periods
Option C2 – I-66 Capacity Enhancement Option 2	Add lane in both directions; designate HOV in peak period, peak direction only
Option D – Integrated Corridor Management	Deploy ICM strategies throughout the corridor
Option E – Arterial Capacity Enhancement	Enhance U.S. 50 through application of access management principles and implementation of a bus-on-shoulder lane
Option F – Metrorail Level of Service and Capacity	Provide an alternative connection between the I-66/Dulles Connector Road Corridors and South Arlington through an interline connection between the Orange Line and Blue Line
Option G – Bus Transit Level of Service and Capacity	Implement a range of enhancements to local, commuter, and regional bus services, including bus route changes and additions throughout the study area
Option H – Transportation Demand Management	Enhance TDM strategies drawn from the I-66 Transit/TDM Study
Option I – Bicycle/Pedestrian System Enhancements	Implement a range of bicycle and pedestrian improvements of varying scales

The effectiveness of the mobility options in addressing the issues and needs was assessed using various performance measures derived from an abbreviated application of the TPB travel demand forecasting model and other off-model analytical methods. Section 2.0 of this report presents the mobility option formulation and evaluation discussion.

Multimodal Packages

Using the detailed assessment of the mobility options and input from the PARC, project stakeholders, and the public, the mobility options were combined into four multimodal packages. These four packages (outlined in Table ES.2) were comprised of elements of previously tested mobility options with some modifications and enhancements to better address the congestion and mobility goals of the corridor. All packages include a highway and transit component, ICM solutions, TDM programs, and bicycle and pedestrian improvements.

As documented in Section 3.0 of this report, all of the multimodal packages tested included transportation projects documented in the CLRP for 2040, along with the recommended bus services and TDM measures from the 2009 DRPT I-66 Transit/TDM Study. Metrorail core capacity improvements, including 100 percent eight-car trains on the Metrorail Orange and Silver Lines, were also included as part of the 2040 Baseline scenario for all the packages. Section 3.0 of this report describes the multimodal package assessment process and results.

Table ES.2 Recommended Multimodal Packages

Package	Multimodal Package Elements
#1	Option B1. I-66 Bus/HOV/HOT Lane System – Option 1 Option G. Bus Transit Level of Service and Capacity Option D. Integrated Corridor Management Option H. Transportation Demand Management Option I. Bicycle/Pedestrian System Enhancements
#2	Option B2. I-66 Bus/HOV/HOT Lane System – Option 2 Option G. Bus Transit Level of Service and Capacity Option D. Integrated Corridor Management Option H. Transportation Demand Management Option I. Bicycle/Pedestrian System Enhancements
#3	Option C1. I-66 Capacity Enhancement – Option 1 Option G. Bus Transit Level of Service and Capacity Modification: Additional buses serving Rosslyn and D.C. Core (i.e., K Street) destinations Option D. Integrated Corridor Management Option H. Transportation Demand Management Option I. Bicycle/Pedestrian System Enhancements
#4	Option G. Bus Transit Level of Service and Capacity Modification: Improve bus routing and LOS; improved headways further on Priority Bus Include U.S. 50 bus-on-shoulder operation Option D. Integrated Corridor Management Option H. Transportation Demand Management Option I. Bicycle/Pedestrian System Enhancements, including complementary bicycle facility along U.S. 50

Sensitivity Tests

The evaluation of the four multimodal packages highlighted strengths and weaknesses in each package. This led to questions about how specific changes to a package might alter the results. To address these questions, two sensitivity analyses were conducted by modifying package features and performing a full run of the travel demand forecasting model. For the first sensitivity test, Package 1 was modified to test having the HOT operations only in effect during peak periods. The second sensitivity test modified Package 3 to have the new lane operate as a Bus/HOV/HOT lane 24/7 rather than as a Bus/HOV lane in the peak periods. Section 3.12 of this report discusses this analysis in more detail.

Recommendations for Enhanced Mobility on I-66 Inside the Beltway

To formulate the final set of project recommendations, the study team considered the technical analysis, the market research, the stakeholder interviews, PARC input and public comments received at the public meetings and via webpage, email, and phone line. Recommendations were organized into two categories:

- Core Recommendations that are considered top priority; and
- Package Recommendations that are derived specifically from the multimodal packages evaluated in this study.

Section 3.0 of this report provides the detailed assessment of the multimodal packages. Section 4.0 provides a more robust discussion of overall study recommendations.

Core Recommendations

The first tier of recommended improvements for the I-66 corridor inside the Beltway consists of the improvements in the corridor as included in the 2011 CLRP for 2040, including spot improvements along westbound I-66, increasing the HOV occupancy restriction on I-66 from HOV 2+ to HOV 3+, completing the Silver Line Metrorail extension to Loudoun County, and implementing the Active Traffic Management element of an ICM system.

The second tier of recommended improvements include the new transit services and TDM programs recommended by the 2009 DRPT I-66 Transit/TDM Study along with components of the WMATA enhancement plan deemed necessary to address Metrorail core capacity concerns in the I-66 corridor. The I-66 Multimodal Study did not evaluate the effectiveness of these improvements independently nor did it examine the timing and phasing strategy for them. It is assumed that the region will prepare a more rigorous implementation plan for these improvements as the travel conditions in the corridor warrant.

Package Recommendations

A hybrid or composite package of elements from several packages is recommended for consideration as the third tier and end-state set of multimodal improvements (joining the first and second tier articulated as core recommendations). Outlined below are the elements of the proposed hybrid package of improvements. The scope, timing, and phasing of these elements should be reassessed and/or refined in the future in response to changing demographics, travel patterns and conditions in the corridor, and/or the implementation of the core recommendations of this study. The package recommendations include:

- Completion of the elements of the bicycle and pedestrian network as detailed in Section 4.3, to enhance service as a viable alternative to motorized trip making in the corridor. Consideration should be given to the priority determination in Section 4.3 as funding becomes available.

- Full operability of an ICM system inside the Beltway as detailed in Section 4.5. These strategies maximize the use, operations, and safety of the multimodal network within the study corridor.
- Addition and enhancement to the suite of TDM programs in the corridor as detailed in Section 4.4. As funding becomes available for TDM, consideration should be given to the priority grouping established in this study for implementation.
- Implementation of the best performing transit recommendations from Multimodal Package 4. This involves examination of all the transit service improvements in Multimodal Package 4 to determine those with the highest ridership in the corridor.
- Implementation of HOT lanes on I-66, potentially during peak periods only, to: provide new travel options in the corridor; utilize available capacity on I-66; provide congestion relief on the arterials; and provide new transit services as an alternative to tolled travel.
- Addition of a third through lane on selected segment(s) of I-66, depending on the monitored traffic flow conditions and demand both on I-66 and the parallel arterials.
- Explore the full use of commonly used or proven design waivers/exceptions to enable remaining within the existing right-of-way for I-66.

Conclusions

While there is significant growth forecast for Northern Virginia between now and 2040, the multimodal transportation infrastructure, programs, and services defined in this report provide the means to accommodate the forecast growth and associated travel demand. The spectrum of recommendations – both core and package – covers a range of timeframes to 2040. The timing and phasing of implementation of the recommendations will require significant consideration of funding availability, progress against core recommendations, and the quality of operations and conditions on the existing key infrastructure assets.

The implementation of the recommendations will most likely require funding beyond existing and anticipated resources that are already committed to other state and local transportation priorities. Section 5.0 of this report provides a summary of a wide array of revenue options to fund the study recommendations. They include revenue sources associated with user fees, general taxes and specialized taxes or fees. Financing options are also considered that could include private equity investment in surface transportation through Public-Private Partnerships (P3), with financing packages that combine public and private debt, equity, and public funding.

I-66 Multimodal Study inside the Beltway, August 2013 Supplemental Report Executive Summary

The Final Report of the I-66 Multimodal Study discussed a hybrid package recommendation which was made up of promising elements of three of the evaluated multimodal packages. The study schedule, however, did not permit discrete testing of the hybrid package. The Supplemental Report discusses the refinement of the hybrid package into a smaller set of multimodal solutions referred to as the "Refined Package." This package contains transit and transportation demand management (TDM) elements, roadway elements, bicycle and pedestrian elements, and a variety of technology elements.

Roadway Refinement

The roadway refinement associated with the Refined Package includes implementation of high-occupancy/toll (HOT) lanes on I-66, tested for two tolling options – peak-period-only tolls and all-day tolls; and provision of an additional through-lane on a portion of eastbound I-66 and completion of a continuous third through lane on westbound I-66 between the Dulles Connector Road and Fairfax Drive.

The roadway refinement of I-66 associated with the Refined Package combines two primary concepts: 1) tolling I-66, and 2) widening I-66 along a critical portion.

- I-66 HOT system – Two tolling options are considered: 1) a peak-period-only HOT system, and 2) an all-day HOT system. Tolling is assumed in both the eastbound and westbound directions for both options (1) and (2). The analyses indicated that peak-only tolling has a greater increase in the daily Person Miles Traveled (PMT) than all-day tolling.

- I-66 widening (westbound) – The project baseline or 2040 CLRP+ includes the completion of auxiliary lane spot improvements 2 and 3 in the westbound direction of I-66 inside the Beltway. These spot improvement projects included in the 2040 CLRP+ do not include a third lane in the segment between the Sycamore Street off-ramp and the Washington Boulevard on-ramp. The Refined Package includes this connection, providing a third continuous through-lane from Fairfax Drive to the VA 267/Dulles Connector Road on-ramp.

- I-66 widening (eastbound) – The Refined Package includes an additional through lane on I-66 beginning at the merge with the VA 267/Dulles Connector Road off-ramp and extending eastward to the off-ramp to Fairfax Drive.

The Refined Package provides a third through-lane only where forecast demand and service level merit the new capacity, as a means of reducing costs and potential impacts versus providing a third lane the entire length of the corridor. In addition, to further mitigate costs and potential impacts of widening I-66 in the segments identified, the full exploration of use of

commonly used or proven design waivers/exceptions during the design phase of these projects is recommended.

Planning-level cost estimates were prepared for the roadway elements of the Refined Package. For the eastbound and westbound widening, it was assumed that the use of design waivers and exceptions for lane widths, shoulder widths, horizontal and vertical clearances, pier protection, side slopes, and drainage would be used where rights of way could be limited. The resulting estimate was that the roadway portion of the Refined Package would cost between $160 million and $180 million.

Transit Refinement

An important aspect of developing the Refined Package was to include the best performing transit recommendations from Package 4, the high transit package of improvements in the original Multimodal Study. Package 4 included increased transit service frequencies for all routes entering the study area, setting a minimum headway on individual and trunk routes of 15 minutes in the peak and 30 off-peak, and new and enhanced Priority Bus services on I-66, US 29, and US 50 (from Fair Oaks to D.C.) The review and adjustment process refined the transit service recommendation to improve the productivity of the proposed services.

In the refinement process, all service changes proposed in the CLRP+ were retained. Service realignments or changes from jurisdiction transit development plans (TDPs) were also retained, as these improvements have previously undergone significant planning attention.

Low-productivity routes were reviewed as indicated by the model assignment. The following productivity thresholds were set for evaluation:

- Peak-period 35 passengers per hour and off-peak cut-off of 20 passengers per hour for WMATA bus lines; and

- Peak-period 25 passengers per hour and off-peak cut-off of 15 passengers per hour for ART bus lines.

For routes with service frequency changes in Package 4 that did not meet these thresholds, the route service frequency was adjusted or the route was eliminated. These adjustments were made separately for the peak and off-peak period.

Specific service changes that are included in the Refined Package can be found in Table A.20 of the Supplemental Report. The primary transit components that were retained in the Refined Package include:

- New and enhanced Priority Bus services with 17 minute peak period frequency on I-66, US 29, and US 50. This represents a scale back from the 10-minute service frequencies assumed in Package 4.

- Enhanced US 50 bus service with new routes from Tysons and Fair Oaks, continuing on US 50 into the D.C. Core.

The Refined Package transit services were in addition to those assumed in the baseline from the 2009 DRPT I-66 Transit and TDM Study. The service improvements detailed in the DRPT study (http://www.drpt.virginia.gov/activities/I66study.aspx) were estimated to cost $83 million for capital, $11.1 million annually for net operating, and $200 million for supporting infrastructure. Also assumed in the baseline were the WMATA capacity expansions to 8 car trains throughout the system, including capacity enhancements at numerous stations.

The additional services recommended as part of the refined package were estimated at $4.9 million capital annually (for vehicles) and $21.6 million net operating, annually. Transit costs do not include additional costs associated with increased maintenance and storage needs.

Bicycle and Pedestrian Facilities' Refinement

The Final Report for the I-66 Multimodal Study identified 60 potential projects that would enhance accommodations for bicyclists and pedestrians traveling along the I-66 corridor. Projects ranged significantly in scale from upgrading the Custis Trail along its entire length, to providing public bicycle parking in Rosslyn. The majority of the 60 original projects were sourced from ongoing planning activities in Fairfax County, the City of Falls Church, Arlington County, Washington Metropolitan Area Transit Authority (WMATA), and Virginia Department of Transportation (VDOT). Other projects were recommended either explicitly by stakeholders and the community, or were included based on general needs (e.g., need better transit access) articulated by stakeholders during Phase I at community meetings, during stakeholder interviews, or through the project survey.

During development of the Supplemental Report, the bicycle and pedestrian project list was refined through a multistep process that included consultation with local agency staff, assessment of a project's role in overall connectivity, and field investigation coupled with professional judgment. Projects already having significant momentum towards implementation, and those determined to be primarily the responsibility of the local government, have not been included in order to concentrate on overall non-motorized regional connectivity and mobility. Key criteria in project evaluation were, connecting major population or employment centers, support for longer distance movements through the study area, access to Metrorail stations, and improving the functionality of existing facilities. The resulting short list of projects supports mobility and congestion relief through enhancements to the connectivity and functionality of the regional bicycle network. These were among the highest ranked projects in Phase I of the I-66 Multimodal Study. These are projects that provide access to parts of the region that were previously unconnected, or projects that improve the functionality and performance of existing facilities.

Through this analysis, the project team identified seven projects that were deemed to be regionally significant. The total cost of completing all seven projects was estimated at approximately $12 million, and includes the following projects.

Custis Trail –widen the trail to 12 feet, where feasible; smooth cracked and heaved pavement; and upgrade trail lighting between Lynn Street in downtown Rosslyn and the intersection with the Washington & Old Dominion Trail (in Bluemont Park) near the western edge of Arlington County.

Fairfax Drive Connector - improve connectivity between the Custis Trail and the Bluemont Junction Trail, and the western edge of the Rosslyn-Ballston Corridor through wider sidewalks, improved signal timing, ramps and signage on N. Fairfax Drive west of N. Glebe Road.

Arlington Boulevard Trail (Glebe to Beltway) - trail along Arlington Boulevard through a combination of constructing an off-road sidepath, on-street infrastructure, and signage. The project will continue the existing Arlington Boulevard sidepath west from Glebe Road to the I-495 interchange.

Arlington Boulevard Trail at I-495 Interchange - bicycle and pedestrian accommodations across I-495 (Capital Beltway) in the vicinity of Arlington Boulevard.

Arlington Boulevard Trail (Beltway West to City of Fairfax) - create a trail along Arlington Boulevard through a combination of constructing an off-road sidepath, on-street infrastructure, and signage from the I-495/Arlington Boulevard interchange to the City of Fairfax border at Fairfax Boulevard.

West Falls Church Connector Trail - construct a trail between the West Falls Church Metro station and the Pimmit Hills neighborhood to the northwest.

VA 7 Tysons to Falls Church - construct an off-road connection between the Washington and Old Dominion Trail in Falls Church and Tysons, running parallel to VA 7 (Leesburg Pike).

Transportation Demand Management

The Transportation Demand Management (TDM) strategies included in each of the Packages of the Multimodal Study were identical, and were carried forward in full to the Refined Package. Strategies included Marketing and Outreach, Vanpool Programs, Financial Incentives, and other ridesharing programs, which are documented in the Final Report.

The 2009 Department of Rail and Public Transportation (DRPT) Transit and TDM Study recommended $3.6 million operating annually and $5.8 million capital in new TDM strategies for the I-66 corridor both inside and outside the Beltway by the year 2030. The I-66 Multimodal Study inside the Beltway recommended an additional $2.2 million in TDM strategies by 2040, amounting to $6 million per year for TDM over and above what is currently spent in this region for TDM (the report notes $11 million spent in 2012 for TDM in northern Virginia).

Integrated Corridor Management

Integrated Corridor Management (ICM) brings together a variety of multimodal technology elements, providing drivers, transit users, carpoolers, and bicyclists with information to be able to make informed transportation decisions in advance or in real time. ICM strategies were not further evaluated or refined in the Supplemental Report.