

## **National Capital Region Transportation Planning Board**

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202

MEMORANDUM

**DRAFT**

June 11, 2009

To: Transportation Planning Board

From: Jane Posey  
Senior Transportation Engineer

Subject: Air Quality Conformity Assessment for the 2009 Update of the Constrained Long Range Plan (CLRP) and FY2010-2015 Transportation Improvement Program (TIP)

### **INTRODUCTION**

This memo documents summary results of the air quality conformity assessment of the 2009 CLRP and the FY2010-2015 TIP with respect to ozone season and fine particle (PM<sub>2.5</sub>) pollutants, and wintertime carbon monoxide (CO). The results have been presented to the TPB Technical Committee for review and comment. A public comment period for the Plan, TIP, and conformity assessment begins at the June 11, 2009 TPB Citizens Advisory Committee meeting and ends on July 11, 2009.

Conformity assessment criteria vary by pollutant. Tests include adherence to mobile source emissions budgets in the case of ozone season pollutants (VOC and NO<sub>x</sub>) and CO, and a demonstration that forecast year PM<sub>2.5</sub> (including both directly emitted PM<sub>2.5</sub> and precursor NO<sub>x</sub>) emissions are not greater than base year 2002 emissions. One hour ozone precursor mobile emissions budgets are taken from the Metropolitan Washington Air Quality Committee (MWAQC)'s Severe Area State Implementation Plan (SIP) (1-hour ozone non-attainment area) document, Plan to Improve Air Quality in the Washington, DC-MD-VA Region, February 19, 2004. In addition, in 2007 MWAQC completed the development of the 8-hour ozone SIP with new mobile emissions budgets, which also correspond to a different geographic area (relevant planning areas are shown in Exhibit 1). Similarly, in March 2008 MWAQC approved, and the state air agencies subsequently submitted to EPA, the region's PM<sub>2.5</sub> Attainment Plan. Adherence to both the 8-hour ozone and PM<sub>2.5</sub> budgets is also documented in this report, even though EPA has not yet acted upon them.

### **BACKGROUND**

On February 18, 2009 the TPB approved the scope of work and the project submissions for inclusion in the conformity analysis for the year 2009 update of the CLRP and FY2010-2015 TIP. Key technical inputs to the analysis included: Round 7.2 Cooperative Forecasts; the Version 2.2 Travel Demand Model utilizing the new project submissions and reflecting updated transit

service; and EPA's Mobile6.2 Emissions Factor Model with use of new 2008 vehicle registration data for all jurisdictions.

Staff proceeded with the technical analyses described below to ascertain whether the draft plan and program would meet the specific conformity criteria.

## **WORK ACTIVITIES**

Technical work activities for the conformity assessment of the 2009 CLRP and FY2010-2015 TIP included the preparation of volatile organic compound (VOC), nitrogen oxide (NO<sub>x</sub>), PM<sub>2.5</sub>, and wintertime carbon monoxide (CO) emissions inventories for specified forecast years associated with the plan and program (forecast years: 2010, 2020 and 2030). While ozone season pollutants (VOC and NO<sub>x</sub>) and wintertime CO are inventoried for average weekday conditions, precursor NO<sub>x</sub> and direct PM<sub>2.5</sub> are inventoried to reflect emissions on a yearly total basis. Accordingly, staff applied seasonal adjustment factors to convert daily travel (annual average weekday traffic or AAWDT) to annual values.

These inventories address a primary conformity assessment criterion to demonstrate that emissions associated with the plan and program adhere to the established mobile source emissions levels. In anticipation of possible emissions increases associated with implementation of the plan and program, staff (in conjunction with the TPB Technical Committee and its Travel Management Subcommittee) conducted parallel analyses of committed and potential new transportation emissions reduction measures (TERM)s, and documented emissions benefits for each analysis year.

## **Plan Amendments and Program Elements**

There have been some new projects and changes advanced for the CLRP / TIP in this year's approval cycle. Attachment A presents an excerpt from the February 8, 2009 TPB item listing the major changes to the conformity project inputs since the 2008 CLRP and the FY2009-2014 TIP.

## **Land Activity Forecasts**

On January 14, 2009 COG's Metropolitan Development Policy Committee approved Round 7.2 Cooperative Forecast totals to be used for testing purposes in analysis of the CLRP and TIP. The Round 7.2 data, summarized in Attachment B, reflect not only the forecast small area land use distributions throughout the Washington area, but also the latest planning assumptions for areas outside the Washington region. For example, the Baltimore land use input to Round 7.2 reflects the Baltimore Metropolitan Council's 'Round 7-A' adopted figures, whereas their previous input to the COG Round 7.1 forecasts was their 'Round 7' figures.

## **Travel Modeling Process**

For this conformity analysis staff used TPB's travel demand model, Version 2.2, with updated tolling processes and a modified post-processor. Using the Version 2.2 model, COG/TPB staff prepared travel demand forecasts for each of the required forecast years. Exhibit 1 presents the geographic areas for travel modeling and for emissions reporting for each non-attainment area.

Exhibit 2 presents the resulting average weekday transit trips, vehicle trips, and vehicle miles traveled (VMT) results through time for each conformity analysis year, for the full modeled area.

## **Emissions Factors**

Staff developed motor vehicle emissions factors through execution of EPA's MOBILE6.2 emissions factor model. This year's factors were updated to reflect the new 2008 vehicle registration data, which were developed using VIN decoder software. The 2008 registration data show an increase in the number of hybrid vehicles and a decrease in the rate of SUV purchases. Both trends tend to reduce emissions. However, the data also show that fewer new vehicles are being purchased, which results in an aging of the region's vehicle fleet. The older fleet increases emissions, and has a greater impact than the trends reducing emissions, thus resulting in an overall increase in emission factors.

The emission factors also include the use of the Maryland Department of the Environment's (MDE) data reflecting the adoption of Phase I of California's Low-Emission Vehicle II (LEV II) program in Maryland. These data include the reduction in ozone season pollutants expected from the adoption of this program. These rates for each pollutant, shown using Fairfax County data as an illustration in Exhibits 3 and 4, were developed following execution of the model in one mph speed increments, by jurisdiction, for each analysis year. The chart shows significantly reduced rates through time, primarily due to the impacts of having cleaner fuel and vehicles in the fleet. Exhibit 5 presents direct PM<sub>2.5</sub> emissions rates through time for each of the three seasons; data are arrayed in a bar chart since these emissions rates do not vary by vehicle speed.

## **Post Processor**

The Post Processor was revised to reflect new table lookup speeds and capacities, and the speed flow relationship contained in the Version 2.2 model. The Post Processor now better reflects speeds observed in travel time studies within the region.

## **Emissions Analyses**

### Mobile Emissions Inventories

#### *Ozone Season and Wintertime CO – Daily Emissions*

Prior to calculation of daily mobile source emissions, the above (AAWDT) travel forecasts produced through the travel demand modeling process were first factored by seasonal adjustments (a 1.05 ozone season factor or a 0.97 winter season factor) to yield VMT appropriate to each season being analyzed. Staff then applied the appropriate Mobile6.2 emissions factors to the travel demand forecasts to prepare mobile source emissions inventories for each forecast year. These emissions results for ozone season pollutants are summarized in Exhibits 6 - 9 and indicate total VOC and NO<sub>x</sub> emissions for each analysis year. The charts show dramatic reductions throughout the period. Historical emissions reductions from the clean air act amendments 1990 base have been well documented in the past; 2030 VOC and NO<sub>x</sub> emissions represent about 13 percent and less than 10 percent, respectively, of their 1990 levels. The results reflect the impact of the cleaner fuel / fleet and related programs, in conjunction with slowing VMT growth rates through time.

The 2010 emissions forecasts are much closer to the budget levels than in recent analyses. This is due to an increase in emission factors that reflects the region's aging fleet, as reported in the

2008 vehicle registration data. An increase in emissions due to the older vehicle fleet is offset somewhat by a decrease in vehicle miles traveled (VMT). This VMT decrease is associated with lower households and job forecasts in the Round 7.2 Cooperative Forecasts, as compared to Round 7.1 for 2010. However, the overall effect is an emissions increase that severely diminished the “adherence margin” for emission budgets for the 2010 forecast year.

### *PM<sub>2.5</sub> – Yearly Emissions*

To develop the yearly total PM<sub>2.5</sub> emissions, travel and emissions were estimated throughout the year by applying (three) seasonal factors to the primary travel data, followed by applying emissions rates for each of the seasons, and summarizing to obtain yearly totals. Direct PM<sub>2.5</sub> and precursor NO<sub>x</sub> emissions, shown in the Exhibit 10 bar chart, exhibit similar dramatic reductions through time despite increases in vehicle trips and VMT in the forecast years. These reductions are also largely attributable to Tier II vehicle standards, cleaner fuels, and the heavy duty engine rule, and continue to generate additional emissions reductions through time as fleet turnover replaces older vehicles / truck engines with much cleaner ones. As with the ozone season emissions, the effects of the older vehicle fleet are reflected as higher PM<sub>2.5</sub> emissions compared to last year.

### *Plan and Program Emissions Versus Emissions Budgets*

Reference to Exhibits 6-10 provides a comparison of emissions levels associated with the CLRP and TIP to the maximum allowable for each pollutant. Net emissions for each forecast year are shown in comparison to emissions budgets, and are seen to be within the mobile budgets for all forecast years. Wintertime CO emissions (contained in a full technical report but not summarized here) follow these same general trends and are easily within the CO emissions budget level.

Exhibit 10 shows that both direct PM<sub>2.5</sub> and precursor NO<sub>x</sub> emissions are much lower than base year 2002 conditions and are within the new mobile budgets, for all forecast years, satisfying this additional conformity assessment criterion for PM<sub>2.5</sub>. In view of the fact that estimated emissions are within the required mobile source emission levels for each pollutant, no additional transportation emissions reduction measures are required to demonstrate conformity.

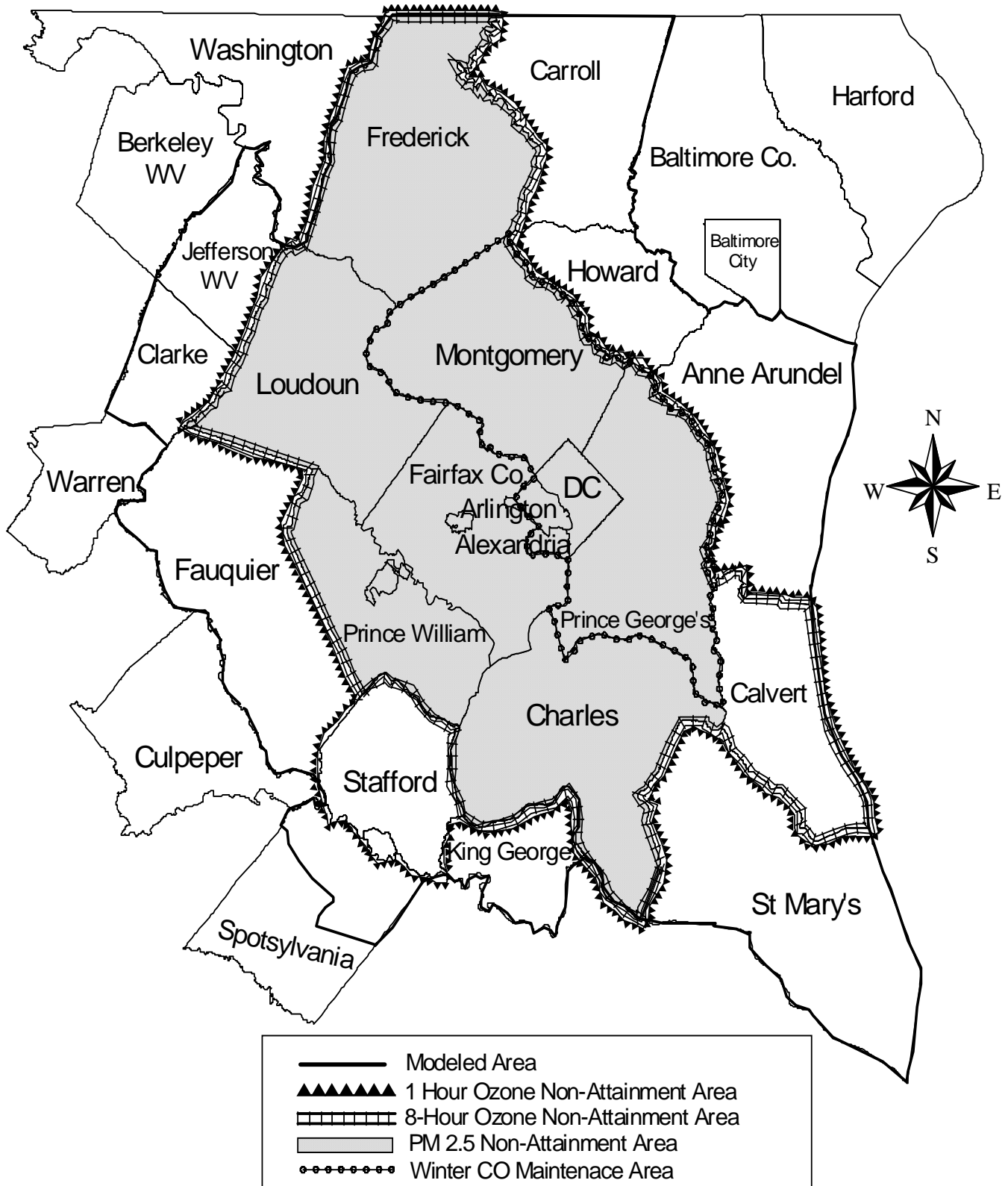
## **SUMMARY**

The analytical results described in this air quality assessment provide a basis for a determination by the TPB of conformity of the 2009 CLRP and the FY2010-2015 TIP.

Following: Exhibits 1-10  
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)**

	<u>2002</u>	<u>2010</u>	<u>2020</u>	<u>2030</u>
<b>Transit Trips</b>	1,055.7	1,161.9	1,518.4	1,652.0
<b>Vehicle Trips</b>	19,535.7	22,092.7	24,906.9	27,287.1
<b>VMT</b>	145,504.9	160,913.4	182,831.8	197,574.5

**Adjustment Factors to Convert AWDT to Appropriate Season:**

Ozone Season AWDT: 1.05

Winter Season AWDT: 0.97

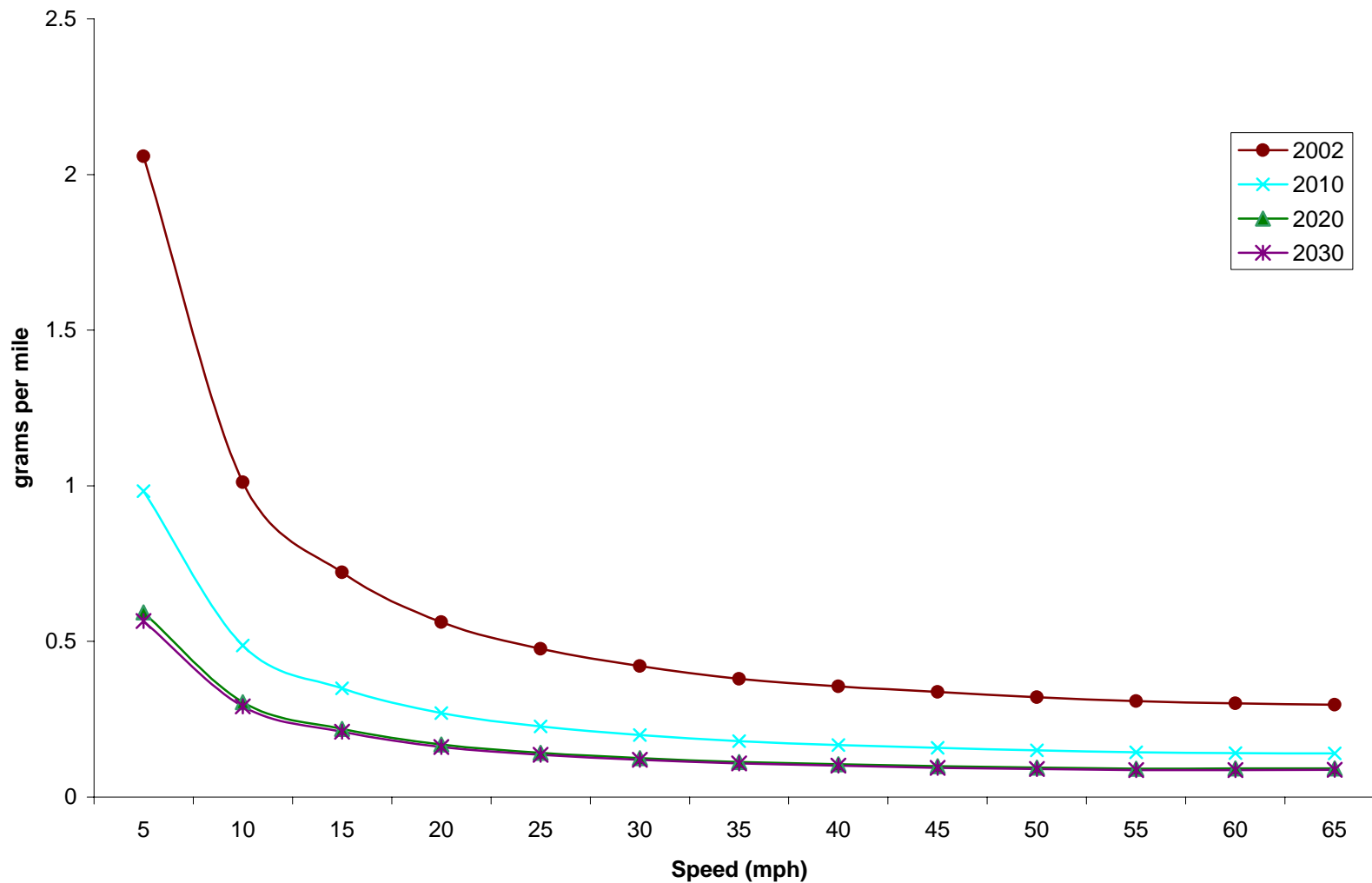
**PM2.5 Annual:**

Season (ADT)	Factor
Season 1 (Jan- Apr)	0.9216
Season 2 (May- Sept)	0.9873
Season 3 (Oct- Dec)	0.9282

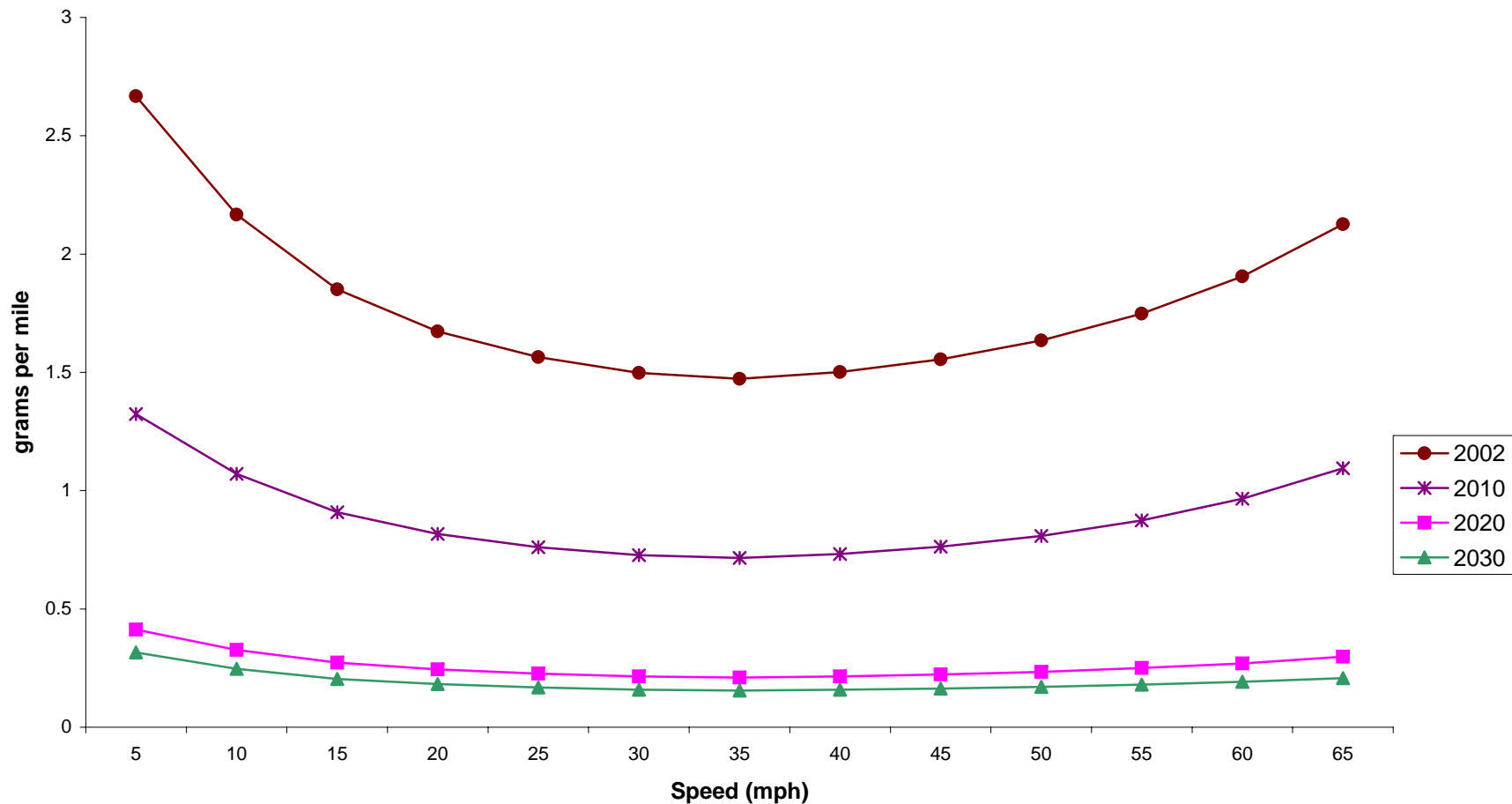
**NOTE:** AWDT reflects a five day average  
ADT reflects a seven day average

### Exhibit 3

## 2002-2030 VOC COMPOSITE MOBILE6.2 ARTERIAL RUNNING EMISSION RATES FOR FAIRFAX COUNTY

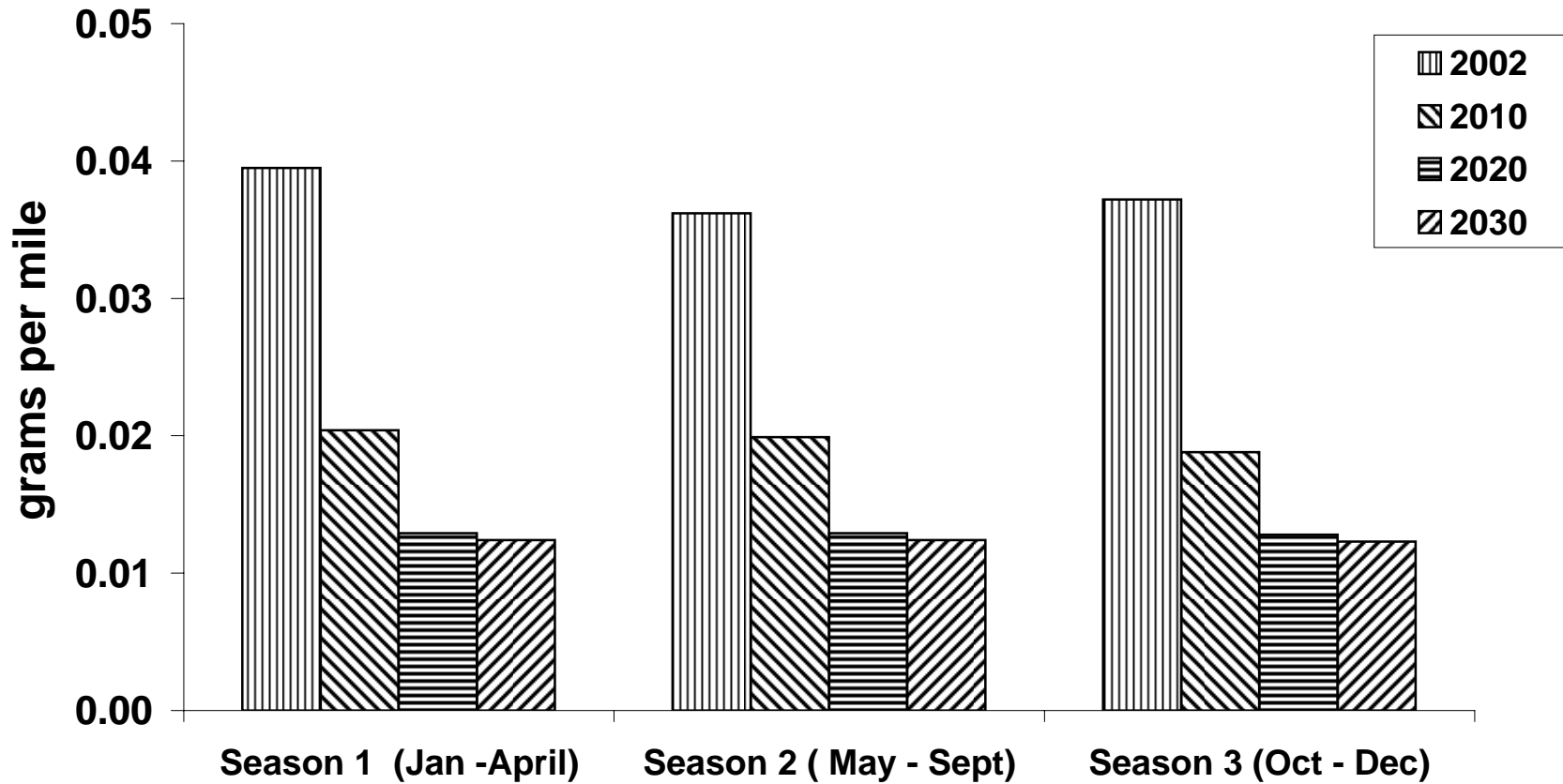


### Exhibit 4 2002-2030 NOx COMPOSITE MOBILE6.2 ARTERIAL RUNNING EMISSION RATES FOR FAIRFAX COUNTY



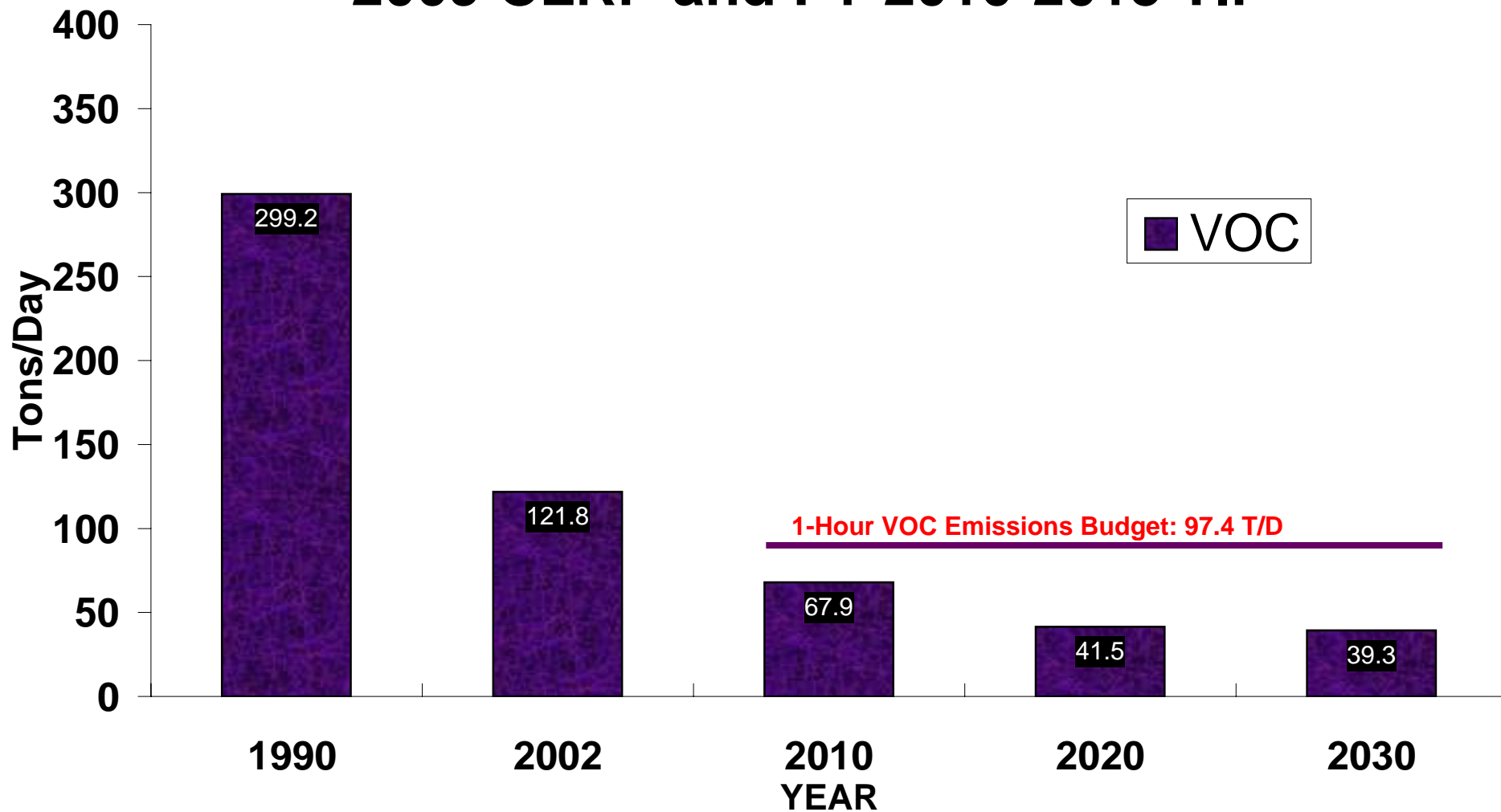


### Exhibit 5 DIRECT PM<sub>2.5</sub> EMISSION RATES FOR FAIRFAX COUNTY (MAJOR ROADS NETWORK)



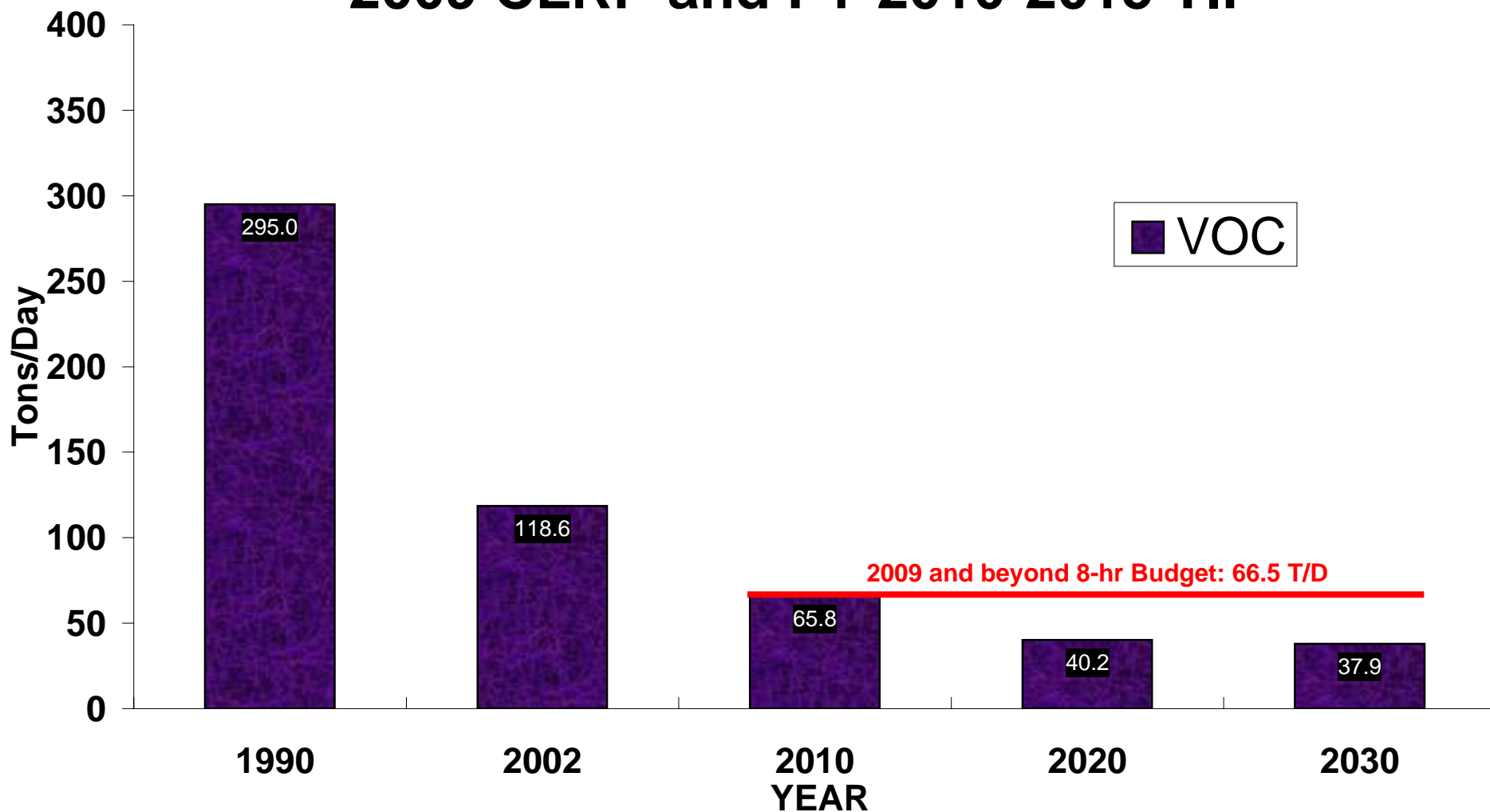
# EXHIBIT 6

## Mobile Source VOC Emissions for the 1-Hour Ozone Nonattainment Area 2009 CLRP and FY 2010-2015 TIP



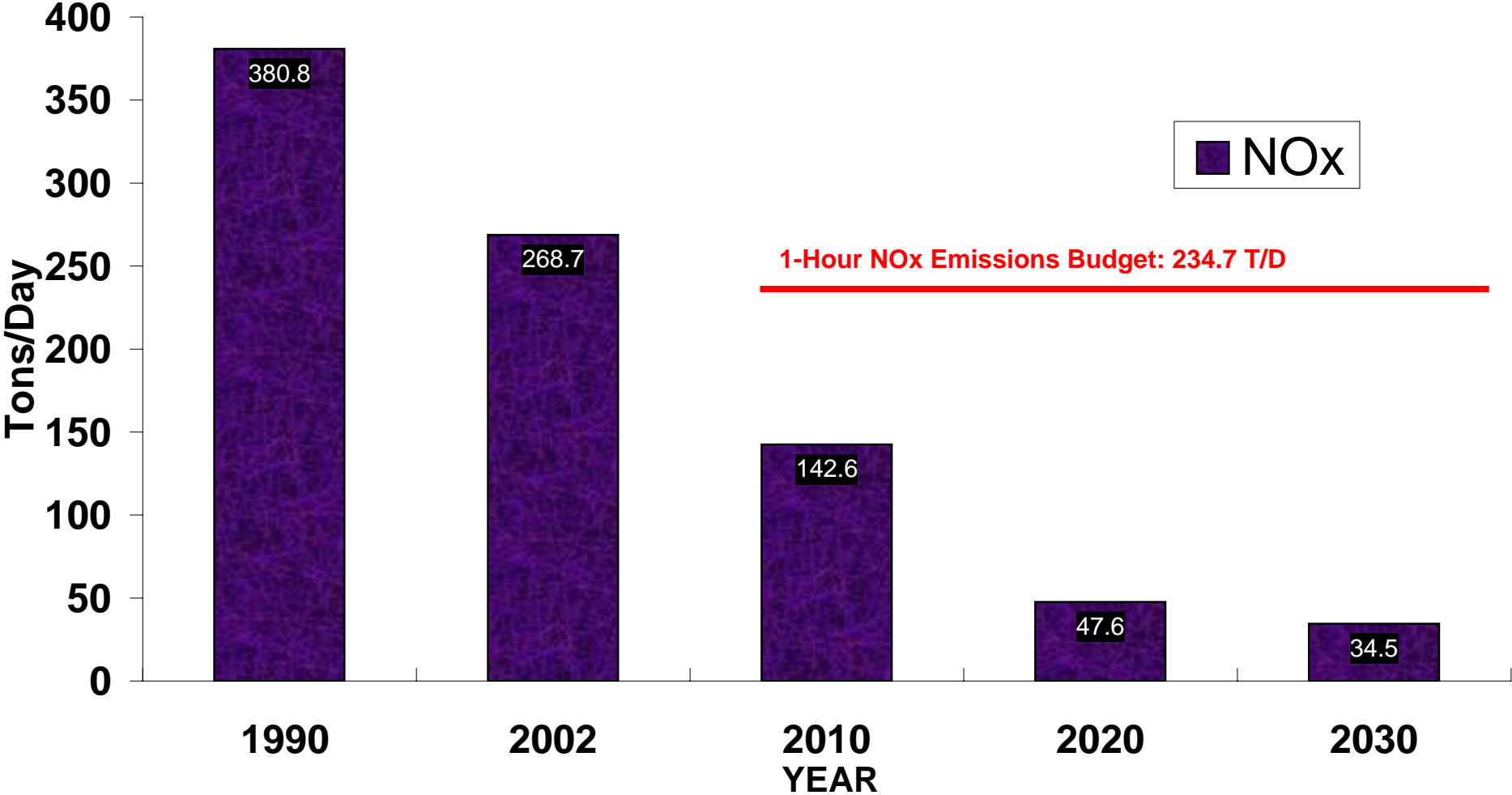
# EXHIBIT 7

## Mobile Source VOC Emissions for the 8-Hour Ozone Nonattainment Area 2009 CLRP and FY 2010-2015 TIP



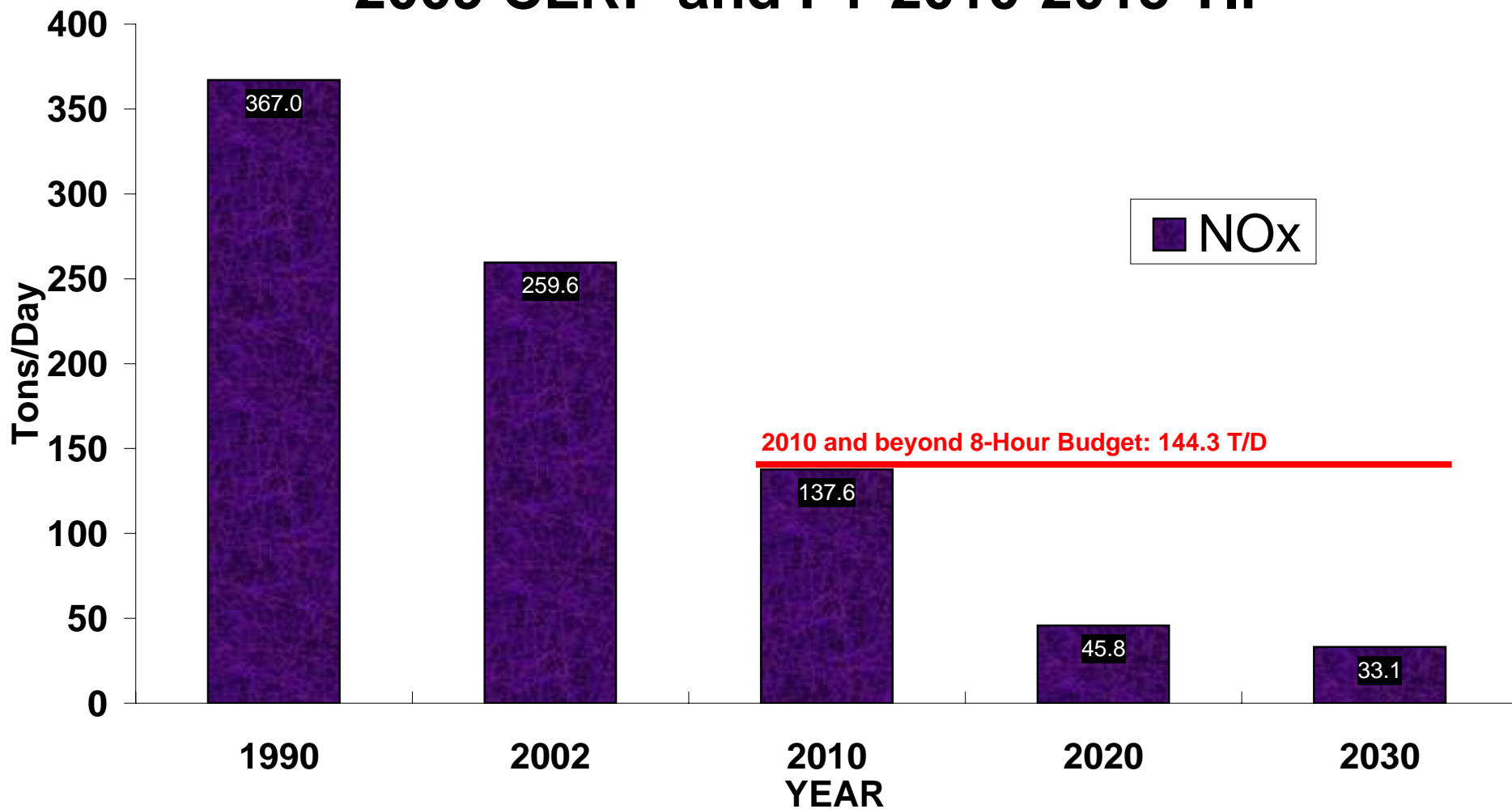
# EXHIBIT 8

## Mobile Source NOx Emissions for the 1-Hour Ozone Nonattainment Area 2009 CLRP and FY 2010-2015 TIP

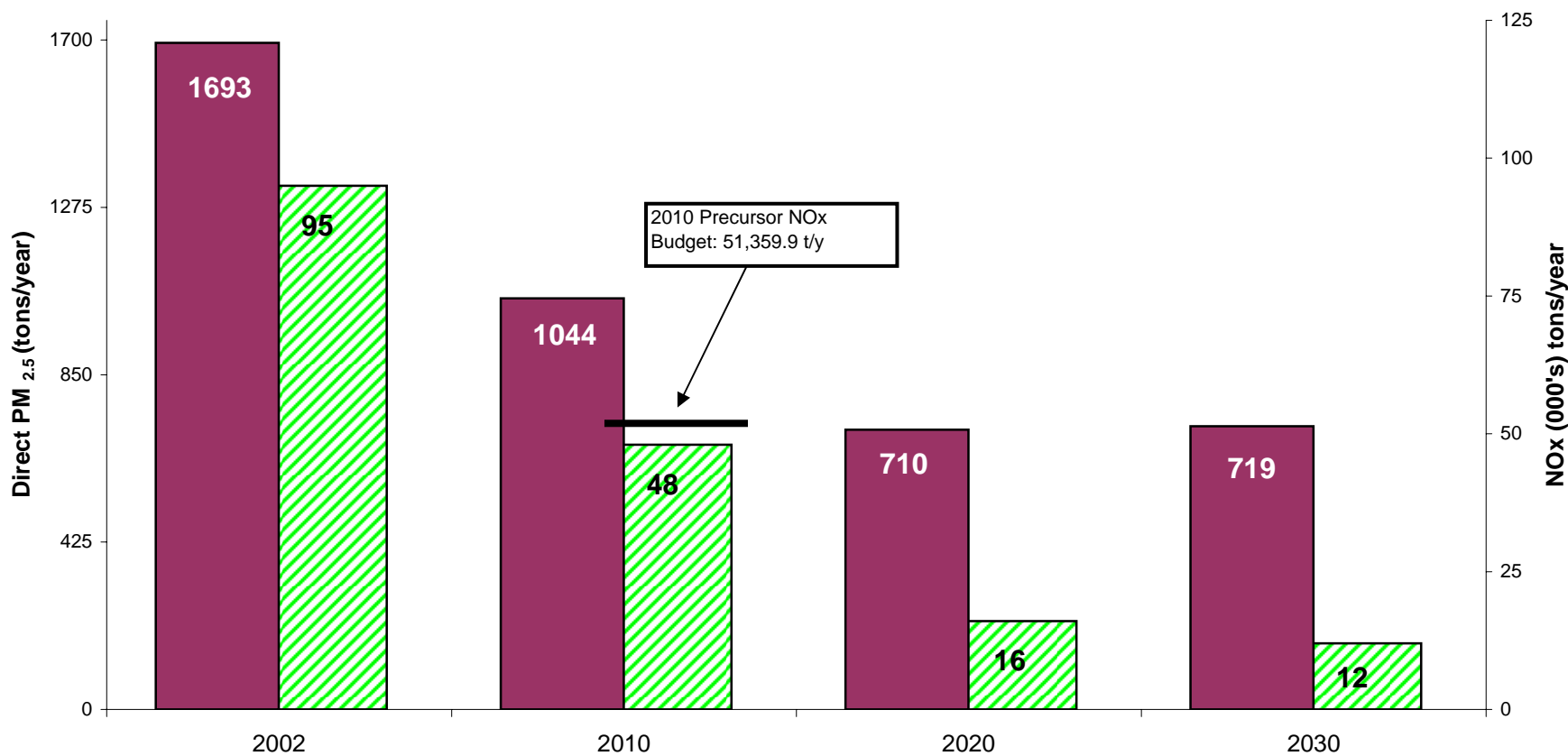


# EXHIBIT 9

## Mobile Source NOx Emissions for the 8-Hour Ozone Nonattainment Area 2009 CLRP and FY 2010-2015 TIP



**Exhibit 10**  
**Mobile Source Emissions**  
**2009 CLRP and FY 2010-2015 TIP**  
**PM<sub>2.5</sub> Direct and Precursor NOx**



# **ATTACHMENT A**

## National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202 TDD: (202) 962-3213

### MEMORANDUM

**February 11, 2009**

**TO:** Transportation Planning Board

**FROM:** Ronald F. Kirby  
Director, Department of  
Transportation Planning

**RE:** Proposed Significant Changes to the 2009 Constrained Long-Range Plan and the  
FY 2010-2015 Transportation Improvement Program for Air Quality Conformity Analysis

On Thursday, January 15, 2009 the TPB released for public comment the draft project inputs for the air quality analysis of the 2009 update to the National Capital Region's Financially Constrained Long-Range Transportation Plan (CLRP) and the FY 2010-2015 Transportation Improvement Program (TIP). The TPB also released the Draft Scope of Work for the Air Quality Conformity Assessment. Comments can be submitted and reviewed online at [www.mwcog.org/tpbpubliccomment](http://www.mwcog.org/tpbpubliccomment). The 30-day public comment period will close at midnight on Saturday, February 14, 2009.

Beginning on page 2 is a list of proposed significant changes to the 2009 CLRP and the FY 2010-2015 TIP. This listing covers changes only to those projects that are considered to be regionally significant, i.e., interstates, principal arterials and some minor arterials, as well as transit facilities. A complete list of all projects planned is included in Attachment B – the Draft 2009 CLRP and FY 2010-2015 TIP Air Quality Conformity Inputs.

In contrast to previous years, there are no significant new projects being added to this year's CLRP update. With state and local budgets facing drastic shortfalls, most of the changes proposed will delay the completion dates of those projects and in some cases, remove projects from the plan altogether. The projects in each jurisdiction below have been grouped together based on the nature of the change; a delay of five to nine years, a delay of ten years or more, or removal from the Plan. Other changes to regionally significant projects in Virginia can be found on page 3. Projects that are delayed less than five years and changes to non-regionally significant projects can be found in Attachment B. A map number is included in the list to help locate affected projects on the maps of major projects in the CLRP in Attachment A.



## District of Columbia

### *Projects delayed five to nine years*

- |                   | Old Date | New Date | Map # |
|-------------------|----------|----------|-------|
| • K Street Busway | 2010     | 2017     | 2*    |

## Maryland

### *Projects delayed five to nine years*

- |   |      |      |    |
|---|------|------|----|
| • I-95/I-495 Interchange at Greenbelt Metro   | 2010 | 2015 | 13 |
| • MD 5 Branch Avenue, construct interchanges at Surratts Road, Earnshaw Drive/Burch Hill Road, and MD 373/Brandywine Road | 2010 | 2015 | 35 |
| • US 29 Columbia Pike, upgrade interchange at Musgrove/Fairland Road  | 2010 | 2015 | 46 |

### *Projects delayed 10 years or more*

- |   |      |      |            |
|---|------|------|------------|
| • I-270/US 15 Corridor, construct from Shady Grove Metro to I-70  | 2020 | 2030 | 8          |
| • I-95/I-495 Branch Avenue Metro Access, construct eight lanes  | 2009 | 2020 | 14         |
| • MD 2/4, construct three lanes from MD 765 to MD 2/4 at Lusby (Calvert County)                             | 2010 | 2020 | not mapped |
| • MD 3 Crain Highway, construct four lanes from US 50 to Anne Arundel County Line                           | 2020 | 2030 | 29         |
| • US 29 Columbia Pike, upgrade six lanes from Musgrove Road to Fairland Road                                | 2010 | 2030 | 46         |
| • US 29 Columbia Pike, upgrade interchanges at Stewart Lane, Tech Road, Greencastle Road and Blackburn Road | 2020 | 2030 | 46         |
| • MD 97 Brookville Bypass, construct two lanes from south to north of Brookeville                           | 2020 | 2030 | 37         |

### *Projects removed from the Plan*

- |                                 |      |  |    |
|---------------------------------|------|--|----|
| • Randolph Road Bus Enhancement | 2010 |  | 6* |
|---------------------------------|------|--|----|

## Virginia

### *Projects delayed five to nine years*

- |  |               |               |     |
|--|---------------|---------------|-----|
| • I-66 HOV, widen to six lanes from US 15 to US 29                             | 2015          | 2020          | 59  |
| • Dulles Airport Access Road, widen to six lanes from Dulles Airport to VA 123 | 2010          | 2017          | 51  |
| • US 50, widen to six lanes from VA 659 to VA 742                              | 2010          | 2015          | 84  |
| • VA 28, construct interchange at VA 209                                       | 2009          | 2015          | 103 |
| • VA 28, widen to eight lanes from I-66 to VA 7                                | 2010          | 2015          | 103 |
| • US 1, widen to six lanes from Blackburn Drive to Featherstone Road           | 2013          | 2020          | 72  |
| • VA 28, widen to four lanes from VA 652 to VA 234                             | 2012,<br>2013 | 2020          | 101 |
| • VA 7, widen to six lanes from Route 9 to Market Street                       | 2015          | 2020          | 108 |
| • VA 7 Bypass, widen to six lanes from US 15 South to VA 7/US 15 East          | 2015          | 2020,<br>2025 | 110 |

\* These projects can be found on Map 2 – Major Transit, HOV and HOT Improvements in the 2008 CLRP.

	Old Date	New Date	Map #
• Tri-County Parkway, construct four lanes from I-66 to Loudoun County Line	2017	2025	105
• VA 28 Bypass, construct four lanes from I-66 to VA 620/VA 613	2020	2025	98
<i>Projects delayed 10 years or more</i>			
• US 1, widen to six lanes from Brady’s Hill Road to Cardinal Drive	2011	2020	72
• Fairfax County Parkway, widen to six lanes with two HOV lanes from Fair Lakes Parkway to I-66	2010	2020	111
<i>Proposed changes to other regionally significant projects in Virginia</i>			
• I-95/I-395 HOT/HOV/Bus Lanes Project	2010	2012, 2014	68
○ New northbound ramp at Fairfax County Parkway			
○ Southbound slip-ramp modifications and additions near Fairfax County Parkway, Lorton Road, Opitz Boulevard, Dumfries Road and Joplin Road			
○ Previously planned 9 mile single-lane taper from VA 234 to VA 610 changed to two HOT lanes with new access ramps, extending from VA 234 to VA 17 in Stafford County (complete in 2014)			
• Capital Beltway HOT Lanes Project			57, 58
○ Additional auxiliary lanes from Dulles Toll Road to VA 7, and from one mile east of I-95/395/495 to north of Hemming Avenue underpass			
○ New ramp movements at I-66, US 29, Dulles Toll Road and Dulles Airport Access Road			
○ Change lane configuration between VA 193 (Georgetown Pike) and south of Old Dominion Drive from eight general purpose + four HOT lanes to eight g.p. + two HOT lanes			
• US 1 from VA 234 North to the Prince William Co. Line			72
○ Downgraded from ‘widening to eight lanes’ to ‘reconstructing six lanes’			
• Dulles Corridor Metrorail Project – Phase 1	2011	2014	11*

\* These projects can be found on Map 2 – Major Transit, HOV and HOT Improvements in the 2008 CLRP.

Attachments

## Proposed project listing for the 2009 Plan Update: Major Highway Improvements\*

### District of Columbia

- 1 11th Street Bridge reconstruction, 2013
- 2 South Capitol Str/Bridge Reconstruction, including intersection with Martin Luther King Jr. Blvd, 2015

### Maryland

- 3 Baltimore Washington Parkway at MD 193, Intersection Improvement, 2025
- 4 Cross-County Connector, widen to 4 lanes, 2009
- 5 Father Hurley Blvd. , construct 4 lanes, 2011
- 6 I-270, interchange at Watkins Mill Rd. Ext., 2020
- 7 I-270, reconstruct interchange at MD 121, 2010
- 8 **I-270/US 15 Corridor, Shady Grove to I-70, widen and HOV, 2030**
- 9 I-70, widen to 6 lanes, 2009
- 10 I-95, interchange and CD lanes at Contee Road , 2020
- 11 I-95, Woodrow Wilson Bridge , build 12 lane bridge, 2009, 2011
- 12 I-95/495, interchange at Arena Drive , 2009
- 13 **I-95/495, interchange at Greenbelt Metro, 2015**
- 14 **I-95/495: Branch Avenue Metro Access, construct 8 lanes, 2020**
- 15 Intercounty Connector, construct 6 lanes, 2012
- 16 M-83, construct 4, 6 lanes, 2020
- 17 MD 117, widen to 4 lanes, 2020
- 18 MD 118 (Germantown Rd.), widen to 6 lanes, 2020
- 19 MD 124 extended, construct 2 lanes, 2010
- 20 **MD 124, widen to 6 lanes, 2010, 2020**
- 21 MD 201/Kenilworth Ave widen to 6 lanes, 2020
- 22 MD 202, reconstruct 6 lanes, 2020
- 23 MD 210, upgrade 6 lanes and interchange improvement, 2030
- 24 MD 212, construct 4 lanes, 2008
- 25 **MD 223, widen to 4 lanes, 2020**
- 26 MD 27, widen to 6 lanes, 2010
- 27 MD 27, widen, MD-355 to A 305, 2010
- 28 MD 28/MD 198, widen, construct 4, 6 lanes, 2020
- 29 **MD 3, widen to 6 lanes, 2030**
- 30 MD 355, construct 6 lanes, interchange at Montrose/Randolph Road, 2010
- 31 MD 355/MD 80, Urbana Bypass, construct 4 lanes, 2010
- 32 MD 4, widen to 6 lanes, upgrade with interchanges at Westphalia Road and Suitland Parkway, 2010, 2011, 2020
- 33 MD 450, reconstruct, grade separate at Peace Cross, CSX, 2009
- 34 MD 450, widen to 4 lanes, 2020
- 35 **MD 5, upgrade, widen to 6 lanes, including interchanges, 2015, 2030**
- 36 MD 85, widen to 4, 6 lanes, 2020
- 37 **MD 97, construct 2 lanes, 2030**
- 38 MD 97, upgrade intersection at MD 28, 2020

- 39 MD 97, upgrade intersection at Randolph Road , 2015
- 40 Middlebrook Road Extended, widen, construct 6 lanes, 2015
- 41 Montrose Parkway East and West, construct 4 lanes, 2009, 2015
- 42 Randolph Road, widen to 5 lanes, 2011
- 43 Suitland Parkway, interchange at Rena/ Forestville Road, 2025
- 44 US 1, reconstruct 4 lanes, 2020, widen to 6 lanes, 2010
- 45 US 15, construct interchange at Monocacy Blvd, 2010
- 46 **US 29, upgrade, including interseptions/interchanges, 2015, 2020, 2030**
- 47 US 301, widen to 6 + 2 lanes, 2020
- 48 US 340/US 15, construct interchange at Jefferson Tech Park, 2010
- 49 US 50, westbound ramp to Columbia Park Road , 2025

### Virginia

- 50 Battlefield Parkway, construct, widen, upgrade 4 lanes, 2008, 2009, 2010
- 51 Dulles Access Road, widen to 6 lanes including interchange reconstruct at I-495, 2010
- 52 Dulles Toll Road, reconstruct interchange at VA 674, 2012
- 53 Fairfax County Parkway HOV, construct 2 lanes, 2015
- 54 Fairfax County Parkway HOV, widen and upgrade, 6 to 8 lanes, 2010, 2015
- 55 Fort Belvoir EPG access improvements, interchanges on Fairfax County Parkway, 2010, 2020
- 56 Franconia/Springfield Parkway, HOV with interchange at Nueman Street, 2010, 2020
- 57 I-495 High Occupancy/Toll (HOT) lanes, Transit Service, 2013, 2030
- 58 **I-495, construct 2 HOT lanes, 2030**
- 59 **I-66 HOV, includes interchange reconstruction at US 15, 2020**
- 60 I-66 HOV, widen to 8 lanes, 2009
- 61 I-66, spot improvements inside the Beltway, 2013
- 62 I-66, reconstruct interchange at US 29, 2014
- 63 I-66/I-495, reconstruct interchange, 2013
- 64 I-66, widen at Gallows Road and Cedar Lane, 2030
- 65 I-95, interchange at VA 7900, 2015
- 66 I-95, reconstruct interchange at VA 642, 2010
- 67 I-95, widen to 8 lanes from Newington to VA 123, 2011
- 68 I-95/395 HOT Lanes, widen, construct 2, 3 lanes with new ramps, 2012, 2014
- 69 I-95/495, reconstruct interchange at VA 613, 2015
- 70 I-95/I-395/I-495, interchange access ramps to I-495 HOT, 2013
- 71 US 1, reconstruct interchange at Russell Road , 2010

- 72 **US 1, widen to 6 lanes including interchange at VA 123, 2010,2011, 2015, 2016, 2017, 2020**
- 73 **US 15, widen to 4 lanes, 2009, 2030**
- 74 US 15, widen to 4 lanes, 2015
- 75 **US 15 Bypass, interchange at Edwards Ferry Road, 2020**
- 76 US 29, interchange at VA 55, 2014
- 77 US 29, widen to 5, 6 lanes, 2014
- 78 US 29, widen to 6 lanes, 2010
- 79 US 29, widen to 6 lanes, 2009, 2010, 2011
- 80 US 29, widen to 6 lanes, 2015, 2020
- 81 US 29, widen to 6 lanes, 2010
- 82 US 50, construct round-about at US 15, 2010
- 83 US 50, widen 3, 8 lanes, 2020
- 84 **US 50, widen to 6 lanes, 2012, 2015**
- 85 US 50, widen/reconstruct 6 lanes including interchanges, 2010, 2012, 2015, 2020
- 86 VA 120, reconstruct 2 lanes, 2020
- 87 VA 120, reconstruct 4 lanes, 2010
- 88 VA 123, widen 6 lanes, 2015, 2020
- 89 VA 123, widen to 6 lanes with interchange at US 1, 2008, 2015, 2017
- 90 VA 123, widen to 6 lanes, 2010
- 91 VA 234 Bypass, widen/upgrade, 6 lanes, 2020
- 92 VA 234, widen to 4 lanes, 2011
- 93 VA 234, widen to 5 lanes, 2010
- 94 VA 234, widen, upgrade 4 lanes, including interchange at US 1, 2008, 2016
- 95 VA 236, reconstruct intersection at Braddock Road, 2009
- 96 VA 236, widen to 6 lanes, 2020
- 97 VA 244, reconstruct interchange at VA 27, 2011
- 98 **VA 28 Bypass, construct 4, 6 lanes, 2020, 2025**
- 99 VA 28, interchange at Wellington Road , RR tracks, 2009
- 100 VA 28, remove movements at I-66, 2008
- 101 **VA 28, widen to 6 lanes, 2020**
- 102 VA 28, widen to 6 lanes, 2025
- 103 **VA 28, widen to 6, 8 lanes, with interchanges, 2008, 2015**
- 104 **VA 3000, widen to 6 lanes, 2020**
- 105 **VA 411, ( Tri-County Parkway ), construct 4 lanes, 2025**
- 106 VA 7, Leesburg Pike, widen to 6, 8 lanes, 2012, 2013, 2020
- 107 **VA 7, construct interchanges, 2009, 2010, 2020**
- 108 **VA 7, widen to 6 lanes, 2020**
- 109 VA 7, widen to 6 lanes, 2020
- 110 **VA 7/US 15 Bypass, widen to 6 lanes, 2020, 2025**
- 111 VA 7100, construct 6 lanes, 2010, 2020
- 112 VA 7100, interchange at Fair Lakes Parkway, 2011
- 113 VA 7100, widen to 6 lanes, 2015
- 114 VA 7100, widen to 6 lanes (Hooes Rd to Sydenstricker Rd), 2015
- 115 Wilson Blvd., reconstruct 4 lanes, 2010

# Map 1: Major Highway Improvements

Map from the 2008 CLRP Brochure



## Proposed project listing for the 2009 Plan Update: Major Transit, High Occupancy Vehicle (HOV) and High Occupancy/Toll (HOT) Improvements\*

### District of Columbia

- 1 Anacostia Street Car Project Phase I, 2010
- 2 ***K Street Busway, 2017***

### Maryland

- 3 Corridor Cities Transitway, from Shady Grove to COMSAT, 2016
- 4 I-270/US 15 Corridor, Shady Grove to I-70, HOV, 2030
- 5 Purple Line, Bethesda to Silver Spring, 2015
- 6 ***Randolph Road Bus Enhancements from MD 355 to US 29, to be removed***
- 7 University Blvd Bus Enhancements, 2020
- 8 Veirs Mill Road Bus Enhancements, 2015

### Virginia

- 9 Cherryhill VRE Station, 2010
- 10 Crystal City Potomac Yard Busway, 2010
- 11 ***Dulles Corridor Rapid Transit, 2014, 2015***
- 12 Fairfax County Parkway HOV, widen and upgrade, 6 to 8 lanes, 2010, 2015
- 13 Fairfax County Parkway HOV, construct 2 lanes, 2015
- 14 Franconia/Springfield Parkway HOV, 2010, 2020
- 15 I-495 High Occupancy/Toll (HOT) lanes, Transit Service, 2013, 2030
- 16 I-495, construct 2 HOV lanes, 2030
- 17 I-66 HOV, widen to 8-lanes, 2009, includes interchange reconstruction at US 15, 2020
- 18 I-95/395 HOT Lanes, widen, construct 2, 3 lanes with new ramps, 2012, 2014
- 19 Potomac Yard Metro Station, 2030
- 20 Potomac Yard Transitway, Arlington and Alexandria, 2011
- 21 US-1 bus right turn lanes, 2025
- 22 VA 244 Columbia Pike Streetcar from Skyline to Pentagon City, 2016

***\*Highlighted Projects*** are proposed to experience a delay of five years or greater, as compared to the expected completion dates listed in the 2008 Plan.

# Map 2: Major Transit, High Occupancy Vehicle (HOV) and High Occupancy/Toll (HOT) Improvements

Map from the 2008 CLRP Brochure

