

October 9, 2007

Memorandum

To: Joan Rohlfis
Department of Environmental Programs

From: Daivamani Sivasailam
Department of Transportation Planning

Subject: Transmittal of draft 2009 Mobile Source PM 2.5 SIP Inventories

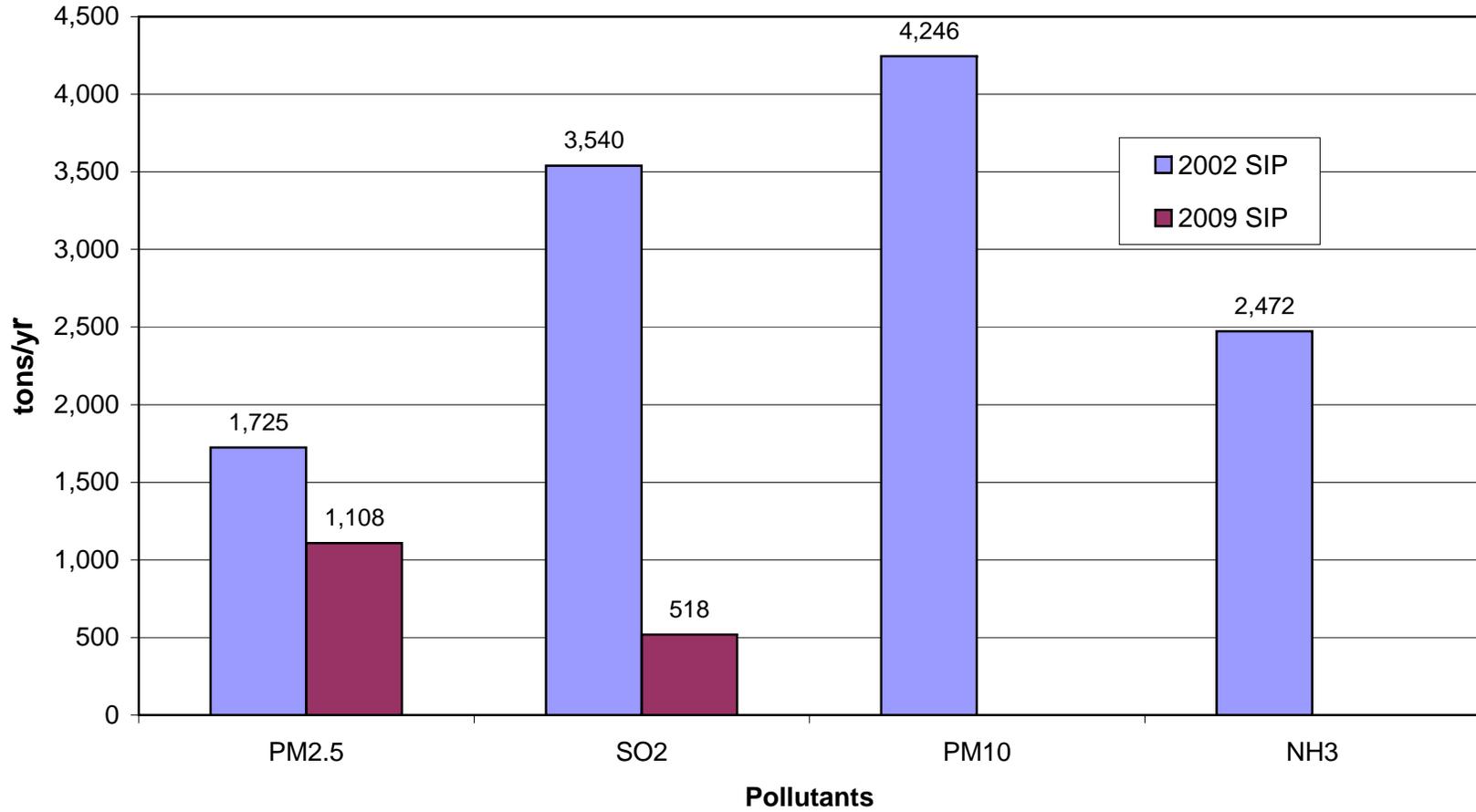
Attached are the draft PM 2.5 SIP inventories for the attainment year of 2009. The pollutants for which inventories were developed were: PM2.5, precursor NOx, and SO2. The emissions rates were developed by your staff and reviewed by DTP staff for consistency with previously developed emissions rates. As per the latest planning assumptions, we used the travel demand model results from the 2006 Constrained Long Range Plan (CLRP) and FY 2007-FY 2012 Transportation Improvement Program (TIP), which included Round 7.0a Cooperative Forecasts land use. We reviewed the emissions inventories and have completed our quality control check, and the inventories appear to be consistent with prior inventories with the exception of school bus and transit bus. We are performing some additional checks with different sulfur levels in diesel fuel for school and transit buses.

Attachment 1 is a chart showing the PM 2.5 SIP annual emissions of pollutants PM2.5 and SO2 for 2002 and 2009, and 2002 inventories for PM 10, and NH3. Attachment 2 is a chart showing the comparison of 2002 PM 2.5 SIP annual emissions with 2009 PM 2.5 SIP annual emissions of precursor NOx, and the 2002 inventory for precursor VOC. Attachments 3A, and 3B are tables showing the regional total inventories for PM 2.5, NOx and SO2 by season and trip cycle component for 2002 and 2009 (2002 which was previously transmitted is shown again for completeness); attachment 3C shows the ratio of the 2009/2002 inventory data. Attachments 4 through 6 show 2009 annual emissions by state for direct PM 2.5, precursor NOx, and SO2 respectively.

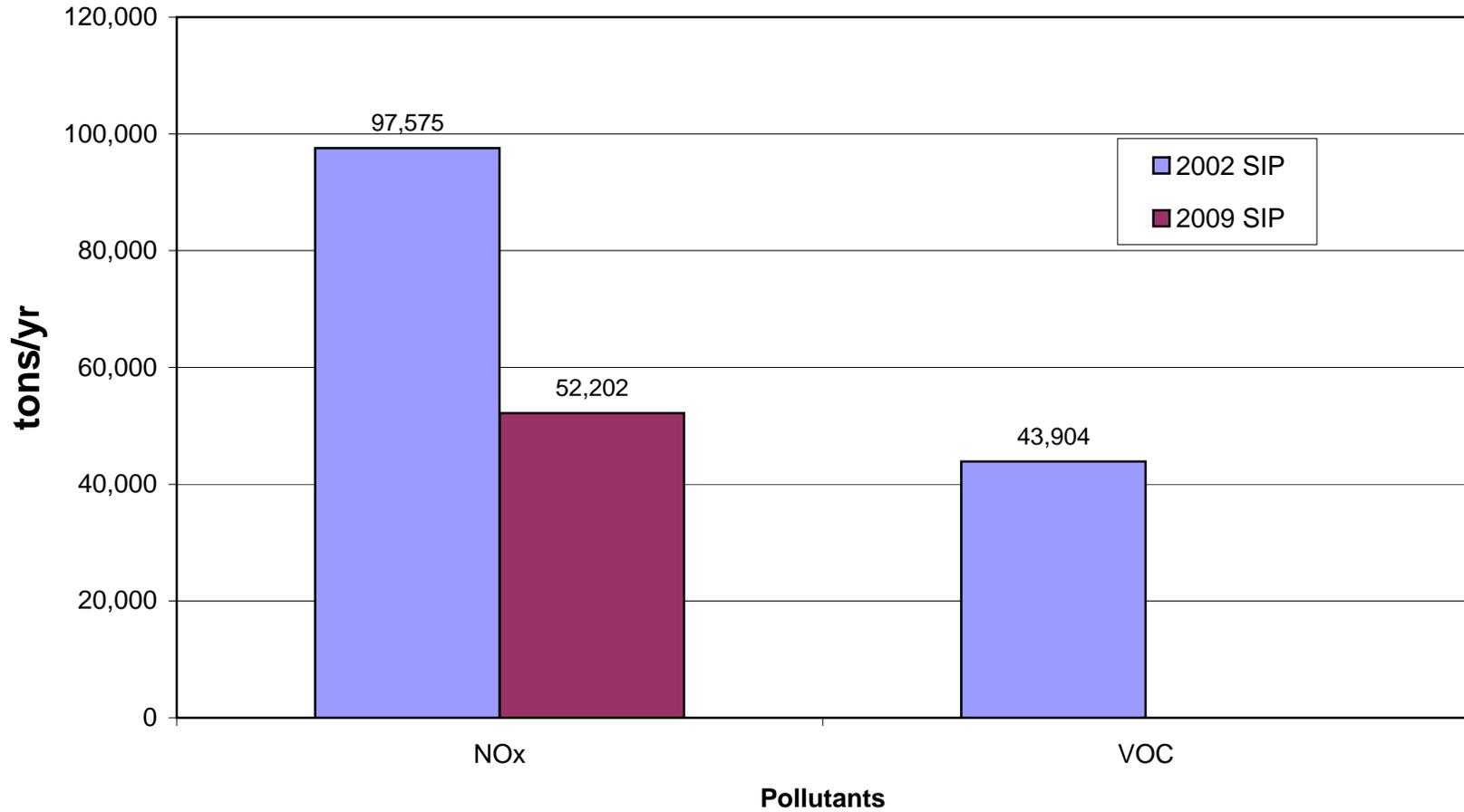
Attachments 1-6

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Attachment 1
Mobile Source PM2.5 SIP -Direct Emissions
(PM2.5, SO2, PM10 & NH3)



Attachment 2
Mobile Source PM2.5 SIP - Precursor Emissions
(NOx & VOC)



Attachment 3 A - PM 2.5 SIP
2002 PM 2.5 On Road Emissions Inventories
(Tons)

SEASON 1 (JAN-APR)		Days	2002					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	120	---	---	20.85	2,502.24
Major Roads - VMT	120	4.16	499.32	245.18	29,421.96	10.19	1,222.56	
Destination	120	---	---	---	---	---	---	
Local Roads	120	0.21	25.44	12.48	1,498.08	0.76	91.20	
Diurnal	120	---	---	---	---	---	---	
Resting Loss	120	---	---	---	---	---	---	
School Buses	76	0.33	24.98	4.86	369.44	0.17	12.96	
Transit Buses	120	0.25	30.55	6.04	724.74	0.16	19.26	
Auto Access	83	0.01	1.01	2.09	173.64	0.05	4.42	
Total (Daily)		4.97		291.51		11.33		
SEASON TOTAL			581.31		34,690.09		1,350.39	

SEASON 2 (MAY-SEP)		Days	2002					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	153	---	---	13.74	2,101.91
Major Roads - VMT	153	4.12	630.51	213.71	32,697.78	6.75	1,033.21	
Destination	153	---	---	---	---	---	---	
Local Roads	153	0.20	31.06	9.95	1,521.89	0.44	67.47	
Diurnal	153	---	---	---	---	---	---	
Resting Loss	153	---	---	---	---	---	---	
School Buses	83	0.32	26.20	4.81	399.47	0.17	14.37	
Transit Buses	153	0.25	37.71	5.99	915.81	0.16	24.88	
Auto Access	107	0.01	1.23	1.48	158.45	0.03	3.03	
Total (Daily)		4.90		249.68		7.56		
SEASON TOTAL			726.72		37,795.31		1,142.95	

SEASON 3 (OCT-DEC)		Days	2002					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	92	---	---	19.35	1,780.38
Major Roads - VMT	92	3.93	361.84	231.50	21,297.63	10.31	948.43	
Destination	92	---	---	---	---	---	---	
Local Roads	92	0.20	18.68	11.93	1,097.19	0.77	70.75	
Diurnal	92	---	---	---	---	---	---	
Resting Loss	92	---	---	---	---	---	---	
School Buses	55	0.27	14.77	4.77	262.16	0.17	9.42	
Transit Buses	92	0.22	20.66	5.78	531.39	0.16	14.74	
Auto Access	61	0.01	0.73	1.99	121.13	0.05	3.29	
Total (Daily)		4.64		275.30		11.46		
SEASON TOTAL			416.68		25,089.89		1,046.63	

1,724.71 97,575.29

ANNUAL TOTAL			1,724.71		97,575.29		3,539.97
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Attachment 3B - PM 2.5 SIP
2009 On Road PM 2.5 SIP Inventories
(Tons)

SEASON 1 (JAN-APR)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	120	---	---	10.06	1,206.72
Major Roads - VMT	120	2.66	318.60	133.00	15,959.88	1.24	149.04	
Destination	120	---	---	---	---	---	---	
Local Roads	120	0.15	18.48	7.05	845.52	0.10	11.76	
Diurnal	120	---	---	---	---	---	---	
Resting Loss	120	---	---	---	---	---	---	
School Buses	76	0.27	20.78	4.01	304.76	0.02	1.49	
Transit Buses	120	0.11	13.14	4.35	522.24	0.02	2.29	
Auto Access	83	0.01	0.78	1.05	87.54	0.01	0.57	
Total (Daily)		3.20		159.52		1.39		
SEASON TOTAL			371.78		18,926.66		165.15	

SEASON 2 (MAY-SEP)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	153	---	---	7.12	1,089.97
Major Roads - VMT	153	2.65	405.30	115.55	17,679.15	1.33	203.95	
Destination	153	---	---	---	---	---	---	
Local Roads	153	0.16	24.63	5.76	881.43	0.11	16.22	
Diurnal	153	---	---	---	---	---	---	
Resting Loss	153	---	---	---	---	---	---	
School Buses	83	0.27	22.67	4.01	332.68	0.02	1.63	
Transit Buses	153	0.10	15.64	4.16	636.16	0.02	2.91	
Auto Access	107	0.01	1.07	0.79	84.25	0.01	0.79	
Total (Daily)		3.20		137.39		1.49		
SEASON TOTAL			469.31		20,703.65		225.49	

SEASON 3 (OCT-DEC)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	92	---	---	8.62	792.67
Major Roads - VMT	92	2.52	231.93	115.06	10,585.34	1.25	115.37	
Destination	92	---	---	---	---	---	---	
Local Roads	92	0.15	13.80	6.04	555.50	0.10	9.11	
Diurnal	92	---	---	---	---	---	---	
Resting Loss	92	---	---	---	---	---	---	
School Buses	55	0.24	13.05	3.81	209.35	0.02	1.08	
Transit Buses	92	0.08	7.54	4.07	374.32	0.02	1.75	
Auto Access	61	0.01	0.57	0.89	54.46	0.01	0.42	
Total (Daily)		3.00		138.48		1.40		
SEASON TOTAL			266.90		12,571.64		127.72	

ANNUAL TOTAL			1,107.98		52,201.95		518.37
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Attachment 3C - PM 2.5 SIP
Ratio of 2009/2002 On road emissions

SEASON 1 (JAN-APR)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	120	---	---	0.48	0.48
Major Roads - VMT	120	0.64	0.64	0.54	0.54	0.12	0.12	
Destination	120	---	---	---	---	---	---	
Local Roads	120	0.73	0.73	0.56	0.56	0.13	0.13	
Diurnal	120	---	---	---	---	---	---	
Resting Loss	120	---	---	---	---	---	---	
School Buses	76	0.83	0.83	0.82	0.82	0.11	0.11	
Transit Buses	120	0.43	0.43	0.72	0.72	0.12	0.12	
Auto Access	83	0.77	0.77	0.50	0.50	0.13	0.13	
Total (Daily)		0.64		0.55		0.12		
SEASON TOTAL			0.64		0.55		0.12	

SEASON 2 (MAY-SEP)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	153	---	---	0.52	0.52
Major Roads - VMT	153	0.64	0.64	0.54	0.54	0.20	0.20	
Destination	153		---	---	---	---	---	
Local Roads	153	0.79	0.79	0.58	0.58	0.24	0.24	
Diurnal	153		---	---	---	---	---	
Resting Loss	153		---	---	---	---	---	
School Buses	83	0.87	0.87	0.83	0.83	0.11	0.11	
Transit Buses	153	0.41	0.41	0.69	0.69	0.12	0.12	
Auto Access	107	0.87	0.87	0.53	0.53	0.26	0.26	
Total (Daily)		0.65		0.55		0.20		
SEASON TOTAL			0.65		0.55		0.20	

SEASON 3 (OCT-DEC)		Days	2009					
			direct PM2.5		precursor NO _x		SO ₂	
			Daily	seasonal	Daily	seasonal	Daily	seasonal
			Major Roads - Starts	92	---	---	0.00	0.45
Major Roads - VMT	92	0.64	0.64	0.01	0.50	0.12	0.12	
Destination	92		---	---	---	---	---	
Local Roads	92	0.74	0.74	0.01	0.51	0.13	0.13	
Diurnal	92		---	---	---	---	---	
Resting Loss	92		---	---	---	---	---	
School Buses	55	0.88	0.88	0.80	0.80	0.02	0.11	
Transit Buses	92	0.37	0.37	0.70	0.70	0.02	0.12	
Auto Access	61	0.79	0.79	0.45	0.45	0.01	0.13	
Total (Daily)		0.65		0.50		0.12		
SEASON TOTAL			0.64		0.50		0.12	

ANNUAL TOTAL			0.64		0.53		0.15
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ATTACHMENT 4

**MOBILE SOURCE EMISSIONS INVENTORY
FOR PM 2.5 BY STATE (TONS/YEAR)**

2009

DISTRICT OF COLUMBIA	97.93
MARYLAND	534.21
VIRGINIA	475.82
TOTAL	1,107.96

ATTACHMENT 5

**MOBILE SOURCE EMISSIONS INVENTORY
FOR PRECURSOR NO_x BY STATE (TONS/YEAR)**

2009

DISTRICT OF COLUMBIA	5,059.75
MARYLAND	24,945.31
VIRGINIA	22,196.88
TOTAL	52,201.94

ATTACHMENT 6

**MOBILE SOURCE EMISSIONS INVENTORY
FOR SO₂ BY STATE (TONS/YEAR)**

2009

DISTRICT OF COLUMBIA	43.89
MARYLAND	246.52
VIRGINIA	227.95
TOTAL	518.36