ITEM 9 - Action
July 17, 2013

Approval of Air Quality Conformity Determination of the 2013 CLRP and FY 2013-2018 TIP

Staff Recommendation: Adopt Resolution R1-2014 finding that the 2013 CLRP and FY 2013-2018 TIP conform with the requirements of the Clean Air Act Amendments of 1990.

Issues: None

Background: At the June 19 meeting, the Board was briefed on the air quality conformity assessment for the 2013 CLRP and FY 2013-2018 TIP**.**

National Capital Region Transportation Planning Board

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MEMORANDUM

July 17, 2013

To: **Transportation Planning Board**

From: **Jane Posey**
Senior Transportation Engineer

Subject: **Air Quality Conformity Assessment for the 2013 Constrained Long Range Plan (CLRP) and the FY2013-2018 Transportation Improvement Program (TIP)**

INTRODUCTION

This memo documents summary results of the air quality conformity assessment of the 2013 CLRP and FY2013-2018 TIP with respect to the following pollutants:

- **Ozone Season Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx).** On May 21, 2012 EPA designated the Washington, DC-MD–VA region as 'marginal' nonattainment for the 2008 ozone National Ambient Air Quality Standards (NAAQS). Until new mobile budgets are developed, the region must adhere to those currently approved by EPA under the old 1997 standard. The currently approved budgets for VOC and NOx were submitted to the EPA by the Metropolitan Washington Air Quality Committee (MWAQC) in 2007, as part of an 8-hour ozone SIP, responding to the 1997 Ozone Standard. On February 7, 2013 EPA found adequate the 2009 Attainment and 2010 Contingency budgets included in this SIP. The budgets are 66.5 tons/day of Volatile Organic Compounds (VOC) and 146.1 tons/day of Nitrogen Oxides (NOx) for the 2009 Attainment Plan and 144.3 tons/day of NOx for the 2010 Contingency Plan.

- **Fine Particles ($PM_{2.5}$).** On December 17, 2004 EPA designated the Washington, DC-MD-VA region as nonattainment for the 1997 Fine Particles Standard. On January 12, 2009, EPA determined that the region had attained the 1997 $PM_{2.5}$ NAAQS and issued a clean data determination for the area. On May 22, 2013 MWAQC approved a $PM_{2.5}$ Resignation Request and Maintenance Plan for the Washington region. This Maintenance Plan includes forecast year mobile budgets for direct $PM_{2.5}$ and Precursor NOx. Until these mobile budgets are found adequate or are approved by EPA, the region will assess conformity based on a test that shows emissions in forecast year scenarios are no greater than those in a 2002 base.

- **Wintertime Carbon Monoxide (CO).** The region is in maintenance for mobile source wintertime CO, and is required to show that pollutants do not exceed the approved budget of 1671.5 tons/day.

The analysis shows that mobile emissions are well within the mobile budgets for ozone season VOC and NOx, as well as wintertime CO, and are well below the 2002 base year levels for the PM2.5 pollutants.

The results, based upon analyses contained in the full technical report, Air Quality Conformity Determination of the 2013 Constrained Long Range Plan and FY2013-2018 Transportation Improvement

Program for the Washington Metropolitan Region, were released for public comment and interagency consultation on June 13, 2013. The public comment period ends on July 13, 2013.

BACKGROUND

The Transportation Planning Board (TPB) approved the scope of work and the project submissions for the 2013 CLRP and FY2013-2018 TIP air quality conformity analysis on February 20, 2013.

Key technical inputs to the analysis include:

- Round 8.2 Cooperative Land Activity Forecasts
- New Project Submissions
- The Version 2.3 Travel Demand Model including a 3722 Transportation Analysis Zones (TAZ) area system
- 2011 Vehicle Registration Data
- EPA's MOVES Emissions Factor Model.

WORK ACTIVITIES

Staff prepared inventories for each pollutant for six forecast years (2015, 2017, 2020, 2025, 2030 and 2040). Ozone season pollutants (VOC and NOx) and wintertime CO are inventoried for average weekday conditions, and precursor NOx and direct $PM_{2.5}$ are inventoried to reflect emissions on a yearly total basis. These inventories address a primary conformity assessment criterion to demonstrate that emissions associated with the plan do not exceed the approved budgets.

CLRP Projects

Attachment A lists the major changes to the conformity project inputs since the 2012 CLRP. A complete list of highway and transit projects included in the conformity analysis is shown in an appendix of the full technical report, mentioned above.

VDOT Alternatives

The Virginia Department of Transportation (VDOT) requested that three alternatives for a western Dulles airport access facility, as well as a "no-build" alternative, be included in this air quality conformity analysis. A description of the alternatives is included at the end of Attachment A. These alternatives are currently undergoing a NEPA review as part of an Environmental Assessment (EA). Only one of these alternatives will be selected for the final EA document seeking federal approval. The results of each alternative were included in information that went out for public comment in June for the conformity analysis. Originally the Commonwealth Transportation Board (CTB) was expected to select an alternative before the TPB meeting in July, but the CTB's decision was delayed. In July the TPB will be asked to approve the conformity analysis, TIP, and CLRP with the VDOT "no-build" alternative, which is referenced in the attached exhibits as "No Dulles Access Improvements".

Land Activity Forecasts

The COG Board approved the draft Round 8.2 Cooperative Forecasts for use in the air quality conformity analysis of the 2013 CLRP and FY2013-2018 TIP in February, 2013. The forecasts
reflect both the small area land use distributions throughout the Washington region, and also the latest planning assumptions for areas that are outside the Washington region. Attachment B shows a summary of the Round 8.2 data.

Travel Modeling Process

Staff updated the Version 2.3 travel demand model to reflect more recent travel information. This update was informed by 2010 traffic and Metrorail counts, and 2010 travel survey data. It resulted in a new 2010 base year validation of the model. Changes to model outputs include: an increase in non-motorized trips with a concurrent reduction in motorized trips in high density areas, a better estimation of traffic crossing the Potomac river bridges, and an overall improvement in estimated to observed Vehicle Miles Travelled (VMT).

Staff prepared travel demand forecasts for each of the analysis years using the updated Version 2.3 travel demand model. Exhibit 1 presents the geographic areas for travel modeling and for emissions reporting for each pollutant. Exhibit 2 presents the resulting average weekday transit trips, vehicle trips, and VMT results through time for each conformity analysis year and VDOT alternative, for the full modeled area.

MOVES

MOVES (MOtor Vehicle Emissions Simulator) is a computer program designed by the US Environmental Protection Agency (EPA) to estimate air pollution emissions from on-road mobile sources. Officially released in 2010, the MOVES model version, MOVES2010, replaced the previous on-road emissions model, MOBILE6.2. MOVES2010a, a subsequent release of the program, was used in this conformity analysis.

MOVES Inputs

The average annual weekday VMT and trip data generated by the travel demand model are adjusted by the post processor to create annual county level VMT for input into the MOVES model. VMT are defined as Annual VMT and VMT by facility type. The annual VMT for MOVES input is based on 6 HPMS vehicle types. The VMT by facility type is stratified by MOVES vehicle type (13 categories) and road type (5 categories). Average vehicle speeds are stratified by vehicle type, road type, time of day, and type of day (i.e. weekday vs. weekend). Bus VMT and Auto Access to Transit VMT are added into the mix. 2011 VIN data are used to assign vehicle population data and age distribution, by city/county, in the MOVES process.

COG's Department of Environmental Programs (DEP) staff provides inputs related to fuel supply and formulation and Inspection and Maintenance (I/M) programs, as well as meteorology data. Fuel and I/M program data are supplied directly from DC, Maryland, and Virginia's air agencies in MOVES ready formats. Meteorology data are developed by DEP staff and supplied as hourly records of temperature and relative humidity in MOVES format.

Mobile Emissions Inventories

Ozone Season and Wintertime CO – Daily Emissions

The emissions results for ozone season pollutants are summarized in Exhibits 3 and 4, and indicate total VOC and NOx emissions for each analysis year. Reductions through time reflect the impact of the cleaner fuel / fleet and related programs. The emissions are shown in relation to the approved mobile budget for each pollutant.

$PM_{2.5}$ – Yearly Emissions

Direct $PM_{2.5}$ and precursor NOx emissions totals are shown in Exhibits 5 and 6. The emissions reductions through time are largely attributable to Tier II vehicle standards, cleaner fuels, and the heavy duty engine rule. The forecast year emissions are shown relative to the 2002 emissions. Mobile budgets, developed for the Fine Particles Maintenance Plan, are included at this time for informational purposes only.

2013 CLRP Emissions Inventories vs. Budgets

Exhibits 3-6 display net emissions for each forecast year. The charts show that emissions are within the mobile budgets for ozone season pollutants, and are not greater than 2002 levels for fine particles pollutants, for all forecast years. Wintertime CO emissions (contained in the full technical report but not summarized here) are also within the CO emissions budget.

TERMs

Transportation Emission Reduction Measures (TERMs) are strategies or actions that the TPB can employ to offset increases in emissions from mobile sources. All TERMs are intended to reduce either the number of vehicle trips (VT), vehicle miles traveled (VMT), or both. These strategies may include ridesharing and telecommuting programs, improved transit and bicycling facilities, clean fuel vehicle programs or other possible actions.

In past conformity analysis, TERMs have been listed in a in a summary table showing the emission reduction benefits of each project, as well as the project's implementation status. With the recalibration of the travel demand model, the vast majority of TERMs have been moved into the baseline and may no longer be used to offset future emissions. Creditable TERMs were reanalyzed using emissions rates developed from the MOVES model. Only projects put into place after 2010, or projects with improvements since 2010, were included in this analysis.

TERMs analyzed for the 2013 CLRP conformity analysis were grouped into four categories:

- TPB Commuter Connections Program
- Regional Incident Management Program
- Pedestrian Facilities Expansions & Enhancements
- Freeform Carpooling (Slug Lots)

Exhibit 7 lists the emission reduction potential of these TERMs, by pollutant, for each analysis year. The benefits of these projects are not included in the emissions totals in this report, but are available, if necessary, to offset future growth in mobile emissions.

COMMENTS / RESPONSE TO COMMENTS

Comment: The Metropolitan Washington Air Quality Committee (MWAQC) provided written comment in its July 10, 2013 letter. The letter states that MWAQC concurs that the transportation-sector emissions associated with the transportation plans meet the approved motor vehicle emissions budgets for ozone season pollutants and carbon monoxide, and are no greater than the 2002 levels for fine particles pollutants, as is necessary to meet conformity requirements. The Committee points out that the region is now working towards meeting a new more stringent 2008 ozone standard of 75 parts per billion (ppb). Currently the region's air quality monitors show design value levels of 87 parts per billion (ppb). MWAQC's 2014 work program includes the development of a Reasonable Further Progress (RFP) plan to meet the new standard as expeditiously as practicable. MWAQC states that it will need TPB's support in examining mobile sector emissions and to identify new cost-effective strategies to reduce emissions. The committee notes that EPA has initiated a process to review the 2008 standard and may propose to make it even more stringent. MWAQC comments positively on the recent VMT per capita reductions in the region, and urges TPB's continued investment in programs to mitigate future growth in vehicle emissions. MWAQC also

emphasizes the need for new federal emission control programs such as Tier 3. The Committee also urges the TPB to maintain its commitments to TERMs and other emissions reduction measures, and suggests that these efforts are essential for meeting the 2008 ozone standard, and potential more stringent standards in the future.

Response: The TPB appreciates MWAQC's concurrence that the amended air quality conformity analysis of the 2013 CLRP and FY2013-2018 TIP meets all of the required emissions tests. The TPB recognizes that the region might not meet the more stringent 2008 ozone standard, and agrees that there should be a continued effort to reduce emissions across all sectors. The Board looks forward to working with MWAQC in the development of plans to assist with the continued improvement of air quality in the region. The TPB also supports federal emission control programs such as Tier 3, and agrees with MWAQC on the need for continued investment in public transit, ridesharing, and other programs to reduce emissions. The TPB supports maintenance of commitments to TERMs and other cost-effective emissions reduction measures.

Comment: The Maryland Department of the Environment (MDE) provided written comment in its July 12, 2013 letter. The letter states that MDE applauds the TPB for implementing programs to meet the area's mobility needs and to protect public health and improve air quality. However, MDE also expresses concerns about the need to better communicate the challenges faced by the region in meeting the new ozone standard, including the need to start showing cleaner air in the summer of 2013. MDE notes that the mobile budgets used in the current conformity process were set using the old 1997 ozone standard, and that there are currently no budgets for the new 2008 ozone standard. It refers to preliminary technical analysis completed by the Ozone Transport Commission (OTC), and suggests that mobile source emissions of nitrogen oxides (NOx) will need to be reduced to levels in the 45 to 50 tons per day to meet the new standard. MDE states that with a 2015 attainment date, area monitors must measure clean data in the summers of 2013, 2014, and 2015. MDE encourages the TPB to work with MWAQC to meet the new standard and to protect public health.

Response: The TPB appreciates MDE's comments. The TPB understands that the attainment date for the 2008 Ozone Standard is 2015, and that by the attainment date the region's monitors must have a design value of 75 parts per billion. Conformity requirements indicate that the region must show adherence to the mobile budgets most recently found adequate by EPA, even if those budgets are not associated with the current standard. The TPB recognizes that the region should continue to make progress to reduce emissions across all sectors to meet the 2008 standard. Federal programs, such as EPA's recently proposed Tier 3 motor vehicle emission and fuel standards, will produce significant additional emissions reductions from mobile sources, and will lead to air quality improvements that are important both for maintaining current NAAQS and for addressing future air quality standards. The TPB looks forward to working with MWAQC and its environmental partners to find the most cost-effective ways to reduce emissions from all sources, in order to clean the air while continuing to provide the mobility needed to support a strong regional economy.

SUMMARY

The analytical results described in this air quality assessment provide a basis for a determination by the TPB of conformity of the 2013 CLRP and FY2013-2018 TIP.

Following: Exhibits 1- 7
Attachments A - B

EXHIBIT 1
Washington, D.C.- Maryland - Virginia
Planning Areas

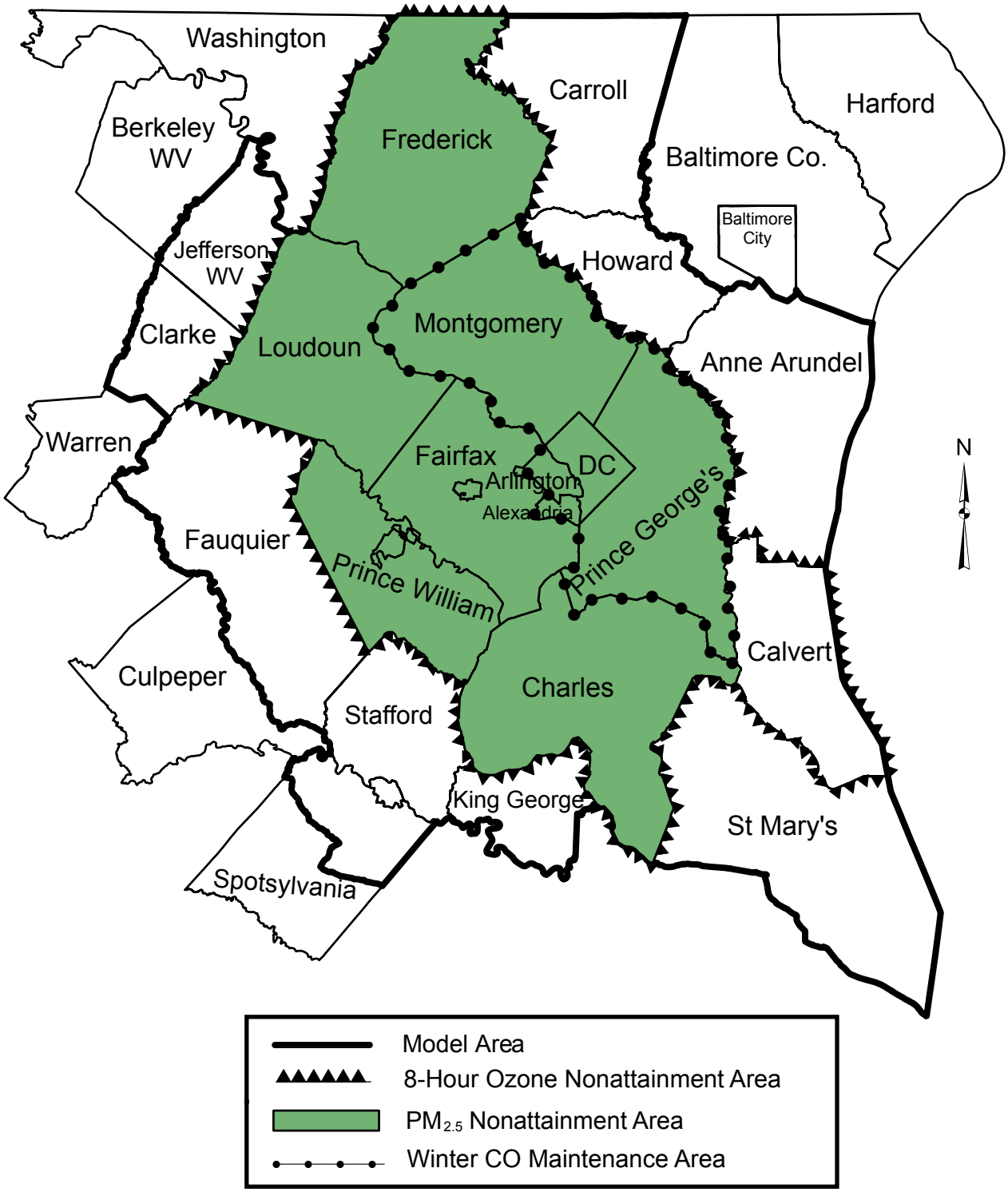


Exhibit 2

Travel Demand Summary
Modeled Area Trips and Vehicle Miles Traveled (000's)
Average Weekday Traffic (AWDT)

	2002	2015	2017	2020	2025 NO VDOT ALT	2025 VDOT ALT A	2025 VDOT ALT B	2025 VDOT ALT C
Transit Trips	1,092.5	1,194.8	1,253.3	1,327.5	1,389.5	1,389.7	1,389.5	1,390.0
Vehicle Trips	14,822.9	16,805.8	17,068.4	17,532.6	18,386.8	18,387.2	18,387.6	18,385.6
VMT	149,388.9	166,771.9	169,941.7	174,980.2	185,034.0	185,141.3	185,166.9	185,161.1

	2030 NO VDOT ALT	2030 VDOT ALT A	2030 VDOT ALT B	2030 VDOT ALT C	2040 NO VDOT ALT	2040 VDOT ALT A	2040 VDOT ALT B	2040 VDOT ALT C
Transit Trips	1,437.1	1,437.4	1,437.0	1,437.3	1,531.8	1,532.0	1,531.9	1,531.9
Vehicle Trips	19,115.8	19,115.9	19,116.2	19,115.3	20,289.9	20,290.8	20,290.0	20,290.0
VMT	193,832.4	193,970.7	193,948.3	193,931.8	206,511.4	206,564.4	206,604.3	206,588.6

Exhibit 3
AIR QUALITY CONFORMITY
2013 CLRP & FY2013-2018 TIP
Ozone Season VOC Emissions

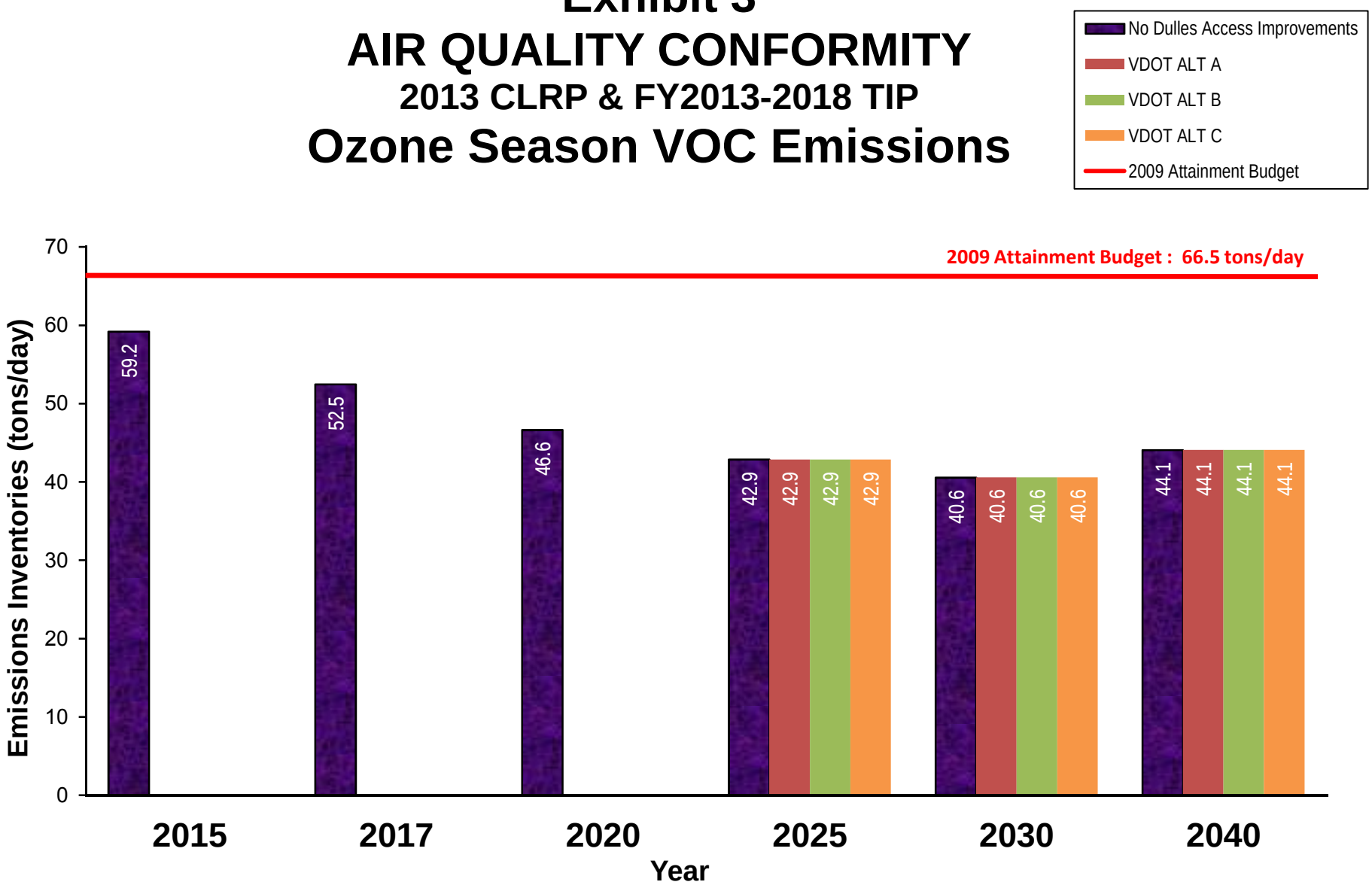


Exhibit 4
AIR QUALITY CONFORMITY
2013 CLRP & FY2013-2018 TIP
Ozone Season NOx Emissions

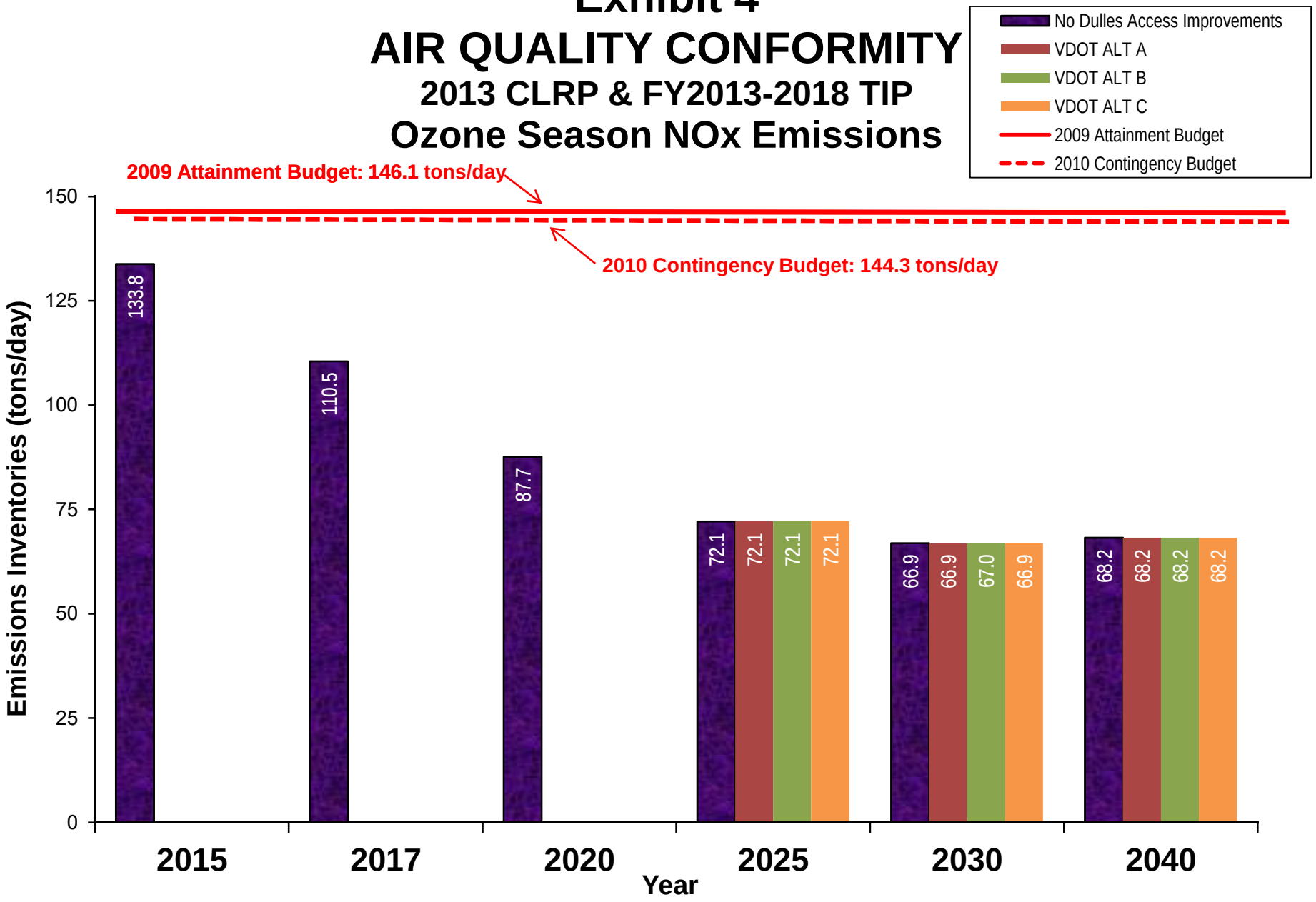
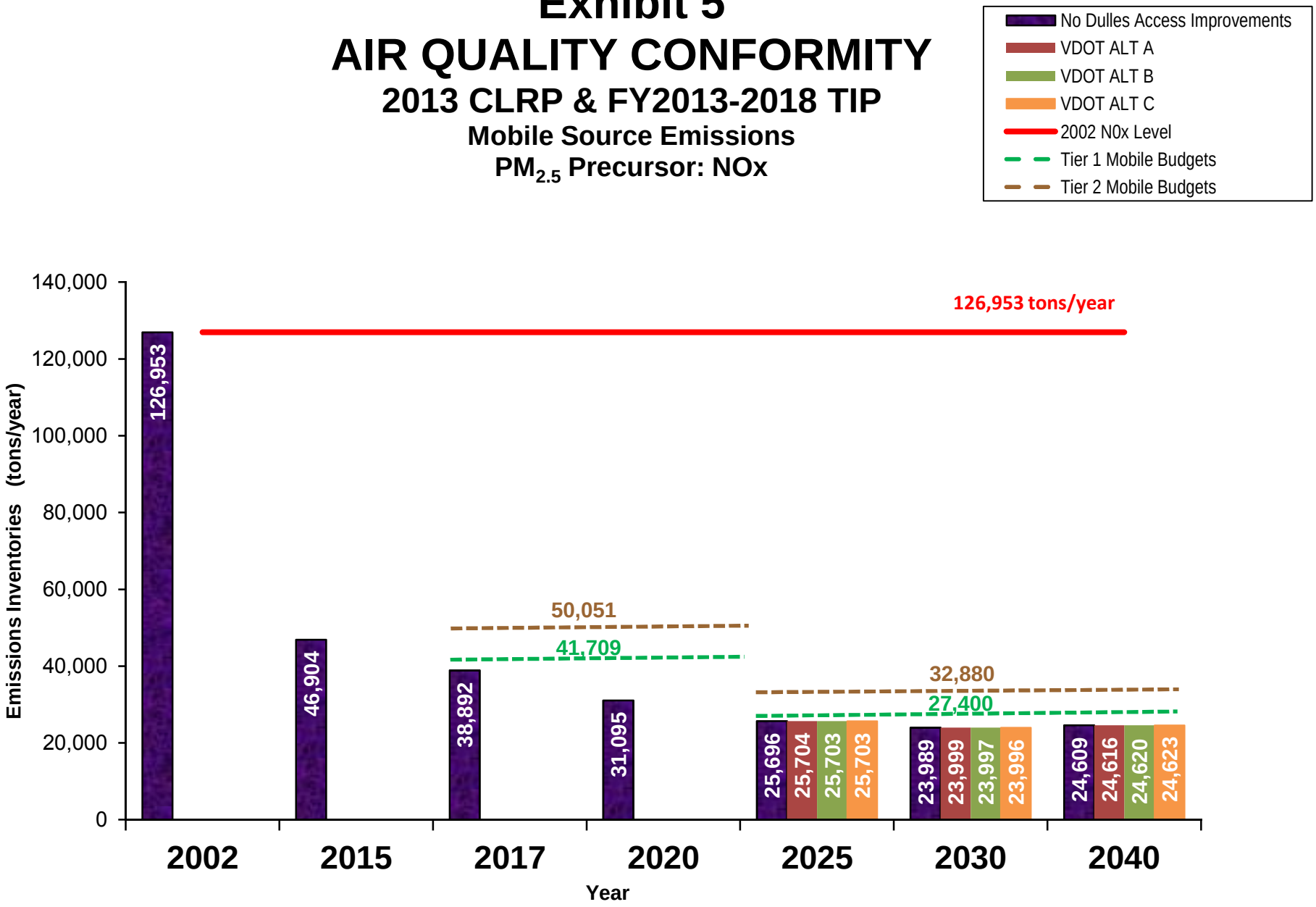
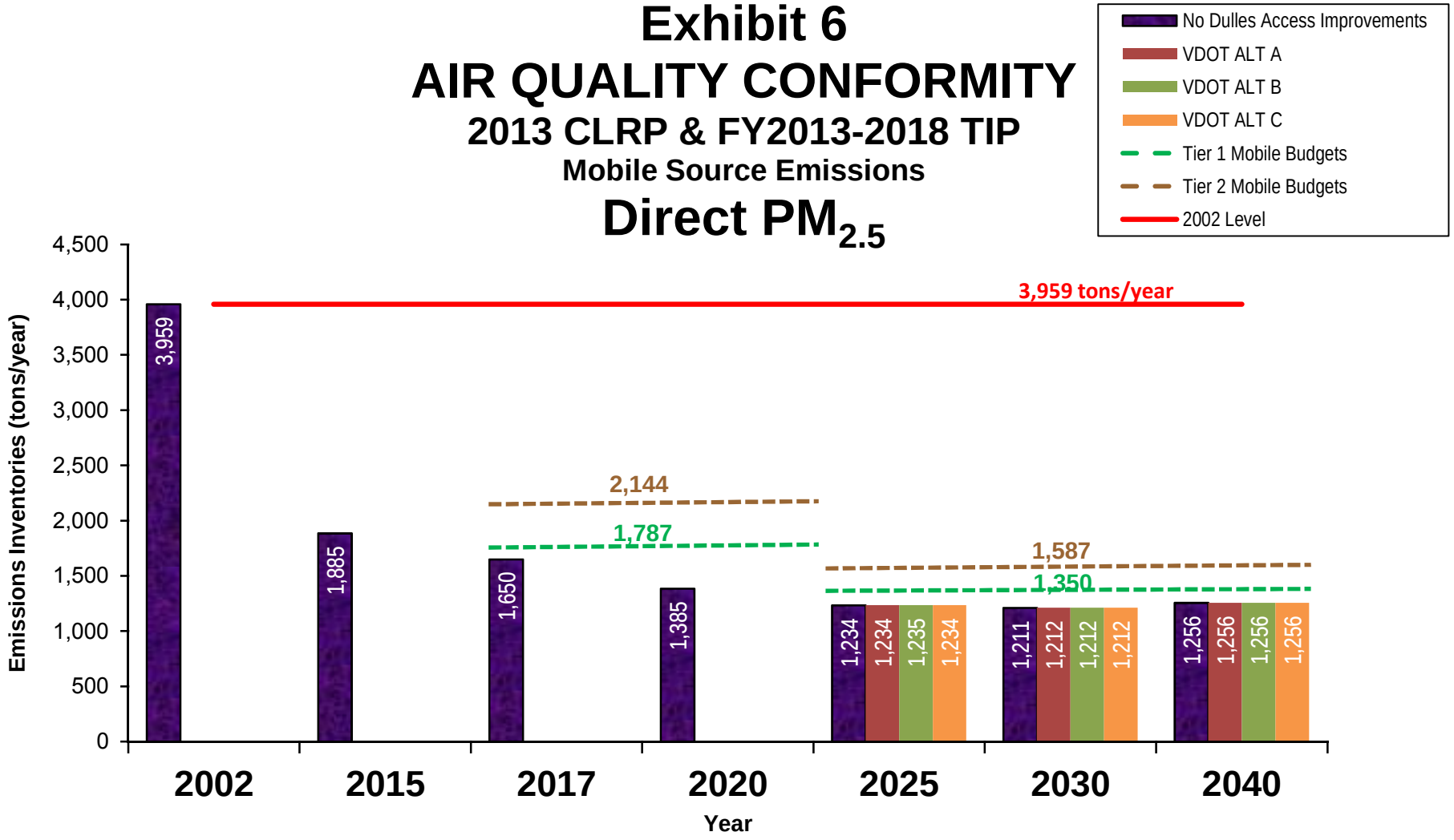


Exhibit 5
AIR QUALITY CONFORMITY
2013 CLRP & FY2013-2018 TIP
Mobile Source Emissions
$PM_{2.5}$ Precursor: NOx



NOTE: MWAQC approved a $PM_{2.5}$ Maintenance Plan on 5/22/2013. The Plan contains mobile budgets for years 2017 and 2025, which are shown in this graph for informational purposes only. When they are approved by EPA they will be used for conformity. In the meantime, without approved mobile budgets, it is required that Forecast Year emissions do not exceed Base Year 2002 emissions.

Exhibit 6
AIR QUALITY CONFORMITY
2013 CLRP & FY2013-2018 TIP
Mobile Source Emissions
Direct $PM_{2.5}$



NOTE: MWAQC approved a $PM_{2.5}$ Maintenance Plan on 5/22/2013. The Plan contains mobile budgets for years 2017 and 2025, which are shown in this graph for informational purposes only. When they are approved by EPA they will be used for conformity. In the meantime, without approved mobile budgets, it is required that Forecast Year emissions do not exceed Base Year 2002 emissions.

EXHIBIT 7

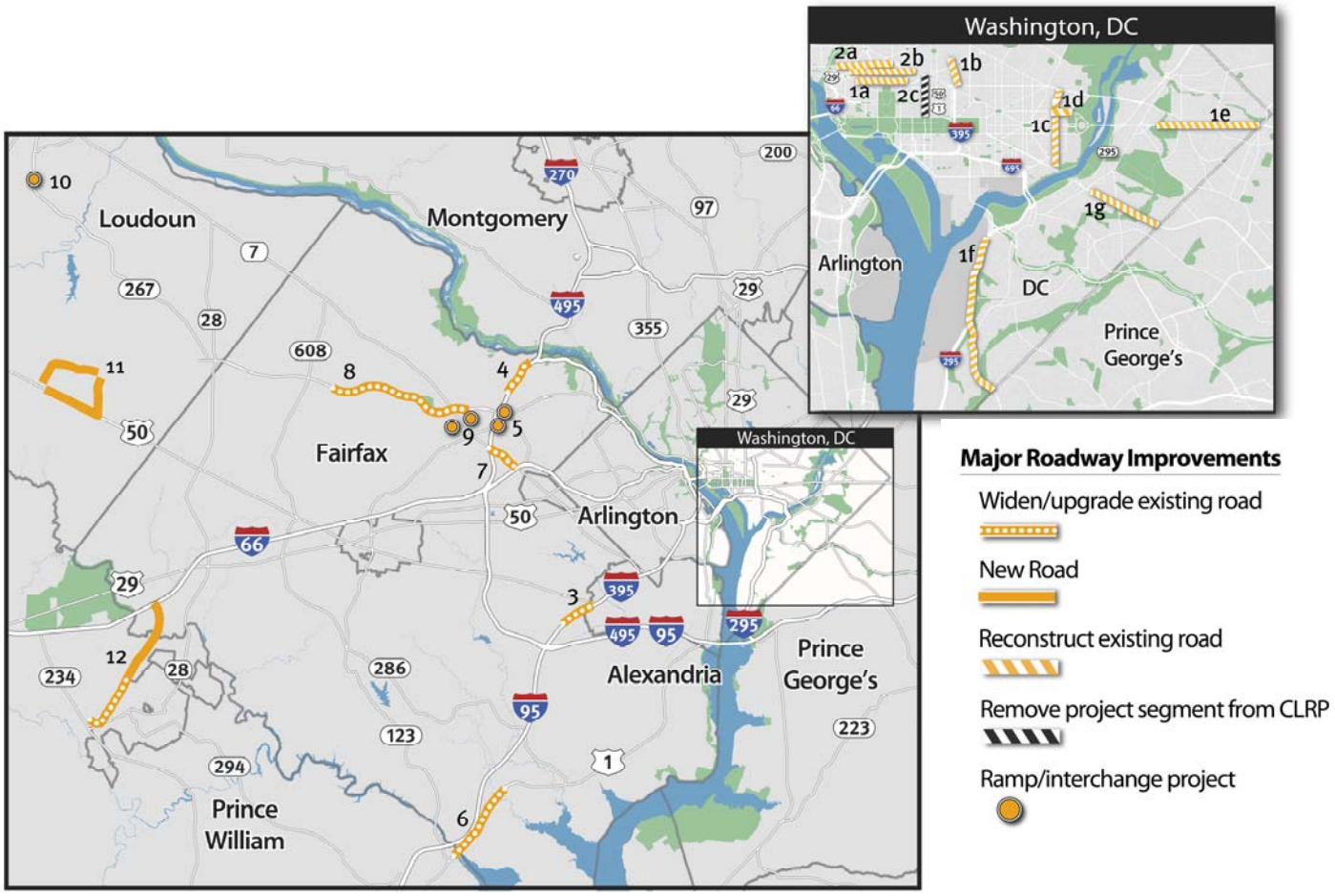
2013 CLRP
TRANSPORTATION EMISSIONS REDUCTION MEASURES
SUMMARY TABLE

EMISSIONS REDUCTIONS					
Years/Pollutants	**Ozone - VOC**	**Ozone - NOx**	**PM2.5 Direct**	**Precursor NOx**	**Winter CO**
	(tons/day)	(tons/day)	(tons/year)	(tons/year)	(tons/day)
2015	0.17	0.27	0.43	10.65	3.75
2017	0.19	0.28	0.37	8.75	4.41
2020	0.23	0.28	0.31	6.88	5.43
2025	0.29	0.32	0.27	5.53	7.35
2030	0.34	0.38	0.26	5.04	9.53
2040	0.54	0.56	0.27	5.08	14.95

NOTE: Benefits from these TERMs are not included in the emissions totals in this conformity analysis.

ATTACHMENT A

Significant Additions and Changes to The 2013 Update to the Financially Constrained Long-Range Transportation Plan



DISTRICT OF COLUMBIA

1. Lane Reductions and Reconfigurations – C St. NE, East Capitol St., I St. NW, New Jersey Ave. NW, Pennsylvania Ave. SE, South Capitol St., 17th St. NE and SE
2. Bike Lane Pilot Projects – 9th St. NW, L St. NW, and M St. NW

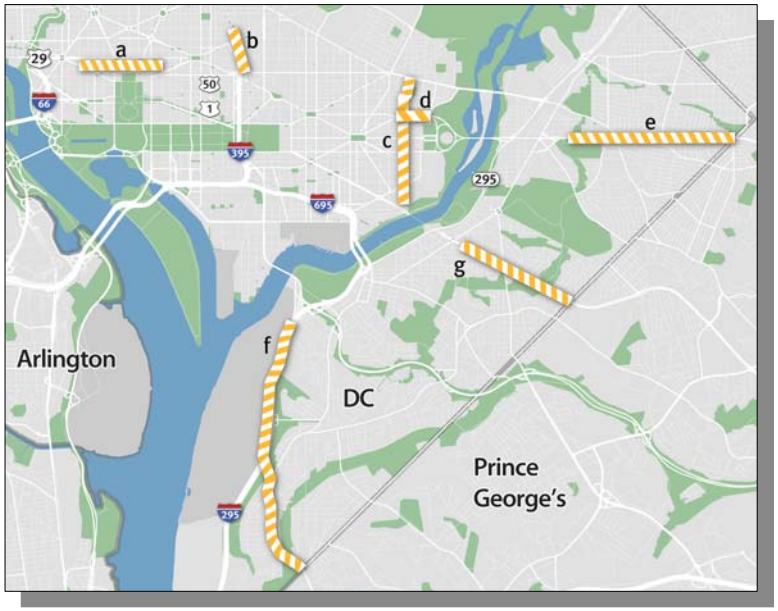
VIRGINIA

3. Widen I-395 Southbound between Duke St. and Edsall Rd.
4. Widening of Northern Segment of I-495, Capital Beltway HOT Lanes
5. I-495, Capital Beltway Ramps at Dulles Airport Access Highway and Dulles Toll Rd.
6. Widen US 1, Jefferson Davis Highway from Lorton Rd. to Annapolis Way
7. Widen VA 7, Leesburg Pike from I-495 to I-66
8. Construct Collector-Distributor Roads along Dulles Toll Rd. between VA 684, Spring Hill Rd. and VA 828, Wiehle Ave.
9. Construct Dulles Toll Road Ramps in Tysons
10. Construct Dulles Greenway Ramp in Leesburg
11. Alt. A: Construct Dulles Air Cargo, Passenger and Metro Access Highway
    Alt. B: Construct New Limited Access US 50 and VA 606, Loudoun County Parkway
12. Study VA 28, Manassas Bypass from VA 234, Sudley Rd. to I-66

DISTRICT OF COLUMBIA PROJECTS

1. Lane Reductions and Reconfigurations

DDOT is proposing a number of federally and locally funded projects that will make changes to the number and direction of travel lanes in selected locations, as described in the following:



a) **C St. NE from 16th St. NE to Oklahoma Ave. NE**
Implement traffic-calming measures by removing one of two travel lanes in each direction. Complete: 2013. Cost: $4.5 million.

b) **East Capitol St. from 40th St. to Southern Ave.**
Implement pedestrian safety and traffic operations improvements and remove one of three travel lanes in each direction. Complete: 2015. Cost: $5 million.

c) **I St. NW Peak Period Bus-Only Lanes 13th St. NW to Pennsylvania Ave. NW**
I St. NW is one-way, running westbound between 13th St. NW and Pennsylvania Ave. NW. Parking restrictions are in effect on both sides of the street during morning and evening peak periods, allowing for five lanes of traffic. This project proposes to use one of those five lanes as a bus-only lane during the peak periods. Complete: 2013. Cost: $500,000.

d) **New Jersey Ave. NW from H St. NW to N St. NW**
Reconstruct New Jersey Ave. NW from four lanes, one-way northbound to two lanes in each direction. Complete: 2015. Cost: $7.5 million.

e) **Pennsylvania Ave. SE from 27th St. SE to Southern Ave. SE**
As a part of the Pennsylvania Avenue Great Streets Project, a median was installed reducing the number of lanes from 5 to 4. Completed in 2011.

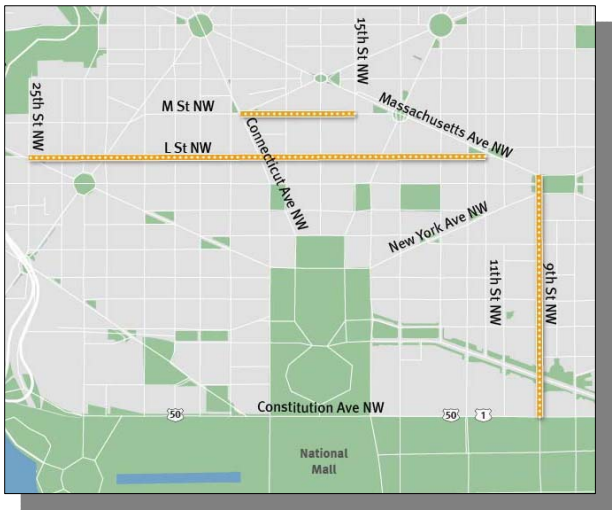
f) **South Capitol St. from Firth Sterling Ave. SE to Southern Ave. SE**
Design and construct a paved bicycle and pedestrian trail along South Capitol St. and reduce the number of lanes from 5 to 4. Complete: 2015. Cost $5 million.

g) **17th St. NE/SE from Benning Ave. NE to Potomac Ave. SE**
Reconstruct 17th St. NE/SE from two lanes southbound to one lane southbound. Complete: 2013. Cost $1.95 million.

See the project descriptions in Attachment A for more information.

2. Bike Lane Pilot Studies

In 2010, DDOT submitted five bike lane projects for inclusion in the CLRP as pilot studies. Two of these projects – 15th St. NW from Constitution Ave. NW to W St. NW and Pennsylvania Ave. NW from 3rd St. NW to 14th St. NW – were completed in 2010. The 15th St. Bike Lane removed one vehicle lane, while the Pennsylvania Ave. Bike Lanes did not remove any vehicle lanes. This year, DDOT is updating the status of the remaining pilot projects as follows:



a. L St. from 11th St. NW to ~~25th St. NW~~ New Hampshire Ave. NW – completed 2012, one travel lane removed
b. M St. from 15th St. NW to ~~29th St. NW~~ 25th St. NW – complete in 2013, one travel lane removed
c. 9th St. NW from Constitution Ave. NW to K St. NW – project withdrawn

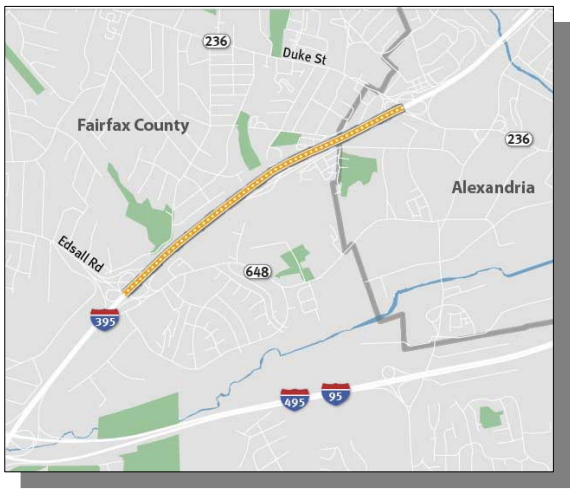
NORTHERN VIRGINIA PROJECTS

3. Widen I-395, Shirley Memorial Highway – Southbound from Duke St. to Edsall Rd.

Add a fourth lane to southbound I-395 between Duke St. and Edsall Rd.

Complete: 2018
Length: 1.5 miles
Cost: $58.5 million
Funding: Federal, State, Other

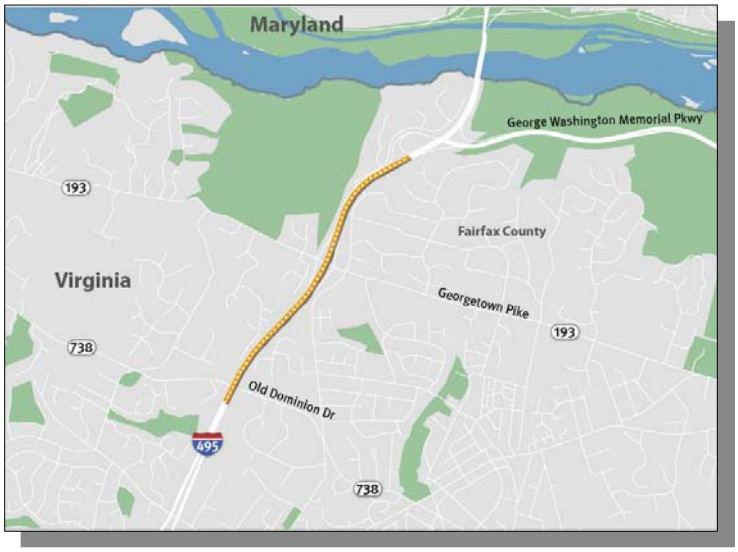
See the project description in Attachment A for more information.



4. Widen I-495, Capital Beltway HOT Lanes from South of the George Washington Parkway to South of Old Dominion Dr.

The CLRP includes the construction of a system of HOT Lanes on I-495. The segment of HOT Lanes between south of the George Washington Pkwy and south of Old Dominion Dr. was planned to be two lanes wide. VDOT proposes to make this segment four lanes wide.

Complete: 2014
Length: 1.5 miles
Cost: $75 million
Funding: Private



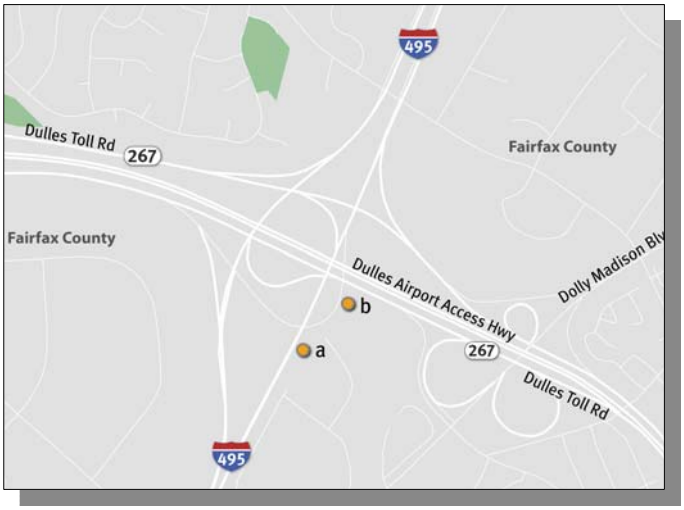
5. Construct and Improve I-495, Capital Beltway Ramps at Dulles Airport Access Highway and Dulles Toll Road

a. Construct a new ramp connecting the northbound general purpose lanes on I-495 to the inner lanes of westbound Dulles Airport Access Highway

Complete: 2030
Length: 0.8 mile
Cost: $7 million
Funding: Federal, State, Private…

b. Widen the ramp connecting eastbound Dulles Toll Road to the northbound general purpose lanes on I-495 from one to two lanes.

Complete: 2030
Length: 0.7 mile
Cost: $10 million
Funding: Federal, State, Private…



See the project description in Attachment A for more information.

6. Widen US 1, Jefferson Davis Highway from Lorton Rd. to Annapolis Way

Widen US 1 from 4 to 6 lanes within the project limits.

Complete: 2035
Length: 3.5 miles
Cost: $125 million
Funding: Federal, State, Local

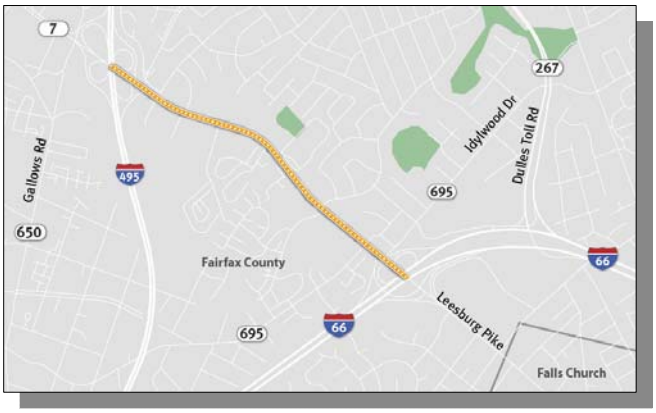
See the project description in Attachment A for more information.

7. Widen VA 7, Leesburg Pike from I-495 to I-66

Widen VA 7 from 4 to 6 lanes within the project limits.

Complete: 2035
Length: 1.3 miles
Cost: $71 million
Funding: Federal, State, Local,

See the project description in Attachment A for more information.

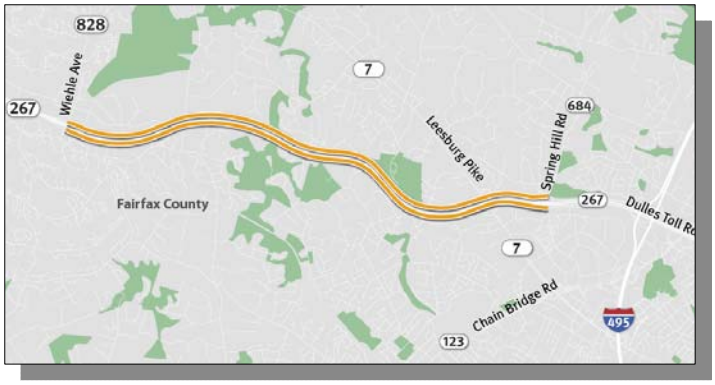


8. Construct Collector-Distributor Roads Parallel to Dulles Toll Road between VA 684, Spring Hill Rd. and VA 828, Wiehle Ave.

Construct new, two-lane collector-distributor roads on either side of the Dulles Toll Rd. eastbound and westbound between VA 684 and VA 828. These new facilities will allow for additional closely-spaced interchanges to be constructed in Tysons.

Complete: 2036, 2037
Length: 6 miles
Cost: $186 million
Funding: Federal, Local, Private, Bonds

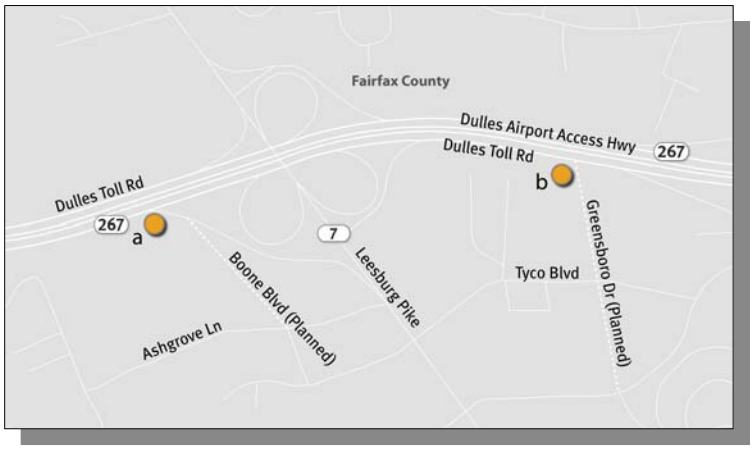
See the project description in Attachment A for more information.



9. Dulles Toll Road Ramps in Tysons at Boone Blvd., and Greensboro Dr.

a. Construct a ramp to and from the Dulles Toll Rd. to the new Boone Blvd. extension at Ashgrove Lane.

Complete: 2037
Cost: $79 million
Funding: Federal, State, Private, Bonds



b. Construct a ramp to and from the Dulles Toll Rd. to the new Greensboro Dr. extension at Tyco Rd.

Complete: 2036
Cost: $28 million
Funding: Federal, State, Private, Bonds

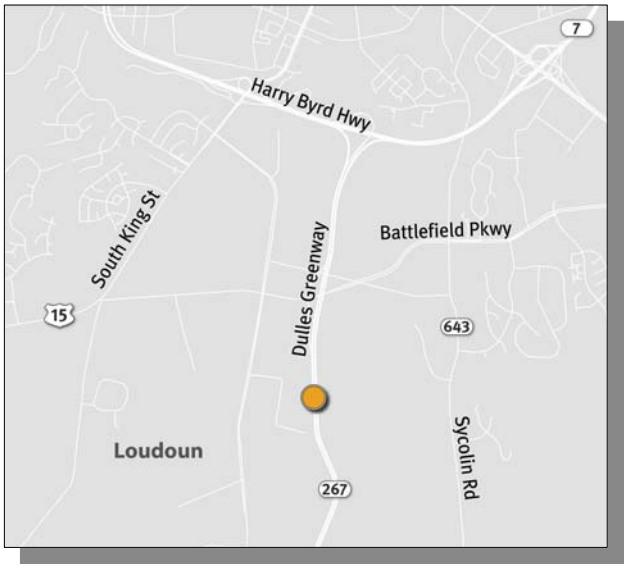
See the project descriptions in Attachment A for more information.

10. Dulles Greenway Ramp at (planned) Hawling Farm Blvd. near Leesburg

Construct a new egress ramp from the Dulles Greenway to the planned Hawling Farm Blvd.

Complete: 2015
Cost: $850,000
Funding: Private

See the project description in Attachment A for more information.

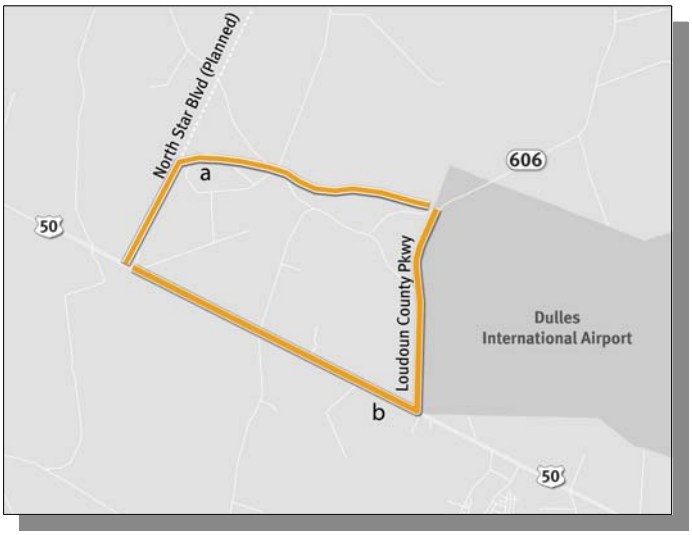


11. Improved Access to Dulles Airport

Two alternatives are currently being considered for improving access to Dulles Airport, particularly for air cargo. Both alternatives will be examined during the TPB's air quality conformity analysis. Prior to TPB's approval of the 2013 CLRP Update, VDOT will be required to select one of the two alternatives for inclusion in the Plan.

a. Dulles Air Cargo, Passenger and Metro Access Highway
from US 50, John Mosby Highway to VA 606, Loudoun County Parkway

Construct a new four-lane facility (on a six-lane right of way) between the intersection of the planned Tri-County Parkway at US 50 and the Loudoun County Parkway at the western end of the Dulles Airport grounds first heading north, then east just south of Broad Run.



Complete: 2025
Length: 3 miles
Cost: $153 million
Funding: Federal, State, Local, Private, Bonds, Other

b. Construct new Limited Access Routes along US 50, John Mosby Highway and VA 606, Loudoun County Parkway

Construct a new, grade-separated, 4-lane limited access facility along US 50 (within existing right-of-way) between the planned Tri-County Parkway and the Loudoun County Parkway (VA 606). Also construct a new, at-grade, 4-lane limited access Loudoun County Parkway between the new grade-separated US 50 and 1.5 miles north of that interchange.

Complete: 2025
Length: 4 miles
Cost: $813 million
Funding: Federal, State, Local, Private, Bonds, Other

12. VA 28 Manassas Bypass Study from VA 234 to I-66

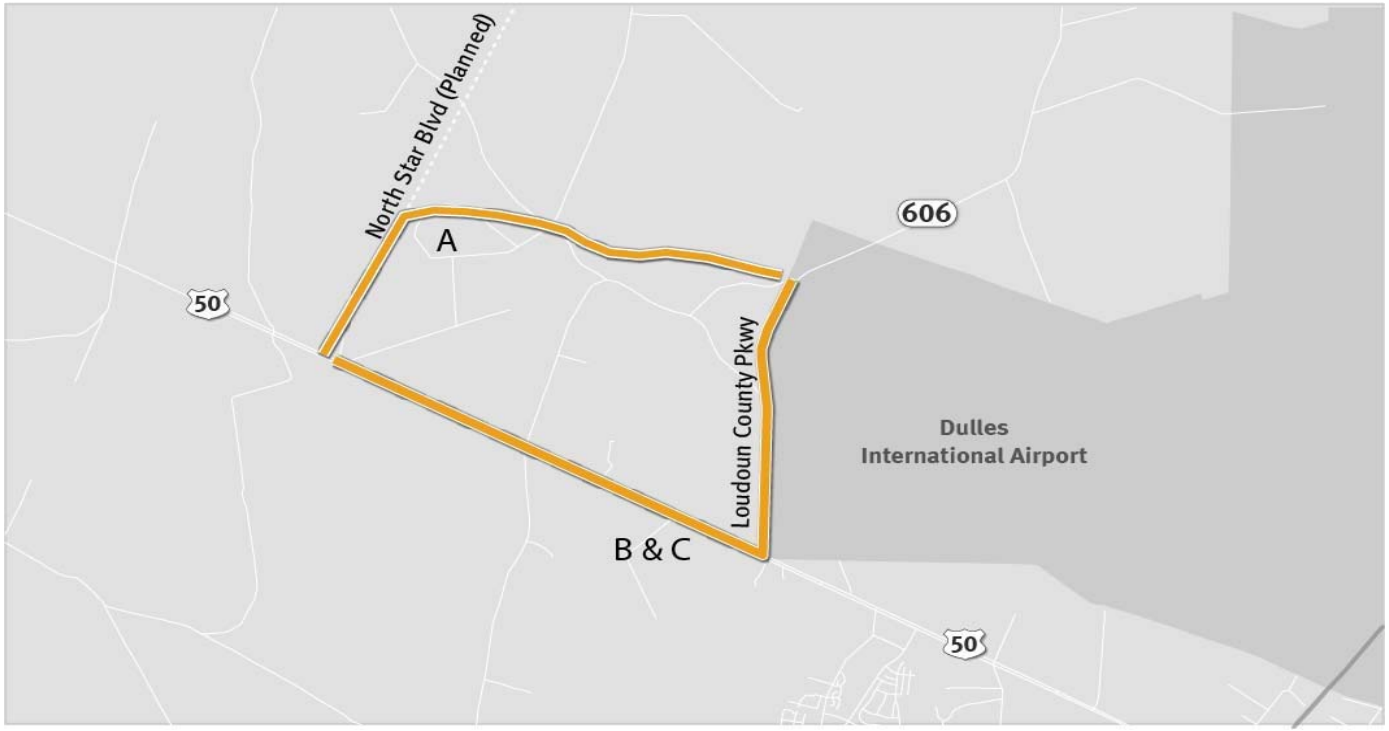
Study a proposed 4 to 6 lane bypass from the intersection of VA 234, Sudley Rd. and VA 411, Godwin Drive through Prince William and Fairfax Counties. This project is proposed as a study and will not be included in the air quality conformity analysis of the CLRP.

Complete:	2018
Length:	6 miles
Cost:	$500,000
Funding:	Federal, State, Local

See the project description in Attachment A for more information.

2013 Constrained Long Range Plan
FY2013-2018 Transportation Improvement Program
VDOT Dulles Access Improvements Alternatives

	US 50	VA 606 (Loudoun County Pkwy)		Northstar Blvd.
	Northstar Blvd. To VA 606	US 50 to 1.5 miles north of US 50	1.5 miles north of US 50 to Dulles Greenway	US 50 (at Northstar Blvd.) to VA 606 (at 1.5 miles north of US 50)
Current Conditions	4/5/6 lanes, major/principal arterial	2/4 lanes, minor arterial	2 lanes, minor arterial	----------
2013 CLRP (no Dulles access improvements)	6 lanes, principal arterial	4 lanes, minor/major arterial	4 lanes, minor/major arterial	----------
2013 CLRP VDOT A	6 lanes, principal arterial	4 lanes, minor/major arterial	4 lanes, minor/major arterial	4 lanes, principal arterial
2013 CLRP VDOT B	4 lanes, limited access facility + 6 lanes, principal arterial	4 lanes, limited access facility + 4 lanes, major arterial	4 lanes, major arterial	----------
2013 CLRP VDOT C (Loudoun County Comprehensive Plan)	6 lanes, limited access facility	8 lanes, limited access facility	4 lanes, major arterial	----------



ATTACHMENT B

HOUSEHOLD DATA

TPB PLANNING AREA:	2015	2017	2020	2025	2030	2040
D.C.	287617	291838	298115	309979	318252	339889
MONTGOMERY	377524	385296	396955	414873	434767	460161
PR.GEORGES	323364	328583	336404	348604	359878	379317
ARLINGTON	105692	108296	112211	117332	121383	128605
ALEXANDRIA	72306	74175	76978	81352	84717	94890
FAIRFAX	412183	419165	429673	455610	478867	523521
LOUDOUN	120272	126427	135648	149208	157333	165274
PR. WILLIAM	166083	172975	183321	197890	210450	229944
FREDERICK	87387	89490	92640	100227	107580	119457
CHARLES	57528	60235	64299	70833	75847	85901
SUBTOTAL	2,009,956	2,056,480	2,126,244	2,245,908	2,349,074	2,526,959
ADDITIONAL COUNTIES:						
HOWARD	117700	120864	125600	132182	135486	137773
ANNE ARUNDEL	210888	213647	217782	223822	229371	234332
CALVERT	34298	34991	36027	37374	38348	40301
CARROLL	65691	67260	69614	73417	76111	81464
FREDERICKSBURG (VA) &N. SPOTSYLVANIA	47742	49894	53122	57878	62604	69306
CLARKE&JEFFERSON	29378	30455	32064	34783	37347	42371
FAUQUIER	25337	25981	26954	28616	30272	33801
K. GEORGE	9,808	10379	11237	12808	14366	17142
ST. MARY'S	44443	46408	49352	53960	58143	66509
STAFFORD	49673	52815	57533	65473	73367	87670
SUBTOTAL	634,958	652,694	679,285	720,313	755,415	810,669
TOTAL	2,644,914	2,709,174	2,805,529	2,966,221	3,104,489	3,337,628

SOURCE:

- MWCOG Round 8.2 Cooperative Forecasts
- BMC Round 7-C Cooperative Forecasts
- George Washington Regional Commission / Federicksburg Area MPO February 2013
  TAZ Refinements of the January 2012 GWRC/FAMPO Long-Range Transportation Plan
  Update Control Estimates and Forecasts for City of Fredericksburg, King George, Spotsylvania and Stafford Counties
- Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's
- COG/TPB Staff used Virginia Employment Commission Population Projections, February 2013 for Clark and Fauquier
- COG/TPB Staff used West Virginia University Population Projections, February 2013 for Jefferson County

EMPLOYMENT DATA

TPB PLANNING AREA:	2015	2017	2020	2025	2030	2040
D.C.	812947	834060	865726	902631	929641	982647
MONTGOMERY	531993	544960	564419	598807	635257	715143
PR.GEORGES	356958	365324	377879	403134	427514	497652
ARLINGTON	247460	258989	276281	292078	303044	308830
ALEXANDRIA	110248	112872	116812	131152	149552	167598
FAIRFAX	697250	721152	757079	809537	854343	920979
LOUDOUN	162772	176679	197577	225893	251675	283246
PR. WILLIAM	163423	172538	186215	207340	230047	278151
FREDERICK	99386	101182	103862	107266	109755	114907
CHARLES	68439	69758	71731	74731	77537	83138
SUBTOTAL	3,250,876	3,357,514	3,517,581	3,752,569	3,968,365	4,352,291
ADDITIONAL COUNTIES:						
HOWARD	181143	186679	194977	209723	221168	231902
ANNE ARUNDEL	309853	317528	329042	345027	358320	370904
CALVERT	41059	42422	44457	46258	47159	48955
CARROLL	69619	70099	70813	71629	72456	74090
FREDERICKSBURG (VA) &N. SPOTSYLVANIA	78759	81609	85881	92897	99865	116175
CLARKE & JEFFERSON	27533	28329	29530	31348	33052	36300
FAUQUIER	29270	30016	31135	33071	34996	39086
K. GEORGE	17804	18433	19377	20947	22490	25747
ST. MARY'S	64083	65350	67268	70093	71969	75862
STAFFORD	52681	54970	58399	64304	70170	84159
SUBTOTAL	871,804	895,435	930,879	985,297	1,031,645	1,103,180
TOTAL	4,122,680	4,252,949	4,448,460	4,737,866	5,000,010	5,455,471

SOURCE:

- MWCOG Round 8.2 Cooperative Forecasts
- BMC Round 7-C Cooperative Forecasts
- George Washington Regional Commission / Federicksburg Area MPO February 2013
  TAZ Refinements of the January 2012 GWRC/FAMPO Long-Range Transportation Plan
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NOTE: Includes Census Adjustment