Appendix G

Emission Reduction from Transportation Control Measures

Detailed Analysis for Transportation Control Measures for 2002-2005 Rate of Progress and 2005 Attainment Demonstrations

TCMs SIP Projects 2005

ID	Measure	VOC (tpd)	NOx (tpd)	Project Category
	Virginia			
NV-1	Park-and-Ride spaces Northern Virginia Districtwide	0.0280	0.0800	c
NV-2	Transit Access Improvements	0.0160	0.0390	c
NV-3	Purchase of New Transit Buses	0.0250	0.0670	
NV-4	Improvements to Pedestrian Facilities	0.0010	0.0020	
NV-5	Construction of Bus Shelters	0.0000	0.0010	c
NV-6	Park-and-Ride spaces Northern Virginia Districtwide	0.0325	0.0838	c
NV-7	Bicycle Lanes / Trails in Northern Virginia	0.0051	0.0053	c
NV-8	Bicycle Lockers in Northern Virginia	0.0004	0.0006	c
NV-9	Hybrid Vehicle Purchase	0.0004	0.0009	
NV-10	Bicycle Lane/Trail	0.0124	0.0127	
NV-11	Sidewalk Improvements	0.0007	0.0007	c
NV-12	CNG Buses	0.0000	0.0174	
	Maryland			
MD-1	MD Suburban Bus Replacements	0.0100	0.0250	
MD-2	Transit Parking Facilities	0.0040	0.0090	c
MD-3	MARC Replacement/Expansion Coaches	0.0360	0.1000	c
MD-4	Bicyle Facilities	0.0080	0.0020	c
MD-5	Park and Ride Facilities	0.0060	0.0190	c
MD-6	Grosvenor Metro Garage	0.0060	0.0155	
MD-7	Park & Ride Lots (Recent Additions)	0.0066	0.0171	
	WMATA			
WM-1	Bicycle Racks on Transit Buses (1458 total racks)	0.0074	0.0131	c
WM-2	Ultra Low Sulfur Diesel Fuel with CRT filters (886 buses)	0.0600	-	
WM-3	Compressed Natural Gas Buses (164 buses)	-	0.1594	
	District of Columbia			
DC-1	Bicycle Lanes (8 miles)	0.0035	0.0035	c
DC-2	CNG Refuse Haulers (2 vehicles)	0.0000	0.0022	
DC-3	Bicycle Racks (150 Racks)	0.0006	0.0005	c
	Total VA, MD	**0.3**	**0.7**	

c = commute
Note : The Emissions for Commute TCMs have been adjusted for 2002 Mobile 6 emissions factors.
Adjustment factors for Commute TCMs: NOx - 1.19145; VOC - 1.44161

Measure: Park-And-Ride Spaces Northern Virginia Districtwide

Measure Number: NV -1
Measure Name: Park-and-Ride spaces

Description:
As part of the 9% SIP VDOT proposed constructing 1,872 park-and-ride spaces at various locations in Northern Virginia. VDOT constructed these park-and-ride spaces. Emissions reductions from these facilities are being credited in the SIP.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0800
Estimated Reductions (tpy)	20.00

Issues
None

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0280
Estimated Reductions (tpy)	7.00

Assumptions

* Reductions in vehicle trips and vehicle miles traveled due to this project were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771

Emission Reductions

Daily Reductions (NOx) = 0.08 tons

Daily Reductions (VOC) = 0.028 tons

Cost Effectiveness

N/A

Measure: Transit Access Improvements

Measure Number: NV -2

Measure Name: Improved Transit Access

Description:

As part of the 9% SIP VDOT proposed improving access for commuters at a VRE station by building 200 park-and-ride spaces. VRE has constructed more than the 200 spaces noted in the earlier SIP. This measure proposes to include the reductions from 560 parking spaces in the SIP. These spaces have been built as of the summer of 2003 and are being utilized by VRE users.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0390
Estimated Reductions (tpy)	9.75

Issues

None

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0160
Estimated Reductions (tpy)	4.00

Assumptions

* Reductions in vehicle trips and vehicle miles traveled due to this project were estimated earlier for the 9% SIP. The estimated emissions reductions were for 1999 and based on Mobile 5b factors.

* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.

* Conversion factor for VOC 0.802 and for NOx 0.771. Also credit for the 225 extra spaces built and being utilized is included.

Emission Reductions

Daily Reductions (NOx) = 0.039 tons

Daily Reductions (VOC) = 0.016 tons

Cost Effectiveness

N/A

Measure: Purchase Of New Transit Buses

Measure Number: NV - 3

Measure Name: New Transit Buses

Description:

As part of the 9% SIP VDOT proposed purchasing new diesel powered buses to replace older vehicles. The proposal was for WMATA to purchase a total of 52 buses in two separate years. WMATA did purchase these buses and the reduced emissions from these newer buses are being credited in the SIP.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0670
Estimated Reductions (tpy)	16.75

Issues

None

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0250
Estimated Reductions (tpy)	6.25

Assumptions

* Reductions in emissions were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771.

Emission Reductions

Daily Reductions (NOx) = 0.067 tons

Daily Reductions (VOC) = 0.025 tons

Cost Effectiveness

N/A

Measure: Improvements To Pedestrian Facilities

Measure Number: NV - 4

Measure Name: Improved Pedestrian Access

Description:

As part of the 9% SIP VDOT proposed making improvements at transit stops and / or stations to facilitate pedestrian access to the transit service. Improvements such as installation of bus shelters, improvements at transit centers, and adding parking spaces have been completed at various locations. Emission reductions from these projects are being credited in the SIP.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.002 tons
Estimated Reductions (tpy)	0.50

Issues

None

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.001 tons
Estimated Reductions (tpy)	0.25

Assumptions

* Reductions in emissions were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771.

Emission Reductions

Daily Reductions (NOx) = 0.002 tons

Daily Reductions (VOC) = 0.001 tons

Cost Effectiveness

N/A

Measure: Construction of Bus Shelters

Measure Number: NV - 5

Measure Name: Construction of Bus shelters.

Description:

As part of the 9% SIP VDOT proposed constructing bus shelters in Northern Virginia. This project has been completed and emission reductions from the projects are being credited in the SIP.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0010
Estimated Reductions (tpy)	0.31

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0000
Estimated Reductions (tpy)	0.00

Issues

None

Assumptions

* Reductions in emissions were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771.

Emission Reductions

Daily Reductions (NOx) = 0.001 tons

Daily Reductions (VOC) = 0.000 tons

Cost Effectiveness

N/A

Measure: Park & Ride Spaces

Measure Number: NV - 6
Measure Name: Park-and-Ride Spaces

Description:
Construct 3,220 new park-and-ride spaces in Northern Virginia. The measure would facilitate the formation of additional commuter car and van pools.

Issues
None

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0838
Estimated Reductions (tpy)	20.95

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0325
Estimated Reductions (tpy)	8.14

Assumptions

. 75% of the spaces will be utilized.
. Average trip length is 22.5 miles. Average travel speed is 40 mph.
. Emission factors for NOx (Running) in year 2005: 0.6995 grams per mile
. Emission factors for VOC (Running) in year 2005: 0.2717 grams per mile

Emission Reductions

Daily Reductions (NOx) = 3,220 spaces * 0.75 utilization * 22.5 miles /trip * 0.6995 gms/mi * 2 trips/day / 907,185
Daily Reductions (NOx) = 0.08380 tpd VOC

Daily Reductions (VOC) = 3,220 spaces * 0.75 utilization * 22.5 miles /trip * 0.2717 gms/mi * 2 trips/day / 907,185
Daily Reductions (VOC) = 0.03255 tpd VOC

Cost Effectiveness

N/A

Measure: Bicycle Lanes/Trails in Northern Virginia

Measure Number: NV - 7
Measure Name: Bicycle lanes / trails

Description:
Construct 12 miles of bicycle lanes and trails in Northern Virginia. The facilities provide commuters an alternate mode of transportation.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0053
Estimated Reductions (tpy)	1.31

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0051
Estimated Reductions (tpy)	1.28

Issues
None

Assumptions

. Reduction in vehicle trips (VT) and vehicle miles traveled (VMT) due to this project will be similar to those estimated for similar projects (TERM M-102) by the National Capital Region Transportation Planning Board (TPB) and proportional to the mileage of trail/lanes constructed.

In TERM M-102 VT and VMT reduced for 34 miles of bike trail were 4067 VT and 13556 VMT.

Emission Reductions

Daily Reductions (NOx) = (1,430 Veh. Trips * 0.9905 gms/mi + 4,785 VMT * 0.6995 gms/mi) / 907,185

Daily Reductions (NOx) = 0.00525 tpd VOC

Daily Reductions (VOC) = (1,430 Veh. Trips * 2.3454 gms/mi + 4,785 VMT * 0.2717 gms/mi) / 907,185

Daily Reductions (VOC) = 0.00513 tpd VOC

Cost Effectiveness

N/A

Measure: Bicycle Lockers in Northern Virginia

Measure Number: NV - 8
Measure Name: Bicycle lockers

Description:
Install 100 bicycle lockers at various park and ride lots and transit stations in Northern Virigina.

Issues
None

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0006
Estimated Reductions (tpy)	0.16

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0003
Estimated Reductions (tpy)	0.09

Assumptions

. One third of the lockers installed will be used at any one time.
. Commute trips converted to bicycle trips will reduce vehicle trips and vehicle miles traveled.
. Average trip length is 15.5 miles.
. 72.5% of the locker users would have traveled as a SOV prior to the availability of the lockers.

Emission Reductions

Daily Reductions (NOx) = 100 lockers * 0.33 utilization * 0.725 SOV mode * (2*0.9905 gms/mi+15.5 mi *2*0.6995 gms/mi)/907,185
Daily Reductions (NOx) = 0.00062 tpd VOC

Daily Reductions (VOC) = 100 lockers * 0.33 utilization * 0.725 SOV mode * (2*2.3454 gms/mi+15.5 mi *2*0.2717 gms/mi)/907,185
Daily Reductions (VOC) = 0.00035 tpd VOC

Cost Effectiveness

N/A

Measure: Hybrid Light Duty Vehicle Purchase

Measure Number: NV - 9
Measure Name: Hybrid Light Duty Vehicle Purchase

Description:
Light Duty Vehicle Replacement Program. Purchase 25 new hybrid electric light duty vehicles in place of gasoline vehicles in Northern Virginia.

Issues
None

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0009
Estimated Reductions (tpy)	0.23

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0004
Estimated Reductions (tpy)	0.09

Assumptions

. Vehicle mileage 8,413 per vehicle per year
. Emission reductions will be due to the difference in emissions rates between gasoline and hybrid vehicles
. Emission factors hybrid vehicle (Running): NOx: 0.02; VOC: 0.01 gms/mile
. Emission factors gasoline vehicle (Running): NOx:1.0; VOC: 0.41 gms/mile

Emission Reductions

Daily Reductions (NOx) = (1.0 - 0.02) gms/mile * 8413 miles/year * 25 vehicles / 250 days
Daily Reductions (NOx) = 0.00091 tpd VOC

Daily Reductions (VOC) = (0.41 - 0.01) gms/mile * 8413 miles/year * 25 vehicles / 250 days
Daily Reductions (VOC) = 0.000371 tpd VOC

Cost Effectiveness

N/A

Measure: Bicycle Trails/Lanes in Northern Virignia

Measure Number: NV - 10

Measure Name: 29 miles of bicycle lanes/trails in Northern Virginia

Description:

The proposed lane / trails will facilitate bicycle riders to commute and provide people an alternate mode of transportation for other trip purposes.

NOx

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0127
Estimated Reductions (tpy)	3.17

Issues

None

VOC

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0124
Estimated Reductions (tpy)	3.11

Assumptions

. Reduction in vehicle trips (VT) and vehicle miles traveled (VMT) due to this project will be similar to those estimated for similar projects (TERM M-102) by the National Capital Region Transportation Planning Board (TPB) and proportional to the mileage of trail/lanes costructed.

In TERM M-102, VT and VMT reduced for 34 miles of bike trail were 4,067 VT and 13,556 VMT.

Emission Reductions

Total NOx Reduced= (3,465 trips * 0.9905 gms/mi + 11,560VMT * 0.6995 gms/mile) / (907,185 g/ton)

Total NOx Reduced= 0.0127 tpd

Total VOC Reduced= (3,465 trips * 2.3454 gms/trip + 11,560 VMT * 0.2717 gms/mile) / (907,185 g/ton)

Total VOC Reduced= 0.0124 tpd

Cost Effectiveness

N/A

Measure: Sidewalk Improvements in Northern Virginia

Measure Number: NV - 11

Measure Name: 1.5 miles of sidewalk improvements in Northern Virginia

Description:
The proposed improvements will increase access to nearby transit stations/stops.

NOx

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0007
Estimated Reductions (tpy)	0.18

Issues
None

VOC

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0007
Estimated Reductions (tpy)	0.18

Assumptions

. Reduction in vehicle trips and vehicle miles traveled due to this project will be similar to those estimated for similar projects by the National Capital Region Transportation Planning Board (TPB) and proportional to the mileage of sidewalk constructed.

Emission Reductions

Total NOx Reduced= (201 trips * 0.9905 gms/mi + 673 VMT * 0.6995 gms/mile) / (907,185 g/ton)
Total NOx Reduced= 0.0007 tpd

Total VOC Reduced= (201 trips * 2.3454 gms/trip + 673 VMT * 0.2717 gms/mile) / (907,185 g/ton)
Total VOC Reduced= 0.0007 tpd

Cost Effectiveness

N/A

Measure: 11 New CNG Buses in place of Old Diesel Buses

Measure Number: NV - 12
Measure Name: 11 New CNG Buses in place of Diesel Buses

Description:
The measure would purchase 11 new CNG buses in Northern Virginia in lieu of diesel buses.

Issues
None

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0174
Estimated Reductions (tpy)	5.42

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0000
Estimated Reductions (tpy)	0.0000

Assumptions

. Vehicle mileage 30,000 per year
. Emission reductions derived from the difference between Diesel and CNG bus emissions factors.
. Emission factors CNG Bus: NOx: 8.4 gms/mile
. Emission factors diesel bus: NOx: 23.3 gms/mile

Emission Reductions

Daily Reductions (NOx) = (23.3 - 8.4) gms/mile * 30,000 miles/year * 11 / (312 days * 907,185)
Daily Reductions (NOx) = 0.01737 tpd VOC

Daily Reductions (VOC) = No VOC Reductions
Daily Reductions (VOC) =

Cost Effectiveness

N/A

Measure: Park & Ride Spaces

Measure Number: MD-1
Measure Name: MD Suburban Bus Replacements

Description:
The measure replaced suburban transit buses with new diesel transit buses which are cleaner than older buses.

Issues
None

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0250
Estimated Reductions (tpy)	6.25

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0100
Estimated Reductions (tpy)	2.50

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions

Daily Reductions (NOx) = 0.025 tpd

Daily Reductions (VOC) = 0.01 tpd

Cost Effectiveness

N/A

Measure: Transit Parking Facilities

Measure Number: MD -2
Measure Name: Transit Parking Facilities

Description:
As part of the 9% SIP MDOT proposed constructing park-and-ride spaces at Lake Forest, Tulagi, and Germantown to serve transit.

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0090
Estimated Reductions (tpy)	20.00

Issues
None

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0040
Estimated Reductions (tpy)	7.00

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

. The benefit from the Germantown facility was adjusted to reflect 2005 conditions.

Emission Reductions

Daily Reductions (NOx) = .009 tpd

Daily Reductions (VOC) = 0.004 tpd

Cost Effectiveness

N/A

Measure: MARC Replacement/Expansion Coaches

Measure Number: MD -3
Measure Name: Improved Transit Access

Description:
As part of the 9% SIP MDOT proposed buying new MARC coaches for replacing existing coaches and to increase service.

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.1000
Estimated Reductions (tpy)	9.75

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0360
Estimated Reductions (tpy)	4.00

Issues
None

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions

Daily Reductions (NOx) = 0.1 tpd

Daily Reductions (VOC) = .036 tpd

Cost Effectiveness

N/A

Measure: Bicycle Facilities

Measure Number: MD - 4
Measure Name: Bicycle Facilities

Description:
As part of the 9% SIP MDOT proposed new bicycle facilities in suburban Maryland.

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0020
Estimated Reductions (tpy)	16.75

Issues
None

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0080
Estimated Reductions (tpy)	6.25

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions

Daily Reductions (NOx) = .002 tpd

Daily Reductions (VOC) = .008 tpd

Cost Effectiveness

N/A

Measure: Park and Ride Facilities

Measure Number: MD-5
Measure Name: Park and Ride Facilities

Description:
As part of the 9% SIP MDOT proposed constructing Park & Ride facilities in suburban Maryland. The locations are MD 5/MD 205, MD 210/ MD 373, and I-270/MD 80.

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0190
Estimated Reductions (tpy)	0.50

Issues
None

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0060
Estimated Reductions (tpy)	0.25

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions

Daily Reductions (NOx) = 0.019 tpd

Daily Reductions (VOC) = 0.006 tpd

Cost Effectiveness

N/A

Measure: Grosvenor Metro Garage

Measure Number: MD-6

Measure Name: Grosvenor Metro Garage

Description:
1300 park-and-ride spaces are planned for a garage near the Grosvenor Metrorail Station. By 2005 it is assumed 650 spaces would be utilized on a daily basis.

2005 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0155
Estimated Reductions (tpy)	4.84

2005 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0060
Estimated Reductions (tpy)	1.87

Assumptions

. VT & VMT are as per usage data developed by MDOT

. Commuters parking in the P&R lot will arrive in single occupant vehicles

. Average travel speed at which the P&R lot riders would have traveled (if they had not used the P&R lot) is 40 mph

. Zero emissions benefit for cold and hot soak emissions

. P & R lots will be in use for 312 working days per year

Emission Reductions

Total NOx Reduced= .0155 tpd

Total VOC Reduced= .006 tpd

Cost Effectiveness

N/A

Measure: Maryland Park-and-Ride Lots (Recent Additions)

Measure Number: MD-7
Measure Name: Maryland Park-and-Ride Lots

Description:
A number of commuter park-and-ride (P&R) lots have been constructed, leased, or are being constructed at MD 210/MD 273, I-270/MD 124, MD 2/MD 4, MD 231/Fairgrounds, MD 117/I-270, MD 2/MD 4 (expansion) in Maryland.

2005 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0171
Estimated Reductions (tpy)	5.34

2005 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0066
Estimated Reductions (tpy)	2.06

Assumptions

. VT & VMT are as per usage data developed by MDOT
. Commuters parking in the P&R lots will arrive in single occupant vehicles
. Average travel speed at which the P&R lot riders would have traveled (if they had not used the P&R lot) is 40 mph
. Zero emissions benefit for cold and hot soak emissions
. P & R lots will be in use for 312 working days per year

Emission Reductions

Total NOx Reduced= 0.0171 tpd

Total VOC Reduced= 0.0066 tpd

Cost Effectiveness

N/A

Measure: Bicycle Racks on WMATA buses in D.C., VA, & MD

Measure Number: WM-1

Measure Name: Bicycle Racks on WMATA buses in D.C., VA, & MD

Description:

This measure would provide external bicycle racks on WMATA buses; 600 buses in D. C, 372 buses in VA, and 486 buses in MD. With bike racks on buses, people can ride their bicycle to a bus stop and have their bicycle with them for the duration of the trip.

NOx

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0131
Estimated Reductions (tpy)	4.08

VOC

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0074
Estimated Reductions (tpy)	2.30

Assumptions

· Each rack can hold two bicycles and will reduce 2 vehicle trips per day

· 72.5% SOV trips in MD, 82.5% SOV trips in DC and VA

· VMT reduced per trip – 15.5 miles (Methodology adopted from M-70a Regional Bicycle Racks, FY96-01 TIP)

Emission Reductions

VT and VMT reduction - DC: 451 trips and 6620 VMT; MD:323 trips and 4745 VMT; VA: 281 VT and 4115 VMT

Total VT & VMT Reduced - 1055 trips 15480 VMT

Total NOx Reduced= (1055 trips * 0.9905 gms/trip + 15480 VMT * 0.6995 gms/mile) / (907,185 g/ton)

Total NOx Reduced= 0.0131 tpd

Total VOC Reduced= (1055 trips * 2.3454 gms/trip + 15480 VMT * 0.2717 gms/mile) / (907,185 g/ton)

Total VOC Reduced= 0.0074 tpd

Cost Effectiveness

N/A

Measure: Clean Diesel Fuel with Filters

Measure Number: WM-2

Measure Name: Clean Diesel Fuel with Filters

Description:

This measure will install Continuously Regenerating Technology (CRT) filters on 886 transit buses and the fuel will be changed to Ultra Low Sulfur Diesel (ULSD) fuel.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	-
Estimated Reductions (tpy)	-

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0600
Estimated Reductions (tpy)	18.72

Assumptions

· Mileage 110 per day per bus

. Buses will be operational 312 days per year.

. VOC Emission benefits with ULSD fuel and with filters is 60%

Running Emission Reductions

Daily Reductions (NOx) = N/A

Daily Reductions (NOx) = N/A

Daily Reductions (VOC) = .06 tpd

Cost Effectiveness

N/A

Measure: Compressed Natural Gas Buses

Measure Number: WM-3

Measure Name: 164 CNG buses in WMATA fleet in place of diesel buses

Description:

This measure will replace 164 diesel fueled buses with 164 Compressed Natural Gas (CNG) buses. CNG provides reductions in Particulate Matter and Nitrogen Oxide compared to a new diesel bus.

NOx

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.1594
Estimated Reductions (tpy)	49.73

VOC

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	N/A
Estimated Reductions (tpy)	N/A

Assumptions

. 164 heavy duty CNG buses replacing 164 diesel buses in operation

· Mileage 110 per day per bus

. Buses will be operational 312 days per year.

. NOx Emission reduction per bus due to use of CNG 8.0158 grams/mile

Running Emission Reductions

Daily Reductions (NOx) = 8.0158 gms/mile * 164 buses * 110 miles/day /907185

Daily Reductions (NOx) = 0.1594 tpd

Cost Effectiveness

N/A

Measure: 8 Miles Bicycle Lane in D. C.

Measure Number: DC-1
Measure Name: 8 miles of bicycle lane/Trail in DC

Description:
This measure would provide 8 miles of bicycle lanes in the District of Columbia. The proposed lane will facilitate bicycle riders to commute and provide people a link between transportation modes for other activities.

2005 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0035
Estimated Reductions (tpy)	0.87

2005 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0035
Estimated Reductions (tpy)	0.88

Assumptions

. A similar project (TPB analyzed TERM M-102) Vehicle Trips and Vehicle Miles of Travel reduced for 34 miles of bike trail were 4067 VT and 13556 VMT. It is assumed that VT, VMT reductions for this TCM would be proportional to the mileage.

Emission Reductions

Total NOx Reduced= (955 trips * 0.9905 gms/trip + 3190 VMT * 0.6995 gms/mile) / (907,185 g/ton)
Total NOx Reduced= 0.0035 tpd

Total VOC Reduced= (955 trips * 2.3454 gms/trip + 3190 VMT * 0.2717 gms/mile) / (907,185 g/ton)
Total VOC Reduced= 0.0035 tpd

Cost Effectiveness

N/A

Measure: 2 New CNG Powered Trash Trucks

Measure Number: DC-2
Measure Name: New CNG Powered Trash Trucks

Description:
New CNG Powered Trash Trucks Replacing Diesel Trucks in the District of Columbia

2005 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0022
Estimated Reductions (tpy)	0.55

2005 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.00000
Estimated Reductions (tpy)	0.00

Assumptions

. 2 diesel trucks will be replaced with new *Compressed Natural Gas (CNG)* powered trucks.
· Mileage accumulation of each trash truck vehicle is greater than 10,000 miles per year, which translates to 40 daily VMT per truck
. Trucks will be operational 250 days per year.
· NOx Emission rate for Diesel trucks – 4 gm/bhp (17.2 gm/mile)
· NOx Emission rate for CNG truck – 1.4 gm/bhp (6.02 gm/mile)
· Service trash trucks spend lots of time idling, idling emissions savings are estimated

Running Emission Reductions

Daily Reductions (NOx) = (17.2 - 6.02) gms/mile * 2 trucks * 40 miles/day /907185
Daily Reductions (NOx) = 0.00099 tpd NOx

Idling Emission Reductions

Daily Reductions (NOx) = (58 - 2) gms/mile * 2 trucks * 10 miles/day
Daily Reductions (NOx) = 0.00123 tpd NOx

Total Reductions (NOx) = 0.00222 *tpd NOx*
Annual Reductions (NOx) = 0.5540 tpy NOx

Daily Reductions (VOC) = No VOC Reduction
Daily Reductions (VOC) =

Annual Reductions (VOC) =

Cost Effectiveness

N/A

Measure: 150 Bicycle Racks in D. C.

Measure Number: DC-3

Measure Name: 150 Bicycle Racks in D.C.

Description:

This measure would provide 150 bicycle racks at various locations throughout D. C. These bicycle racks provide people with an additional transportation option.

2005 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0005
Estimated Reductions (tpy)	0.12

2005 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0006
Estimated Reductions (tpy)	0.15

Assumptions

· Each rack will reduce 2 trips per day

· 63% of total trips will be SOV trips

· VMT reduced per trip – 2 miles (Methodology adopted from M-70a Regional Bicycle Racks, FY96-01 TIP)

Emission Reductions

Total NOx Reduced= (189 trips * 0.9905 gms/trip + 378 VMT * 0.6995 gms/mile) / (907,185 g/ton)

Total NOx Reduced= 0.0005 tpd

Total VOC Reduced= (189 trips * 2.3454 gms/trip + 378 VMT * 0.2717 gms/mile) / (907,185 g/ton)

Total VOC Reduced= 0.0006 tpd

Cost Effectiveness

N/A

Detailed Analysis for Transportation Control Measures for 1999-2002 Rate of Progress Demonstration

TCMs SIP Projects 2002

ID	Measure	VOC (tpd)	NOx (tpd)	Project Category
	Virginia			
NV-1	Park-and-Ride spaces Northern Virginia Districtwide	0.0404	0.0953	c
NV-2	Transit Access Improvements	0.0231	0.0465	c
NV-3	Purchase of New Transit Buses	0.0250	0.0670	
NV-5	Construction of Bus Shelters	0.0000	0.0012	c
NV-6	Park-and-Ride spaces Northern Virginia Districtwide	0.0469	0.0998	c
NV-7	Bicycle Lanes / Trails in Northern Virginia	0.0074	0.0063	c
NV-8	Bicycle Lockers in Northern Virginia	0.0005	0.0007	c
NV-9	Hybrid Vehicle Purchase	0.0004	0.0009	
NV-11	Sidewalk Improvements	0.0011	0.0009	c
	Maryland			
MD-1	MD Suburban Bus Replacements	0.0100	0.0250	
MD-2	Transit Parking Facilities	0.0058	0.0107	c
MD-3	MARC Replacement/Expansion Coaches	0.0519	0.1191	c
MD-4	Bicyle Facilities	0.0115	0.0024	c
MD-5	Park and Ride Facilities	0.0086	0.0226	c
	WMATA			
WM-1	Bicycle Racks on Transit Buses (1458 total racks)	0.0106	0.0156	c
WM-2	Ultra Low Sulfur Diesel Fuel with CRT filters (886 buses)	0.0600	-	
	District of Columbia			
DC-1	Bicycle Lanes (8 miles)	0.0050	0.0042	c
DC-3	Bicylce Racks (150 Racks)	0.0009	0.0006	c
	Regional Total	**0.3**	**0.5**	

c = commute
Note : The Emissions for Commute TCMs have been adjusted for 2002 Mobile 6 emissions factors.
Adjustment factors for Commute TCMs: NOx - 1.19145; VOC - 1.44161

Measure: Park-And-Ride Spaces Northern Virginia Districtwide

Measure Number: NV -1
Measure Name: Park-and-Ride spaces

Description:
As part of the 9% SIP VDOT proposed constructing 1,872 park-and-ride spaces at various locations in Northern Virginia. VDOT constructed these park-and-ride spaces. Emissions reductions from these facilities are being credited in the SIP.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0953
Estimated Reductions (tpy)	20.00

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0404
Estimated Reductions (tpy)	7.00

Assumptions

* Reductions in vehicle trips and vehicle miles traveled due to this project were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771

Emission Reductions 2005

Daily Reductions (NOx) = 0.08 tons

Daily Reductions (VOC) = 0.028 tons

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145
VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0953 tpd
Total VOC Reduced= 0.0404 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Transit Access Improvements

Measure Number: NV -2

Measure Name: Improved Transit Access

Description:

As part of the 9% SIP VDOT proposed improving access to commuters at a VRE station by building 200 park-and-ride spaces. VRE has constructed more than the 200 spaces noted in the earlier SIP. This measure proposes to include the emissions reductions from 560 parking spaces in the SIP. These spaces have been built as of the summer of 2003 and are being utilized by VRE users.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0465
Estimated Reductions (tpy)	9.75

Issues

None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0231
Estimated Reductions (tpy)	4.00

Assumptions

* Reductions in vehicle trips and vehicle miles traveled due to this project were estimated earlier for the 9% SIP. The estimated emissions reductions were for 1999 and based on Mobile 5b factors.

* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.

* Conversion factor for VOC 0.802 and for NOx 0.771. Also credit for the 225 extra spaces built and being utilized is included.

Emission Reductions 2005

Daily Reductions (NOx) = 0.039 tons

Daily Reductions (VOC) = 0.016 tons

Emission Reductions 2002

Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145

VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0465 tpd

Total VOC Reduced= 0.0231 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Purchase Of New Transit Buses

Measure Number: NV - 3
Measure Name: New Transit Buses

Description:
As part of the 9% SIP VDOT proposed purchasing new diesel powered buses to replace older vehicles. The proposal was for WMATA to purchase a total of 52 buses in two separate years. WMATA did purchase these buses and the reduced emissions from these newer buses are being credited in the SIP.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0670
Estimated Reductions (tpy)	16.75

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0250
Estimated Reductions (tpy)	6.25

Assumptions

* Reductions in emissions were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771.

2002 Emission Reductions

Daily Reductions (NOx) = 0.067 tons

Daily Reductions (VOC) = 0.025 tons

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Construction of Bus Shelters

Measure Number: NV - 5

Measure Name: Construction of Bus shelters.

Description:

As part of the 9% SIP VDOT proposed constructing bus shelters in Northern Virginia. This project has been completed and emission reductions from the projects are being credited in the SIP.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0012
Estimated Reductions (tpy)	0.37

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0000
Estimated Reductions (tpy)	0.00

Issues

None

Assumptions

* Reductions in emissions were estimated earlier for the 9% SIP. The estimated reductions were for 1999 and based on Mobile 5b factors.
* The emissions reductions estimated earlier have been updated to reflect Mobile 6 factors and correspond to year 2005.
* Conversion factor for VOC 0.802 and for NOx 0.771.

Emission Reductions 2005

Daily Reductions (NOx) = 0.001 tons

Daily Reductions (VOC) = 0.000 tons

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145

VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0012 tpd

Total VOC Reduced= 0.0000 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Park & Ride Spaces

Measure Number: NV - 6
Measure Name: Park-and-Ride Spaces

Description:
Construct 3,220 new park-and-ride spaces in Northern Virginia. The measure would facilitate the formation of additional commuter car and van pools.

Issues
None

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0998
Estimated Reductions (tpy)	24.96

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0469
Estimated Reductions (tpy)	11.73

Assumptions

. 75% of the spaces will be utilized.
. Average trip length is 22.5 miles. Average travel speed is 40 mph.
. Emission factors for NOx (Running) in year 2005: 0.6995 grams per mile
. Emission factors for VOC (Running) in year 2005: 0.2717 grams per mile

Emission Reductions 2005

Daily Reductions (NOx) = 3,220 spaces * 0.75 utilization * 22.5 miles /trip * 0.6995 gms/mi * 2 trips/day / 907,185
Daily Reductions (NOx) = 0.08380 tpd

Daily Reductions (VOC) = 3,220 spaces * 0.75 utilization * 22.5 miles /trip * 0.2717 gms/mi * 2 trips/day / 907,185
Daily Reductions (VOC) = 0.03255 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145
VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0998 tpd
Total VOC Reduced= 0.0469 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Bicycle Lanes/Trails in Northern Virginia

Measure Number: NV - 7
Measure Name: Bicycle lanes / trails

Description:
Construct 12 miles of bicycle lanes and trails in Northern Virginia. The facilities provide commuters an alternate mode of transportation.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0063
Estimated Reductions (tpy)	1.56

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0074
Estimated Reductions (tpy)	1.85

Issues
None

Assumptions

. Reduction in vehicle trips (VT) and vehicle miles traveled (VMT) due to this project will be similar to those estimated for similar projects (TERM M-102) by the National Capital Region Transportation Planning Board (TPB) and proportional to the mileage of trail/lanes constructed.

In TERM M-102 VT and VMT reduced for 34 miles of bike trail were 4067 VT and 13556 VMT.

Emission Reductions 2005

Daily Reductions (NOx) = (1,430 Veh. Trips * 0.9905 gms/mi + 4,785 VMT * 0.6995 gms/mi) / 907,185
Daily Reductions (NOx) = 0.00525 tpd

Daily Reductions (VOC) = (1,430 Veh. Trips * 2.3454 gms/mi + 4,785 VMT * 0.2717 gms/mi) / 907,185
Daily Reductions (VOC) = 0.00513 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145
VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0063 tpd
Total VOC Reduced= 0.0074 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Bicycle Lockers in Northern Virginia

Measure Number: NV - 8
Measure Name: Bicycle lockers

Description:
Install 100 bicycle lockers at various park and ride lots and transit stations in Northern Virigina.

Issues
None

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0007
Estimated Reductions (tpy)	0.19

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0005
Estimated Reductions (tpy)	0.12

Assumptions

. One third of the lockers installed will be used at any one time.
. Commute trips converted to bicycle trips will reduce vehicle trips and vehicle miles traveled.
. Average trip length is 15.5 miles.
. 72.5% of the locker users would have traveled as a SOV prior to the availability of the lockers.

Emission Reductions 2005

Daily Reductions (NOx) = 100 lockers * 0.33 utilization * 0.725 SOV mode * (2*0.9905 gms/mi+15.5 mi *2*0.6995 gms/mi)/907,185
Daily Reductions (NOx) = 0.00062 tpd

Daily Reductions (VOC) = 100 lockers * 0.33 utilization * 0.725 SOV mode * (2*2.3454 gms/mi+15.5 mi *2*0.2717 gms/mi)/907,185
Daily Reductions (VOC) = 0.00035 tpd

Emission Reductions 2002

Mobile 6 and 2005 emissions factors.
NOx adjustement factor = 1.19145
VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0007 tpd
Total VOC Reduced= 0.0005 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Hybrid Light Duty Vehicle Purchase

Measure Number: NV - 9
Measure Name: Hybrid Light Duty Vehicle Purchase

Description:
Light Duty Vehicle Replacement Program. Purchase 25 new hybrid electric light duty vehicles in place of gasoline vehicles in Northern Virginia.

Issues
None

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0009
Estimated Reductions (tpy)	0.23

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0004
Estimated Reductions (tpy)	0.09

Assumptions

. Vehicle mileage 8,413 per vehicles per year
. Emission reductions will be due to the difference in emissios rates between gasoline and hybrid vehicles
. Emission factors hybrid vehicle (Running): NOx: 0.02; VOC: 0.01 gms/mile
. Emission factors gasoline vehicle (Running): NOx:1.0; VOC: 0.41 gms/mile

2002 Emission Reductions

Daily Reductions (NOx) = (1.0 - 0.02) gms/mile * 8413 miles/year * 25 vehciles / 250 days
Daily Reductions (NOx) = 0.00091 tpd

Daily Reductions (VOC) = (0.41 - 0.01) gms/mile * 8413 miles/year * 25 vehicles / 250 days
Daily Reductions (VOC) = 0.000371 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: Sidewalk Improvements in Northern Virginia

Measure Number: NV - 11

Measure Name: 1.5 miles of sidewalk improvements in Northern Virginia

Description:
The proposed improvements would increase access to nearby transit stations/stops.

2002 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0009
Estimated Reductions (tpy)	0.22

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0011
Estimated Reductions (tpy)	0.27

Assumptions

. Reduction in vehicle trips and vehicle miles traveled due to this project will be similar to those estimated for similar projects by the National Capital Region Transportation Planning Board (TPB) and proportional to the mileage of sidewalk constructed.

Emission Reductions 2005

Total NOx Reduced= (201 trips * 0.9905 gms/mi + 673 VMT * 0.6995 gms/mile) / (907,185 g/ton)
Total NOx Reduced= 0.0007 tpd

Total VOC Reduced= (201 trips * 2.3454 gms/trip + 673 VMT * 0.2717 gms/mile) / (907,185 g/ton)
Total VOC Reduced= 0.000738 tpd

Emission Reductions 2002

Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145
VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0009 tpd
Total VOC Reduced= 0.0011 tpd

Cost Effectiveness

N/A

Measure: Park & Ride Spaces

Measure Number: MD-1
Measure Name: MD Suburban Bus Replacements

Description:
The measure replaced suburban transit buses with new diesel transit buses which are cleaner than older buses.

Issues
None

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0250
Estimated Reductions (tpy)	6.25

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0100
Estimated Reductions (tpy)	2.50

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions 2002

Daily Reductions (NOx) = 0.025 tpd

Daily Reductions (VOC) = 0.01 tpd

Cost Effectiveness

N/A

Measure: Transit Parking Facilities

Measure Number: MD -2
Measure Name: Transit Parking Facilities

Description:
As part of the 9% SIP MDOT proposed constructing park-and-ride spaces at Lake Forest, Tulagi, and Germantown to serve transit.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0107
Estimated Reductions (tpy)	20.00

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0058
Estimated Reductions (tpy)	7.00

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

. The benefit from the Germantown facility was adjusted to reflect 2005 conditions.

Emission Reductions 2005

Daily Reductions (NOx) = .009 tpd

Daily Reductions (VOC) = 0.004 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145
VOC adjustment factor = 1.44161

Total NOx Reduced= 0.0107 tpd
Total VOC Reduced= 0.0058 tpd

Cost Effectiveness

N/A

Measure: MARC Replacement/Expansion Coaches

Measure Number: MD -3
Measure Name: Improved Transit Access

Description:
As part of the 9% SIP MDOT proposed buying new MARC coaches for replacing existing coaches and to increase service.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.1191
Estimated Reductions (tpy)	9.75

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0519
Estimated Reductions (tpy)	4.00

Issues
None

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions 2005

Daily Reductions (NOx) = 0.1 tpd

Daily Reductions (VOC) = .036 tpd

Emission Reductions 2002

Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145
VOC adjustment factor = 1.44161

Total NOx Reduced= 0.1191 tpd
Total VOC Reduced= 0.0519 tpd

Measure: Bicycle Facilities

Measure Number: MD - 4
Measure Name: Bicycle Facilities

Description:
As part of the 9% SIP MDOT proposed new bicycle facilities in suburban Maryland.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0024
Estimated Reductions (tpy)	16.75

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0115
Estimated Reductions (tpy)	6.25

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions 2005

Daily Reductions (NOx) = .002 tpd

Daily Reductions (VOC) = .008 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145
VOC adjustment factor = 1.44161

Total NOx Reduced= 0.0024 tpd
Total VOC Reduced= 0.0115 tpd

Cost Effectiveness

N/A

Measure: Park and Ride Facilities

Measure Number: MD-5
Measure Name: Park and Ride Facilities

Description:
As part of the 9% SIP MDOT proposed constructing Park & Ride facilities in suburban Maryland. The locations are MD 5/MD 205, MD 210/ MD 373, and I-270/MD 80.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0226
Estimated Reductions (tpy)	0.50

Issues
None

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0086
Estimated Reductions (tpy)	0.25

Assumptions

. Mobile 6 factors used to update Mobile 5b estimates

Emission Reductions 2005

Daily Reductions (NOx) = 0.019 tpd

Daily Reductions (VOC) = 0.006 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145
VOC adjustment factor = 1.44161

Total NOx Reduced= 0.0226 tpd
Total VOC Reduced= 0.0086 tpd

Cost Effectiveness

N/A

Measure: Bicycle Racks on WMATA buses in D.C., VA, & MD

Measure Number: WM-1

Measure Name: Bicycle Racks on WMATA buses in D.C., VA, & MD

Description:

This measure would provide external bicycle racks on WMATA buses; 600 buses in D. C, 372 buses in VA, and 486 buses in MD. With bike racks on buses, people can ride their bicycle to a bus stop and have their bicycle with them for the duration of the trip.

2002 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0156
Estimated Reductions (tpy)	4.87

2002 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0106
Estimated Reductions (tpy)	3.31

Assumptions

· Each rack can hold two bicycles and will reduce 2 vehicle trips per day

· 72.5% SOV trips in MD, 82.5% SOV trips in DC and VA

· VMT reduced per trip – 15.5 miles (Methodology adopted from M-70a Regional Bicycle Racks, FY96-01 TIP)

Emission Reductions 2005

VT and VMT reduction - DC: 451 trips and 6620 VMT; MD:323 trips and 4745 VMT; VA: 281 VT and 4115 VMT

Total VT & VMT Reduced - 1055 trips 15480 VMT

Total NOx Reduced= (1055 trips * 0.9905 gms/trip + 15480 VMT * 0.6995 gms/mile) / (907,185 g/ton)

Total NOx Reduced= 0.0131 tpd

Total VOC Reduced= (1055 trips * 2.3454 gms/trip + 15480 VMT * 0.2717 gms/mile) / (907,185 g/ton)

Total VOC Reduced= 0.0074 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustement factor = 1.19145

VOC adjustement factor = 1.44161

Total NOx Reduced= 0.0156 tpd

Total VOC Reduced= 0.0106 tpd

Cost Effectiveness

N/A

Measure: Clean Diesel Fuel with Filters

Measure Number: WM-2

Measure Name: Clean Diesel Fuel with Filters

Description:

This measure will install Continuously Regenerating Technology (CRT) filters on 886 transit buses and the fuel will be changed to Ultra Low Sulfur Diesel (ULSD) fuel.

2002 NOx Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	-
Estimated Reductions (tpy)	-

2002 VOC Reductions

Estimated Cost ($/ton)	N/A
Estimated Reductions (tpd)	0.0600
Estimated Reductions (tpy)	18.72

Assumptions

· Mileage 110 per day per bus

. Buses will be operational 312 days per year.

. VOC Emission benefits with ULSD fuel and with filters is 60%

Running Emission Reductions 2002

Daily Reductions (NOx) = N/A

Daily Reductions (NOx) = N/A

Daily Reductions (VOC) = .06 tpd

Cost Effectiveness

N/A

Summary Analysis

N/A

Measure: 8 Miles Bicycle Lane in D. C.

Measure Number: DC-1
Measure Name: 8 miles of bicycle lane/Trail in DC

Description:
This measure would provide 8 miles of bicycle lanes in the District of Columbia. The proposed lane will facilitate bicycle riders to commute and provide people a link between transportation modes for other activities.

2002 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0042
Estimated Reductions (tpy)	1.05

2002 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0050
Estimated Reductions (tpy)	1.25

Assumptions

. A similar project (TPB analyzed TERM M-102) Vehicle Trips and Vehicle Miles of Travel reduced for 34 miles of bike trail were 4067 VT and 13556 VMT. It is assumed that VT, VMT reductions for this TCM would be proportional to the mileage.

Emission Reductions 2005

Total NOx Reduced= (955 trips * 0.9905 gms/trip + 3190 VMT * 0.6995 gms/mile) / (907,185 g/ton)
Total NOx Reduced= 0.0035 tpd

Total VOC Reduced= (955 trips * 2.3454 gms/trip + 3190 VMT * 0.2717 gms/mile) / (907,185 g/ton)
Total VOC Reduced= 0.0035 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145
VOC adjustment factor = 1.44161

Total NOx Reduced= 0.0042 tpd
Total VOC Reduced= 0.0050 tpd

Cost Effectiveness

N/A

Measure: 150 Bicycle Racks in D. C.

Measure Number: DC-3

Measure Name: 150 Bicycle Racks in D.C.

Description:

This measure would provide 150 bicycle racks at various locations throughout D. C. These bicycle racks provide people with an additional transportation option.

2002 NOx Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0006
Estimated Reductions (tpy)	0.15

2002 VOC Reductions

Estimated Cost ($/ton)	$ -
Estimated Reductions (tpd)	0.0009
Estimated Reductions (tpy)	0.15

Assumptions

· Each rack will reduce 2 trips per day

· 63% of total trips will be SOV trips

· VMT reduced per trip – 2 miles (Methodology adopted from M-70a Regional Bicycle Racks, FY96-01 TIP)

Emission Reductions 2005

Total NOx Reduced= (189 trips * 0.9905 gms/trip + 378 VMT * 0.6995 gms/mile) / (907,185 g/ton)

Total NOx Reduced= 0.0005 tpd

Total VOC Reduced= (189 trips * 2.3454 gms/trip + 378 VMT * 0.2717 gms/mile) / (907,185 g/ton)

Total VOC Reduced= 0.0006 tpd

Emission Reductions 2002

The Emissions for 2002 are estimated using NOx and VOC adjustment factors for commute TCMs generated from the ratios of 2002 Mobile 6 and 2005 emissions factors.

NOx adjustment factor = 1.19145

VOC adjustment factor = 1.44161

Total NOx Reduced= 0.0006 tpd

Total VOC Reduced= 0.0009 tpd

Cost Effectiveness

N/A

Commitment Letters for TCM Implementation

August 1, 2003

The Honorable Phil Mendelson
Chairman
Metropolitan Washington Air Quality Committee (MWAQC)
777 North Capitol Street, NE
Washington, DC 20002 - 4239

Dear Chairman Mendelson:

In a July 16, 2003 letter to you providing comments the National Capital Region Transportation Planning Board (TPB) on the draft Washington area State Implementation Plan (SIP), TPB Chairman Peter Shapiro provided information regarding the transportation control measures (TCMs) to be included in the SIP document. He indicated that TPB staff members were working with the agencies and jurisdictions responsible for implementing the TCMs to provide information, which was requested by the Environmental Protection Agency (EPA) in its comments on the SIP, detailing responsibility for TCM implementation, schedule and funding sources.

I am pleased to forward that information to MWAQC. Attachment A is a summary chart, "TCM Implementation Plan and Schedule", which lists all of the TCMs and the specific details requested by EPA. Attachment B contains the actual commitment letters from each implementing agency.

In addition, in the course of TPB staff and Technical Committee review of the TCM documentation, a number of minor errors and typos have been identified. These corrections, none of which affects any of the summary figures or calculations in the SIP document, are also attached for SIP documentation purposes, as Attachment C.

We are pleased to provide MWAQC with this TCM programming information to assist you in your important air quality planning efforts in the Washington region.

Sincerely,

Ronald F. Kirby
Director, Department of
Transportation Planning

Attachment A

TCM Implementation Plan and Schedule

TCM Implementation Plan and Schedule
July 2003 Severe Area SIP

Ref #	Description	Jurisdiction	Responsible Agency	TIP Year	Funding Type	Implementation Year
DC-1	Bicycle Lane in D. C. (8 miles)	DC	DDOT	FY 2002-07	Federal/State	2004
DC-2	New CNG Powered Trash Trucks (2 Vehicles)	DC	DDOT	FY 2002-07	Federal/State	2003
DC-3	Bicycle Racks in D.C. (150 Racks)	DC	DDOT	FY 2002-07	Federal/State	2004
MD-1	Maryland Suburban Bus Replacements	MCG, PG	MCG, PG	FY 1997-02	State/Local	1998/1999
MD-2	Transit Parking Facilities	MD	MDOT	FY 1997-02	State/Local	2000
MD-3	MARC Replacement/Expansion Coaches	MD	MARC	FY 1995-00	State/Local	2000
MD-4	Bicycle Facilities	MD	MDOT	FY 1995-00 FY 1997-02	State/Local	1998
MD-5	Park and Ride Facilities	MD	MDOT	FY 1997-02	State/Local	1998-03
MD-6	Grosvenor Metro Garage	MD	MDOT	FY 1997-02	State/Local	2003-04
MD-7	Maryland Park-and-Ride Lots (Recent Additions)	MD	MDOT	FY 1997-02	State/Local	2000-04
NV-1	Northern Virginia Districtwide Park-And-Ride Spaces	NV	VDOT	FY 1995-00 FY 1996-01	State/Local	1996-99
NV-2	Transit Access Improvements (VRE Parking Spaces)	NV	VDOT	*	Private	2001
NV-3	Purchase Of New Transit Buses (WMATA)	NV	VDOT	FY 1995-00 FY 1996-01	CMAQ	1996-1998
NV-4	Improved Pedestrian Access	NV	VDOT	FY 1997-02	State/Local	2002-04
NV-5	Construction of Bus Shelters (12)	NV	City of Fairfax	FY 1997-02	State/Local	1999 - Summer 2003
NV-6	Park & Ride Spaces (New)	NV	VDOT	Varies	Fed./State	Aug. 2000 - Sept. 2002
NV-7	Bicycle Lanes/Trails in Northern Virginia(12 miles)	NV	VDOT	Varies	Fed./State	1999 - Aug. 2003
NV-8	Bicycle Lockers in Northern Virginia(VDOT)	NV	VDOT	Varies	Fed./State	1997 - 2002
NV-9	Hybrid light Duty Vehicles (25 vehicles)	Fairfax County	Fairfax County	*	State/Local	2002 - 2003
NV-10	Bicycle Trails/Lanes in Northern Virginia (29 miles)	Arlington & P.W. County	Arlington County P.W. County	*	State/Local	2003
NV-11	Sidewalk improvements in Northern Virginia (1.5 miles)	Fairfax City	VDOT	*	State/Local	June 2001 - July 2003
NV-12	11 New CNG Buses in place of Diesel Buses	Arlington County	Arlington County	*	Operating Fund	2003
WM-1	Bicycle Racks on Buses (1458 racks)	Region	WMATA	FY 2003-08	CMAQ	2003
WM-2	ULSD; CRT Filters (886 buses)	Region	WMATA	FY 2003-08	CMAQ; Private	2001; 2004
WM-3	CNG Buses (164 buses)	Region	WMATA	FY 2002-07	Fed/State /Local	2002-03

** Projects implemented as part of the jurisdictions' ongoing countywide capital program and not required to be included in a TIP.*

Attachment B

Commitment Letters from each Implementing Agency

July 29, 2003

The Honorable Peter Shapiro
Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E.
Suite 300
Washington, D.C. 20002-4239

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), you reported the Transportation Planning Board's (TPB) support of including specific Transportation Control Measures (TCMs) in the draft regional air quality plan. In support of that, WMATA sent you a letter recommending inclusion of three TCMs in the draft air quality plan. These three measures, bicycle racks on transit buses, ultra low sulfur diesel fuel with CRT filters, and CNG buses, were included in the draft air quality plan that MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC, WMATA recommends including emissions reductions from these three measures in the air quality plan, as appropriate.

Measure	Emissions Reductions In 2005 VOC	NOx
(1) Bicycle racks on transit buses (1,458 total racks)	0.0074	0.0131
(2) Ultra Low Sulfur Diesel Fuel with CRT Filters (886)	0.0600	
(3) CNG buses (164)		0.1594
Total Reductions:	0.0674	0.1725

Washington Metropolitan Area Transit Authority

600 Fifth Street, NW
Washington, DC 20001
202/962-1234

By Metrorail:
Judiciary Square—Red Line
Gallery Place-Chinatown—Red, Green and Yellow Lines
By Metrobus:
Routes D1, D3, D6, P6, 70, 71, 80, X2

A District of Columbia, Maryland and Virginia Transit Partnership

Consistent with WMATA's commitment to the above measures, the purpose of this letter is to confirm that WMATA has completed installation of bicycle racks on 1,458 buses, has taken delivery of 164 CNG buses, is currently using ultra low sulfur diesel fuel and will complete installation of the CRT filters by 2004. As such, the estimated emissions reductions from these measures will be available by 2005 for meeting rate-of-progress, attainment or contingency measure requirements.

Additional information on these measures can be obtained by contacting Ms. Lora Byala at (202) 962-1749.

Sincerely,

Richard A. White
Chief Executive Officer

Maryland Department of Transportation
The Secretary's Office

Robert L. Ehrlich, Jr.
Governor
Michael S. Steele
Lt. Governor
Robert L. Flanagan
Secretary
Trent M. Kittleman
Deputy Secretary

July 29, 2003

The Honorable Peter Shapiro
Chairman
National Capital Region Transportation
Planning Board
777 North Capital Street, N.E., Suite 300
Washington DC 20002-4239

Dear Chairman Shapiro

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), you reported the Transportation Planning Board's (TPB) support of including specific new Transportation Control Measures (TCMs) in the draft regional air quality plan. The letter referenced commitment letters needed from responsible implementing agencies that provide specific additional TCMs, vehicle-technology, and/or fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC, the Maryland Department of Transportation recommends including emissions reductions from the following projects in the region's final air quality plan, as appropriate.

	VOC (tpd)	NOx (tpd)
Grosvenor Metro Garage (1,300 spaces)	0.006	0.0155
Park and Ride Lots	0.0066	0.0171
MD 210/MD 373 (489 spaces) I-270/MD 124 (517 spaces) MD 2/4 @ Ball Road (31 spaces) MD 231/fairgrounds (20 spaces) MD 117/I-270 (260 spaces) MD 2/4 @ Ball Road Expansion (60 spaces)		
TOTAL	**0.0126**	**0.0326**

These TCMs are designed to provide emissions reductions by 2005 and will be available for meeting rate of progress, attainment, or contingency measure requirements. These new parking facilities are either currently open or under construction.

My telephone number is 410-865-1000
Toll Free Number 1-888-713-1414 TTY User Call Via MD Relay
7201 Corporate Center Drive, Hanover, Maryland 21076

Additionally, MDOT supports retention of the emissions reduction from an earlier set of TCMs. These projects have been completed and the revised emission benefits are listed below. MDOT recommends including these measures and associated emission reductions in the air quality plan.

PROJECT	2005 VOC (tpd)	NOx (tpd)
• MD Suburban Bus Replacements	0.01	0.025
• Transit Parking Facilities	0.004	0.009
• MARC Replacement/Expansion Coaches	0.036	0.100
• Bicycle Facilities	0.008	0.002
• Park and Ride Facilities	0.006	0.019
TOTAL	**0.064**	**0.155**

If you would like any additional information on these measures, you may contact me directly or you may contact Mr. Howard Simons of my staff at 410-865-1296 or by email at hsimons@mdot.state.md.us.

Sincerely,

Marsha J. Kaiser, Director
Office of Planning and Capital Programming

cc: Mr. Tad Aburn, Maryland Department of the Environment
Mr. Nat Bottigheimer, Assistant Director, Office of Planning and Capital Programming, Maryland Department of Transportation
Mr. Henry Kay, Maryland Transit Administration
Mr. Ron Kirby, Metropolitan Washington Council of Governments
Mr. Doug Simmons, State Highway Administration

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
14685 Avion Parkway
Chantilly, VA 20151
(703) 383-VDOT (8368)

PHILIP A. SHUCET
COMMISSIONER

THO
DISTRI

July 30, 2003

The Honorable Peter Shapiro, Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4290

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), you reported the Transportation Planning Board's (TPB) support for including specific Transportation Control Measures (TCMs) in the draft regional air quality State Implementation Plan (SIP). The letter referenced commitment letters needed from responsible implementing agencies. In response to this letter VDOT had recommended, in my May 23, 2003 letter to you, including a number of specific TCMs in the draft SIP which was approved by MWAQC for public comments at its May 28, 2003 meeting.

I am pleased to reaffirm VDOT's commitment to these TCMs, listed below, and recommend inclusion of the measures in the final SIP. VDOT is able to confirm that most of the TCMs, listed below, have been fully implemented and all of the TCMs will be completed by the end of 2004. As such, the estimated emissions reductions from these measures will be available by 2005, for meeting rate of progress, attainment or contingency measure requirements.

If you have questions or need additional information regarding any of the measures, please call Mr. Kanti Srikanth at (703) 383-2228.

Sincerely,

Thomas F. Farl

TCMs Recommended By VDOT For Inclusion In The Severe Area SIP

ID	TITLE	VOC (tons / day)	NOx (tons / day)
NV-1	Park-and-Ride spaces *Northern Virginia Districtwide*	0.028	0.080
NV-2	Transit Access Improvements	0.016	0.039
NV-3	Purchase of New Transit Buses	0.025	0.067
NV-4	Improvements to Pedestrian Facilities	0.001	0.002
NV-5	Construction of Bus Shelters	0.000	0.001
NV-6	Park-and-Ride spaces *Northern Virginia Districtwide*	0.033	0.084
NV-7	Bicycle Lanes / Trails in Northern Virginia	0.005	0.005
NV-8	Bicycle Lockers in Northern Virginia	0.000	0.001
	Sub-Total	**0.108**	**0.279**

COUNTY OF PRINCE WILLIAM

4379 Ridgewood Center Drive, Prince William, Virginia 22192-5308
(703) 792-6820 Metro 631-1703 Fax (703) 792-6828

DEPARTMENT OF
PUBLIC WORKS

Robert W. Wilson
Director

July 8, 2003

Honorable Peter Shapiro, Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4290

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), you reported the Transportation Planning Board's (TPB) support of including specific new Transportation Control Measures (TCMs) in the draft regional air quality plan. The letter referenced commitment letters needed from responsible implementing agencies that provide specific additional TCMs, vehicle-technology, and/or fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC, Prince William County recommends including emissions reductions from the following project in the region's final air quality plan, as appropriate.

No.	Project Category	2005 Emissions Reduction	
		VOC (tons/day)	NOx (tons/day)
1	19 Miles of Bicycle/Multi-purpose trails – County-wide	0.0081	0.0083

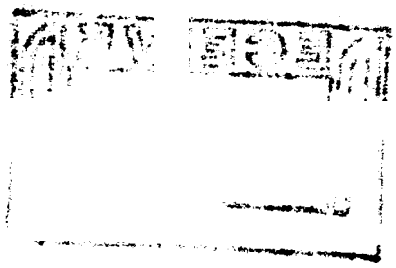
Consistent with Prince William County's commitment to the above measure, the purpose of this letter is to confirm that the County has completed the construction of all 19 miles of bicycle/multi-purpose trails. As such, the estimated emissions reduction from the measure will be available by 2005 for meeting rate-of-progress, attainment, or contingency measure requirements.

If you have questions or need additional information regarding this measure, please call Rick Canizales or me at (703) 792-6825.

Sincerely,

Tom Blaser
Transportation Division Chief

Cc: Board of County Supervisors, Chairman
Woodbridge District Supervisor
County Executive
Public Works Director



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The City of Fairfax

Office of the City Manager

July 8, 2003

The Honorable Peter Shapiro, Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4290

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC) concerning the inclusion of revised MOBILE6 – based mobile emissions budgets you reported TPB's support of including specific new Transportation Control Measures (TCMs) in the draft regional air quality plan. The letter references letters from responsible implementing agencies that provide specific additional TCMs and vehicle-technology and fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC the City of Fairfax is pleased to recommend including emissions reductions from the following project in the region's final air quality plan as appropriate.

No.	Project Category	2005 Emissions Reduction	
		VOC (tons/day)	NOx (tons/day)
1	1.5 Miles of Sidewalk construction – City-wide	0.0007	0.0007

Consistent with the City of Fairfax's commitment to the above measure, the purpose of this letter is to confirm that the City has completed the construction of 1.50 miles of sidewalk to date. As such, the estimated emissions reduction from the measure will be available by 2005 for meeting rate-of-progress, attainment, or contingency measure requirements.

City Hall • Fairfax, Virginia 22030-3630 • (703) 385-7850 • FAX (703) 385-7811
TTY (703) 385-7855 • Internet: http://www.ci.fairfax.va.us

If you have questions or need additional information regarding this measure, please call Alex Verzosa at (703) 385-7889.

Sincerely,

Robert Sisson
City Manager

cc: Mayor and City Council
John Veneziano, Director of Public Works

ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE COUNTY MANAGER
#1 COURTHOUSE PLAZA
2100 CLARENDON BOULEVARD, SUITE 302
ARLINGTON, VIRGINIA 22201
(703) 228-3120 • FAX (703) 228-3295

RON CARLEE
COUNTY MANAGER

July 11, 2003

The Honorable Peter Shapiro, Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300
Washington, DC 20002-4290

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC) concerning the inclusion of revised MOBILE 6 – based mobile emissions budgets, you reported the Transportation Planning Board's (TPB) support for specific new Transportation Control Measures (TCM) in the draft regional air quality plan. The letter references letters from responsible implementing agencies that provide specific additional TCMs and vehicle-technology and fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC, Arlington County is pleased to recommend including emissions reductions from the following local projects in the region's final air quality plan as appropriate.

No.	Project Category	2005 Emissions Reduction	
		VOC (tons/day)	NOx (tons/day)
1	10 miles of bicycle lanes – County-wide	0.0044	0.0043
2	Purchase of 11 CNG fueled buses	0.0004	0.0174

Consistent with Arlington County's commitment to the above measures, the purpose of this letter is to confirm that Arlington County has:

1. Completed the marking of 10 miles of bicycle lanes, and
2. Purchased eight of the eleven CNG buses with the remaining three buses to be placed in service by the end of 2003.

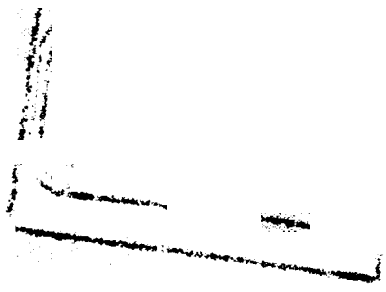
As such, the estimated emissions reduction from the measures will be available by 2005 for meeting rate-of-progress, attainment, or contingency measure requirements.

If you have questions or need additional information regarding this measure, please call Ritch Viola at (703) 228-3699.

Sincerely,

Ron Carlee
County Manager

cc: Members, Arlington County Board
John Mausert-Mooney, Director, Department of Environmental Services
R. S. Kem, Director, Department of Public Works



FAIRFAX COUNTY
VIRGINIA

OFFICE OF THE COUNTY EXECUTIVE
12000 Government Center Parkway
Suite 522
Fairfax, Virginia 22035-5511

Telephone: (703) 324-2531 Fax (703) 324-3956

July 22, 2003

The Honorable Peter Shapiro, Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4290

Dear Chairman Shapiro:

In your May 21, 2003, letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), concerning the mobile emissions budgets to be included in the region's draft air quality plan, you reported TPB's support for including new Transportation Control Measures (TCMs) in the plan. Your letter references letters from responsible implementing agencies that provide specific additional TCMs and vehicle-technology and fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with the TPB's commitment to MWAQC, Fairfax County recommends including emissions reductions from the following project in the region's final air quality plan, as appropriate.

No.	Project Category	2005 Emissions Reduction	
		VOC tons/day)	NOx (tons/day)
1	Purchase of 25 hybrid sedans	0.0004	0.0009

The purpose of this letter is to confirm that Fairfax County has, in fact, purchased the referenced 25 vehicles during FY 2003, and these vehicles are currently in service. As such, the estimated emissions reduction from the measure will be available by 2005 for meeting rate-of-progress, attainment, or contingency measure requirements.

If you have questions or need additional information regarding this measure, please call Tom Biesiadny at (703) 324-1154.

Sincerely,

Anthony H. Griffin
County Executive

cc: Katherine K. Hanley, Chairman, Board of Supervisors
Catherine M. Hudgins, Supervisor, Hunter Mill District
Sharon Bulova, Supervisor, Braddock District
Dana Kauffman, Supervisor, Lee District
Robert A. Stalzer, Deputy County Executive
James Gorby, Director, Department of Vehicle Services
Young Ho Chang, Director, Department of Transportation
Kambiz Agazi, Environmental Coordinator

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

AUG 1 2003

Office of the Director

The Honorable Peter Shapiro
Chairman
National Capital Region Transportation Planning Board
777 North Capitol Street, N.E. Suite 300
Washington, D.C. 20002-4239

Dear Chairman Shapiro:

In your May 21, 2003 letter to Phil Mendelson, Chairman of the Metropolitan Washington Air Quality Committee (MWAQC), you reported the Transportation Planning Board's (TPB) support for including specific new Transportation Control Measures (TCMs) in the draft air quality plan. The letter referenced commitment letters needed from responsible implementing agencies that provide specific additional TCMs, vehicle technology, and/or fuel-based measures. These measures were included in the draft air quality plan MWAQC released for public comment on May 28, 2003.

In keeping with this commitment to MWAQC, The District of Columbia Department of Transportation (DDOT) recommends including emissions reductions from the following projects in the region's final air quality plan as appropriate.

No.	Project Category	2005 Emissions Reduction	
		VOC (tons/day)	NOx (tons/day)
1	Bicycle Lanes (8 miles)	0.003500	0.0035
2	CNG Refuse Haulers (2)	0.000000	0.0022
3	Bicycle Racks (150)	0.000600	0.0005
	Total Reductions	0.004100	0.0062

Sincerely,

Michelle Pourciau
Deputy Director

2000 14th Street, N.W., Washington, D.C. 20009 (202) 673-6813