UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

NOV 0 8 1999

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: 1-Hour Ozone Attainment Demonstrations and Tier 2/Sulfur Rulemaking

FROM: Lydia N. Wegman, Director
Air Quality Standards and Standards Division
Office of Air Quality Planning and Standards

Merrylin Zaw-Mon, Director
Fuels and Energy Division
Office of Mobile Sources

TO: Air Director, Regions I-VI

The purpose of this memo is to advise you of the relationship between 1-hour ozone attainment demonstrations and the emissions reductions that will be achieved by the Tier 2/sulfur (Tier 2) rulemaking and to provide emissions data related to that rulemaking. We trust this information will be helpful as you work with your States on issues related to the 1-hour ozone attainment demonstrations and the benefits of the Tier 2 rulemaking for certain serious and severe ozone nonattainment areas.

Tier 2 Benefits in One-Hour Attainment Demonstrations

Many serious and severe one-hour nonattainment areas require emissions reductions beyond those assumed in their current control strategies in order to have approvable attainment demonstrations. We believe that the reductions that will be realized through the Tier 2 rulemaking can help these areas both demonstrate attainment and maintain healthy air quality once the standard is attained. To aid States in accounting for the Tier 2 reductions in their attainment demonstrations, we have estimated the emissions reductions associated with the Tier 2 proposal for these areas. States should use these estimates in their attainment demonstrations to quantify emissions reductions from Tier 2, as appropriate.

Attached are the tonnage benefits for Tier 2 in 2007, on a county-by-county basis, for all counties within ten nonattainment areas where 1-hour attainment demonstrations have been submitted ("Phase II" plans for serious and severe nonattainment areas, as described in EPA's March 2, 1995 guidance). Tonnage benefits in 2005 are also provided for all counties in the Baltimore, Philadelphia, and Washington, DC nonattainment areas. Tables are also included showing the change in volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emission

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factors due to Tier 2 for every calendar year from 2004 to 2030. Details on the methods we used in making these estimates are attached.

Areas that need to rely in whole or in part on the Tier 2 benefits to help demonstrate attainment must account for those benefits in the motor vehicle emissions inventories. The State implementation plans' (SIPs) motor vehicle emissions inventories and the motor vehicle emissions budgets for transportation conformity purposes must be recalculated to include the Tier 2 benefits to the extent they are relied on for attainment. We expect to take action on the Phase II SIPs before these areas have recalculated and resubmitted their motor vehicle inventories and budgets using MOBILE6 (to be released next year). Therefore, those attainment demonstrations that rely in part on the Tier 2 reductions will need to be revised using the numbers in the attachment.

The revised attainment demonstrations, emissions inventories and the motor vehicle emissions budgets must be formally resubmitted as SIP revisions. We encourage States to submit these revisions by December 1999 in order for EPA to include them in the transportation conformity adequacy determinations. Alternatively, these revisions should be submitted by July 2000 for serious nonattainment areas, as we anticipate completing rulemaking on these Phase II SIPs in the fall of 2000. For severe nonattainment areas, these revisions should be submitted with other requirements by December 2000.

Eventually, the Phase II SIP budgets need to be resubmitted using MOBILE6 so that both the SIP budgets and the conformity determinations will reflect Tier 2 benefits that are consistent with the final rule and local inputs. Therefore, we will require the motor vehicle emissions inventories and budgets for conformity purposes to be recalculated and resubmitted to EPA as a formal SIP revision within one year after the release of MOBILE6.

<u>What Does This Mean for Conformity?</u>

The attachments to this memorandum include information that allows metropolitan planning organizations and State transportation departments in areas covered by Phase II SIPs to include Tier 2 benefits in their conformity analyses. Conformity analyses can begin including these Tier 2 benefits once the Tier 2 rule is final, provided that the Phase II SIPs and associated budgets include the Tier 2 benefits. We will be releasing an official MOBILE information sheet that formalizes this policy.

Since we had not previously provided estimates of the Tier 2 tonnage reductions for these nonattainment areas, States now need additional time to conduct public hearings and, if appropriate, revise their SIPs. We believe the Phase II SIP motor vehicle emissions inventories and budgets do not need to be revised immediately to include Tier 2 benefits in order for us to find the budgets adequate for conformity purposes. However, if the Phase II SIP relies on some portion of the Tier 2 benefits to demonstrate attainment and has not yet included the Tier 2 benefits in the SIP budgets, our adequacy finding will include a condition that conformity determinations may not take credit for Tier 2 until the SIP budgets are revised to reflect Tier 2 benefits.

If a State does not need Tier 2 reductions in order to demonstrate attainment and chooses not to revise its attainment demonstration SIP and its motor vehicle emissions budgets to account for Tier 2 reductions, these reductions would be used by the transportation community in the conformity process. That is, the Tier 2 reductions would be used to provide for increases in vehicle miles traveled above those already provided for in the SIP. In this case, the Tier 2 reductions would no longer be available for attainment demonstration or stationary source offset purposes. Thus, if a State wants to use Tier 2 emissions decreases for purposes other than transportation conformity, it needs to revise the SIP's motor vehicle emissions budgets. Further, in revising their SIP budgets to account for Tier 2, States may consider not only SIP budgets for the attainment year, but also SIP budgets for later years in order to be consistent with the transportation community's forecast period of 20 years.

We recognize that the Tier 2 benefits in the attachments are interim approximations. They were not created using MOBILE6 and they do not use all the local inputs that would normally be used in a SIP. Our guidance during the interim is intended to ensure that the Phase II SIP and the conformity determination account for the Tier 2 benefits in a similar way, even if the methodology for calculating the benefits has some limitations.

Potential Uses of Tier 2 Emissions Decreases

States have flexibility in deciding how to distribute the reductions that will result from the Tier 2 rule. A State may decide to rely upon Tier 2 decreases in their entirety in the attainment demonstration or may use a portion of those reductions for other purposes. For example, a State could set aside Tier 2 emission reductions for use as offsets provided the reductions meet the applicable criteria for otherwise creditable offsets. If a State chooses to reserve Tier 2 credits for offsets, it may need to adopt additional emissions reduction measures in order to demonstrate attainment.

It is important to ensure that the Tier 2 decreases are not double-counted. A State would not be allowed to credit the attainment demonstration with all expected Tier 2 reductions and at the same time set aside a portion of those reductions as creditable emissions offsets for use in the permitting of new sources or to provide for increases in vehicle miles traveled in transportation conformity. For example, where a State wishes to use a portion of the Tier 2 reductions for new source emissions offsets and where all other applicable requirements for use as offsets are met, that portion would not be available for use in the attainment demonstration.

If there are any questions or comments regarding this memorandum, please contact Doug Grano (919-541-3292) for general issues, Rick Rykowski (734-214-4959) for Tier 2 emissions decreases, and Kathryn Sargeant (734-214-4441) for conformity.

Attachments

cc: David Mobley
Tom Helms
Gary Dolce

bcc: Doug Grano
Roy Huntley
Phil Lorang
Sharon Reinders
Rick Rykowski
Kathryn Sargeant
Mike Sklar
David Solomon

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Attachment

Information and Methods for Estimating Tier 2 Benefits in Nonattainment Areas

Recognizing that the proposed Tier 2 emissions decreases are needed to help demonstrate attainment in several areas, we have estimated the tons decrease for specific areas associated with the Tier 2 sulfur proposal. This information should be helpful in developing preliminary estimates of the emission reductions associated with Tier 2 standards for light duty vehicles. This information is summarized in the attached tables. If you would like an electronic version of these tables (in the form of an Excel spreadsheet), please contact Gary Dolce at (734) 214-4414 or at dolce.gary@epa.gov.

Tier 2 Reductions in 2007 in 10 Nonattainment Areas

Tables 1 through 5 give estimates of Tier 2 emission reductions in 2007 by county in 10 nonattainment areas broken down by vehicle type. States should apply the reductions by vehicle class in Tables 1 through 5 to the base case emissions they have estimated for SIP purposes. Table 6 gives estimates of total emissions from all sources in the same nonattainment areas and Table 7 gives Tier 2 reductions as a percentage of total baseline emissions from all sources. Tables 6 and 7 are provided for reference purposes and are not needed for SIP calculations. All tables were derived from a database of county-by-county emissions developed for the Tier 2 assessment.

Full documentation of the methods used to develop these inventories will be available shortly in the Tier 2 Docket. To briefly summarize here, highway vehicle emissions were first estimated using MOBILE5b with input files that described local conditions (inspection/maintenance [I/M] program, temperatures, fuel parameters, registration distribution). The resulting emission factors were then multiplied by correction factors in order to simulate emission factors that would result from proposed changes in MOBILE to be incorporated in MOBILE6. Correction factors were developed for both a base case and a Tier 2 control case. The corrected emission factors for both cases were then multiplied by projected vehicle miles travelled (VMT) for each vehicle class in order to estimate future emissions in 2007 with and without Tier 2 controls. VMT projections used in this analysis were determined using national VMT projections for 2007 used in the National Emissions Trends Report allocated to county according to population growth factors by metropolitan statistical areas and rest-of-state areas. Because the correction factors used were based on default national MOBILE inputs, the results should be viewed as approximations of what will be estimated when MOBILE6 becomes available.

Tier 2 Reductions in 2005

Tables 1 through 5 also include estimates of Tier 2 reductions in 2005 in three of the nonattainment areas. They were calculated from the 2007 inventories by applying ratios of 2005 to 2007 emission factors and VMT to the 2007 inventories. The emission factor ratios were derived using a special version of MOBILE called "Modified MOBILE5b/Version2," which has been designed to simulate emission factors that would result from proposed changes in MOBILE to be incorporated in MOBILE6. This simplified version of MOBILE cannot deal with many of

the local-specific input options that are incorporated into MOBILE5b and, as a result, runs using Modified MOBILE5b/Version2 used national defaults for many of the inputs. Because of these simplifying assumptions, these estimates should be viewed as rough approximations of what would be calculated when MOBILE6 becomes available.

Tier 2 reductions in other years for conformity

Areas cannot use Tier 2 reductions in their conformity analyses until the Tier 2 rule is final. We will release an official MOBILE Information Sheet that formalizes the methods for calculating these Tier 2 reductions. However, we are providing the following data now for informational purposes.

Tables 8 and 9 give differences in base case and control case emission factors for NO_x and VOC for six different combinations of I/M program and gasoline formulation for all years from 2004 to 2030. These differences were derived from Modified MOBILE5b/Version2. They can be multiplied by local VMT to develop rough estimates of Tier 2 reductions in any area in any year. The accuracy of the resulting estimated emission reductions is limited by the lack of local area specificity in the MOBILE inputs used to develop the emission factors. For example, the emission reductions would be greater in an area that has a newer fleet (i.e., the fleet age distribution has a higher percentage of newer vehicles) than the default distribution used in MOBILE.

Table 1. LDGV: Emission Reductions Due to Tier 2/Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Atlanta, GA (Serious)				
GEORGIA (Region IV)				
Cherokee Co	0.0721	0.7125		
Clayton Co	0.1932	1.5223		
Cobb Co	0.4718	3.7357		
Coweta Co	0.0296	0.3506		
De Kalb Co	0.5819	4.5560		
Douglas Co	0.0690	0.5911		
Fayette Co	0.0280	0.3144		
Forsyth Co	0.0289	0.3429		
Fulton Co	0.6853	5.3990		
Gwinnett Co	0.3483	2.8415		
Henry Co	0.0404	0.4440		
Paulding Co	0.0270	0.3240		
Rockdale Co	0.0457	0.4479		
Atlanta Total	2.6211	21.5819		
Baltimore, MD (Severe-15)				
MARYLAND (Region III)				
Anne Arundel Co	0.0584	0.6869	0.0559	0.5678
Baltimore (City)	0.0973	1.1054	0.0931	0.9142
Baltimore Co	0.0939	1.1161	0.0897	0.9224
Carroll Co	0.0151	0.2458	0.0142	0.2025
Harford Co	0.0222	0.2977	0.0211	0.2456
Howard Co	0.0261	0.3218	0.0249	0.2658
Baltimore Total	0.3130	3.7737	0.2989	3.1182
Chicago-Gary-Lake County, IL-IN (Severe-17)				
ILLINOIS (Region V)				
Cook Co	1.0249	9.3529		
Du Page Co	0.1551	1.4265		
Grundy Co (P)	0.0007	0.0096		
Kane Co	0.0154	0.2081		
Kendall Co (P)	0.0018	0.0263		
Lake Co	0.0876	0.8468		
Mc Henry Co	0.0133	0.1869		
Will Co	0.0362	0.4163		
IL Subtotal	1.3350	12.4734		
INDIANA (Region V)				
Lake Co	0.1319	1.2512		
Porter Co	0.0313	0.3552		
IN Subtotal	0.1632	1.6064		
Chicago Total	1.4982	14.0798		

Table 1. LDGV: Emission Reductions Due to Tier 2/Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Greater Connecticut (Serious)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0063	0.0699		
Hartford Co	0.1603	1.7492		
Litchfield Co (P)	0.0183	0.2399		
Middlesex Co	0.0245	0.3063		
New Haven Co	0.1277	1.4179		
New London Co	0.0507	0.5991		
Tolland Co	0.0200	0.2634		
Windham Co	0.0118	0.1727		
Greater CT Total	0.4196	4.8184		
Houston-Galveston-Brazoria, TX (Severe-17)				
TEXAS (Region VI)				
Brazoria Co	0.0401	0.4755		
Chambers Co	0.0084	0.1062		
Fort Bend Co	0.0718	0.6910		
Galveston Co	0.0731	0.6427		
Harris Co	0.7530	10.5106		
Liberty Co	0.0147	0.1909		
Montgomery Co	0.0533	0.6887		
Waller Co	0.0059	0.0741		
Houston Total	1.0203	13.3797		
Milwaukee-Racine, WI (Severe-17)				
WISCONSIN (Region V)				
Kenosha Co	0.0274	0.3381		
Milwaukee Co	0.2372	2.6439		
Ozaukee Co	0.0157	0.2081		
Racine Co	0.0326	0.4022		
Washington Co	0.0170	0.2813		
Waukesha Co	0.0700	0.9098		
Milwaukee Total	0.3999	4.7834		
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.1406	1.5636		
Litchfield Co (P)	0.0031	0.0408		
CT Subtotal	0.1437	1.6044		

Table 1. LDGV: Emission Reductions Due to Tier 2/Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
NEW JERSEY (Region II)				
Bergen Co	0.0858	0.9313		
Essex Co	0.0809	0.8731		
Hudson Co	0.0576	0.6215		
Hunterdon Co	0.0159	0.2572		
Middlesex Co	0.0773	0.8591		
Monmouth Co	0.0669	0.7714		
Morris Co	0.0468	0.5582		
Ocean Co	0.0519	0.6435		
Passaic Co	0.0445	0.4819		
Somerset Co	0.0297	0.3622		
Sussex Co	0.0143	0.2167		
Union Co	0.0512	0.5543		
NJ Subtotal	0.6228	7.1304		
NEW YORK (Region II)				
Bronx Co	0.0935	0.9688		
Kings Co	0.1792	1.8519		
Nassau Co	0.1031	1.0683		
New York Co	0.1160	1.1975		
Orange Co (P)	0.0408	0.3584		
Queens Co	0.1519	1.5705		
Richmond Co	0.0296	0.3052		
Rockland Co	0.0209	0.2155		
Suffolk Co	0.1031	1.0920		
Westchester Co	0.0703	0.7559		
NY Subtotal	0.9084	9.3840		
New York Total	1.6749	16.1188		
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)				
DELAWARE (Region III)				
Kent Co	0.0497	0.4617	0.0525	0.3680
New Castle Co	0.1791	1.4553	0.1894	1.1621
DE Subtotal	0.2288	1.9170	0.2419	1.5302
MARYLAND (Region III)				
Cecil Co	0.0158	0.2259	0.0151	0.1844
MD Subtotal	0.0158	0.2259	0.0151	0.1844
NEW JERSEY (Region II)				
Burlington Co	0.0458	0.5304	0.0444	0.4396
Camden Co	0.0619	0.6451	0.0601	0.5351
Cumberland Co	0.0149	0.1797	0.0144	0.1485
Gloucester Co	0.0287	0.3292	0.0278	0.2728
Mercer Co	0.0468	0.5570	0.0449	0.4579
Salem Co	0.0083	0.1144	0.0080	0.0947
NJ Subtotal	0.2064	2.3558	0.1995	1.9485

Table 1. LDGV: Emission Reductions Due to Tier 2/Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
PENNSYLVANIA (Region III)				
Bucks Co	0.1040	0.9716	0.1037	0.7911
Chester Co	0.0775	0.8094	0.0770	0.6586
Delaware Co	0.1080	0.9004	0.1079	0.7338
Montgomery Co	0.1385	1.2075	0.1384	0.9837
Philadelphia Co	0.3139	2.5696	0.3140	2.0943
PA Subtotal	0.7419	6.4585	0.7410	5.2616
Philadelphia Total	1.1929	10.9572	1.1975	8.9247
Springfield (Western MA), MA (Serious)				
MASSACHUSETTS (Region I)				
Berkshire Co	0.0178	0.1637		
Franklin Co	0.0069	0.0897		
Hampden Co	0.0888	0.7183		
Hampshire Co	0.0199	0.1899		
Western MA Total	0.1334	1.1616		
Washington, DC-MD-VA (Serious)[a]				
DISTRICT OF COLUMBIA (Region III)				
Entire District	0.0843	0.7292	0.0813	0.5907
DC Subtotal	0.0843	0.7292	0.0813	0.5907
MARYLAND (Region III)				
Calvert Co	0.0146	0.1763	0.0151	0.1408
Charles Co	0.0135	0.1632	0.0140	0.1303
Frederick Co	0.0359	0.3784	0.0374	0.3026
Montgomery Co	0.1731	1.5224	0.1812	1.2217
Prince George's Co	0.1775	1.5097	0.1858	1.2098
MD Subtotal	0.4145	3.7500	0.4334	3.0052
VIRGINIA (Region III)				
Alexandria	0.0287	0.2563	0.0278	0.2071
Arlington Co	0.0430	0.3841	0.0417	0.3105
Fairfax	0.0048	0.0428	0.0047	0.0347
Fairfax Co	0.1954	1.8133	0.1895	1.4674
Loudoun Co	0.0172	0.1929	0.0165	0.1556
Prince William Co	0.0598	0.5924	0.0578	0.4785
Stafford Co	0.0159	0.1962	0.0153	0.1582
VA Subtotal	0.3648	3.4780	0.3534	2.8120
Washington Total	0.8636	7.9572	0.8680	6.4079

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 2. LDGT1: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Atlanta, GA (Serious)				
GEORGIA (Region IV)				
Cherokee Co	0.0820	0.6470		
Clayton Co	0.2122	1.3723		
Cobb Co	0.5180	3.3594		
Coweta Co	0.0347	0.3196		
De Kalb Co	0.6382	4.0956		
Douglas Co	0.0768	0.5344		
Fayette Co	0.0327	0.2867		
Forsyth Co	0.0333	0.3128		
Fulton Co	0.7527	4.8546		
Gwinnett Co	0.3841	2.5579		
Henry Co	0.0466	0.4040		
Paulding Co	0.0318	0.2954		
Rockdale Co	0.0517	0.4063		
Atlanta Total	2.8948	19.4460		
Baltimore, MD (Severe-15)				
MARYLAND (Region III)				
Anne Arundel Co	0.0744	0.7416	0.0652	0.4964
Baltimore (City)	0.1235	1.1897	0.1083	0.7964
Baltimore Co	0.1202	1.2038	0.1054	0.8056
Carroll Co	0.0206	0.2683	0.0179	0.1793
Harford Co	0.0288	0.3228	0.0252	0.2158
Howard Co	0.0336	0.3477	0.0294	0.2327
Baltimore Total	0.4011	4.0739	0.3514	2.7262
Chicago-Gary-Lake County, IL-IN (Severe-17)				
ILLINOIS (Region V)				
Cook Co	1.4704	11.3080		
Du Page Co	0.2234	1.7245		
Grundy Co (P)	0.0010	0.0116		
Kane Co	0.0234	0.2518		
Kendall Co (P)	0.0027	0.0316		
Lake Co	0.1261	1.0233		
Mc Henry Co	0.0201	0.2261		
Will Co	0.0531	0.5035		
IL Subtotal	1.9202	15.0804		
INDIANA (Region V)				
Lake Co	0.1661	1.3156		
Porter Co	0.0408	0.3757		
IN Subtotal	0.2069	1.6913		
Chicago Total	2.1271	16.7717		

Table 2. LDGT1: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Greater Connecticut (Serious)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0081	0.0756		
Hartford Co	0.2055	1.8920		
Litchfield Co (P)	0.0241	0.2622		
Middlesex Co	0.0321	0.3333		
New Haven Co	0.1644	1.5331		
New London Co	0.0660	0.6495		
Tolland Co	0.0265	0.2875		
Windham Co	0.0160	0.1892		
Greater CT Total	0.5427	5.2223		
Houston-Galveston-Brazoria, TX (Severe-17)				
TEXAS (Region VI)				
Brazoria Co	0.0510	0.5548		
Chambers Co	0.0103	0.1201		
Fort Bend Co	0.0860	0.7776		
Galveston Co	0.0897	0.7471		
Harris Co	1.0896	11.6750		
Liberty Co	0.0185	0.2163		
Montgomery Co	0.0661	0.7814		
Waller Co	0.0074	0.0841		
Houston Total	1.4186	14.9564		
Milwaukee-Racine, WI (Severe-17)				
WISCONSIN (Region V)				
Kenosha Co	0.0292	0.2919		
Milwaukee Co	0.2472	2.2715		
Ozaukee Co	0.0166	0.1788		
Racine Co	0.0345	0.3479		
Washington Co	0.0192	0.2424		
Waukesha Co	0.0744	0.7826		
Milwaukee Total	0.4211	4.1151		
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.1807	1.6903		
Litchfield Co (P)	0.0041	0.0445		
CT Subtotal	0.1848	1.7349		

Table 2. LDGT1: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
NEW JERSEY (Region II)				
Bergen Co	0.1618	1.3424		
Essex Co	0.1517	1.2597		
Hudson Co	0.1081	0.8962		
Hunterdon Co	0.0321	0.3776		
Middlesex Co	0.1458	1.2409		
Monmouth Co	0.1269	1.1170		
Morris Co	0.0894	0.8094		
Ocean Co	0.1001	0.9349		
Passaic Co	0.0837	0.6950		
Somerset Co	0.0569	0.5261		
Sussex Co	0.0283	0.3173		
Union Co	0.0965	0.7996		
NJ Subtotal	1.1813	10.3161		
NEW YORK (Region II)				
Bronx Co	0.1356	1.2118		
Kings Co	0.2590	2.3169		
Nassau Co	0.1494	1.3374		
New York Co	0.1675	1.4980		
Orange Co (P)	0.0558	0.3697		
Queens Co	0.2196	1.9645		
Richmond Co	0.0428	0.3818		
Rockland Co	0.0302	0.2695		
Suffolk Co	0.1499	1.3690		
Westchester Co	0.1024	0.9482		
NY Subtotal	1.3122	11.6668		
New York Total	2.6783	23.7178		
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)				
DELAWARE (Region III)				
Kent Co	0.0754	0.5560	0.0666	0.3683
New Castle Co	0.2339	1.6027	0.2074	1.0638
DE Subtotal	0.3093	2.1587	0.2740	1.4321
MARYLAND (Region III)				
Cecil Co	0.0225	0.2576	0.0197	0.1710
MD Subtotal	0.0225	0.2576	0.0197	0.1710
NEW JERSEY (Region II)				
Burlington Co	0.0867	0.7708	0.0770	0.5120
Camden Co	0.1161	0.9344	0.1035	0.6210
Cumberland Co	0.0288	0.2628	0.0256	0.1744
Gloucester Co	0.0546	0.4789	0.0485	0.3182
Mercer Co	0.0889	0.8068	0.0787	0.5342
Salem Co	0.0165	0.1668	0.0147	0.1108
NJ Subtotal	0.3916	3.4205	0.3481	2.2706

Table 2. LDGT1: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day)		Reduction in 2005 (tons per ozone season day)	
	VOC	NOx	VOC	NOx
PENNSYLVANIA (Region III)				
Bucks Co	0.1609	1.2225	0.1441	0.8065
Chester Co	0.1225	1.0194	0.1095	0.6722
Delaware Co	0.1647	1.1311	0.1478	0.7464
Montgomery Co	0.2117	1.5183	0.1898	1.0017
Philadelphia Co	0.4755	3.2271	0.4268	2.1294
PA Subtotal	1.1353	8.1184	1.0182	5.3564
Philadelphia Total	1.8587	13.9552	1.6599	9.2301
Springfield (Western MA), MA (Serious)				
MASSACHUSETTS (Region I)				
Berkshire Co	0.0215	0.1774		
Franklin Co	0.0088	0.0965		
Hampden Co	0.1062	0.7737		
Hampshire Co	0.0246	0.2044		
Western MA Total	0.1611	1.2520		
Washington, DC-MD-VA (Serious)[a]				
DISTRICT OF COLUMBIA (Region III)				
Entire District	0.0902	0.6577	0.0791	0.4373
DC Subtotal	0.0902	0.6577	0.0791	0.4373
MARYLAND (Region III)				
Calvert Co	0.0146	0.1571	0.0126	0.1049
Charles Co	0.0146	0.1493	0.0127	0.0997
Frederick Co	0.0392	0.3566	0.0341	0.2382
Montgomery Co	0.1713	1.3552	0.1495	0.9081
Prince George's Co	0.1776	1.3553	0.1551	0.9069
MD Subtotal	0.4173	3.3735	0.3641	2.2578
VIRGINIA (Region III)				
Alexandria	0.0342	0.2586	0.0302	0.1710
Arlington Co	0.0556	0.4172	0.0492	0.2756
Fairfax	0.0057	0.0439	0.0051	0.0291
Fairfax Co	0.2360	1.8690	0.2087	1.2373
Loudoun Co	0.0228	0.2059	0.0202	0.1359
Prince William Co	0.0691	0.5862	0.0610	0.3879
Stafford Co	0.0205	0.2100	0.0180	0.1386
VA Subtotal	0.4439	3.5908	0.3923	2.3755
Washington Total	0.9514	7.6220	0.8355	5.0706

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 3. LDGT2: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Atlanta, GA (Serious)				
GEORGIA (Region IV)				
Cherokee Co	0.0543	0.2685		
Clayton Co	0.1419	0.5691		
Cobb Co	0.3467	1.3895		
Coweta Co	0.0231	0.1329		
De Kalb Co	0.4274	1.6936		
Douglas Co	0.0511	0.2219		
Fayette Co	0.0216	0.1191		
Forsyth Co	0.0219	0.1300		
Fulton Co	0.5035	2.0078		
Gwinnett Co	0.2566	1.0580		
Henry Co	0.0304	0.1680		
Paulding Co	0.0204	0.1228		
Rockdale Co	0.0342	0.1687		
Atlanta Total	1.9331	8.0499		
Baltimore, MD (Severe-15)				
MARYLAND (Region III)				
Anne Arundel Co	0.0546	0.3743	0.0386	0.2011
Baltimore (City)	0.0916	0.6005	0.0649	0.3228
Baltimore Co	0.0880	0.6079	0.0621	0.3267
Carroll Co	0.0144	0.1358	0.0099	0.0728
Harford Co	0.0210	0.1634	0.0148	0.0879
Howard Co	0.0246	0.1755	0.0173	0.0942
Baltimore Total	0.2942	2.0574	0.2077	1.1055
Chicago-Gary-Lake County, IL-IN (Severe-17)				
ILLINOIS (Region V)				
Cook Co	0.9050	4.8200		
Du Page Co	0.1367	0.7351		
Grundy Co (P)	0.0006	0.0050		
Kane Co	0.0138	0.1074		
Kendall Co (P)	0.0016	0.0135		
Lake Co	0.0775	0.4361		
Mc Henry Co	0.0119	0.0964		
Will Co	0.0320	0.2144		
IL Subtotal	1.1791	6.4279		
INDIANA (Region V)				
Lake Co	0.1146	0.6369		
Porter Co	0.0276	0.1819		
IN Subtotal	0.1422	0.8188		
Chicago Total	1.3213	7.2467		

Table 3. LDGT2: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Greater Connecticut (Serious)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0064	0.0396		
Hartford Co	0.1637	0.9920		
Litchfield Co (P)	0.0189	0.1375		
Middlesex Co	0.0251	0.1746		
New Haven Co	0.1308	0.8037		
New London Co	0.0521	0.3406		
Tolland Co	0.0205	0.1509		
Windham Co	0.0123	0.0993		
Greater CT Total	0.4298	2.7384		
Houston-Galveston-Brazoria, TX (Severe-17)				
TEXAS (Region VI)				
Brazoria Co	0.0353	0.2478		
Chambers Co	0.0066	0.0617		
Fort Bend Co	0.0576	0.3341		
Galveston Co	0.0639	0.3339		
Harris Co	0.6206	5.2593		
Liberty Co	0.0120	0.0929		
Montgomery Co	0.0432	0.3350		
Waller Co	0.0047	0.0361		
Houston Total	0.8439	6.6908		
Milwaukee-Racine, WI (Severe-17)				
WISCONSIN (Region V)				
Kenosha Co	0.0239	0.1851		
Milwaukee Co	0.2063	1.4383		
Ozaukee Co	0.0138	0.1134		
Racine Co	0.0284	0.2204		
Washington Co	0.0156	0.1536		
Waukesha Co	0.0616	0.4960		
Milwaukee Total	0.3496	2.6068		
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.1436	0.8861		
Litchfield Co (P)	0.0032	0.0234		
CT Subtotal	0.1468	0.9095		
NEW JERSEY (Region II)				

Table 3. LDGT2: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Bergen Co	0.1236	0.6889		
Essex Co	0.1161	0.6466		
Hudson Co	0.0825	0.4597		
Hunterdon Co	0.0232	0.1943		
Middlesex Co	0.1113	0.6370		
Monmouth Co	0.0966	0.5736		
Morris Co	0.0677	0.4159		
Ocean Co	0.0751	0.4803		
Passaic Co	0.0641	0.3565		
Somerset Co	0.0429	0.2700		
Sussex Co	0.0205	0.1632		
Union Co	0.0739	0.4104		
NJ Subtotal	0.8975	5.2964		
NEW YORK (Region II)				
Bronx Co	0.1058	0.6083		
Kings Co	0.2025	1.1629		
Nassau Co	0.1166	0.6716		
New York Co	0.1310	0.7519		
Orange Co (P)	0.0419	0.1515		
Queens Co	0.1716	0.9862		
Richmond Co	0.0333	0.1917		
Rockland Co	0.0232	0.1353		
Suffolk Co	0.1165	0.6877		
Westchester Co	0.0797	0.4759		
NY Subtotal	1.0221	5.8230		
New York Total	2.0664	12.0289		
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)				
DELAWARE (Region III)				
Kent Co	0.0486	0.2524	0.0362	0.1355
New Castle Co	0.1610	0.7516	0.1227	0.4045
DE Subtotal	0.2096	1.0040	0.1589	0.5399
MARYLAND (Region III)				
Cecil Co	0.0144	0.1211	0.0099	0.0643
MD Subtotal	0.0144	0.1211	0.0099	0.0643
NEW JERSEY (Region II)				
Burlington Co	0.0660	0.3959	0.0476	0.2098
Camden Co	0.0890	0.4793	0.0646	0.2540
Cumberland Co	0.0216	0.1360	0.0155	0.0714
Gloucester Co	0.0416	0.2457	0.0303	0.1301
Mercer Co	0.0674	0.4144	0.0483	0.2183
Salem Co	0.0119	0.0856	0.0084	0.0453
NJ Subtotal	0.2977	1.7559	0.2147	0.9289

Table 3. LDGT2: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
PENNSYLVANIA (Region III)				
Bucks Co	0.0786	0.4594	0.0567	0.2445
Chester Co	0.0590	0.3833	0.0422	0.2040
Delaware Co	0.0814	0.4255	0.0591	0.2267
Montgomery Co	0.1041	0.5711	0.0753	0.3042
Philadelphia Co	0.2354	1.2142	0.1710	0.6471
PA Subtotal	0.5585	3.0535	0.4043	1.6265
Philadelphia Total	1.0802	5.9345	0.7879	3.1596
Springfield (Western MA), MA (Serious)				
MASSACHUSETTS (Region I)				
Berkshire Co	0.0129	0.0775		
Franklin Co	0.0052	0.0424		
Hampden Co	0.0644	0.3397		
Hampshire Co	0.0146	0.0898		
Western MA Total	0.0971	0.5494		
Washington, DC-MD-VA (Serious)[a]				
DISTRICT OF COLUMBIA (Region III)				
Entire District	0.0671	0.3708	0.0465	0.1983
DC Subtotal	0.0671	0.3708	0.0465	0.1983
MARYLAND (Region III)				
Calvert Co	0.0115	0.0859	0.0084	0.0467
Charles Co	0.0113	0.0803	0.0083	0.0435
Frederick Co	0.0291	0.1878	0.0214	0.1020
Montgomery Co	0.1368	0.7472	0.1019	0.4076
Prince George's Co	0.1420	0.7401	0.1057	0.4030
MD Subtotal	0.3307	1.8413	0.2458	1.0028
VIRGINIA (Region III)				
Alexandria	0.0235	0.1330	0.0163	0.0707
Arlington Co	0.0397	0.2175	0.0275	0.1152
Fairfax	0.0039	0.0226	0.0027	0.0120
Fairfax Co	0.1642	0.9613	0.1142	0.5118
Loudoun Co	0.0157	0.1058	0.0108	0.0560
Prince William Co	0.0518	0.3201	0.0358	0.1699
Stafford Co	0.0143	0.1078	0.0098	0.0570
VA Subtotal	0.3131	1.8681	0.2171	0.9927
Washington Total	0.7109	4.0802	0.5094	2.1937

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 4. LDDT: Emission Reductions Due to Tier 2 / Sulfur in 2007and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Atlanta, GA (Serious)				
GEORGIA (Region IV)				
Cherokee Co	0.0026	0.0066		
Clayton Co	0.0069	0.0143		
Cobb Co	0.0173	0.0349		
Coweta Co	0.0012	0.0029		
De Kalb Co	0.0217	0.0427		
Douglas Co	0.0026	0.0055		
Fayette Co	0.0013	0.0027		
Forsyth Co	0.0010	0.0029		
Fulton Co	0.0255	0.0504		
Gwinnett Co	0.0127	0.0262		
Henry Co	0.0012	0.0042		
Paulding Co	0.0010	0.0028		
Rockdale Co	0.0017	0.0040		
Atlanta Total	0.0967	0.2001		
Baltimore, MD (Severe-15)				
MARYLAND (Region III)				
Anne Arundel Co	0.0077	0.0164	0.0038	0.0084
Baltimore (City)	0.0128	0.0264	0.0062	0.0134
Baltimore Co	0.0121	0.0265	0.0057	0.0135
Carroll Co	0.0022	0.0054	0.0012	0.0026
Harford Co	0.0030	0.0068	0.0015	0.0034
Howard Co	0.0032	0.0077	0.0014	0.0039
Baltimore Total	0.0410	0.0892	0.0198	0.0453
Chicago-Gary-Lake County, IL-IN (Severe-17)				
ILLINOIS (Region V)				
Cook Co	0.1024	0.1859		
Du Page Co	0.0156	0.0283		
Grundy Co (P)	0.0001	0.0002		
Kane Co	0.0018	0.0040		
Kendall Co (P)	0.0002	0.0005		
Lake Co	0.0089	0.0165		
Mc Henry Co	0.0014	0.0035		
Will Co	0.0037	0.0079		
IL Subtotal	0.1340	0.2467		
INDIANA (Region V)				
Lake Co	0.0105	0.0209		
Porter Co	0.0023	0.0057		
IN Subtotal	0.0128	0.0266		
Chicago Total	0.1468	0.2733		

Table 4. LDDT: Emission Reductions Due to Tier 2 / Sulfur in 2007and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Greater Connecticut (Serious)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0006	0.0013		
Hartford Co	0.0156	0.0325		
Litchfield Co (P)	0.0018	0.0043		
Middlesex Co	0.0024	0.0054		
New Haven Co	0.0122	0.0262		
New London Co	0.0048	0.0107		
Tolland Co	0.0016	0.0047		
Windham Co	0.0010	0.0031		
Greater CT Total	0.0400	0.0882		
Houston-Galveston-Brazoria, TX (Severe-17)				
TEXAS (Region VI)				
Brazoria Co	0.0026	0.0070		
Chambers Co	0.0006	0.0016		
Fort Bend Co	0.0044	0.0096		
Galveston Co	0.0048	0.0091		
Harris Co	0.0697	0.1400		
Liberty Co	0.0009	0.0024		
Montgomery Co	0.0033	0.0093		
Waller Co	0.0002	0.0008		
Houston Total	0.0865	0.1798		
Milwaukee-Racine, WI (Severe-17)				
WISCONSIN (Region V)				
Kenosha Co	0.0026	0.0051		
Milwaukee Co	0.0211	0.0397		
Ozaukee Co	0.0012	0.0030		
Racine Co	0.0029	0.0058		
Washington Co	0.0014	0.0041		
Waukesha Co	0.0063	0.0134		
Milwaukee Total	0.0355	0.0711		
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0137	0.0289		
Litchfield Co (P)	0.0003	0.0007		
CT Subtotal	0.0140	0.0296		
NEW JERSEY (Region II)				

Table 4. LDDT: Emission Reductions Due to Tier 2 / Sulfur in 2007and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Bergen Co	0.0123	0.0240		
Essex Co	0.0117	0.0224		
Hudson Co	0.0082	0.0160		
Hunterdon Co	0.0022	0.0063		
Middlesex Co	0.0110	0.0220		
Monmouth Co	0.0096	0.0199		
Morris Co	0.0066	0.0142		
Ocean Co	0.0073	0.0162		
Passaic Co	0.0065	0.0125		
Somerset Co	0.0043	0.0094		
Sussex Co	0.0020	0.0049		
Union Co	0.0073	0.0144		
NJ Subtotal	0.0890	0.1822		
NEW YORK (Region II)				
Bronx Co	0.0130	0.0247		
Kings Co	0.0251	0.0474		
Nassau Co	0.0145	0.0273		
New York Co	0.0161	0.0306		
Orange Co (P)	0.0016	0.0036		
Queens Co	0.0212	0.0403		
Richmond Co	0.0042	0.0079		
Rockland Co	0.0028	0.0056		
Suffolk Co	0.0144	0.0281		
Westchester Co	0.0098	0.0192		
NY Subtotal	0.1227	0.2347		
New York Total	0.2257	0.4465		
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)				
DELAWARE (Region III)				
Kent Co	0.0029	0.0062	0.0013	0.0032
New Castle Co	0.0109	0.0204	0.0052	0.0103
DE Subtotal	0.0138	0.0266	0.0065	0.0135
MARYLAND (Region III)				
Cecil Co	0.0015	0.0045	0.0005	0.0022
MD Subtotal	0.0015	0.0045	0.0005	0.0022
NEW JERSEY (Region II)				
Burlington Co	0.0066	0.0133	0.0032	0.0067
Camden Co	0.0085	0.0169	0.0038	0.0088
Cumberland Co	0.0021	0.0044	0.0010	0.0021
Gloucester Co	0.0039	0.0084	0.0017	0.0043
Mercer Co	0.0068	0.0139	0.0034	0.0069
Salem Co	0.0010	0.0027	0.0003	0.0012
NJ Subtotal	0.0289	0.0596	0.0134	0.0299

Table 4. LDDT: Emission Reductions Due to Tier 2 / Sulfur in 2007and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
PENNSYLVANIA (Region III)				
Bucks Co	0.0086	0.0165	0.0042	0.0085
Chester Co	0.0067	0.0134	0.0034	0.0068
Delaware Co	0.0088	0.0160	0.0041	0.0085
Montgomery Co	0.0114	0.0207	0.0055	0.0106
Philadelphia Co	0.0258	0.0446	0.0124	0.0228
PA Subtotal	0.0613	0.1112	0.0297	0.0571
Philadelphia Total	0.1056	0.2019	0.0501	0.1028
Springfield (Western MA), MA (Serious)				
MASSACHUSETTS (Region I)				
Berkshire Co	0.0017	0.0032		
Franklin Co	0.0007	0.0018		
Hampden Co	0.0085	0.0157		
Hampshire Co	0.0019	0.0040		
Western MA Total	0.0128	0.0247		
Washington, DC-MD-VA (Serious)[a]				
DISTRICT OF COLUMBIA (Region III)				
Entire District	0.0073	0.0141	0.0034	0.0071
DC Subtotal	0.0073	0.0141	0.0034	0.0071
MARYLAND (Region III)				
Calvert Co	0.0009	0.0031	0.0003	0.0015
Charles Co	0.0010	0.0031	0.0005	0.0017
Frederick Co	0.0026	0.0072	0.0011	0.0038
Montgomery Co	0.0139	0.0301	0.0065	0.0153
Prince George's Co	0.0136	0.0286	0.0065	0.0145
MD Subtotal	0.0320	0.0721	0.0149	0.0369
VIRGINIA (Region III)				
Alexandria	0.0024	0.0050	0.0010	0.0024
Arlington Co	0.0040	0.0079	0.0019	0.0039
Fairfax	0.0006	0.0009	0.0004	0.0005
Fairfax Co	0.0191	0.0386	0.0091	0.0194
Loudoun Co	0.0021	0.0039	0.0013	0.0020
Prince William Co	0.0058	0.0120	0.0029	0.0060
Stafford Co	0.0015	0.0039	0.0006	0.0019
VA Subtotal	0.0355	0.0722	0.0172	0.0361
Washington Total	0.0748	0.1584	0.0355	0.0801

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 5. HDGV: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Atlanta, GA (Serious)				
GEORGIA (Region IV)				
Cherokee Co	0.0094	0.0818		
Clayton Co	0.0224	0.1269		
Cobb Co	0.0547	0.3138		
Coweta Co	0.0045	0.0470		
De Kalb Co	0.0669	0.3746		
Douglas Co	0.0086	0.0565		
Fayette Co	0.0041	0.0407		
Forsyth Co	0.0040	0.0471		
Fulton Co	0.0791	0.4491		
Gwinnett Co	0.0410	0.2516		
Henry Co	0.0059	0.0561		
Paulding Co	0.0040	0.0440		
Rockdale Co	0.0060	0.0507		
Atlanta Total	0.3106	1.9399		
Baltimore, MD (Severe-15)				
MARYLAND (Region III)				
Anne Arundel Co	0.0084	0.0633	0.0089	0.0602
Baltimore (City)	0.0132	0.0916	0.0139	0.0872
Baltimore Co	0.0136	0.1023	0.0144	0.0974
Carroll Co	0.0029	0.0343	0.0031	0.0327
Harford Co	0.0035	0.0339	0.0037	0.0323
Howard Co	0.0039	0.0316	0.0041	0.0301
Baltimore Total	0.0455	0.3570	0.0480	0.3399
Chicago-Gary-Lake County, IL-IN (Severe-17)				
ILLINOIS (Region V)				
Cook Co	0.1017	0.5944		
Du Page Co	0.0154	0.0917		
Grundy Co (P)	0.0001	0.0010		
Kane Co	0.0017	0.0208		
Kendall Co (P)	0.0002	0.0027		
Lake Co	0.0090	0.0589		
Mc Henry Co	0.0016	0.0191		
Will Co	0.0040	0.0359		
IL Subtotal	0.1337	0.8244		
INDIANA (Region V)				
Lake Co	0.0134	0.0817		
Porter Co	0.0037	0.0305		
IN Subtotal	0.0171	0.1122		
Chicago Total	0.1508	0.9366		

Table 5. HDGV: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Greater Connecticut (Serious)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0007	0.0055		
Hartford Co	0.0186	0.1365		
Litchfield Co (P)	0.0027	0.0257		
Middlesex Co	0.0032	0.0302		
New Haven Co	0.0146	0.1121		
New London Co	0.0062	0.0532		
Tolland Co	0.0027	0.0275		
Windham Co	0.0017	0.0204		
Greater CT Total	0.0505	0.4111		
Houston-Galveston-Brazoria, TX (Severe-17)				
TEXAS (Region VI)				
Brazoria Co	0.0041	0.0502		
Chambers Co	0.0008	0.0113		
Fort Bend Co	0.0064	0.0543		
Galveston Co	0.0070	0.0482		
Harris Co	0.0771	0.5157		
Liberty Co	0.0015	0.0212		
Montgomery Co	0.0058	0.0760		
Waller Co	0.0005	0.0078		
Houston Total	0.1032	0.7847		
Milwaukee-Racine, WI (Severe-17)				
WISCONSIN (Region V)				
Kenosha Co	0.0040	0.0238		
Milwaukee Co	0.0296	0.1452		
Ozaukee Co	0.0023	0.0149		
Racine Co	0.0044	0.0288		
Washington Co	0.0027	0.0248		
Waukesha Co	0.0092	0.0631		
Milwaukee Total	0.0522	0.3006		
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)				
CONNECTICUT (Region I)				
Fairfield Co (P)	0.0163	0.1229		
Litchfield Co (P)	0.0005	0.0044		
CT Subtotal	0.0167	0.1273		
NEW JERSEY (Region II)				

Table 5. HDGV: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
Bergen Co	0.0140	0.0833		
Essex Co	0.0133	0.0781		
Hudson Co	0.0095	0.0557		
Hunterdon Co	0.0036	0.0397		
Middlesex Co	0.0129	0.0818		
Monmouth Co	0.0113	0.0786		
Morris Co	0.0081	0.0601		
Ocean Co	0.0091	0.0732		
Passaic Co	0.0071	0.0432		
Somerset Co	0.0055	0.0408		
Sussex Co	0.0026	0.0318		
Union Co	0.0084	0.0498		
NJ Subtotal	0.1054	0.7161		
NEW YORK (Region II)				
Bronx Co	0.0106	0.0786		
Kings Co	0.0203	0.1497		
Nassau Co	0.0118	0.0870		
New York Co	0.0132	0.0968		
Orange Co (P)	0.0054	0.0401		
Queens Co	0.0172	0.1269		
Richmond Co	0.0034	0.0247		
Rockland Co	0.0024	0.0177		
Suffolk Co	0.0120	0.0936		
Westchester Co	0.0082	0.0665		
NY Subtotal	0.1045	0.7816		
New York Total	0.2267	1.6250		
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)				
DELAWARE (Region III)				
Kent Co	0.0040	0.0317	0.0042	0.0301
New Castle Co	0.0120	0.0728	0.0126	0.0691
DE Subtotal	0.0160	0.1045	0.0168	0.0992
MARYLAND (Region III)				
Cecil Co	0.0028	0.0279	0.0029	0.0265
MD Subtotal	0.0028	0.0279	0.0029	0.0265
NEW JERSEY (Region II)				
Burlington Co	0.0080	0.0579	0.0085	0.0553
Camden Co	0.0106	0.0593	0.0112	0.0567
Cumberland Co	0.0027	0.0217	0.0029	0.0207
Gloucester Co	0.0050	0.0354	0.0053	0.0338
Mercer Co	0.0081	0.0595	0.0085	0.0566
Salem Co	0.0016	0.0148	0.0017	0.0141
NJ Subtotal	0.0360	0.2486	0.0381	0.2372

Table 5. HDGV: Emission Reductions Due to Tier 2 / Sulfur in 2007 and 2005 in Certain Nonattainment Areas (tons per ozone season day)

Nonattainment areas and included counties	Reduction in 2007 (tons per ozone season day) VOC	NOx	Reduction in 2005 (tons per ozone season day) VOC	NOx
PENNSYLVANIA (Region III)				
Bucks Co	0.0092	0.0678	0.0098	0.0648
Chester Co	0.0076	0.0644	0.0081	0.0615
Delaware Co	0.0095	0.0526	0.0101	0.0503
Montgomery Co	0.0123	0.0768	0.0130	0.0733
Philadelphia Co	0.0271	0.1466	0.0287	0.1401
PA Subtotal	0.0657	0.4082	0.0696	0.3900
Philadelphia Total	0.1205	0.7892	0.1275	0.7530
Springfield (Western MA), MA (Serious)				
MASSACHUSETTS (Region I)				
Berkshire Co	0.0014	0.0150		
Franklin Co	0.0005	0.0101		
Hampden Co	0.0071	0.0515		
Hampshire Co	0.0016	0.0169		
Western MA Total	0.0106	0.0935		
Washington, DC-MD-VA (Serious)[a]				
DISTRICT OF COLUMBIA (Region III)				
Entire District	0.0105	0.0517	0.0110	0.0489
DC Subtotal	0.0105	0.0517	0.0110	0.0489
MARYLAND (Region III)				
Calvert Co	0.0018	0.0209	0.0019	0.0197
Charles Co	0.0019	0.0192	0.0020	0.0182
Frederick Co	0.0043	0.0388	0.0045	0.0367
Montgomery Co	0.0185	0.1206	0.0194	0.1141
Prince George's Co	0.0177	0.1111	0.0186	0.1050
MD Subtotal	0.0442	0.3106	0.0464	0.2937
VIRGINIA (Region III)				
Alexandria	0.0031	0.0168	0.0033	0.0177
Arlington Co	0.0050	0.0293	0.0052	0.0277
Fairfax	0.0004	0.0033	0.0004	0.0031
Fairfax Co	0.0240	0.1469	0.0252	0.1389
Loudoun Co	0.0023	0.0200	0.0024	0.0189
Prince William Co	0.0072	0.0532	0.0076	0.0503
Stafford Co	0.0023	0.0230	0.0024	0.0217
VA Subtotal	0.0443	0.2945	0.0465	0.2783
Washington Total	0.0990	0.6568	0.1038	0.6209

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 6. Total Emissions from all sources in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	2007 Baseline Total Emissions All Sources					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Atlanta, GA (Serious)						
GEORGIA (Region IV)						
Cherokee Co	4,785	5,351	14	14	2,143	2,163
Clayton Co	7,404	9,148	23	24	3,466	3,696
Cobb Co	21,583	30,606	66	80	10,166	12,211
Coweta Co	3,424	15,065	10	34	1,560	5,177
De Kalb Co	28,107	27,312	87	72	13,381	10,960
Douglas Co	3,529	3,703	10	10	1,605	1,493
Fayette Co	2,744	3,125	8	9	1,290	1,327
Forsyth Co	2,746	3,737	8	11	1,292	1,705
Fulton Co	40,407	47,161	124	128	19,044	19,607
Gwinnett Co	15,781	20,830	49	57	7,573	8,795
Henry Co	3,541	7,858	10	15	1,606	2,252
Paulding Co	1,775	2,594	5	7	766	1,097
Rockdale Co	3,605	3,321	11	9	1,685	1,379
Atlanta Total	139,430	179,812	429	470	65,576	71,861
Baltimore, MD (Severe-15)						
MARYLAND (Region III)						
Anne Arundel Co	14,505	35,318	46	73	6,992	11,158
Baltimore (City)	22,896	22,550	71	46	10,863	7,114
Baltimore Co	22,146	32,627	70	74	10,752	11,280
Carroll Co	4,487	6,029	13	16	2,038	2,477
Harford Co	8,520	6,966	26	20	3,938	2,989
Howard Co	5,712	7,222	18	17	2,794	2,581
Baltimore Total	78,266	110,712	244	246	37,377	37,598
Chicago-Gary-Lake County, IL-IN (Severe-17)						
ILLINOIS (Region V)						
Cook Co	222,073	237,444	661	507	101,176	77,671
Du Page Co	29,809	30,564	96	76	14,617	11,625
Grundy Co (P)	430	621	1	2	203	343
Kane Co	14,428	12,801	49	36	7,422	5,510
Kendall Co (P)	631	1,951	2	4	326	672
Lake Co	74,751	29,645	155	75	23,788	11,446
Mc Henry Co	8,187	7,138	28	20	4,248	3,109
Will Co	16,577	48,759	52	112	7,998	17,123
IL Subtotal	366,885	368,923	1,044	833	159,777	127,401
INDIANA (Region V)						
Lake Co	26,738	71,889	84	177	12,836	27,075
Porter Co	12,237	23,964	37	52	5,731	7,948
IN Subtotal	38,975	95,852	121	229	18,568	35,023
Chicago Total	405,860	464,775	1,166	1,062	178,345	162,424

Table 6. Total Emissions from all sources in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	2007 Baseline Total Emissions All Sources					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Greater Connecticut (Serious)						
CONNECTICUT (Region I)						
Fairfield Co (P)	1,225	1,226	4	4	636	554
Hartford Co	26,335	27,544	87	80	13,280	12,266
Litchfield Co (P)	5,360	3,715	19	12	2,887	1,776
Middlesex Co	4,692	6,511	16	19	2,402	2,910
New Haven Co	23,445	21,525	79	63	12,042	9,648
New London Co	9,266	11,467	31	34	4,763	5,129
Tolland Co	2,958	3,754	9	12	1,426	1,776
Windham Co	2,818	3,515	9	10	1,337	1,583
Greater CT Total	76,099	79,257	253	233	38,770	35,642
Houston-Galveston-Brazoria, TX (Severe-17)						
TEXAS (Region VI)						
Brazoria Co	22,175	56,511	65	156	9,927	23,847
Chambers Co	4,611	20,536	14	64	2,201	9,858
Fort Bend Co	9,198	53,076	28	153	4,305	23,356
Galveston Co	26,350	131,107	77	368	11,778	56,228
Harris Co	156,569	298,019	477	836	72,998	127,877
Liberty Co	4,062	4,788	12	13	1,805	2,045
Montgomery Co	8,666	13,937	27	41	4,104	6,298
Waller Co	1,699	2,541	6	7	882	1,109
Houston Total	233,329	580,516	706	1,638	107,999	250,617
Milwaukee-Racine, WI (Severe-17)						
WISCONSIN (Region V)						
Kenosha Co	7,585	17,012	29	37	4,512	5,697
Milwaukee Co	46,035	54,412	144	120	21,978	18,381
Ozaukee Co	5,971	6,064	27	16	4,114	2,424
Racine Co	9,487	8,094	35	21	5,356	3,282
Washington Co	5,153	4,994	17	14	2,562	2,171
Waukesha Co	16,154	17,178	52	45	7,993	6,922
Milwaukee Total	90,386	107,753	304	254	46,516	38,878
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)						
CONNECTICUT (Region I)						
Fairfield Co (P)	27,402	27,414	93	81	14,221	12,395
Litchfield Co (P)	911	631	3	2	490	302
CT Subtotal	28,312	28,046	96	83	14,711	12,697
NEW JERSEY (Region II)						
Bergen Co	25,232	33,899	82	74	12,548	11,252
Essex Co	28,911	31,919	89	70	13,673	10,769

Table 6. Total Emissions from all sources in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	2007 Baseline Total Emissions All Sources					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Hudson Co	22,349	33,097	67	69	10,299	10,527
Hunterdon Co	3,889	5,056	12	15	1,853	2,234
Middlesex Co	29,728	28,112	91	67	13,925	10,224
Monmouth Co	16,032	40,909	53	105	8,092	16,014
Morris Co	13,974	14,342	45	34	6,909	5,221
Ocean Co	9,643	14,082	32	34	4,964	5,230
Passaic Co	13,437	13,808	43	28	6,576	4,244
Somerset Co	7,805	9,575	25	24	3,806	3,602
Sussex Co	3,052	4,025	10	11	1,456	1,633
Union Co	32,374	26,991	97	59	14,794	9,064
NJ Subtotal	206,426	255,815	646	588	98,893	90,014
NEW YORK (Region II)						
Bronx Co	17,226	16,649	56	38	8,644	5,866
Kings Co	39,205	35,017	127	80	19,452	12,295
Nassau Co	31,451	25,495	105	64	16,112	9,866
New York Co	50,008	39,101	145	117	22,142	17,863
Orange Co (P)	3,717	4,619	11	12	1,758	1,812
Queens Co	35,529	35,545	116	93	17,815	14,240
Richmond Co	13,224	7,192	40	20	6,147	3,043
Rockland Co	9,420	9,831	24	24	3,737	3,683
Suffolk Co	42,649	27,771	142	79	21,776	12,137
Westchester Co	26,679	18,894	79	51	12,089	7,815
NY Subtotal	269,108	220,113	848	579	129,674	88,620
New York Total	503,846	503,973	1,590	1,251	243,277	191,331
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)						
DELAWARE (Region III)						
Kent Co	7,127	10,080	22	28	3,441	4,260
New Castle Co	23,392	35,144	71	88	10,894	13,445
DE Subtotal	30,519	45,224	94	116	14,334	17,705
MARYLAND (Region III)						
Cecil Co	4,437	4,295	13	12	2,020	1,865
MD Subtotal	4,437	4,295	13	12	2,020	1,865
NEW JERSEY (Region II)						
Burlington Co	11,505	12,746	36	30	5,507	4,655
Camden Co	14,080	15,776	44	32	6,774	4,972
Cumberland Co	4,023	6,113	14	16	2,133	2,426
Gloucester Co	19,111	18,216	55	48	8,395	7,312
Mercer Co	11,054	24,060	35	44	5,314	6,695
Salem Co	15,178	7,306	42	19	6,489	2,947
NJ Subtotal	74,952	84,217	226	190	34,613	29,008
PENNSYLVANIA (Region III)						
Bucks Co	17,502	16,584	54	48	8,248	7,277

Table 6. Total Emissions from all sources in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	2007 Baseline Total Emissions All Sources					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Chester Co	13,854	19,610	44	56	6,707	8,552
Delaware Co	21,539	31,660	65	83	9,969	12,655
Montgomery Co	29,073	20,780	87	61	13,309	9,282
Philadelphia Co	44,314	41,022	141	111	21,609	17,013
PA Subtotal	126,282	129,656	391	358	59,841	54,778
Philadelphia Total	236,190	263,391	724	676	110,806	103,357
Springfield (Western MA), MA (Serious)						
MASSACHUSETTS (Region I)						
Berkshire Co	8,287	5,776	20	17	3,038	2,660
Franklin Co	6,078	4,540	20	13	3,005	2,003
Hampden Co	10,883	15,402	33	42	5,029	6,483
Hampshire Co	6,257	5,100	19	15	2,968	2,298
Western MA Total	31,505	30,817	92	88	14,039	13,444
Washington, DC-MD-VA (Serious)[b]						
DISTRICT OF COLUMBIA (Region III)						
Entire District	12,970	13,489	43	40	6,606	6,182
DC Subtotal	12,970	13,489	43	40	6,606	6,182
MARYLAND (Region III)						
Calvert Co	1,882	4,459	6	13	961	1,937
Charles Co	3,925	20,739	13	24	1,981	3,651
Frederick Co	5,872	9,042	18	25	2,707	3,863
Montgomery Co	20,067	27,976	64	65	9,761	9,918
Prince George's Co	18,630	28,378	58	53	8,803	8,083
MD Subtotal	50,376	90,595	158	179	24,213	27,451
VIRGINIA (Region III)						
Alexandria	3,309	9,860	11	23	1,643	3,516
Arlington Co	5,139	8,330	17	24	2,580	3,719
Fairfax	706	396	2	1	370	169
Fairfax Co	23,984	39,393	79	112	12,055	17,116
Loudoun Co	4,146	6,106	13	19	2,038	2,979
Prince William Co	5,620	14,720	18	40	2,683	6,052
Stafford Co	2,468	4,084	8	12	1,287	1,806
VA Subtotal	45,695	83,162	149	232	22,841	35,497
Washington Total	109,040	187,246	351	452	53,660	69,131

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a. VMT includes only HDGV, LDDT, LDGT1, LDGT2, and LDGV.

b. Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 7. Tier 2 emission reductions as a percentage of baseline total emissions in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	Reductions As a Percentage of Baseline Total					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Atlanta, GA (Serious)						
GEORGIA (Region IV)						
Cherokee Co	1.82%	10.57%	1.57%	12.14%	1.57%	12.14%
Clayton Co	3.21%	13.53%	2.55%	14.92%	2.55%	14.92%
Cobb Co	2.69%	9.89%	2.12%	11.07%	2.12%	11.07%
Coweta Co	1.03%	1.82%	0.91%	2.52%	0.91%	2.52%
De Kalb Co	2.55%	13.54%	1.99%	15.02%	1.99%	15.02%
Douglas Co	2.39%	12.86%	1.98%	14.45%	1.98%	14.45%
Fayette Co	1.22%	7.89%	1.04%	8.81%	1.04%	8.81%
Forsyth Co	1.23%	7.16%	1.06%	7.50%	1.06%	7.50%
Fulton Co	2.09%	9.29%	1.64%	9.96%	1.64%	9.96%
Gwinnett Co	2.71%	11.02%	2.11%	11.72%	2.11%	11.72%
Henry Co	1.36%	4.44%	1.19%	7.31%	1.19%	7.31%
Paulding Co	1.79%	9.75%	1.68%	11.00%	1.68%	11.00%
Rockdale Co	1.53%	10.71%	1.27%	11.96%	1.27%	11.96%
Atlanta Total	2.30%	9.69%	1.83%	10.90%	1.83%	10.90%
Baltimore, MD (Severe-15)						
MARYLAND (Region III)						
Anne Arundel Co	0.62%	1.85%	0.45%	2.58%	0.45%	2.58%
Baltimore (City)	0.66%	4.71%	0.48%	6.48%	0.48%	6.48%
Baltimore Co	0.66%	3.26%	0.47%	4.15%	0.47%	4.15%
Carroll Co	0.50%	3.75%	0.41%	4.26%	0.41%	4.26%
Harford Co	0.39%	4.01%	0.30%	4.22%	0.30%	4.22%
Howard Co	0.71%	4.23%	0.50%	5.24%	0.50%	5.24%
Baltimore Total	0.62%	3.24%	0.45%	4.21%	0.45%	4.21%
Chicago-Gary-Lake County, IL-IN (Severe-17)						
ILLINOIS (Region V)						
Cook Co	0.81%	4.28%	0.55%	5.18%	0.55%	5.18%
Du Page Co	0.91%	5.06%	0.57%	5.27%	0.57%	5.27%
Grundy Co (P)	0.25%	1.58%	0.18%	1.22%	0.18%	1.22%
Kane Co	0.18%	1.67%	0.12%	1.64%	0.12%	1.64%
Kendall Co (P)	0.47%	1.37%	0.31%	1.69%	0.31%	1.69%
Lake Co	0.20%	3.07%	0.20%	3.18%	0.20%	3.18%
Mc Henry Co	0.26%	2.68%	0.17%	2.62%	0.17%	2.62%
Will Co	0.37%	0.90%	0.25%	1.05%	0.25%	1.05%
IL Subtotal	0.64%	3.66%	0.45%	4.21%	0.45%	4.21%
INDIANA (Region V)						
Lake Co	0.78%	1.72%	0.52%	1.87%	0.52%	1.87%
Porter Co	0.40%	1.43%	0.28%	1.83%	0.28%	1.83%
IN Subtotal	0.66%	1.65%	0.45%	1.86%	0.45%	1.86%
Chicago Total	0.64%	3.24%	0.45%	3.70%	0.45%	3.70%

Table 7. Tier 2 emission reductions as a percentage of baseline total emissions in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	Reductions As a Percentage of Baseline Total					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Greater Connecticut (Serious)						
CONNECTICUT (Region I)						
Fairfield Co (P)	0.84%	5.93%	0.53%	5.30%	0.53%	5.30%
Hartford Co	1.00%	6.61%	0.65%	5.99%	0.65%	5.99%
Litchfield Co (P)	0.54%	6.50%	0.35%	5.77%	0.35%	5.77%
Middlesex Co	0.84%	4.79%	0.56%	4.47%	0.56%	4.47%
New Haven Co	0.89%	6.85%	0.57%	6.17%	0.57%	6.17%
New London Co	0.89%	5.38%	0.58%	4.93%	0.58%	4.93%
Tolland Co	1.08%	7.09%	0.77%	6.32%	0.77%	6.32%
Windham Co	0.65%	4.88%	0.49%	4.68%	0.49%	4.68%
Greater CT Total	0.90%	6.28%	0.59%	5.70%	0.59%	5.70%
Houston-Galveston-Brazoria, TX (Severe-17)						
TEXAS (Region VI)						
Brazoria Co	0.24%	0.77%	0.21%	0.86%	0.21%	0.86%
Chambers Co	0.23%	0.46%	0.19%	0.45%	0.19%	0.45%
Fort Bend Co	1.03%	1.19%	0.80%	1.22%	0.80%	1.22%
Galveston Co	0.38%	0.46%	0.31%	0.48%	0.31%	0.48%
Harris Co	0.70%	3.24%	0.55%	3.36%	0.55%	3.36%
Liberty Co	0.45%	3.51%	0.40%	3.92%	0.40%	3.92%
Montgomery Co	0.76%	4.35%	0.64%	4.59%	0.64%	4.59%
Waller Co	0.43%	2.57%	0.32%	2.80%	0.32%	2.80%
Houston Total	0.62%	2.11%	0.49%	2.20%	0.49%	2.20%
Milwaukee-Racine, WI (Severe-17)						
WISCONSIN (Region V)						
Kenosha Co	0.57%	1.92%	0.30%	2.27%	0.30%	2.27%
Milwaukee Co	0.82%	4.83%	0.52%	5.44%	0.52%	5.44%
Ozaukee Co	0.41%	3.31%	0.18%	3.27%	0.18%	3.27%
Racine Co	0.54%	4.80%	0.29%	4.68%	0.29%	4.68%
Washington Co	0.51%	5.29%	0.33%	4.98%	0.33%	4.98%
Waukesha Co	0.68%	5.14%	0.42%	5.01%	0.42%	5.01%
Milwaukee Total	0.70%	4.35%	0.41%	4.67%	0.41%	4.67%
New York-N. New Jersey-Long Island, NY-NJ-CT (Severe-17)						
CONNECTICUT (Region I)						
Fairfield Co (P)	0.84%	5.93%	0.53%	5.30%	0.53%	5.30%
Litchfield Co (P)	0.54%	6.50%	0.35%	5.77%	0.35%	5.77%
CT Subtotal	0.83%	5.95%	0.53%	5.31%	0.53%	5.31%
NEW JERSEY (Region II)						
Bergen Co	0.75%	3.32%	0.48%	4.17%	0.48%	4.17%
Essex Co	0.62%	3.31%	0.42%	4.09%	0.42%	4.09%

Table 7. Tier 2 emission reductions as a percentage of baseline total emissions in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	Reductions As a Percentage of Baseline Total					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Hudson Co	0.57%	2.27%	0.40%	2.98%	0.40%	2.98%
Hunterdon Co	0.84%	5.87%	0.64%	5.99%	0.64%	5.99%
Middlesex Co	0.57%	3.68%	0.39%	4.25%	0.39%	4.25%
Monmouth Co	0.91%	2.26%	0.59%	2.45%	0.59%	2.45%
Morris Co	0.73%	4.65%	0.48%	5.44%	0.48%	5.44%
Ocean Co	1.17%	5.43%	0.75%	6.28%	0.75%	6.28%
Passaic Co	0.73%	4.22%	0.48%	5.73%	0.48%	5.73%
Somerset Co	0.82%	4.50%	0.56%	5.13%	0.56%	5.13%
Sussex Co	0.97%	6.25%	0.71%	6.88%	0.71%	6.88%
Union Co	0.35%	2.49%	0.25%	3.09%	0.25%	3.09%
NJ Subtotal	0.66%	3.35%	0.45%	4.02%	0.45%	4.02%
NEW YORK (Region II)						
Bronx Co	0.96%	6.27%	0.63%	7.54%	0.63%	7.54%
Kings Co	0.81%	5.70%	0.54%	6.88%	0.54%	6.88%
Nassau Co	0.58%	4.52%	0.38%	4.95%	0.38%	4.95%
New York Co	0.41%	3.30%	0.31%	3.06%	0.31%	3.06%
Orange Co (P)	1.72%	6.88%	1.27%	7.80%	1.27%	7.80%
Queens Co	0.76%	4.76%	0.50%	5.04%	0.50%	5.04%
Richmond Co	0.40%	4.58%	0.28%	4.58%	0.28%	4.58%
Rockland Co	0.39%	2.36%	0.33%	2.67%	0.33%	2.67%
Suffolk Co	0.43%	4.23%	0.28%	4.12%	0.28%	4.12%
Westchester Co	0.46%	4.29%	0.34%	4.44%	0.34%	4.44%
NY Subtotal	0.59%	4.56%	0.41%	4.82%	0.41%	4.82%
New York Total	0.63%	4.02%	0.43%	4.47%	0.43%	4.47%
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD (Severe-15)						
DELAWARE (Region III)						
Kent Co	1.13%	4.64%	0.80%	4.70%	0.80%	4.70%
New Castle Co	1.19%	4.13%	0.84%	4.44%	0.84%	4.44%
DE Subtotal	1.17%	4.25%	0.83%	4.50%	0.83%	4.50%
MARYLAND (Region III)						
Cecil Co	0.53%	5.00%	0.43%	5.23%	0.43%	5.23%
MD Subtotal	0.53%	5.00%	0.43%	5.23%	0.43%	5.23%
NEW JERSEY (Region II)						
Burlington Co	0.86%	4.97%	0.59%	5.81%	0.59%	5.81%
Camden Co	0.97%	4.94%	0.65%	6.57%	0.65%	6.57%
Cumberland Co	0.80%	3.48%	0.50%	3.81%	0.50%	3.81%
Gloucester Co	0.33%	2.16%	0.24%	2.30%	0.24%	2.30%
Mercer Co	0.92%	2.77%	0.63%	4.23%	0.63%	4.23%
Salem Co	0.12%	1.84%	0.09%	1.99%	0.09%	1.99%
NJ Subtotal	0.60%	3.35%	0.42%	4.14%	0.42%	4.14%
PENNSYLVANIA (Region III)						
Bucks Co	0.97%	6.03%	0.67%	5.76%	0.67%	5.76%

Table 7. Tier 2 emission reductions as a percentage of baseline total emissions in 2007 in 10 nonattainment areas.

Nonattainment areas and included counties	Reductions As a Percentage of Baseline Total					
	Annual (tons)		Ozone Season Day (tons)		Ozone Season (tons)	
	VOC	NOx	VOC	NOx	VOC	NOx
Chester Co	0.90%	4.18%	0.62%	4.10%	0.62%	4.10%
Delaware Co	0.83%	2.98%	0.57%	3.05%	0.57%	3.05%
Montgomery Co	0.78%	6.03%	0.55%	5.60%	0.55%	5.60%
Philadelphia Co	1.17%	6.57%	0.76%	6.48%	0.76%	6.48%
PA Subtotal	0.97%	5.18%	0.66%	5.07%	0.66%	5.07%
Philadelphia Total	0.87%	4.43%	0.60%	4.71%	0.60%	4.71%
Springfield (Western MA), MA (Serious)						
MASSACHUSETTS (Region I)						
Berkshire Co	0.31%	2.73%	0.28%	2.51%	0.28%	2.51%
Franklin Co	0.16%	1.85%	0.11%	1.84%	0.11%	1.84%
Hampden Co	1.21%	4.62%	0.84%	4.48%	0.84%	4.48%
Hampshire Co	0.46%	3.60%	0.32%	3.36%	0.32%	3.36%
Western MA Total	0.62%	3.69%	0.45%	3.51%	0.45%	3.51%
Washington, DC-MD-VA (Serious)[b]						
DISTRICT OF COLUMBIA (Region III)						
Entire District	0.86%	4.74%	0.60%	4.51%	0.60%	4.51%
DC Subtotal	0.86%	4.74%	0.60%	4.51%	0.60%	4.51%
MARYLAND (Region III)						
Calvert Co	0.96%	3.34%	0.69%	3.50%	0.69%	3.50%
Charles Co	0.45%	0.67%	0.33%	1.74%	0.33%	1.74%
Frederick Co	0.82%	3.70%	0.63%	3.84%	0.63%	3.84%
Montgomery Co	1.16%	4.83%	0.81%	5.82%	0.81%	5.82%
Prince George's Co	1.29%	4.76%	0.92%	7.09%	0.92%	7.09%
MD Subtotal	1.11%	3.67%	0.78%	5.21%	0.78%	5.21%
VIRGINIA (Region III)						
Alexandria	1.20%	2.42%	0.86%	2.92%	0.86%	2.92%
Arlington Co	1.23%	4.51%	0.87%	4.34%	0.87%	4.34%
Fairfax	0.93%	10.10%	0.64%	10.30%	0.64%	10.30%
Fairfax Co	1.15%	4.32%	0.81%	4.32%	0.81%	4.32%
Loudoun Co	0.59%	2.96%	0.45%	2.71%	0.45%	2.71%
Prince William Co	1.46%	3.69%	1.10%	3.95%	1.10%	3.95%
Stafford Co	0.88%	4.43%	0.65%	4.58%	0.65%	4.58%
VA Subtotal	1.12%	3.92%	0.80%	4.01%	0.80%	4.01%
Washington Total	1.08%	3.86%	0.77%	4.53%	0.77%	4.53%

Notes:

(P) Only part of the county is included in the nonattainment area. Emissions are allocated proportionally to population.

a: VMT includes only HDGV, LDDT, LDGT1, LDGT2, and LDGV.

b: Emissions from Falls Church are included in Fairfax county. Emissions from Manassas and Manassas Park are included in Prince William County.

Table 8. Difference in g/mile between base case and Tier 2 NOx emission factors.

	I/M Fuel Control	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Phase-in Conv. Base-T2
	Calendar Year	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV
NOx	2004	0.178	0.182	0.158	0.095	0.491	0.088	0.093	0.089	0.097	0.207	0.204
NOx	2005	0.205	0.208	0.215	0.229	0.468	0.106	0.118	0.144	0.233	0.204	0.228
NOx	2006	0.233	0.238	0.280	0.361	0.448	0.126	0.144	0.208	0.366	0.203	0.255
NOx	2007	0.264	0.272	0.349	0.486	0.431	0.149	0.176	0.274	0.492	0.202	0.283
NOx	2008	0.294	0.308	0.417	0.599	0.415	0.172	0.211	0.343	0.605	0.200	0.313
NOx	2009	0.324	0.343	0.487	0.699	0.401	0.195	0.246	0.411	0.705	0.200	0.341
NOx	2010	0.353	0.376	0.554	0.785	0.389	0.218	0.278	0.475	0.791	0.199	0.368
NOx	2011	0.380	0.406	0.616	0.857	0.380	0.240	0.310	0.535	0.863	0.199	0.392
NOx	2012	0.406	0.434	0.673	0.916	0.373	0.261	0.337	0.590	0.922	0.199	0.415
NOx	2013	0.427	0.459	0.724	0.965	0.363	0.278	0.362	0.640	0.970	0.197	0.434
NOx	2014	0.444	0.480	0.772	1.005	0.355	0.293	0.384	0.686	1.009	0.197	0.450
NOx	2015	0.458	0.497	0.814	1.036	0.350	0.306	0.402	0.726	1.040	0.197	0.462
NOx	2016	0.470	0.512	0.852	1.060	0.346	0.317	0.416	0.764	1.063	0.197	0.473
NOx	2017	0.478	0.523	0.886	1.079	0.341	0.325	0.427	0.796	1.082	0.197	0.481
NOx	2018	0.486	0.531	0.915	1.093	0.339	0.332	0.436	0.825	1.096	0.197	0.488
NOx	2019	0.492	0.538	0.942	1.104	0.335	0.336	0.442	0.850	1.106	0.197	0.493
NOx	2020	0.496	0.543	0.965	1.111	0.333	0.341	0.447	0.872	1.114	0.197	0.497
NOx	2021	0.499	0.547	0.985	1.118	0.330	0.344	0.451	0.892	1.120	0.197	0.500
NOx	2022	0.502	0.550	1.003	1.121	0.328	0.345	0.453	0.908	1.124	0.197	0.503
NOx	2023	0.504	0.552	1.018	1.124	0.326	0.347	0.455	0.923	1.127	0.197	0.505
NOx	2024	0.507	0.555	1.031	1.127	0.325	0.349	0.458	0.936	1.129	0.197	0.507
NOx	2025	0.509	0.558	1.041	1.128	0.324	0.351	0.461	0.947	1.131	0.197	0.509
NOx	2026	0.508	0.558	1.052	1.130	0.323	0.351	0.461	0.957	1.133	0.198	0.508
NOx	2027	0.509	0.559	1.069	1.132	0.321	0.351	0.462	0.974	1.134	0.198	0.509
NOx	2028	0.509	0.560	1.086	1.134	0.319	0.352	0.464	0.991	1.136	0.198	0.509
NOx	2029	0.509	0.561	1.092	1.135	0.319	0.352	0.465	0.997	1.138	0.198	0.509
NOx	2030	0.507	0.558	1.088	1.125	0.319	0.351	0.462	0.994	1.127	0.198	0.507

Table 8. Difference in g/mile between base case and Tier 2 NOx emission factors.

	I/M Fuel Control	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	None Conv. Base-T2	None Conv. Base-T2
	Calendar Year	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1
NOx	2004	0.184	0.162	0.095	0.491	0.127	0.106	0.090	0.097	0.207	0.215	0.190
NOx	2005	0.210	0.218	0.229	0.468	0.143	0.129	0.144	0.233	0.204	0.241	0.220
NOx	2006	0.239	0.283	0.361	0.448	0.162	0.154	0.209	0.366	0.203	0.270	0.252
NOx	2007	0.273	0.352	0.486	0.431	0.183	0.185	0.275	0.492	0.202	0.303	0.290
NOx	2008	0.309	0.420	0.599	0.415	0.204	0.219	0.344	0.605	0.200	0.338	0.330
NOx	2009	0.343	0.490	0.699	0.401	0.224	0.252	0.411	0.705	0.200	0.371	0.371
NOx	2010	0.377	0.556	0.785	0.389	0.242	0.284	0.475	0.791	0.199	0.405	0.409
NOx	2011	0.408	0.617	0.857	0.380	0.261	0.314	0.535	0.863	0.199	0.437	0.445
NOx	2012	0.435	0.674	0.916	0.373	0.277	0.340	0.589	0.922	0.199	0.466	0.476
NOx	2013	0.460	0.726	0.965	0.363	0.291	0.364	0.640	0.970	0.197	0.490	0.504
NOx	2014	0.480	0.772	1.005	0.355	0.303	0.385	0.686	1.009	0.197	0.510	0.528
NOx	2015	0.498	0.815	1.036	0.350	0.313	0.402	0.726	1.040	0.197	0.526	0.548
NOx	2016	0.512	0.853	1.060	0.346	0.322	0.417	0.764	1.063	0.197	0.540	0.564
NOx	2017	0.523	0.887	1.079	0.341	0.329	0.428	0.796	1.082	0.197	0.551	0.577
NOx	2018	0.532	0.917	1.093	0.339	0.335	0.436	0.824	1.096	0.197	0.560	0.586
NOx	2019	0.539	0.942	1.104	0.335	0.339	0.442	0.850	1.106	0.197	0.567	0.593
NOx	2020	0.543	0.965	1.111	0.333	0.342	0.448	0.872	1.114	0.197	0.572	0.599
NOx	2021	0.547	0.985	1.118	0.330	0.344	0.451	0.892	1.120	0.197	0.576	0.603
NOx	2022	0.550	1.003	1.121	0.328	0.347	0.454	0.908	1.124	0.197	0.580	0.607
NOx	2023	0.552	1.018	1.124	0.326	0.349	0.457	0.923	1.127	0.197	0.582	0.609
NOx	2024	0.555	1.031	1.127	0.325	0.351	0.459	0.936	1.129	0.197	0.586	0.613
NOx	2025	0.558	1.041	1.128	0.324	0.351	0.461	0.947	1.131	0.197	0.588	0.616
NOx	2026	0.558	1.052	1.130	0.323	0.351	0.461	0.957	1.133	0.198	0.588	0.617
NOx	2027	0.559	1.069	1.132	0.321	0.351	0.462	0.974	1.134	0.198	0.588	0.619
NOx	2028	0.560	1.086	1.134	0.319	0.352	0.464	0.991	1.136	0.198	0.589	0.620
NOx	2029	0.561	1.092	1.135	0.319	0.352	0.465	0.997	1.138	0.198	0.589	0.620
NOx	2030	0.558	1.088	1.125	0.319	0.351	0.462	0.994	1.127	0.198	0.586	0.618

Table 8. Difference in g/mile between base case and Tier 2 NOx emission factors.

	I/M Fuel Control	None Conv. Base-T2	None Conv. Base-T2	None Conv. Base-T2	None Reform. Base-T2	None Reform. Base-T2	None Reform. Base-T2	None Reform. Base-T2	None Reform. Base-T2
	Calendar Year	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV
NOx	2004	0.170	0.093	0.491	0.116	0.108	0.094	0.094	0.207
NOx	2005	0.227	0.220	0.468	0.133	0.133	0.151	0.223	0.204
NOx	2006	0.295	0.342	0.448	0.155	0.161	0.218	0.347	0.203
NOx	2007	0.366	0.456	0.431	0.178	0.195	0.288	0.460	0.202
NOx	2008	0.439	0.554	0.415	0.204	0.232	0.360	0.559	0.200
NOx	2009	0.512	0.638	0.401	0.229	0.268	0.431	0.644	0.200
NOx	2010	0.581	0.709	0.389	0.254	0.303	0.499	0.716	0.199
NOx	2011	0.645	0.767	0.380	0.278	0.335	0.561	0.774	0.199
NOx	2012	0.702	0.813	0.373	0.299	0.364	0.618	0.821	0.199
NOx	2013	0.753	0.850	0.363	0.318	0.390	0.668	0.859	0.197
NOx	2014	0.800	0.879	0.355	0.334	0.412	0.714	0.889	0.197
NOx	2015	0.841	0.903	0.350	0.348	0.430	0.755	0.912	0.197
NOx	2016	0.878	0.920	0.346	0.358	0.445	0.791	0.930	0.197
NOx	2017	0.910	0.932	0.341	0.368	0.457	0.822	0.943	0.197
NOx	2018	0.939	0.940	0.339	0.375	0.465	0.850	0.951	0.197
NOx	2019	0.965	0.946	0.335	0.381	0.473	0.876	0.957	0.197
NOx	2020	0.988	0.949	0.333	0.385	0.478	0.897	0.960	0.197
NOx	2021	1.006	0.952	0.330	0.389	0.482	0.916	0.963	0.197
NOx	2022	1.024	0.952	0.328	0.391	0.485	0.933	0.963	0.197
NOx	2023	1.039	0.952	0.326	0.393	0.487	0.949	0.963	0.197
NOx	2024	1.052	0.952	0.325	0.395	0.490	0.961	0.964	0.197
NOx	2025	1.064	0.952	0.324	0.398	0.493	0.973	0.963	0.197
NOx	2026	1.075	0.952	0.323	0.398	0.494	0.983	0.964	0.198
NOx	2027	1.092	0.952	0.321	0.399	0.495	1.001	0.964	0.198
NOx	2028	1.109	0.952	0.319	0.398	0.496	1.018	0.964	0.198
NOx	2029	1.116	0.953	0.319	0.399	0.497	1.024	0.965	0.198
NOx	2030	1.113	0.942	0.319	0.398	0.495	1.021	0.954	0.198

Table 9. Difference in g/mile between base case and Tier 2 HC emission factors.

	I/M Fuel Control	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Conv. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Final Reform. Base-T2	Phase-in Conv. Base-T2
	Calendar Year	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV
HC	2004	0.042	0.053	0.064	0.053	0.110	0.018	0.021	0.023	0.055	0.040	0.044
HC	2005	0.042	0.053	0.077	0.127	0.100	0.018	0.023	0.033	0.133	0.038	0.044
HC	2006	0.043	0.053	0.092	0.199	0.090	0.020	0.024	0.044	0.208	0.036	0.044
HC	2007	0.044	0.053	0.108	0.269	0.082	0.022	0.027	0.058	0.281	0.034	0.045
HC	2008	0.045	0.053	0.125	0.334	0.071	0.024	0.030	0.073	0.348	0.030	0.046
HC	2009	0.046	0.053	0.145	0.390	0.060	0.026	0.033	0.089	0.406	0.027	0.046
HC	2010	0.047	0.054	0.164	0.440	0.055	0.029	0.035	0.105	0.458	0.025	0.048
HC	2011	0.049	0.055	0.181	0.482	0.050	0.030	0.038	0.120	0.502	0.023	0.049
HC	2012	0.050	0.056	0.199	0.517	0.045	0.033	0.041	0.135	0.538	0.021	0.050
HC	2013	0.051	0.056	0.214	0.547	0.042	0.035	0.044	0.147	0.569	0.020	0.051
HC	2014	0.052	0.057	0.227	0.570	0.039	0.036	0.046	0.161	0.593	0.020	0.052
HC	2015	0.054	0.058	0.240	0.588	0.038	0.039	0.048	0.172	0.612	0.020	0.054
HC	2016	0.055	0.058	0.252	0.604	0.037	0.040	0.050	0.181	0.628	0.019	0.055
HC	2017	0.056	0.060	0.262	0.618	0.035	0.042	0.051	0.190	0.642	0.020	0.057
HC	2018	0.058	0.060	0.271	0.629	0.034	0.043	0.052	0.199	0.654	0.019	0.057
HC	2019	0.059	0.061	0.280	0.639	0.033	0.044	0.053	0.207	0.664	0.019	0.058
HC	2020	0.059	0.062	0.288	0.646	0.032	0.044	0.054	0.214	0.671	0.019	0.059
HC	2021	0.060	0.062	0.295	0.651	0.030	0.045	0.054	0.219	0.677	0.018	0.060
HC	2022	0.060	0.063	0.300	0.656	0.026	0.046	0.054	0.224	0.682	0.016	0.060
HC	2023	0.060	0.062	0.305	0.660	0.023	0.046	0.055	0.229	0.686	0.014	0.060
HC	2024	0.061	0.063	0.310	0.664	0.021	0.046	0.055	0.233	0.690	0.013	0.061
HC	2025	0.060	0.062	0.313	0.666	0.018	0.047	0.056	0.237	0.693	0.012	0.060
HC	2026	0.061	0.063	0.316	0.668	0.016	0.047	0.055	0.240	0.695	0.011	0.061
HC	2027	0.061	0.063	0.322	0.672	0.013	0.047	0.056	0.245	0.699	0.010	0.061
HC	2028	0.061	0.063	0.327	0.675	0.011	0.047	0.056	0.250	0.702	0.008	0.061
HC	2029	0.061	0.063	0.329	0.675	0.010	0.047	0.057	0.251	0.703	0.008	0.061
HC	2030	0.061	0.064	0.328	0.672	0.009	0.047	0.057	0.251	0.699	0.007	0.061

Table 9. Difference in g/mile between base case and Tier 2 HC emission factors.

	I/M Fuel Control	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Conv. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	Phase-in Reform. Base-T2	None Conv. Base-T2	None Conv. Base-T2
	Calendar Year	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV	LDGV	LDGT1
HC	2004	0.054	0.066	0.053	0.110	0.019	0.022	0.024	0.055	0.040	0.047	0.063
HC	2005	0.054	0.079	0.127	0.100	0.020	0.023	0.034	0.133	0.038	0.046	0.059
HC	2006	0.054	0.094	0.199	0.090	0.021	0.025	0.046	0.208	0.036	0.046	0.056
HC	2007	0.053	0.109	0.269	0.082	0.022	0.028	0.059	0.281	0.034	0.046	0.060
HC	2008	0.053	0.127	0.334	0.071	0.024	0.030	0.073	0.348	0.030	0.047	0.059
HC	2009	0.054	0.145	0.390	0.060	0.027	0.033	0.089	0.406	0.027	0.047	0.052
HC	2010	0.054	0.164	0.440	0.055	0.029	0.036	0.105	0.458	0.025	0.048	0.053
HC	2011	0.055	0.183	0.482	0.050	0.031	0.039	0.121	0.502	0.023	0.048	0.056
HC	2012	0.056	0.199	0.517	0.045	0.033	0.042	0.134	0.538	0.021	0.048	0.058
HC	2013	0.056	0.213	0.547	0.042	0.035	0.044	0.148	0.569	0.020	0.050	0.057
HC	2014	0.057	0.228	0.570	0.039	0.037	0.046	0.161	0.593	0.020	0.051	0.058
HC	2015	0.058	0.240	0.588	0.038	0.039	0.048	0.172	0.612	0.020	0.051	0.059
HC	2016	0.059	0.252	0.604	0.037	0.040	0.050	0.182	0.628	0.019	0.053	0.061
HC	2017	0.060	0.262	0.618	0.035	0.042	0.051	0.191	0.642	0.020	0.054	0.062
HC	2018	0.061	0.272	0.629	0.034	0.043	0.052	0.200	0.654	0.019	0.055	0.062
HC	2019	0.061	0.280	0.639	0.033	0.044	0.053	0.207	0.664	0.019	0.056	0.063
HC	2020	0.062	0.288	0.646	0.032	0.044	0.054	0.214	0.671	0.019	0.057	0.063
HC	2021	0.062	0.295	0.651	0.030	0.045	0.054	0.219	0.677	0.018	0.058	0.064
HC	2022	0.063	0.300	0.656	0.026	0.046	0.054	0.224	0.682	0.016	0.058	0.065
HC	2023	0.062	0.305	0.660	0.023	0.046	0.055	0.229	0.686	0.014	0.058	0.064
HC	2024	0.063	0.310	0.664	0.021	0.046	0.055	0.233	0.690	0.013	0.058	0.064
HC	2025	0.062	0.313	0.666	0.018	0.047	0.056	0.237	0.693	0.012	0.059	0.065
HC	2026	0.063	0.316	0.668	0.016	0.047	0.055	0.240	0.695	0.011	0.060	0.065
HC	2027	0.063	0.322	0.672	0.013	0.047	0.056	0.245	0.699	0.010	0.059	0.065
HC	2028	0.063	0.327	0.675	0.011	0.047	0.056	0.250	0.702	0.008	0.059	0.066
HC	2029	0.063	0.329	0.675	0.010	0.047	0.057	0.251	0.703	0.008	0.059	0.066
HC	2030	0.064	0.328	0.672	0.009	0.047	0.057	0.251	0.699	0.007	0.060	0.065

Table 9. Difference in g/mile between base case and Tier 2 HC emission factors.

	I/M	None	None	None	None	None	None	None	None
	Fuel	Conv.	Conv.	Conv.	Reform.	Reform.	Reform.	Reform.	Reform.
	Control	Base-T2	Base-T2	Base-T2	Base-T2	Base-T2	Base-T2	Base-T2	Base-T2
	Calendar Year	LDGT2	LDDT	HDGV	LDGV	LDGT1	LDGT2	LDDT	HDGV
HC	2004	0.086	0.052	0.110	0.020	0.022	0.031	0.055	0.040
HC	2005	0.096	0.124	0.100	0.020	0.023	0.040	0.130	0.038
HC	2006	0.108	0.190	0.090	0.020	0.024	0.051	0.200	0.036
HC	2007	0.139	0.250	0.082	0.021	0.026	0.065	0.265	0.034
HC	2008	0.150	0.301	0.071	0.023	0.029	0.080	0.321	0.030
HC	2009	0.147	0.345	0.060	0.025	0.032	0.095	0.368	0.027
HC	2010	0.165	0.381	0.055	0.026	0.035	0.111	0.408	0.025
HC	2011	0.183	0.412	0.050	0.029	0.038	0.125	0.442	0.023
HC	2012	0.199	0.437	0.045	0.030	0.041	0.139	0.469	0.021
HC	2013	0.214	0.459	0.042	0.032	0.044	0.153	0.492	0.020
HC	2014	0.228	0.475	0.039	0.033	0.046	0.165	0.510	0.020
HC	2015	0.241	0.488	0.038	0.035	0.049	0.176	0.524	0.020
HC	2016	0.252	0.499	0.037	0.036	0.051	0.186	0.536	0.019
HC	2017	0.264	0.508	0.035	0.038	0.052	0.195	0.545	0.020
HC	2018	0.273	0.515	0.034	0.039	0.054	0.203	0.553	0.019
HC	2019	0.282	0.520	0.033	0.040	0.054	0.210	0.559	0.019
HC	2020	0.290	0.524	0.032	0.041	0.054	0.217	0.564	0.019
HC	2021	0.297	0.527	0.030	0.042	0.055	0.222	0.567	0.018
HC	2022	0.302	0.529	0.026	0.042	0.056	0.228	0.569	0.016
HC	2023	0.308	0.530	0.023	0.042	0.056	0.233	0.571	0.014
HC	2024	0.313	0.532	0.021	0.044	0.056	0.236	0.573	0.013
HC	2025	0.317	0.533	0.018	0.044	0.056	0.240	0.575	0.012
HC	2026	0.319	0.534	0.016	0.044	0.057	0.243	0.576	0.011
HC	2027	0.326	0.535	0.013	0.044	0.057	0.249	0.578	0.010
HC	2028	0.331	0.536	0.011	0.044	0.057	0.253	0.579	0.008
HC	2029	0.333	0.537	0.010	0.045	0.058	0.255	0.580	0.008
HC	2030	0.334	0.532	0.009	0.044	0.058	0.255	0.575	0.007